Keeping Entrepreneurship at Bay:

How the Department of the Interior Uses Flawed Science to Foreclose the American Dream

Exhibits

CAUSE of ACTION
Advocates for Government Accountability

March 4, 2013

EXHIBIT

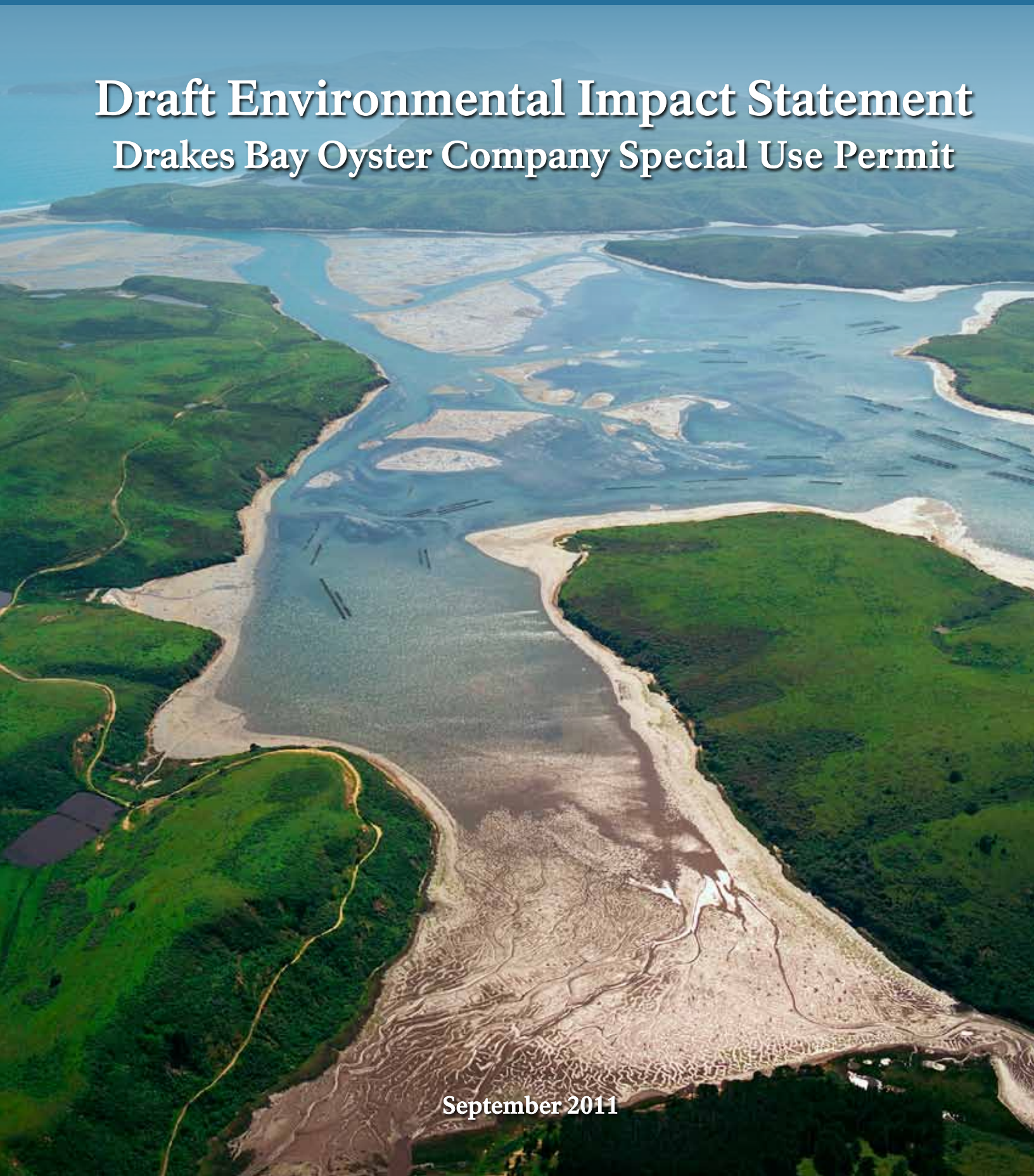
1

National Park Service
U.S. Department of the Interior

Point Reyes National Seashore
California

Draft Environmental Impact Statement

Drakes Bay Oyster Company Special Use Permit



September 2011

APPENDIXES

SPECIAL USE PERMIT

Form 10-114
Rev. Jan. 00

UNITED STATES DEPARTMENT OF THE INTERIOR
National Park Service
Special Use Permit

Name of Use: Aquaculture

Date Permit Reviewed 2008
Reviewed 20
Reviewed 20
Expires November 30, 2012

Long Term X
Short Term

Permit # MISC-8530-6000-8002
Type Park Code No. #
Point Reyes National Seashore

Drakes Bay Oyster Company
17171 Sir Francis Drake Blvd.
Inverness, CA 94937
(415) 669-1149

is hereby authorized for a period ("Term") commencing on April ____, 2008 ("Commencement Date") and terminating on November 30, 2012 ("Expiration Date") to use the following described land, improvements, and waters in the following area:

the lands and improvements at Drakes Bay Estero at the former Johnson's Oyster Site consisting of approximately 1.1 acres of land and improvements designated as the "SUP Area" on the map attached hereto as Exhibit B ("Drake's Estero Oysters – SUP & ROP"); the waters designated as the "SUP Area" on the map attached hereto as Exhibit A ("Drake's Estero Aquaculture & CDFG Leases: NPS Resources and SUP Area"); the land designated as the "Well Area" on the map attached hereto as Exhibit D ("Drakes Bay Oyster Company Well Area"); and the land designated as the "Sewage Area" on the map attached hereto as Exhibit E ("Drakes Bay Oyster Company Sewage Area"). Collectively, the areas so designated shall be referred to as the "Premises." The Premises governed by this Permit do not include the area designated as the ROP Area on the map attached hereto as Exhibit B.

For the purpose(s) of:

Use of the area designated as the "SUP Area" on the map attached hereto as Exhibit B for the purpose of processing shellfish, the interpretation of shellfish cultivation to the visiting public, and residential purposes reasonably incidental thereto. Use of the area designated as the "SUP Area" on the map attached hereto as Exhibit A for the purpose of shellfish cultivation. Use of the area designated as the "Well Area" on the map attached hereto as Exhibit D for the purpose of supplying water for the Drakes Bay Oyster Company facilities using Permittee well, pump, and pipelines. Use of the area designated as the "Sewage Area" on the map attached hereto as Exhibit E for the purpose of use and maintenance of existing sewage pipeline and sewage leachfield to service the Drakes Bay Oyster Company facilities. Collectively, the uses set forth in this paragraph shall be referred to as the "Permitted Uses."

Authorizing legislation or other authority (RE – DO-53): 16 U.S.C. 1, 1a-1, 3 & 459c; the Reservation of Use and Occupancy.

NEPA & NHPA Compliance: NEPA compliance pending

PERFORMANCE BOND:	Required	Not Required X	Amount:
LIABILITY INSURANCE:	Required X	Not Required	Amount: As set forth in Article 15 of this Permit.

ISSUANCE of this Permit is subject to the terms, covenants, obligations, and reservations, expressed or implied herein and to the payment to the U.S. Dept. of the Interior, National Park Service of the sum of **$2,800.00** per year, plus an amount to be determined by appraisal for the use of the Sewage Area and the Well Area including water use.

PERMITTEE: _____ Drakes Bay Oyster Co. 4/22/08
Signature — Organization — Date

Authorizing Official: _____ George Turnbull 4/22/08
Signature — Deputy Regional Director — Date

CONDITIONS OF THIS PERMIT

1) DEFINITIONS

As used in this Permit, the following terms shall have the following meanings:

a) "Agency" means any agency, department, commission, board, bureau, office or other governmental authority having jurisdiction.

b) "Applicable Laws" includes, without limitation all present and future statutes, regulations, requirements, Environmental Requirements, guidelines, judgments, or orders of any Agency or judicial body, whether now existing or hereafter established, relating to or affecting the Premises or the use or occupancy of the Premises.

c) "Commencement Date" is as defined on the Cover Page of this Permit.

d) "Cyclic Maintenance" means (i) the performance by Permittee of all repairs, maintenance, or replacement-in-kind necessary to maintain the Premises and the existing improvements thereon in good order, condition, and repair; (ii) housekeeping and routine and periodic work scheduled to mitigate wear and deterioration without materially altering the appearance of the Premises; (iii) the repair or replacement-in-kind of broken or worn-out elements, parts or surfaces so as to maintain the existing appearance of the Premises; and (iv) scheduled inspections of all building systems on the Premises.

e) "Default" means Permittee's failure to keep and perform any of the Provisions of this Permit.

f) "Environmental Requirements" means, without limitation, all standards or requirements relating to the protection of human health or the environment such as:

   a. standards or requirements pertaining to the reporting, permitting, management, monitoring, investigation or remediation of emissions, discharges, releases, or threatened emissions, releases or discharges of Hazardous Materials into the air, surface water, groundwater, or land;

   b. standards or requirements relating to the manufacture, handling, treatment, storage, disposal, or transport of Hazardous Materials; and

   c. standards or requirements pertaining to the health and safety of employees or the public.

g) "Expiration Date" is as defined on the Cover Page of this Permit.

h) "Hazardous Materials" means, without limitation, any material or substance, whether solid, liquid, or gaseous in nature,

   a. the presence of which requires reporting, permitting, management, monitoring, investigation or remediation under any Environmental Requirement;

   b. that is or becomes defined as a "hazardous waste," "extremely hazardous waste," "restricted hazardous waste," "hazardous substance," "pollutant," "discharge," "waste," "contaminant," or "toxic contaminant" under any Environmental Requirement, or any above-ground or underground storage containers for the foregoing;

   c. that is toxic, explosive, corrosive, flammable, infectious, radioactive, reactive, carcinogenic, mutagenic, or otherwise hazardous to human health or the environment and is or becomes regulated under any Environmental Requirement;

   d. that contains gasoline, diesel fuel or other petroleum hydrocarbons or derivatives or volatile organic compounds, or is an above-ground or underground storage container for same;

e. that contains polychlorinated biphenyls (PCBs), asbestos, asbestos-containing materials or urea formaldehyde foam insulation; or

f. that contains radon gas.

i) "Hazardous Materials Occurrence" means any use, generation, treatment, keeping, storage, transport, release, disposal, migration, or discharge of any Hazardous Materials from, on, under or into the Premises or Point Reyes National Seashore ("Point Reyes") that causes any environmental contamination.

j) "Improvements or Alterations" means any construction that does not fall within the definition of Cyclic Maintenance.

k) "NPS" means the management officials in charge of the administration and operation of Point Reyes, including the Superintendent or his/her designee(s).

l) "Park" means, without limitation, all lands, waters and structures within the legislative boundaries of the Point Reyes National Seashore, all natural and cultural resources within such boundaries, and any other property within such boundaries belonging to Point Reyes. As appropriate given the context, this term also includes the visiting public and/or Point Reyes employees.

m) "Permit" means this instrument which contains those certain termination and revocation provisions as provided for herein.

n) "Permitted Uses" is as defined on the Cover Page of this Permit.

o) "Personal Property" means all furniture, fixtures, equipment, appliances and apparatus placed on the Premises that neither are attached to nor form a part of the Premises. Personal Property also includes any trailers, modular units, and/or temporary structures owned by Permittee.

p) "Point Reyes" means Point Reyes National Seashore.

q) "Premises" is as defined on the Cover Page of this Permit.

r) "Provision" shall mean any term, agreement, covenant, condition or provision of this Permit or any combination of the foregoing.

s) "ROP" or "Reservation of Use and Occupancy" means the Reservation of Use and Occupancy purchased by the Permittee in 2005. In 1972 the United States of America purchased Johnson Oyster Company's property, subject to a Reservation of Use and Occupancy on approximately 1.5 of those acres for a period of forty (40) years. This Reservation of Use and Occupancy expires on November 30, 2012.

t) "SUP" means this Permit.

u) "Term" is as defined on the Cover Page of this Permit.

v) "Termination Date" means the Expiration Date or such earlier date as this Permit is terminated or revoked pursuant to any Provision of this Permit.

2) GENERAL CONDITIONS

a) The Permittee shall exercise this privilege subject to the supervision of the Superintendent, and shall comply with all Applicable Laws.

b) Permit and Approvals – Except as otherwise provided in this Permit, Permittee shall be responsible for obtaining, at its sole cost and expense, all necessary permits, approvals or other authorizations relating to Permittee's use and occupancy of the Premises.

c) Damages - The Permittee shall pay the United States for any damage resulting from this use which would not reasonably be inherent in the use which the Permittee is authorized to make of the land and areas described In this Permit.

d) Benefit - Neither Members of, nor Delegates to Congress, or Resident Commissioners shall be admitted to any share or part of this Permit or derive, either directly or indirectly any pecuniary benefits to arise therefrom: Provided, however, that nothing herein contained shall be construed to extend to any incorporated company if the Permit be for the benefit of such corporation.

e) Assignment and Subletting - This Permit may not be transferred or assigned without the consent of the Permitter, in writing. Permittee shall not sublet the Premises or any part thereof or any property thereon, nor grant any interest, privilege or license whatsoever in connection with this Permit without the prior written approval of the Permitter.

f) Revocation - This Permit may be terminated upon Default or at the discretion of the Permitter.

g) The Permittee is prohibited from giving false information; to do so will be considered a breach of conditions and be grounds for revocation [Re: 36 CFR 2.32(4)]

3) USE OF PREMISES

a) Permittee is authorized to use the Premises only for the Permitted Uses.

b) Permittee shall not engage in any activity that may be dangerous or harmful to persons, property, or the Park; that constitutes or results in waste or unreasonable annoyance (including, without limitation, signage and the use of loudspeakers or sound or light apparatus that could disturb park visitors and wildlife outside the Premises); that in any manner causes or results in a nuisance; or that is of a nature that it involves a substantial hazard, such as the manufacture or use of explosives, chemicals or products that may explode.

c) The Parties hereby acknowledge and agree that Permittee's covenant that the Premises shall be used as set forth in this Article 3 is material consideration for Permitter's agreement to enter into this Permit. The Parties further acknowledge and agree that any violation of said covenant shall constitute a Default under this Permit and that Permitter may inspect the premises at any time.

d) This Permit is subject to the right of the NPS to establish trails and other improvements and betterments over, upon, or through the Premises and further to the use by travelers and others of such established or existing roads and trails. The Permittee understands that occasional park visitors are authorized to walk, use non-motorized watercraft, or hike in the various areas included in this Permit even though no trails are formally established.

e) Permitter reserves the right for Permitter, its employees, contractors and agents to enter and to permit any Agency to enter upon the Premises for the purposes of inspection, inventory or when otherwise deemed appropriate by the Permitter for the protection of the interests of Permitter, including Permitter's interests in any natural or cultural resources located on, in or under the Premises.

f) Permitter reserves the right at any time to close to travel any of its lands, to erect and maintain gates at any point thereon, to regulate or prevent traffic of any kind thereon, to prescribe the methods of use thereof, and to maintain complete dominion over the same; provided, however, that at all times during the Term, Permitter shall provide Permittee and Permittee's invitees with reasonable access to the Premises subject only to interruptions caused by necessary maintenance or administrative operations or by matters beyond Permitter's control.

g) Permittee hereby waives any claim for damages for any injury, inconvenience to or interference with Permittee's use and occupancy of the Premises, any loss of occupancy or quiet enjoyment of the Premises, or any other loss occasioned by Permitter's exercise of its rights under this Article 3 except to the extent that the damages, expenses, claims or suits result from the willful misconduct or gross negligence of Permitter, its employees, contractors or agents; provided, further, that Permitter shall be liable only to the extent such claims are allowed

EXHIBIT

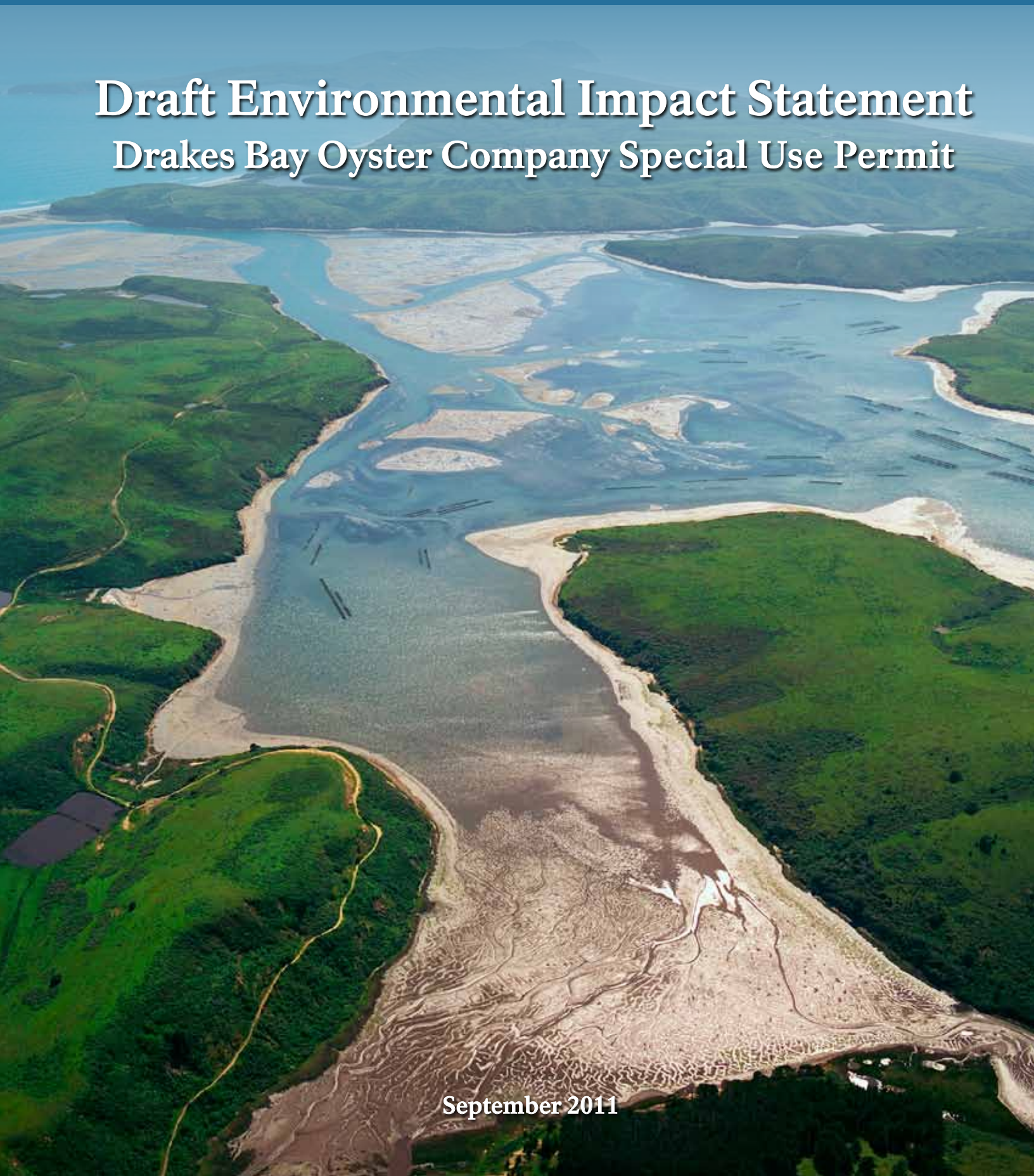
2

National Park Service
U.S. Department of the Interior

Point Reyes National Seashore
California

Draft Environmental Impact Statement

Drakes Bay Oyster Company Special Use Permit



September 2011

Cover Photo by: Robert Campbell

Draft Environmental Impact Statement for the Drakes Bay Oyster Company Special Use Permit
Point Reyes National Seashore
California
September 2011

Lead Agency: National Park Service (NPS), U.S. Department of the Interior
Cooperating Agencies: California Department of Fish and Game (CDFG), U.S. Army Corps of Engineers (USACE), National Oceanic and Atmospheric Administration, National Marine Fisheries Service (NOAA-NMFS), and U.S. Environmental Protection Agency (EPA)

This Draft Environmental Impact Statement (EIS) for the Drakes Bay Oyster Company (DBOC) Special Use Permit (SUP) describes and analyzes four alternatives for federal action related to the operation of DBOC within Point Reyes National Seashore (the Seashore). On October 30, 2009, Congress enacted Section 124 of Public Law (PL) 111-88, which provides to the Secretary of the Interior (Secretary) the discretionary authority to issue a new SUP to DBOC for a period of 10 years. Based on the intent of PL 94-544, PL 94-567, and NPS wilderness management policies, the Solicitor's Office opinion advised NPS that it lacked authority to extend DBOC's nonconforming commercial use beyond November 2012. The commercial shellfish operation in Drakes Estero, now operated by DBOC, is the only nonconforming use that prevents conversion of the waters of Drakes Estero from congressionally designated potential wilderness to congressionally designated wilderness. The discretionary authority contained in section 124 now allows the Secretary to permit DBOC's operations for a new 10 year term, until November 30, 2022. The EIS presents a no-action alternative, which considers expiration of existing authorizations and subsequent conversion of the area to congressionally designated wilderness, and three action alternatives, which consider the issuance of a new SUP to DBOC for a period of 10 years with differing levels of onshore facilities and infrastructure and offshore operations.

Alternative A, No New Special Use Permit – Conversion to Wilderness (No-action) considers the expiration of the existing RUO and SUP and subsequent conversion to wilderness consistent with PL 94-567. The existing SUP and RUO would expire on November 30, 2012. Under Alternative A, the Secretary would not exercise the discretion granted to him under section 124 to issue a new 10-year SUP. Upon removal of the nonconforming structures from Drakes Estero, NPS would convert the area to wilderness. The three action alternatives describe differing levels of onshore facilities and infrastructure and offshore operations associated with the issuance of a new SUP for a period of 10 years. **Alternative B, Issue New Special Use Permit - Existing Onshore Facilities and Infrastructure and Offshore Operations Would be Allowed for a Period of 10 Years**, considers a level of use consistent with conditions that were present in fall 2010 when NPS initiated evaluation under the EIS. The existing SUP and RUO expire on November 30, 2012. The Secretary would exercise the discretion granted to him under section 124 to issue a new 10-year SUP to DBOC, expiring November 30, 2022. **Alternative C, Issue New Special Use Permit - Onshore Facilities and Infrastructure and Offshore Operations Present in 2008 Would be Allowed for a Period of 10 Years**, considers a level of use that is consistent with the conditions and operations that existed at the time the current SUP was signed in April 2008.The existing SUP and RUO expire on November 30, 2012. Under Alternative C, the Secretary would exercise the discretion granted to him under section 124 to issue a new 10-year SUP to DBOC, expiring November 30, 2022. **Alternative D, Issue New Special Use Permit - Expanded Onshore Development and Offshore Operations Would be Allowed for a Period of 10 Years**, considers expansion of operations and development of new infrastructure as requested by DBOC as part of the EIS process. The existing SUP and RUO expire on November 30, 2012. Under alternative D, the Secretary would exercise the discretion granted to him under section 124 to issue a new 10-year SUP to DBOC, expiring November 30, 2022.

The review period for the Draft EIS will end 60 days after publication of the U.S. Environmental Protection Agency Notice of Availability in the Federal Register. If you wish to comment on the document during the review period, you may submit comments electronically at <http://parkplanning.nps.gov/pore> or you may mail comments to the name and address listed below. Email comments will not be accepted. Before including your address, phone number, email address, or other personal identifying information in your comment, you should be aware that your entire comment - including your personal identifying information - may be made publicly available at any time. Although you can ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so. After public review, this document may then be revised in response to public comments. A final version of this document will then be released, and a 30-day no-action period will follow. Following the 30-day period, the alternative or actions constituting the approved plan will be documented in a record of decision that will be signed by the Regional Director of the Pacific West Region.

For further information regarding this document, please contact:

Melanie Gunn, Public Outreach Coordinator
Point Reyes National Seashore
1 Bear Valley Road, Point Reyes Station, California 94956
415-464-5162
Melanie_Gunn@nps.gov

EXECUTIVE SUMMARY

The Environmental Impact Statement (EIS) for the Drakes Bay Oyster Company (DBOC) Special Use Permit (SUP) examines four alternatives. The no-action alternative considers expiration of existing authorizations and subsequent conversion of the area to congressionally designated wilderness. Three action alternatives consider the issuance of a new SUP to DBOC for a period of 10 years with differing levels of onshore facilities and infrastructure and offshore operations. Beneficial and adverse impacts are assessed for all four alternatives evaluated in this EIS. Existing authorizations for DBOC to operate expire November 30, 2012. The results of the National Environmental Policy Act of 1969, as amended (NEPA) process will be used to inform the decision of whether a new SUP should be issued. If a new SUP is issued, it would allow DBOC to operate until November 30, 2022. In the event that a new SUP is issued, it would incorporate all of DBOC's National Park Service (NPS) authorized onshore and offshore[1] operational requirements.

PURPOSE OF AND NEED FOR ACTION

PURPOSE AND NEED

Action is needed at this time because pursuant to section 124 of Public Law 111-88, the Secretary has the discretionary authority to issue a SUP for a period of 10 years to DBOC for its shellfish operation, which consists of commercial production, harvesting, processing, and sale of shellfish at Point Reyes National Seashore. The existing Reservation of Use and Occupancy (RUO) and SUP held by DBOC will expire on November 30, 2012. DBOC has submitted a request for the issuance of a new permit upon expiration of the existing authorizations.

The purpose of the document is to use the NEPA process to engage the public and evaluate the effects of issuing a SUP for the commercial shellfish operation. The results of the NEPA process will be used to inform the decision of whether a new SUP should be issued to DBOC for a period of 10 years.

[1] In this document, the term offshore is used to refer to operations and facilities in Drakes Estero, including intertidal areas such as the shoreline and mudflats.

PROJECT OBJECTIVES

- Manage natural and cultural resources to support their protection, restoration, and preservation.
- Manage wilderness and potential wilderness areas to preserve the character and qualities for which they were designated.
- Provide opportunities for visitor use and enjoyment of park resources.

BACKGROUND

The authority for NPS to issue a new permit to DBOC came about as a result of congressional action. On October 30, 2009, Congress enacted section 124 of Public Law (PL) 111-88 (section 124), which was part of the Department of the Interior, Environment, and Related Agencies Appropriations Act of 2010. Section 124, as it will be referred to in this EIS, provides to the Secretary of the Interior (Secretary) the discretionary authority to issue a new SUP to DBOC that would be valid for a period of 10 years. Congress granted the Secretary the discretionary authority contained in section 124 in response to NPS's determination that it lacked authority to allow DBOC to operate after November 30, 2012. NPS's determination was based on a 2004 opinion from the Department of the Interior (DOI) Solicitor's Office (Solicitor's Office) interpreting PL 94-544 and 94-567 of 1976, which designated Drakes Estero as potential wilderness, and NPS wilderness management policies (DOI 2004[i]). In particular, House Report 94-1680, which accompanied the public law, provided that, "it is the intention that those lands and waters designated as potential wilderness additions will be essentially managed as wilderness, to the extent possible, with efforts to steadily continue to remove all obstacles to the eventual conversion of these lands and waters to wilderness status." The commercial shellfish operation in Drakes Estero, now operated by DBOC, is the only nonconforming use that prevents conversion of the waters of Drakes Estero from congressionally designated potential wilderness to congressionally designated wilderness. Based on the intent of PL 94-544, PL 94-567, and NPS wilderness management policies, the Solicitor's Office opinion advised NPS that it lacked authority to extend DBOC's nonconforming commercial use beyond November 2012 (DOI 2004[ii]). The discretionary authority contained in section 124 now allows the Secretary to permit DBOC's operations for a new 10 year term, until November 30, 2022.

Mariculture entrepreneurs first planted oyster beds in the Tomales Bay area around the turn of the 20th century. The original Drakes Bay Oyster Company (no relation to the present day DBOC) operated on the banks of Drakes Estero near the head of Schooner Bay, from 1938 to 1945 (Caywood and Hagen 2011). In 1958, Charles W. Johnson took over the oyster operation in Drakes Estero and soon founded the Johnson Oyster Company (JOC). Mr. Johnson cultivated shellfish (mostly oysters) in Drakes Estero and operated onshore processing facilities from 1961 through 2003. Mr. Johnson purchased 5 acres of onshore land where the existing processing facilities were located in 1961. He and his wife moved to the oyster plant at Creamery Bay.

Although the Seashore was established in 1962, NPS did not acquire ownership of all lands and waters within the Seashore's boundary immediately. In 1965, the state-held water bottoms of Drakes Estero were conveyed to NPS by the State of California. In 1972, NPS purchased fee title to the 5-acre upland parcel where the oyster processing facilities were located from Mr. Johnson. As part of the purchase agreement, Mr. Johnson elected to retain a 40-year RUO over 1.5 acres of the 5-acre parcel. The RUO allowed for "processing and selling

wholesale and retail oysters, seafood and complimentary food items, the interpretation of oyster cultivation to the visiting public, and residential purposes reasonably incidental thereto."

In December 2004, DBOC purchased the assets of JOC, assuming the remaining 7 years of the RUO and SUP that NPS had issued to JOC for the well and septic leach field. There were no changes to the terms of the RUO or to its expiration date. In April 2008, DBOC and NPS signed an SUP (NPS Permit No. MISC-8530-6000-8002) that would allow the oyster operation in Drakes Estero to remain, with provisions, until November 30, 2012, when it would expire concurrently with the RUO.

DBOC's operations occur on uplands adjacent to Drakes Estero and within Drakes Estero itself. All of the upland, tidal, and subtidal lands on which DBOC conducts its operations are located within the Seashore and are owned in fee by the United States. Pursuant to 36 CFR Section 1.2, these lands and activities conducted on them are subject to NPS laws and regulations.

DESCRIPTION OF THE PROJECT AREA

The Seashore is located in western Marin County in central California, approximately 40 miles northwest of San Francisco and within 50 miles of the nine-county San Francisco Bay Area, the fifth largest metropolitan area in the United States. The Seashore is bounded to the north, west, and southwest by the Pacific Ocean and to the east by the residential communities of Inverness, Inverness Park, Point Reyes Station, Olema, and Dogtown. Western Marin County is primarily rural, with scattered, small, unincorporated towns that serve tourism, agriculture, local residents. In addition, the Seashore administers the Northern District of the Golden Gate National Recreation Area, adjacent to the Seashore, for a combined management area and legislated boundary of approximately 94,000 acres (figure ES-1).

Drakes Estero is a system of five branching bays encompassing approximately 2,500 acres. The branching bays are stretched to the north and separated by low converging ridges. From west to east, they are: Barries Bay, Creamery Bay, Schooner Bay, Home Bay, and Estero de Limantour (figures ES-1 and ES-2). Nearly half of the surface area of Drakes Estero consists of mud and sand flats that are exposed at low tide (Press 2005). Because of the shallow character of the bay, and its tendency to flush completely within a normal tidal cycle, currents in the mainstem and secondary channels are relatively strong. The Drakes Estero watershed covers approximately 31 square miles, including Drakes Estero itself (Baltan 2006). The Seashore leases most of the lands surrounding Drakes Estero for cattle grazing (approximately 14 square miles within the watershed). Areas draining to, and surrounding the Estero de Limantour are primarily within congressionally designated wilderness (approximately 8 square miles within the watershed).

The EIS examines DBOC operations and facilities in and adjacent to Drakes Estero. The project area is roughly 1,700 acres and includes DBOC facilities and operations in much of the congressionally designated potential wilderness (1,363 acres), 2.6 acres of onshore property, and 2 acres incorporating the well and septic areas, as delineated in the RUP and SUP (figures ES-3 and ES-4). In order to provide a comprehensive analysis of potential impacts of the alternatives presented in the EIS, the project area also includes the kayak launch parking area and the access road leading from Sir Francis Drake Boulevard. All land and water portions of the project area are owned by NPS. Resources outside the project area may be described if they are subject to impacts resulting from any of the proposed alternatives. The project area as a whole is depicted on figure ES-2, with figure ES-3 showing the detailed location of the onshore operations.

EXHIBIT

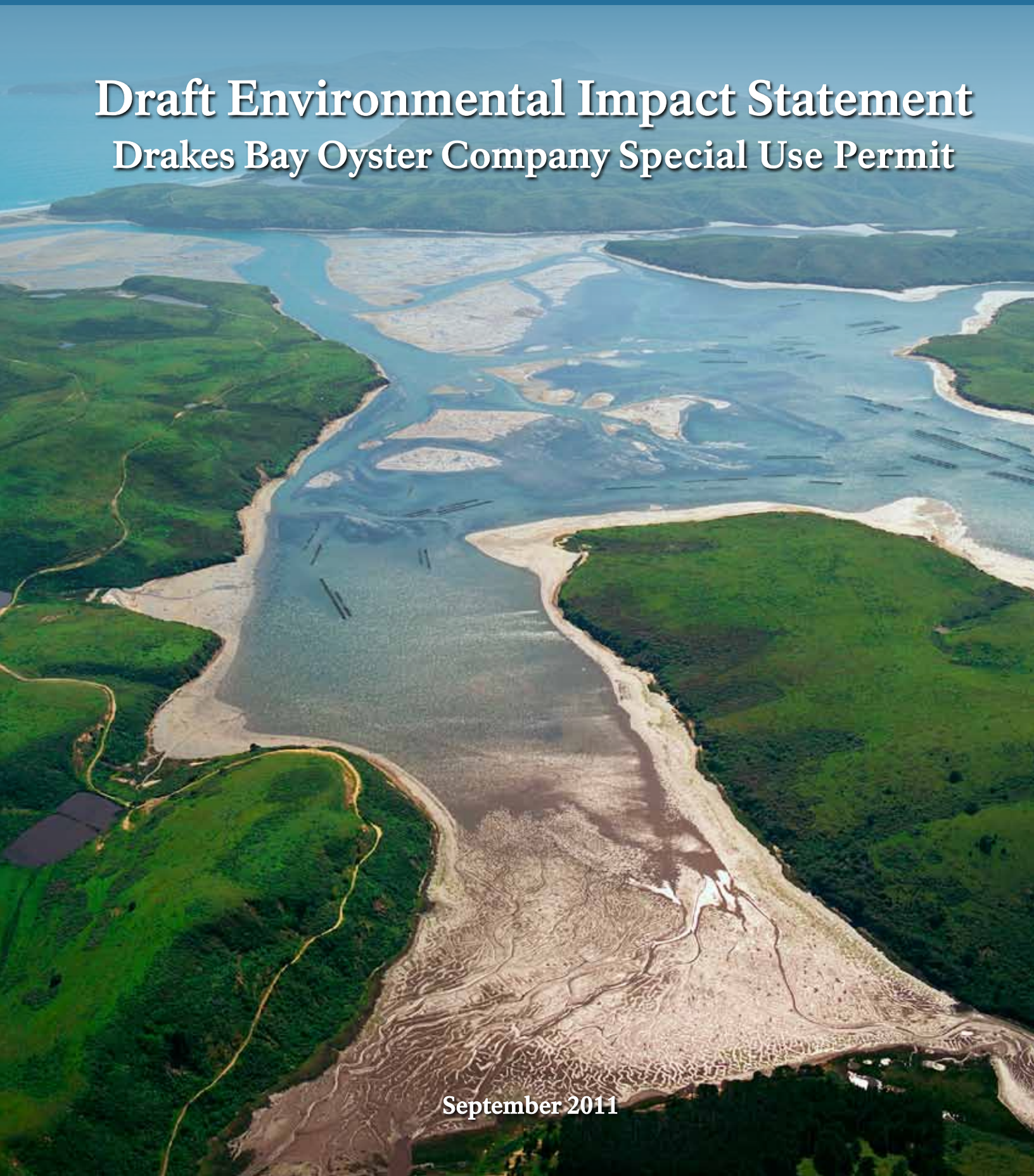
3

National Park Service
U.S. Department of the Interior

Point Reyes National Seashore
California

Draft Environmental Impact Statement

Drakes Bay Oyster Company Special Use Permit



September 2011

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ALTERNATIVES

continued production of local shellfish, which would be considered a beneficial use. Alternatives B, C, and D could, however, result in undesirable and unintended consequences, such as providing a hard substrate that allows invasive species establishment and presence of refuse in Drakes Estero.

4. Preserve important historic, cultural, and natural aspects of our national heritage and maintain, wherever possible, an environment that supports diversity and variety of individual choice.

   None of the alternatives are expected to result in impacts on cultural or historic resources. No impacts to known archeological resources are anticipated and potential impacts to as yet undiscovered subsurface archeological resources would be avoided, minimized, or mitigated. Any ground-disturbing activities within the onshore areas of the SUP would take place in coordination with the California SHPO and the Federated Indians of Graton Rancheria, and would require a site monitor.

   A study and assessment of potential historical significance (a DOE) was conducted for the structures currently used by DBOC, both in Drakes Estero and onshore. Due to the level of alteration these structures have undergone over time, the assessment concluded that none maintain historic integrity and are therefore not eligible for listing on the National Register. The SHPO has reviewed the DOE and concurs that the structures are not eligible for listing on the National Register (see appendix D). Therefore, none of the alternatives would have adverse effects on historic structures.

   All alternatives would support diversity and variety of individual choice but to varying degrees. Alternative A would allow those visitors seeking solitude and an unconfined, primitive form of recreation an opportunity to enjoy a marine wilderness. However, because all commercial shellfish operations would cease, alternative A would not provide as much diversity and individual choice for those visitors wishing to visit an active commercial shellfish operation and consume fresh oysters within the Seashore. Similarly, while alternatives B, C, and D would provide the opportunity for those choosing to view a commercial shellfish operation and enjoy fresh oysters, these alternatives would diminish the opportunity for those seeking solitude and an unconfined, primitive form of recreation.

5. Achieve a balance between population and resource use that will permit high standards of living and a wide sharing of life’s amenities.

   All alternatives considered in this EIS would be consistent with this policy but to varying degrees. The Seashore is highly valued for its natural setting, especially due to its proximity to the highly developed and densely populated San Francisco Bay Area. The enabling legislation established the Seashore “to save and preserve, for purposes of public recreation, benefit, and inspiration, a portion of the diminishing seashore of the United States that remains undeveloped” (PL 87-657). Public open spaces are an important amenity and highly valued within the local area and the Bay Area. Alternative A would improve the natural setting and open space of the Seashore by removing commercial shellfish operations within Drakes Estero and converting congressionally designated potential wilderness to congressionally designated wilderness.

Economic contributions to the local economy attributed to the more than two million visitors to the Seashore annually would likely continue under all alternatives. Alternatives B, C, and D would also provide an increased economic contribution to the local and state economy by providing jobs and food production, therefore contributing to the standard of living and sharing of amenities in the area.

6. Enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

   Alternative A would best enhance the quality of renewable resources and maximum attainable recycling of depletable resources. Natural resources associated with the natural conditions and processes in Drakes Estero would be further protected by the conversion of congressionally designated potential wilderness to congressionally designated wilderness. Alternative A would reduce on-site energy consumption from existing conditions, as commercial shellfish operations that use energy, such as motor boats, pneumatic drills, shellfish processing, and residential facilities, would cease. Alternatives B, C, and D would result in increased on-site energy consumption compared to alternative A due to the continuation or increase in commercial shellfish operations. Alternative D would potentially result in the highest contribution to energy use due to increased oyster production and proposed new facilities. In addition, the shellfish cultivated by DBOC under alternatives B, C, and D are not a natural resource within Drakes Estero. Seed for nonnative Pacific oysters and Manila clams are imported from outside California. The use of outside resources does not result in enhancement of renewable resources or maximum recycling of depletable resources.

PREFERRED ALTERNATIVE

DOI regulations, 43 CFR 46.425(a), state that a Draft EIS, "should identify the bureau's preferred alternative or alternatives, if one or more exists." At this time, there is not a preferred alternative. Full and objective input from the public is encouraged on all of the alternatives analyzed in the Draft EIS. All public comments received on the Draft EIS will be evaluated and considered in the development of the preferred alternative which will be identified in the Final EIS.

ENVIRONMENTALLY PREFERABLE ALTERNATIVE

The NPS is required to identify the environmentally preferable alternative in its NEPA documents for public review and comment. Guidance from CEQ states that the environmentally preferable alternative is “the alternative that causes the least damage to the biological and physical environment; it also means the alternative which best protects, preserves, and enhances historic, cultural, and natural resources” (CEQ 1981).

Alternative A is identified as the environmentally preferable alternative because it has the most potential to protect the biological, physical, and cultural environment in and around Drakes Estero. This is based on the following considerations:

- Subsequent to expiration of the SUP, the congressionally designated potential wilderness would be converted to congressionally designated wilderness, as directed by Congress and NPS policies, providing a marine wilderness experience to the public.
- Eelgrass beds in Drakes Estero would benefit from removal of shading by oyster racks and damage by motorboat propellers. These special aquatic ecosystems, functioning as habitat, nursery grounds, and food for numerous species of fish, waterfowl, and other marine species, would not be disrupted on a daily basis under alternative A.
- Control of the invasive tunicate *Didemnum* would be more manageable under alternative A. Already present within Drakes Estero, this invasive species most often attaches to hard substrates, including hanging culture and racks. Alternative A would remove more than 7 acres of artificial hard (preferred substrate) structures currently used as habitat by the *Didemnum* thereby making management more feasible. Alternatives B, C, and D would allow the oyster substrate to persist or increase for another 10 years, enabling continued expansion of this invasive species.
- Removal of cultivated nonnative species under alternative A would best protect the natural ecosystem of Drakes Estero. Alternatives B, C, and D would allow cultivation of nonnative species to take place in Drakes Estero for another 10 years, which would provide additional time during which these species may become naturalized in this ecosystem. Manila clams are now documented outside of culture bags, and their age structure indicates recent naturalization (Grosholz 2011b). Ongoing cultivation of Manila clams for a period of 10 years would likely result in expansion of this nonnative species.
- Alternative A would eliminate the daily use and operation of motorboats on Drakes Estero, thereby reducing the potential for disturbance to the resident and migratory wildlife species that depend on its resources.
- Wetland functions and values would be restored through natural processes under alternative A. Fringe wetland habitat and eelgrass beds are susceptible to impacts from continued wave action (such as that caused by boat wakes) and placement of fill material. Alternative A would eliminate from Drakes Estero the daily motorboat traffic and the oyster growing bags, allowing these natural habitats to reestablish. Placement of culture bags and the use of motorboats by DBOC would persist or increase for another 10 years under alternatives B, C, and D.
- Atmospheric and underwater noise associated with boat motors, oyster tumblers, pneumatic drills, and daily customer traffic would be removed under alternative A, thus restoring a more natural soundscape within Drakes Estero. These noise generators and associated disturbance would persist and in some cases perhaps increase for another 10 years under alternatives B, C, and D.

SUMMARY OF THE ALTERNATIVES

Table 2-5 provides a summary of the alternatives presented above.

TABLE 2-5. SUMMARY OF ALTERNATIVES

	Alternative A: No New Special Use Permit—Conversion to Wilderness (No-action)	Alternative B: Issue New Special Use Permit—Existing Onshore Facilities and Infrastructure and Offshore Operations Would Be Allowed for a Period of 10 Years	Alternative C: Issue New Special Use Permit—Onshore Facilities and Infrastructure and Offshore Operations Present in 2008 Would Be Allowed for a Period of 10 Years	Alternative D: Issue New Special Use Permit—Expanded Onshore Development and Offshore Operations Would Be Allowed for a Period of 10 Years
New SUP	Existing authorizations expire on November 30, 2012. No new SUP for DBOC operations would be issued.	A new SUP for DBOC operations would be issued, expiring on November 30, 2022.	Same as alternative B.	Same as alternative B.
Mariculture Species	N/A	Area 1 (1,077 acres): ▪ Pacific oysters ▪ European flat oyster ▪ Manila clams[a] Area 2 (1.0 acre): ▪ Purple-hinged rock scallops	Area 1 (896 acres): ▪ Pacific oysters ▪ European flat oyster Area 2 (1.0 acre): ▪ Purple-hinged rock scallops ▪ Manila clams	Area 1 (1,082 acres): ▪ Pacific oysters ▪ European flat oyster ▪ Olympia oysters ▪ Manila clams ▪ Purple-hinged rock scallops Area 2 would be removed.
Acquisition of Larvae and Seed	N/A	All imported.	All imported.	Pacific oysters and Manila clams imported. Olympia oysters and purple-hinged rock scallops collected on site.
Culture Methods	N/A	▪ Japanese hanging culture ▪ French tube culture ▪ Bottom bags ▪ Floating bags ▪ Floating trays	Same as alternative B.	Same as alternative B.
Production Limits	N/A	600,000 pounds of shellfish per year.	500,000 pounds of shellfish per year.	850,000 pounds of shellfish per year.

[a] Items have not previously been permitted by NPS

N/A = not applicable

TABLE 2-5. SUMMARY OF ALTERNATIVES (CONTINUED)

	Alternative A	Alternative B	Alternative C	Alternative D
Offshore Permit Boundaries	N/A	Offshore SUP boundaries would be based on existing leases, with two adjustments to Area 1: (1) The two parcels would be joined in Schooner Bay to allow boats to use the main channel and (2) areas within harbor seal protection areas would be excluded. Area 2 would be maintained for cultivation of purple-hinged rock scallops. Offshore permit area would include 1,078 acres.	Area 1 would be the same as alternative B except the southeast boundary of alternative C would follow either the harbor seal protection area boundary or the proposed DBOC shellfish growing area boundary, whichever is more protective of established harbor seal haul-out areas. Area 2 would be maintained for cultivation of Manila clams and purple-hinged rock scallops. Offshore permit area would include 897 acres.	Offshore SUP boundaries would be based on DBOC's proposed adjustment of the shellfish growing area boundary, with the same two adjustments noted under alternative B. Area 2 would not be maintained as a separate growing area. Offshore permit area would include 1,082 acres.
Offshore Infrastructure	All aquaculture materials, including racks, bags, and other materials would be removed from Drakes Estero as part of closeout activities. Approximately 179,000 linear feet of pressure treated lumber would be removed in addition to removal of remaining culture material.	Ongoing maintenance of racks, assuming 5 percent replacement or repair annually, may include repair or replacement of approximately 1,285 feet of rack and 8,900 feet of lumber per year.	Same as Alternative B	Same as Alternative B
Vessel Transit Plan	N/A	A vessel transit plan for DBOC boat use within Drakes Estero would be developed and submitted to the NPS for approval.	Same as alternative B.	Same as alternative B.

N/A = not applicable

TABLE 2-5. SUMMARY OF ALTERNATIVES (CONTINUED)

	Alternative A	Alternative B	Alternative C	Alternative D
DBOC Boat Operations	Use of motorized boats in Drakes Estero would cease.	Two motorboats and two nonmotorized barges would be operated in Drakes Estero, approximately 12 trips per day, 8 hours a day, combined.	Same as alternative B.	Same as alternative B, except boat operations may increase due to increased production limits.
Harbor Seal Protection Protocol	N/A	The existing protocol would be included in the new SUP, including seasonal closure of lateral channel and maintenance of a 100-yard buffer from any hauled-out harbor seal at any location and time by DBOC boats and staff.	Same as alternative B.	Same as alternative B.
Onshore Permit Boundaries	N/A	Onshore SUP boundaries would be based on existing NPS authorizations, excluding a known archeological resource. Onshore permit area would total 4.3 acres, including the areas used for water and septic utilities.	Same as alternative B.	Same as alternative B.
DBOC Onshore Facilities: Staff Housing	The main house and cabin would remain as NPS property following SUP expiration. DBOC would be responsible for removing mobile homes following expiration of the SUP.	On-site housing would be provided for DBOC staff in 2 permanent houses and 3 mobile homes, providing a total of 14 bedrooms.	Same as alternative B.	The level of staff housing that would be provided under this alternative has not been determined.
DBOC Onshore Facilities: Picnic Area	Picnic tables and associated materials are considered personal property and would be removed by DBOC upon expiration of the SUP.	A dozen picnic benches would be provided for DBOC visitors within the permit area.[a]	No picnic area would be provided at DBOC. NPS would provide tables outside the permit area.	A picnic area may be provided in some form.

N/A = not applicable

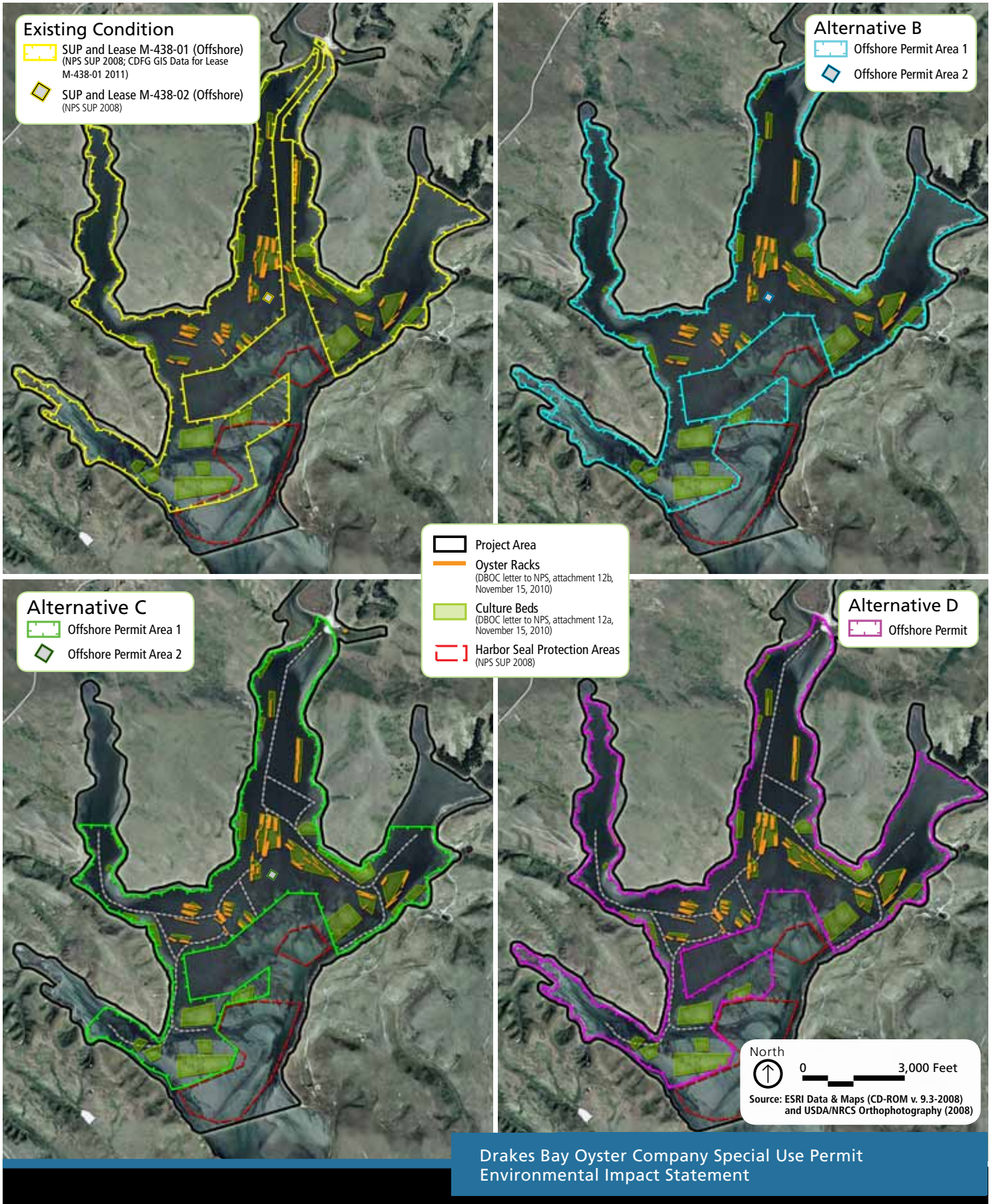
TABLE 2-5. SUMMARY OF ALTERNATIVES (CONTINUED)

	Alternative A	Alternative B	Alternative C	Alternative D
DBOC Onshore Facilities: Processing Plant	DBOC would remove private property within the building. This building is NPS property and would remain on site.	The existing single-story processing plant would continue to house shellfish processing, retail, and interpretive facilities at the existing scale.	Same as alternative B.	The existing processing plant would be removed and replaced in some form by a larger building.
DBOC Onshore Facilities: Cannery	This temporary structure was placed by DBOC and would be removed following SUP expiration.	The cannery would continue to be housed in the existing shipping container.[a]	Same as alternative B.	The temporary cannery container would be removed and this function served within the new larger processing plant.
DBOC Onshore Facilities: Setting Tanks	These structures are considered personal property. DBOC would be responsible for removal following the expiration of the SUP.	Seeding would take place in the existing tanks (indoor and outdoor[a]).	Same as alternative B.	A new seeding plant may be constructed to replace the existing facilities.
Wilderness Status	Following removal of nonconforming uses in Drakes Estero, the congressionally designated potential wilderness would be converted to congressionally designated wilderness in 2012.	A new SUP would be issued for DBOC operations until November 30, 2022. This would delay conversion of congressionally designated potential wilderness to congressionally designated wilderness for 10 years.	Same as alternative B.	Same as alternative B.
Other NPS Operations and Facilities	The existing access road, parking lot, interpretive board, and vault toilet would be maintained. The NPS also would install a gate to limit recreational access to Drakes Estero during harbor seal pupping season.	Same as alternative A, without the addition of the gate.	Same as alternative A, without the addition of the gate.	Same as alternative A, without the addition of the gate.

[a] Items have not previously been permitted by NPS

COMPARISON OF SPECIAL USE PERMIT BOUNDARIES

Figure 2-14 shows side-by-side comparisons of the overall SUP boundaries as they currently exist and as they would exist under each action alternative. The SUP boundaries are shown at the scale of Drakes Estero because it is the offshore boundaries that change between alternatives. The onshore boundaries remain the same for each action alternative. Under alternative A, no SUP would be issued; therefore, there are no SUP boundaries to display for alternative A.



Drakes Bay Oyster Company Special Use Permit
Environmental Impact Statement

National Park Service
U.S. Department of the Interior

Point Reyes National Seashore

FIGURE 2-14

Comparison of Offshore Permit Areas

SUMMARY OF ENVIRONMENTAL CONSEQUENCES

Table 2-6 provides a summary of the environmental consequences related to each alternative. A more detailed explanation of the impacts is presented in “Chapter 4: Environmental Consequences.”

TABLE 2-6. SUMMARY OF ENVIRONMENTAL CONSEQUENCES

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
Wetlands			
Overall, alternative A would result in long-term beneficial impacts on wetlands within the project area. No wetlands would be permanently lost. The removal of personal property would increase the potential that the project area could be converted back to historic wetland habitat. Specifically, the removal of approximately 5 linear miles of racks and up to 88 acres of bags from nonvegetated sandbars and mudflats in Drakes Estero would allow benthic organisms in Drakes Estero to recolonize the space previously occupied by the bags. Additionally, erosive forces on sediments caused by tidal water flowing across and around bags would be eliminated, restoring natural hydrodynamics in up to 88 acres of sandbars and mudflats available for use by DBOC. Further, removal of the bags, racks, and other shellfish cultivation equipment from up to 142 acres of Drakes Estero would also reduce the potential for introduction and spread of invasive species such as the nonnative tunicate *Didemnum*. Reduction in propeller-caused turbidity in the water column also would result in increased sunlight penetration and therefore increased primary production. Removal of racks would result in short-term minor adverse impacts on wetlands because of a temporary increase in turbidity during removal of onshore structures, approximately 4,700 posts (2-inch by 6-inch boards) from the sediment within Drakes Estero, and up to 88 acres of bottom bags. This increase in turbidity would be highly localized and would last approximately one to two months. The cumulative impact would be long-term beneficial, and alternative A would contribute an appreciable beneficial increment to the cumulative impact.	During the life of the 10-year permit, impacts on wetlands under alternative B would be short-term minor adverse and long-term moderate adverse. Within the 138 acres of documented shellfish growing beds, actions associated with the placement of bottom bags on up to 84 acres of tidal mudflats/sandbars would continue under alternative B. Bottom bags have been placed in approximately 22 acres of mudflats and sandbars each of the past two years. Other impacts include pulse disturbances to mudflats and sandbars from the placement and rotation of bags/trays, DBOC staff walking across the mudflats/sandbars, and boat propellers and hulls scraping the bottom sediment. Onshore operations may cause a minor decrease in wetland functions and values from refuse and runoff along the shoreline if not collected and hauled offsite. No wetlands would be permanently converted to uplands under this alternative; however, impacts would be clearly detectable and could appreciably affect individuals or groups of species, communities, or natural processes for an additional 10 years. Temporary impacts would be associated with dredging under the new dock. Dredging would occur within a 30- by 60-foot area at the dock, resulting in a local short-term minor adverse impact on the silted bottom of Drakes Estero, with impacts expected to last one week due to a localized increase in sedimentation. The cumulative impact would be long-term moderate adverse, and alternative B would contribute an appreciable adverse increment to the cumulative impact. By obtaining state and federal permits, alternative B would be consistent with relevant law and policy related to management of wetlands. DBOC's	During the life of the 10-year permit, impacts on wetlands under alternative C would be short-term minor adverse and long-term moderate adverse. Actions associated with the placement of bottom bags on up to 84 acres of tidal mudflats/sandbars would continue under alternative C. Of the 138 acres available for use, bottom bags have been placed in approximately 22 acres of mudflats/sandbars each of the past two years and could be placed in up to 84 acres in Drakes Estero. Other impacts include pulse disturbances to mudflats/sandbars from the placement and rotation of bags/trays, DBOC staff walking across the mudflats/sandbars, and boat propellers and hulls scraping the bottom sediment. As under alternative B, onshore operations may cause a minor decrease in wetland functions and values from refuse and runoff along the shoreline if not collected and hauled offsite. No wetlands would be permanently converted to uplands under this alternative; however, impacts would be clearly detectable and could appreciably affect individuals or groups of species, communities, or natural processes for an additional 10 years. Temporary impacts would be associated with dredging under the new dock within a 30- by 60-foot area at the dock, resulting in a local short-term minor adverse impact on the silted bottom of Drakes Estero, with impacts expected to last one week due to a localized increase in sedimentation. The cumulative impact would be long-term moderate adverse, and alternative C would contribute an appreciable adverse increment to the cumulative impact. By obtaining relevant state and federal permits, alternative C would be consistent with relevant law and policy related to management of	During the life of the 10-year permit, impacts on wetlands under alternative D would be short-term minor adverse and long-term moderate adverse. Actions associated with the placement of bottom bags on up to 84 acres of tidal mudflats/sandbars would continue under alternative D. Of the 138 acres available for use, bottom bags have been placed in approximately 22 acres of mudflats/sandbars each of the past two years and could be placed in up to 84 acres in Drakes Estero. Other impacts include pulse disturbances to mudflats/sandbars from the placement and rotation of bags/trays, DBOC staff walking across the mudflats/sandbars, and boat propellers and hulls scraping the mud bottom. Because of the potential for higher production under this alternative (approximately 40 percent greater than alternative B and 70 percent greater than alternative C), the impacts associated with these actions would likely be greater than alternative B or C, but are still expected to be at a moderate level. As under alternatives B and C, onshore operations may cause a minor decrease in wetland functions and values from refuse and runoff along the shoreline if not collected and hauled offsite. No wetlands would be permanently converted to uplands under this alternative; however, impacts would be clearly detectable and could appreciably affect individuals or groups of species, communities, or natural processes for an additional 10 years. Temporary impacts would be associated with dredging under the new dock (30- by 60-foot area), placement of a new 1,050-foot intake pipe along the bottom of Drakes Estero, and construction of a new processing facility. These actions are expected to result in short-term, minor adverse impacts due to an increase in local turbidity levels. The cumulative impact would be long-term moderate adverse, and

TABLE 2-6. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
With respect to wetlands, alternative A is consistent with relevant law and policy. The natural recovery of wetlands would be consistent with NPS *Management Policies 2006* and DO-77-1, which sets a goal of a "net gain" of wetlands (NPS 2006d, 2002a). USACE would be consulted to determine whether or not removal of commercial shellfish infrastructure would require permitting.	commercial shellfish operations and any dredge or fill activities within the waters of the United States (including Drakes Estero and the pond behind the mobile homes) are subject to permitting by USACE. Dredging the area around the dock would require USACE permit authorization. In a letter to NPS dated November 16, 2010, USACE stated: "The aquaculture activities are within our jurisdiction and a permit is required. Review of our files indicates that the Drakes Bay Oyster Company aquaculture operation does not have a current permit application or permit on file. The Corps advises that the Drakes Bay Oyster Company submit a permit application to ensure their activities comply with our regulations. Application for Corps authorization should be made to this office." (USACE 2010) The letter goes on to note that, if an individual permit is required, DBOC will need to "demonstrate to the Corps that any proposed fill is necessary because there are no practicable alternatives, as outlined in the U.S. Environmental Protection Agency's Section 404(b)(l) Guidelines" (USACE 2010). Lastly, any future actions would be reviewed by NPS under DO-77-1; however, minor water-dependent actions (such as the installation of the new dock) are likely to be excepted from a statement of findings (per section 4.2.1 of NPS Procedural Manual 77-1; NPS 2002a).	wetlands. DBOC's commercial shellfish operations and any dredge or fill activities within the waters of the United States (including Drakes Estero and the pond behind the mobile homes) are subject to permitting by USACE. Dredging the area around the dock would require USACE permit authorization. In a letter to NPS dated November 16, 2010, USACE stated: "The aquaculture activities are within our jurisdiction and a permit is required. Review of our files indicates that the Drakes Bay Oyster Company aquaculture operation does not have a current permit application or permit on file. The Corps advises that the Drakes Bay Oyster Company submit a permit application to ensure their activities comply with our regulations. Application for Corps authorization should be made to this office." (USACE 2010) The letter goes on to note that, if an individual permit is required, DBOC will need to "demonstrate to the Corps that any proposed fill is necessary because there are no practicable alternatives, as outlined in the U.S. Environmental Protection Agency's Section 404(b)(l) Guidelines" (USACE 2010). Lastly, any future actions would be reviewed by the NPS under DO-77-1; however, minor water-dependent actions (such as the installation of the new dock) are likely to be excepted from a statement of findings (per section 4.2.1 of NPS Procedural Manual 77-1; NPS 2002a).	alternative D would contribute an appreciable adverse increment to the overall cumulative impact. By obtaining relevant state and federal permits, alternative D would be consistent with relevant law and policy related to management of wetlands. DBOC's commercial shellfish operations and any dredge or fill activities within the waters of the United States (including Drakes Estero and the pond behind the mobile homes) are subject to permitting by USACE. Installation of the intake pipe and dredging the area around the dock would require USACE permit authorization. In a letter to NPS dated November 16, 2010, USACE stated: "The aquaculture activities are within our jurisdiction and a permit is required. Review of our files indicates that the Drakes Bay Oyster Company aquaculture operation does not have a current permit application or permit on file. The Corps advises that the Drakes Bay Oyster Company submit a permit application to ensure their activities comply with our regulations. Application for Corps authorization should be made to this office." (USACE 2010) The letter goes on to note that, if an individual permit is required, DBOC will need to "demonstrate to the Corps that any proposed fill is necessary because there are no practicable alternatives, as outlined in the U.S. Environmental Protection Agency's Section 404(b)(l) Guidelines" (USACE 2010). Lastly, any future actions would be reviewed by

TABLE 2-6. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
			the NPS under DO-77-1; however, minor water-dependent actions (such as the installation of the new dock and placement of the water intake line) are likely to be excepted from a statement of findings (per section 4.2.1 of NPS Procedural Manual 77-1; NPS 2002a).
Eelgrass			
Overall, alternative A would result in long-term beneficial impacts on eelgrass habitat due to the termination of DBOC operations within Drakes Estero, as well as the removal of structures that currently inhibit eelgrass abundance and serve as potential points of introduction and added substrate for expansion of invasive species (e.g., tunicates) and epiphytic algae. There may be some highly localized adverse impacts on eelgrass associated with removal of the commercially grown shellfish because they provide some benefits associated with nutrient cycling and water filtration; however, the overall long-term impacts of alternative A on eelgrass would be beneficial. Alternative A also would result in short-term minor adverse impacts because removal of mariculture infrastructure would result in localized increases in sedimentation that would last less than two months. The cumulative impact would be long-term beneficial, and alternative A would contribute an appreciable beneficial increment to the overall cumulative impact. With respect to eelgrass, alternative A is consistent with relevant law and policy because it would preserve and enhance (1) a special aquatic site, a category of waters of the United States afforded additional consideration under the CWA, (2) essential fish habitat (habitat of particular concern) under the Groundfish Plan, and (3) native species and natural processes encouraged	Overall, alternative B would result in long-term moderate adverse impacts on eelgrass in Drakes Estero due the operation of DBOC boats for another 10 years and the continued presence of commercial shellfish infrastructure within Drakes Estero. DBOC activities in Drakes Estero under alternative B would allow the continuation of actions associated with commercial shellfish operations that could damage eelgrass habitat, such as propeller scarring (estimated at 8.5 miles based on 2010 aerial photography), boat wake erosion, and temporary increases in turbidity from sediment resuspension given the area of boat operations within Drakes Estero. It is anticipated that the amount of scarring under alternative B would remain similar to that observed in the 2010 aerial photographs. Further, the continuation of DBOC activities would increase the potential for shellfish mariculture–related introductions of nonnative species (e.g., colonial tunicates) and epiphytic algae, which would have a long-term adverse impact on eelgrass. Maintenance of offshore infrastructure would continue to preclude eelgrass colonization underneath the beds and approximately 7 acres of racks. Beneficial ecosystem effects typically attributed to bivalves, such as nutrient cycling and water clarity, would continue, but these beneficial impacts would be expected to be relatively small in a west coast estuary like Drakes Estero due to high sediment-nutrient content, extensive tidal flushing, and proximity to nutrient-rich upwelling zones along the Pacific coast. Finally, maintenance of oyster	Overall, alternative C would result in long-term moderate adverse impacts on eelgrass in Drakes Estero due the operation of DBOC boats for an additional 10 years and the continued presence of shellfish infrastructure within Drakes Estero. DBOC activities in Drakes Estero under alternative C would allow the continuation of actions associated with commercial shellfish operations that could damage eelgrass habitat, such as propeller scarring (estimated and 8.5 miles based on 2010 aerial photography), boat wake erosion, and temporary increases in turbidity from sediment resuspension given the area of boat operations within Drakes Estero. It is anticipated that because the level of boat use would remain similar, the amount of scarring under alternative C would remain similar to that observed in the 2010 aerial photographs. Further, the continuation of DBOC activities would increase the potential for shellfish mariculture–related introductions of nonnative species (e.g., colonial tunicates) and epiphytic algae. Maintenance of offshore infrastructure would continue to preclude eelgrass colonization underneath the beds and approximately 7 acres of racks. Beneficial ecosystem effects typically attributed to bivalves, such as nutrient cycling and water clarity, would continue, but these beneficial impacts would be expected to be relatively small in a west coast estuary like Drakes Estero due to high sediment-nutrient content, extensive tidal flushing, and proximity to nutrient-rich upwelling zones along the Pacific coast. Finally,	Overall, alternative D would result in long-term moderate adverse impacts on eelgrass in Drakes Estero due to an additional 10 years of DBOC operations. DBOC activities in Drakes Estero under alternative D would allow the continuation of and potential increase in actions associated with commercial shellfish mariculture that result in damage to eelgrass habitat, such as propeller scarring (estimated at 8.5 miles based on 2010 aerial photography), boat wake erosion, and temporary increases in turbidity from sediment resuspension. It is anticipated that due to the likely increase in boat traffic and area of vessel operations that the potential for scarring may be increased from the levels observed in the 2010 aerial photography. Further, the continuation of DBOC activities would increase the potential for shellfish mariculture–related introductions of nonnative species (e.g., colonial tunicates) and epiphytic algae. Maintenance of offshore infrastructure would continue to preclude eelgrass colonization underneath the beds and racks. Beneficial ecosystem effects typically attributed to bivalves, such as nutrient cycling and water clarity, would continue, but these beneficial impacts would be expected to be relatively minor in a west coast estuary like Drakes Estero (i.e., with high sediment-nutrient content, extensive tidal flushing, and proximity to nutrient-rich upwelling zones along the Pacific coast). Finally, maintenance of oyster racks within Drakes Estero would prolong the erosional condition that is occurring under the racks. These adverse impacts

TABLE 2-6. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
by NPS Management Policies 2006.	racks within Drakes Estero would prolong the erosional condition that is occurring under the racks. In general, impacts would be clearly detectable and could appreciably affect individuals or groups of species, communities, or natural processes. The NAS concluded that mariculture in Drakes Estero results in impacts on eelgrass from the presence of racks and from boat propeller scars, but these impacts are somewhat offset by the "rapid regeneration capacity" for eelgrass and "that eelgrass productivity can be locally enhanced by the cultured oysters through a reduction in turbidity and fertilization via nutrient regeneration" (NAS 2009). Although there are some highly localized beneficial impacts on eelgrass associated with commercial shellfish operations, the overall impact of alternative B on eelgrass would be moderate and adverse. The cumulative impact would be long-term moderate adverse, and alternative B would contribute an appreciable adverse increment to the overall cumulative impact. With respect to eelgrass, alternative B does not further the goals set forth in existing law and policy because it would allow ongoing adverse impacts on (1) a special aquatic site, a category of waters of the United States afforded additional consideration under the CWA, (2) essential fish habitat (habitat of particular concern) under the Groundfish Plan, and (3) native species and natural processes (including native species management) under NPS Management Policies 2006.	maintenance of oyster racks within Drakes Estero would prolong the erosional condition that is occurring under the racks. In general, impacts would be clearly detectable and could appreciably affect individuals or groups of species, communities, or natural processes. The NAS concluded that mariculture in Drakes Estero results in impacts on eelgrass from the presence of racks and from boat propeller scars, but these impacts are somewhat offset by the "rapid regeneration capacity" for eelgrass and "that eelgrass productivity can be locally enhanced by the cultured oysters through a reduction in turbidity and fertilization via nutrient regeneration" (NAS 2009). Although there are some highly localized beneficial impacts on eelgrass associated with shellfish operations, the impact of alternative C on eelgrass would be moderate and adverse. The cumulative impact would be long-term moderate adverse, and alternative C would contribute an appreciable adverse increment to the cumulative impact. With respect to eelgrass, alternative C does not further the goals set forth in existing law and policy because it would allow ongoing adverse impacts on (1) a special aquatic site, a category of waters of the United States afforded additional consideration under the CWA, (2) essential fish habitat (habitat of particular concern) under the Groundfish Plan, and (3) native species and natural processes (including native species management) under NPS Management Policies 2006.	would be of greater magnitude than those associated with alternatives B and C due to the likely increase in boat traffic in Drakes Estero associated with the increased level of production (approximately 40 percent greater than alternative B and 70 percent greater than alternative C), and the increased use of bags and racks in shellfish operations, but are still expected to be of a moderate intensity. Impacts would be clearly detectable and could appreciably affect individual plants, eelgrass meadows, and natural processes (such as eelgrass colonization and/or regeneration). The cumulative impact would be long-term moderate adverse, and alternative D would contribute an appreciable adverse increment to the overall cumulative impact. With respect to eelgrass, alternative D does not further the goals set forth in existing law and policy because it would allow ongoing adverse impacts on (1) a special aquatic site, a category of waters of the United States afforded additional consideration under the CWA, (2) essential fish habitat (habitat of particular concern) under the Groundfish Plan, and (3) native species and natural processes (including native species management) under NPS Management Policies 2006.
Wildlife and Wildlife Habitat: Benthic Fauna			
Overall, alternative A would result in long-term beneficial impacts on native benthic fauna because the termination of DBOC operations and	Overall, alternative B would result in long-term moderate adverse impacts on native benthic fauna due to an additional 10 years of DBOC	Overall, alternative C would result in long-term moderate adverse impacts on benthic fauna due to an additional 10 years of commercial shellfish	Overall, alternative D would result in long-term moderate adverse impacts on native benthic fauna due to an additional 10 years of DBOC

TABLE 2-6. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
associated mariculture activities within Drakes Estero would remove nonnative species from Drakes Estero and reduce risk for the spread of nonnative and invasive species in the future. Alternative A would result in the removal of mariculture structures supporting more than 10 million oysters currently growing in Drakes Estero, as well as several hundred thousand Manila clams in bags. Although some habitat for certain benthic species would be removed when DBOC's offshore infrastructure is removed, alternative natural habitats (e.g., eelgrass beds) are expected to replace these structures. Further, the removal of structures under alternative A would also remove substrates that support invasive tunicates and other fouling species. Several native benthic species, such as bivalves, polychaete worms, and ostracods would benefit from the removal of offshore infrastructure, particularly up to 88 acres of mudflats and sandbars where bottom bags can be placed (22 acres have been planted with bottom bags each of the past two years). Such species are adapted to the soft bottom habitat and eelgrass that would likely replace the mariculture structures once they are removed. The cumulative impact would be beneficial, and alternative A would contribute an appreciable beneficial increment to the beneficial cumulative impact. Alternative A would be consistent with the guidance set forth in NPS Management Policies 2006 for the maintenance and restoration of natural native ecosystems, including the eradication of exotic species where these species interfere with natural processes and habitat (NPS 2006d).	operations and associated human activities within Drakes Estero, and the potential for such activities to serve as vectors for introduction of nonnative invasive species. Specifically, the cultivation of nonnative species within Drakes Estero at production levels of 600,000 pounds of shellfish meat annually would result in approximately 7.06 million individual organisms being added to and subsequently harvested from Drakes Estero on an annual basis. Based on DBOC proof of use reports, the acreage of sand bars and mudflats occupied at this level of production is 50 percent greater than that reported for 2008 in the 2009 NAS report. This would appreciably affect the natural benthic community, the consequences of which could include nonnative species competitively excluding native species of bivalves and other benthic organisms, introduction of molluscan diseases, and other harmful nonnative species being imported unintentionally (such as the invasive tunicate Didemnum). Use of both bottom bags and racks has been implicated in detectable changes in benthic communities. The maintenance and continued use of DBOC offshore infrastructure would result in a slight decrease in benthic invertebrate abundance where the racks are currently located, owing mostly to the lack of eelgrass in these areas. In addition, the continuation of bag cultivation in Drakes Estero would maintain artificial structured habitat for some benthic invertebrates, but would also allow for non-catch mortality to continue, as described above, which would have an adverse impact on native bivalves. Further, the continued use of offshore infrastructure would maintain the potential for Didemnum expansion, and associated mariculture activities (such as infrastructure maintenance, vessel traffic, and harvesting) would pose a risk for further dispersal of this nonnative invasive tunicate via colonial fragments. The potential for increase in overall	operations and associated human activities within Drakes Estero, and the potential for such activities to serve as vectors for introduction of nonnative invasive species. Specifically, production levels under alternative C (500,000 pounds of shellfish meat) would result in 5.88 million individuals being harvested from Drakes Estero annually. The cultivation of nonnative species within Drakes Estero would appreciably affect the communities of the natural benthic community, including introduction of molluscan diseases and other nonnative species imported unintentionally (such as the invasive tunicate Didemnum). However, the area in which Manila clams will be grown is a small area where no sandbars exist, which would limit the potential for this species to naturalize in Drakes Estero as compared with alternatives B and D. The use of both bottom bags and racks has been implicated in detectable changes in benthic communities. The slight reduction in shellfish production levels between alternative B (600,000 pounds) and alternative C (500,000 pounds) indicates that the level of impact on benthic fauna resulting from alternative C would be slightly less than that from alternative B; however, these impacts would be clearly detectable and could appreciably affect the individual species, communities, or natural processes. Cumulative impacts would be long-term moderate adverse, and alternative C would contribute an appreciable adverse increment to the overall cumulative impact. The introduction and maintenance of nonnative species in Drakes Estero does not further the goal of NPS Management Policies 2006, which is to minimize the impacts of human activities on native benthic fauna populations. All species that could be cultivated are nonnative with the exception of the purple-hinged rock scallop, which is native to	operations and associated human activities within Drakes Estero, and the potential for such activities to serve as vectors for introduction of nonnative invasive species. Specifically, the increase in shellfish production levels to 850,000 pounds shucked weight (approximately 10 million individual organisms harvested annually) represents a marked increase over alternatives B and C (approximately 40 percent greater than alternative B and 70 percent greater than alternative C); therefore, it is assumed alternative D would result in the greatest level of impact on native benthic fauna among all alternatives. The cultivation of nonnative species within Drakes Estero would appreciably affect the natural benthic community, including introduction and spread of molluscan diseases and other nonnative species imported unintentionally (such as the invasive tunicate Didemnum). While certain species introduced under alternative D are native to the region (e.g., purple-hinged rock scallops and Olympia oysters), they are not readily present in Drakes Estero in adult form. The use of both bottom bags and racks has been implicated in detectable changes in benthic communities. These impacts would be clearly detectable and could appreciably affect the individual species, communities, or natural processes. Cumulative impacts would be long-term moderate adverse, and alternative D would contribute an appreciable adverse increment to the overall cumulative impact. The introduction and maintenance of nonnative species in Drakes Estero does not further the goal of NPS Management Policies 2006, which is to minimize the impacts of human activities on native benthic fauna populations. All species that could be cultivated are nonnative with the exception of the purple-hinged rock scallop, which is native to

TABLE 2-6. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
	cover of Didemnum would have an adverse impact on species diversity. Lastly, the nonnative Manila clam would be produced on a much wider scale under this alternative than under existing conditions, which increases the chance of naturally breeding populations of this species becoming established in Drakes Estero (NAS 2004, 2009). These impacts would be clearly detectable and could appreciably affect individual species, communities, or natural processes. The cumulative impact would be long-term moderate adverse, and alternative B would contribute an appreciable adverse increment to the overall cumulative impact. The introduction and maintenance of nonnative species in Drakes Estero does not further the goal of NPS Management Policies 2006, which is to minimize the impacts of human activities on native benthic fauna populations. All species that could be cultivated are nonnative with the exception of the purple-hinged rock scallop, which is native to the rocky California coast but is only likely to be found in Drakes Estero in larval form.	the rocky California coast but is only likely to be found in Drakes Estero in larval form.	the rocky California coast but is only likely to be found in Drakes Estero in larval form, and the Olympia oyster, which also prefers a hard substrate and is not present in Drakes Estero in large numbers. Additionally, DBOC's proposal to collect native shellfish larvae within Drakes Estero would not be consistent with the NPS mission, per Management Policies 2006 (NPS 2006d) or regulations.
Wildlife and Wildlife Habitat: Fish			
Overall, alternative A would result in long-term beneficial impacts on fish due to the restoration of natural fish habitat, particularly those attributed to Pacific groundfish habitat in the Groundfish Plan, which in turn would provide increased cover for fish from piscivorous birds and other fish as well as increased prey for larger groundfish. Alternative A would result in a more natural species composition within the project area. Alternative A also would result in short-term minor adverse impacts because disruption of fish during rack removal from Drakes Estero would be localized and slightly detectable, but would not affect the overall structure of any natural	Overall, alternative B would result in long-term minor adverse impacts on fish because while the natural species composition would remain altered due to the presence of non-natural structured habitat, impacts would be relatively localized and confined to the 7 acres of racks and would not affect the overall structure of any natural community. The maintenance of shellfish racks would continue to displace approximately 7 acres of natural fish habitat which would otherwise provide increased cover for fish from piscivorous birds and other fish as well as increased prey for larger groundfish, particularly those attributed to Pacific groundfish habitat in the Groundfish Plan.	Overall, alternative C would result in long-term minor adverse impacts on fish because while the natural species composition would remain altered due to the presence of non-natural structured habitat, impacts would be relatively localized and confined to the 7 acres of racks and would not affect the overall structure of any natural community. The maintenance of shellfish racks would continue to displace approximately 7 acres of natural fish habitat which would otherwise provide increased cover for fish from piscivorous birds and other fish as well as increased prey for larger groundfish, particularly those attributed to Pacific groundfish habitat in the Groundfish Plan.	Overall, alternative D would result in long-term minor adverse impacts on fish because while the natural species composition would remain altered due to the presence of non-natural structured habitat, impacts would be relatively localized and confined to the 7 acres of racks and would not affect the overall structure of any natural community..The maintenance of shellfish racks would continue to displace approximately 7 acres of natural fish habitat which would otherwise provide increased cover for fish from piscivorous birds and other fish as well as increased prey for larger groundfish, particularly those attributed to Pacific groundfish habitat in the Groundfish Plan.

TABLE 2-6. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
community. The cumulative impact would be beneficial, and alternative A would contribute a noticeable beneficial increment to the overall cumulative impact. Alternative A would be consistent with the guidance set forth in NPS Management Policies 2006 for the maintenance and restoration of natural native ecosystems, including restoration of native fish communities (NPS 2006d). Additionally, this alternative would be consistent with the goals set forth in the Magnuson-Stevens Fishery Conservation and Management Act because the essential fish habitat (habitat of particular concern) designated within the Pacific Fishery Management Council's Groundfish Management Plan would be maintained and improved.	The cumulative impact would be long-term beneficial, and alternative B would contribute a noticeable adverse increment to the overall beneficial cumulative impact. With regards to fish, continued operation of DBOC for 10 additional years would not be consistent with relevant law and policy. The continued maintenance of a non-natural community in Drakes Estero does not further the goal of NPS Management Policies 2006 to preserve and restore natural communities and ecosystems. Perpetuation of non-natural habitat would continue to attract fish communities that would not naturally be found in Drakes Estero. Additionally, this alternative would not be consistent with the goals set forth in the Magnuson-Stevens Fishery Conservation and Management Act because damage to eelgrass designated as essential fish habitat (habitat of particular concern) within the Pacific Fishery Management Council's Groundfish Management Plan would continue.	The cumulative impact would be long-term beneficial, and alternative C would contribute a noticeable adverse increment to the overall beneficial cumulative impact. With regards to fish, continued operation of DBOC for 10 additional years would not be consistent with relevant law and policy. The continued maintenance of a non-natural community in Drakes Estero does not further the goal of NPS Management Policies 2006 to preserve and restore natural communities and ecosystems. Perpetuation of non-natural habitat would continue to attract fish communities that would not naturally be found in Drakes Estero. Additionally, this alternative would not be consistent with the goals set forth in the Magnuson-Stevens Fishery Conservation and Management Act because damage to eelgrass designated as essential fish habitat (habitat of particular concern) within the Pacific Fishery Management Council's Groundfish Management Plan would continue.	The cumulative impact would be long-term beneficial, and alternative D would contribute a noticeable adverse increment to the beneficial cumulative impact. With regards to fish, continued operation of DBOC for 10 additional years would not be consistent with relevant law and policy. The continued maintenance of a non-natural community in Drakes Estero does not further the goal of NPS Management Policies 2006 to preserve and restore natural communities and ecosystems. Perpetuation of non-natural habitat would continue to attract fish communities that would not naturally be found in Drakes Estero. Additionally, this alternative would not be consistent with the goals set forth in the Magnuson-Stevens Fishery Conservation and Management Act because damage to eelgrass designated as essential fish habitat (habitat of particular concern) within the Pacific Fishery Management Council's Groundfish Management Plan would continue.
Wildlife and Wildlife Habitat: Harbor Seals			
Overall, alternative A would result in long-term beneficial impacts on harbor seals due to the termination of DBOC operations and associated human activities within Drakes Estero. Disturbance would be limited to recreational kayakers, hikers on the adjacent landscape, and aircraft. The former two would be prohibited (and physically excluded from accessing the kayak launch) during harbor seal pupping season. Based on current research (Becker, Press, and Allen 2011), the termination of shellfish mariculture in Drakes Estero may benefit the distribution and abundance of the native harbor seal population. Alternative A may also result in short-term minor adverse impacts due to impacts	Overall, alternative B would result in long-term moderate adverse impacts on harbor seals due to continuation of commercial shellfish operations within Drakes Estero year-round, for another 10 years, and the associated use of motorboats and bottom bag cultivation on sandbars and mudflats adjacent to the designated harbor seal protection areas. This would result in continued human presence and potential harbor seal disturbances throughout the year. Although the mandatory buffer of 100 yards from hauled-out harbor seals (year round) and other restrictions during the harbor seal pupping season would be retained in the SUP issued to DBOC, alternative B would result in moderate adverse impacts on harbor	Overall, alternative C would result in long-term moderate adverse impacts on harbor seals due to continuation of commercial shellfish operations within Drakes Estero year-round, for another 10 years, and the associated use of motorboats and bottom bag cultivation on sandbars and mudflats adjacent to the designated harbor seal protection areas. This would result in continued human presence and potential harbor seal disturbances throughout the year. Although the mandatory buffer of 100 yards from hauled-out harbor seals (year round) and other restrictions during the harbor seal pupping season would be retained in the SUP issued to DBOC, alternative C would result in moderate adverse impacts on harbor	Overall, alternative D would result in long-term moderate adverse impacts on harbor seals due to continuation of commercial shellfish operations within Drakes Estero year-round, for another 10 years, and the associated use of motorboats and bottom bag cultivation on mudflats adjacent to the designated harbor seal protection areas. This would result in continued human presence and potential harbor seal disturbances throughout the year. Although the mandatory buffer of 100 yards from hauled-out harbor seals (year round) and other restrictions during the harbor seal pupping season would be retained in the SUP issued to DBOC, alternative D would result in moderate adverse impacts on harbor seals due to the

TABLE 2-6. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
associated with rack removal, which would be localized and slightly detectable, but would not affect the overall structure of any natural community. These activities would be conducted outside of the harbor seal pupping season to minimize adverse impacts. The cumulative impact would be long-term beneficial, and alternative A would contribute an appreciable beneficial increment to the overall cumulative impact. With respect to harbor seals, alternative A is consistent with relevant law and policy because removal of DBOC operations from Drakes Estero would remove an unnatural stimulus that currently affects harbor seal behavior. Additionally, the decrease in disturbance to this species would be consistent with MMPA (16 USC 1361 et seq., 1401–1407, 1538, 4107).	seals due to the potential for displacement and continued disturbances that are known to disrupt harbor seal behavior. The impacts associated with alternative B would be clearly detectable and could appreciably affect harbor seals and harbor seal habitat. The cumulative impact would be long-term moderate adverse, and alternative B would contribute an appreciable adverse increment to the overall cumulative impact. With respect to harbor seals, alternative B does not further the goals of relevant law and policy because continued DBOC operations in Drakes Estero would maintain an unnatural stimulus that has the potential to affect harbor seal behavior. NPS Management Policies 2006 specify that NPS managers should strive to preserve and restore "behaviors of native plant and animal populations and the communities and ecosystems in which they occur" (NPS 2006d). Additionally, the continued disturbance to this species would be subject to regulation by the MMPA (16 USC 1361 et seq., 1401–1407, 1538, 4107). The MMPA prohibits, with certain exceptions, the take of marine mammals in U.S. waters and by U.S. citizens, and the importation of marine mammals and marine mammal products into the United States. Under the MMPA, "take" is defined as "harass, hunt, capture, kill or collect, or attempt to harass, hunt, capture, kill or collect." "Harassment" is defined as "any act of pursuit, torment, or annoyance which has the potential to injure a marine mammal in the wild, or has the potential to disturb a marine mammal in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering." Under the MMPA, if an activity is defined as harassment under the above criteria, a specific permit called an Incidental Harassment Authorization may be	seals due to the potential for displacement and continued disturbances that are known to disrupt harbor seal behavior. The impacts associated with alternative C would be clearly detectable and could appreciably affect harbor seals and harbor seal habitat. The cumulative impact would be long-term moderate adverse, and alternative C would contribute an appreciable adverse increment to the overall cumulative impact. With respect to harbor seals, alternative C does not further the goals of relevant law and policy because continued DBOC operations in Drakes Estero would maintain an unnatural stimulus that has the potential to affect harbor seal behavior. NPS Management Policies 2006 specify that NPS managers should strive to preserve and restore "behaviors of native plant and animal populations and the communities and ecosystems in which they occur" (NPS 2006d). Additionally, the continued disturbance to this species would be subject to regulation by the MMPA (16 USC 1361 et seq., 1401–1407, 1538, 4107). The MMPA prohibits, with certain exceptions, the take of marine mammals in U.S. waters and by U.S. citizens, and the importation of marine mammals and marine mammal products into the United States. Under the MMPA, "take" is defined as "harass, hunt, capture, kill or collect, or attempt to harass, hunt, capture, kill or collect." "Harassment" is defined as "any act of pursuit, torment, or annoyance which has the potential to injure a marine mammal in the wild, or has the potential to disturb a marine mammal in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering." Under the MMPA, if an activity is defined as harassment under the above criteria, a specific permit called an Incidental Harassment Authorization may be	potential for displacement and continued disturbances that are known to disrupt harbor seal behavior. The adverse impacts associated with alternative D would be of greater magnitude than those associated with alternatives B and C due to the likely increase in boat traffic in Drakes Estero associated with increased production levels (approximately 40 percent greater than alternative B and 70 percent greater than alternative C), but are still expected to be moderate in intensity and would be clearly detectable and could appreciably affect harbor seals and harbor seal habitat. The cumulative impact would be long-term moderate adverse, and alternative D would contribute an appreciable adverse increment to the overall cumulative impact. With respect to harbor seals, alternative D does not further the goals of relevant law and policy because continued DBOC operations in Drakes Estero would maintain an unnatural stimulus that has the potential to affect harbor seal behavior. NPS Management Policies 2006 specify that NPS managers should strive to preserve and restore "behaviors of native plant and animal populations and the communities and ecosystems in which they occur" (NPS 2006d). Additionally, the continued disturbance to this species would be subject to regulation by the MMPA (16 USC 1361 et seq., 1401–1407, 1538, 4107). The MMPA prohibits, with certain exceptions, the take of marine mammals in U.S. waters and by U.S. citizens, and the importation of marine mammals and marine mammal products into the United States. Under the MMPA, "take" is defined as "harass, hunt, capture, kill or collect, or attempt to harass, hunt, capture, kill or collect." "Harassment" is defined as "any act of pursuit, torment, or annoyance which has the potential to injure a marine mammal in the wild, or has the

TABLE 2-6. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
	required.	required.	potential to disturb a marine mammal in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering." Under the MMPA, if an activity is defined as harassment under the above criteria, a specific permit called an Incidental Harassment Authorization may be required.
Wildlife and Wildlife Habitat: Birds			
Overall, alternative A would result in long-term beneficial impacts on birds due to the removal of the commercial shellfish operation within Drakes Estero and its associated human activities. Removal of DBOC motorboats and related activities would minimize the disruption of biological activities such as foraging and resting. Intertidal areas previously used by DBOC for the bottom bag cultivation in commercial operations would result in up to 88 additional acres of foraging and resting habitat for resident and migratory birds. Alternative A may result in adverse impacts to birds from rack removal, but the impacts would be short-term and minor because they would be highly localized and would not affect the overall structure of any natural community. Cumulative impacts would be long-term beneficial and alternative A would contribute an appreciable beneficial increment to the overall cumulative impacts. Alternative A would be consistent with the goals set forth in both NPS Management Policies 2006 and the MBTA. NPS Management Policies 2006 specify that NPS managers should strive to preserve and restore "behaviors of native plant and animal populations and the communities and ecosystems in which they occur" (NPS 2006d). The MBTA (16 USC 703–712, as amended) makes it illegal for people to "take" migratory	Alternative B would result in long-term moderate adverse impacts on birds and bird habitat due to the continuation of commercial shellfish operations and the associated human activities within Drakes Estero for an additional 10 years. Continued use of motorboats and other noise-producing equipment, as well as maintenance of shellfish growing structures, within Drakes Estero would continue to disrupt biological activity of birds, such as foraging and resting behavior, potentially leading to a reduction in fitness and reproductive success. Noise disturbance from DBOC operations would also alter other biological activities of birds using Drakes Estero, such as predator avoidance. The impacts of alternative B would be clearly detectable and could appreciably affect birds and bird habitat within the project area. The cumulative impact would be long-term moderate adverse, and alternative B would contribute an appreciable adverse increment to the overall impact. With respect to birds, alternative B would not be consistent with the goals set forth in the NPS Management Policies 2006, which specifies that NPS managers should strive to preserve and restore "behaviors of native plant and animal populations and the communities and ecosystems in which they occur" (NPS 2006d). No actions are anticipated to be inconsistent with the MBTA (16	Alternative C would result in long-term moderate adverse impacts on birds and bird habitat due to the continuation of commercial shellfish operations within Drakes Estero for an additional 10 years and the associated human activities. Continued use of motorboats and other noise-producing equipment, as well as maintenance of shellfish growing structures, within Drakes Estero would continue to disrupt biological activity of birds, such as foraging and resting behavior, potentially leading to a reduction in fitness and reproductive success. Noise disturbance from DBOC operations would also alter other biological activities of birds using Drakes Estero, such as predator avoidance. The impacts of alternative C would be clearly detectable and could appreciably affect birds and bird habitat within the project area. The cumulative impact would be long-term moderate adverse, and alternative C would contribute an appreciable adverse increment to the cumulative impact. With respect to birds, alternative C would not be consistent with the goals set forth in the NPS Management Policies 2006, which specifies that NPS managers should strive to preserve and restore "behaviors of native plant and animal populations and the communities and ecosystems in which they occur" (NPS 2006d). No actions are anticipated to be inconsistent with the MBTA (16	Alternative D would result in long-term moderate adverse impacts on birds and bird habitat due to the continuation of commercial shellfish operations within Drakes Estero for an additional 10 years and the associated human activities. Continued use of motorboats and other noise-producing equipment, as well as maintenance of shellfish growing structures, within Drakes Estero would continue to disrupt biological activity of birds, such as foraging and resting behavior, potentially leading to a reduction in fitness and reproductive success. Noise disturbance from DBOC operations would also alter other biological activities of birds using Drakes Estero, such as predator avoidance. These adverse impacts would be greater than those associated with alternatives B and C due to the likely increase in DBOC boat traffic in Drakes Estero associated with increased production (approximately 40 percent greater than alternative B and 70 percent greater than alternative C), but are still expected to be moderate in intensity, would remain clearly detectable and could appreciably affect birds and bird habitat within the project area. The cumulative impact would be long-term moderate adverse, and alternative D would contribute an appreciable adverse increment to the overall impact. With respect to birds, alternative D would not be

TABLE 2-6. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
birds, their eggs, feathers or nests.	USC 703–712, as amended), which makes it illegal to "take" migratory birds, their eggs, feathers or nests.	USC 703–712, as amended), which makes it illegal to "take" migratory birds, their eggs, feathers or nests.	consistent with the goals set forth in the NPS Management Policies 2006, which specifies that NPS managers should strive to preserve and restore "behaviors of native plant and animal populations and the communities and ecosystems in which they occur" (NPS 2006d). No actions are anticipated to be inconsistent with the MBTA (16 USC 703–712, as amended), which makes it illegal for people to "take" migratory birds, their eggs, feathers or nests.
Special-Status Species			
Overall, alternative A would result in long-term beneficial impacts on special-status species (federally listed animal species) and critical habitat. Alternative A may also result in short-term minor adverse impacts to special-status species during removal of DBOC facilities and personal property because removal could disturb individuals or cause temporary sedimentation within designated critical habitat. The short-term impacts related to removal would be highly localized and would last up to two months. The cumulative impact would be long-term beneficial, and alternative A would contribute a noticeable beneficial increment to the overall cumulative impact. For all special-status species discussed above, alternative A would be consistent with relevant law and policy. Alternative A would forward the goal set forth in NPS Management Policies 2006, which states that the NPS will "survey for, protect, and strive to recover all species native to national park service units that are listed under the Endangered Species Act" (NPS 2006d). Alternative A would also fulfill the federal mandate set forth by the ESA to conserve listed species and ensure that their actions do not jeopardize the continued existence of the listed species.	Overall, alternative B would result in continued long-term minor adverse impacts on federally listed animal species for an additional 10 years because ongoing DBOC operations could cause a disruption in individuals and/or designated critical habitat. Cumulative impacts would be long-term beneficial, and alternative B would contribute a noticeable adverse increment to the overall cumulative impact. For all special-status species discussed above, alternative B would be consistent with relevant law and policy. However, alternative B would not fulfill the goals articulated in NPS Management Policies 2006 as well as alternative A. NPS Management Policies 2006, which states that the NPS will "survey for, protect, and strive to recover all species native to national park service units that are listed under the Endangered Species Act" (NPS 2006d). UWFWS and NMFS are given the authority under the ESA to determine whether or not actions jeopardize the continued existence of listed species. NPS will complete consultation with USFWS and/or NMFS would be prior to the release of the final EIS to ensure that the action would not jeopardize the species' continued existence or result in destruction or adverse modification of critical habitat.	Overall, alternative C would result in continued long-term minor adverse impacts on federally listed animal species for an additional 10 years because ongoing DBOC operations could cause a disruption in individuals and/or designated critical habitat. Cumulative impacts would be long-term beneficial, and alternative C would contribute a noticeable adverse increment to the overall cumulative impact. For all special-status species discussed above, alternative C would be consistent with relevant law and policy. However, alternative C would not fulfill the goals articulated in NPS Management Policies 2006 as well as alternative A. NPS Management Policies 2006, which states that the NPS will "survey for, protect, and strive to recover all species native to national park service units that are listed under the Endangered Species Act" (NPS 2006d). UWFWS and NMFS are given the authority under the ESA to determine whether or not actions jeopardize the continued existence of listed species. NPS will complete consultation with USFWS and/or NMFS would be prior to the release of the final EIS to ensure that the action would not jeopardize the species' continued existence or result in destruction or adverse modification of critical habitat.	Overall, alternative D would result in long-term minor adverse impacts on special-status species for an additional 10 years due to the continued operation of a commercial shellfish operation within Drakes Estero. As discussed above, the impacts of alternative D may be greater than alternatives B and C due to increased production levels (approximately 40 percent greater than alternative B and 70 percent greater than alternative C). Alternative D would also have short-term minor adverse impacts on Myrtle's silverspot butterfly and California red-legged frog critical habitat during redevelopment of the site because of the potential for habitat to be displaced and the increased risk for vehicle strikes. The cumulative impact would be long-term beneficial, and alternative D would contribute a noticeable adverse increment to the overall cumulative impact. For all special-status species discussed above, alternative D would be consistent with relevant law and policy. However, alternative D would not fulfill the goals articulated in NPS Management Policies 2006 as well as alternative A. NPS Management Policies 2006, which states that the NPS will "survey for, protect, and strive to recover all species native to national park service units

TABLE 2-6. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
			that are listed under the Endangered Species Act" (NPS 2006d). UWFWS and NMFS are given the authority under the ESA to determine whether or not actions jeopardize the continued existence of listed species. NPS will complete consultation with USFWS and/or NMFS would be prior to the release of the Final EIS to ensure that the action would not jeopardize the species' continued existence or result in destruction or adverse modification of critical habitat.
Coastal Flood Zones			
Overall, alternative A would result in long-term beneficial impacts on the coastal flood zone due to an increase in flood storage capacity of the onshore area and the removal of structures and materials that have the potential to cause damage during a flood event. The cumulative impact would be beneficial, and alternative A would contribute a noticeable beneficial increment to the cumulative impacts. With respect to coastal flood zones, alternative A is consistent with relevant law and policy. Removal of structures and residences within the flood zone would fulfill the goals set forth by Presidential Executive Order 11988, "Floodplain Management" and the subsequent NPS Director's Order 77-2 and Procedural Manual 77-2: Floodplain Management, which are intended to properly conserve, manage, and protect flood zones on NPS lands to protect human health and the environment and prevent damage to property in the event of a flood event.	Overall, alternative B would result in long-term moderate adverse impacts on the coastal flood zone within the project area for an additional 10 years because continued DBOC operations would take place within the flood zone and would result in continued potential for flood damage to property and/or environmental contamination at the project site. Offshore structures and materials could be damaged and/or dislodged during a flood event, potentially causing damage to resources within Drakes Estero. Onshore, it is anticipated that the punching shed, shop, processing plant, and stringing shed would be inundated during a 100-year flood event, potentially causing damage to the structures and contents as well as local contamination. Shell piles would reduce flood storage capacity in the area, while proposed dredging in the vicinity of the dock would offset these impacts to some extent. Wastewater collection tanks would also be inundated during a 100-year flood event, potentially causing leaks of untreated wastewater to enter Drakes Estero. The cumulative impact would be long-term moderate adverse, and alternative B would contribute an appreciable adverse increment to the overall cumulative impact.	Overall, alternative C would result in long-term moderate adverse impacts on the coastal flood zone within the project area for an additional 10 years because continued DBOC operations would take place within the flood zone and would result in continued potential for flood damage to property and/or environmental contamination at the project site. Offshore structures and materials could be damaged and/or dislodged during a flood event, potentially causing damage to resources within Drakes Estero. Onshore, it is anticipated that the punching shed, shop, processing plant, and stringing shed would be inundated during a 100-year flood event, potentially causing damage to the structures and contents as well as local contamination. Shell piles would reduce flood storage capacity in the area, while proposed dredging in the vicinity of the dock would offset these impacts to some extent. Wastewater collection tanks would also be inundated during a 100-year flood event, potentially causing leaks of untreated wastewater to enter Drakes Estero. The cumulative impact would be long-term moderate adverse, and alternative C would contribute an appreciable adverse increment to the cumulative impact. NPS guidelines require that new actions within the	Overall, alternative D would result in long-term moderate adverse impacts on the coastal flood zone due to continued mariculture operations. Existing structures are within the flood zone, which could result in increased potential for flood damage to property or environmental contamination at the project site. Compared to alternatives B and C, alternative D would result in increased flood zone impacts from the offshore facilities due to additional racks and bottom bags to accommodate the higher shellfish production level. The construction of new facilities may take place within the flood zone if alternative site locations outside of the flood zone but within the SUP area were determined to be infeasible through a subsequent planning process. If located within the flood zone, the new facility would result in continued potential for flood damage to property and/or environmental contamination at the project site. Wastewater collection systems would remain as described in alternatives B and C, and flood zone impacts from other structures (punching shed, stringing shed, dock, washing station, and mobile homes) would be the same as those under alternatives B and C. An increase in production would likely result in additional shell being added to the shell piles located within the flood zone, resulting in a reduction of flood storage capacity. The cumulative impact would be

TABLE 2-6. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
	NPS guidelines require that new actions within the flood zone comply with Procedural Manual 77-2: Floodplain Management. This alternative would allow the continued use of nonconforming structures, and no new structures would be placed in the coastal flood zone. As such, this alternative would comply with existing NPS guidelines and procedures.	flood zone comply with Procedural Manual 77-2: Floodplain Management. This alternative would allow the continued use of nonconforming structures, and no new structures would be placed in the coastal flood zone. As such, this alternative would comply with existing NPS guidelines and procedures.	long-term moderate adverse, and alternative D would contribute an appreciable adverse increment to the cumulative impact. Alternative D is the only alternative that includes new onshore development, which is a Class I Action specified in the Procedural Manual 77-2: Floodplain Management. As such, the new structure would require a Statement of Findings (SOF) if alternative site locations outside of the coastal flood zone but within the SUP area were determined to be infeasible. The SOF process would ensure the structure is properly designed and constructed in a way that minimizes impacts to the flood zone.
Water Quality			
Overall, alternative A would result in long-term beneficial impacts on water quality as a result of reduced non-point-source runoff and the elimination of future disturbances to the Drakes Estero bottom from boats and offshore structures. Bivalves filter and process suspended solids, nutrients, and phytoplankton from the water column resulting in cleaner, less turbid water. Drakes Estero is not a highly turbid coastal embayment (NAS 2009), so bivalve contributions to water clarity would likely be limited relatively minor and limited. Based on west coast research (Dumbauld, Ruesink, and Rumrill 2009), the positive ecosystem effects typically attributed to bivalves, such as nutrient cycling and water clarity, would be expected to be relatively minor in west coast estuaries like Drakes Estero. This is because the nutrient dynamics in these systems are driven by coastal upwelling and a strong tidal cycle which flushes small estuaries like Drakes Estero on a daily basis. However, to the extent that localized beneficial effects from DBOC bivalves influence eelgrass productivity near	Overall, this alternative would result in long-term minor adverse impacts on water quality for another 10 years. Alternative B would have recurring but not long-lasting effects on water quality and would be within historical water quality standards. Cultivated shellfish as filter feeders would remain in Drakes Estero under this alternative, offering localized long-term beneficial impacts to water quality by removing suspended solids, nutrients, and phytoplankton from the water column. Sediment disturbances from offshore mariculture activities (bags/trays, boats, wading DBOC employees) would be locally temporary (pulsing) and would dissipate after each tide cycle, resulting in short-term minor adverse impacts on water quality. Dredging around the floating dock would be expected to create temporary disturbances to the water column from increased turbidity. This action would cause short-term minor adverse impacts on water quality. The point-source discharges (washing station and setting tanks) under this alternative would continue, but no new point-source outputs	Overall, alternative C would result in long-term minor adverse impacts on water quality for another 10 years. Alternative C would have recurring but not long-lasting effects on water quality and would be within historical water quality standards. Cultivated shellfish would remain in Drakes Estero for another 10 years under this alternative, offering localized beneficial water filtering functions from the removal of suspended solids, nutrients, and phytoplankton from the water column. Impacts to water quality include those described under alternative B. In particular, sediment disturbances from offshore mariculture activities (bags/trays, boats, wading DBOC employees) would be locally temporary (pulsing) and would dissipate after each tide cycle, resulting in short-term minor adverse impacts on water quality. Dredging around the floating dock would be expected to create temporary disturbances to the water column from increased turbidity, resulting in short-term minor adverse impacts on water quality. Point-source discharges would include small amounts of marine sediments	Overall, alternative D would have short-term minor adverse and long-term minor adverse impacts on water quality due to offshore and onshore activities associated with commercial shellfish operations within Drakes Estero. Alternative D would not be expected to exceed water quality standards, have long-lasting effects on water quality or impede the goals and objectives of NPS policies on water quality. Alternative D would have the highest population of cultivated shellfish occupying Drakes Estero. As a result, localized water quality benefits from filter feeding bivalves would be greatest compared to the other alternatives. The impacts associated with alternative D would be similar to those described under alternatives B and C. However, this alternative may cause slightly higher rates of sediment disturbance in Drakes Estero, compared to alternatives B and C, due to more frequent boat trips and bag/tray management. Onshore discharge into Drakes Estero of pumped water serving the washing station and setting tanks would be expected to

TABLE 2-6. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
DBOC beds and racks (see discussion under alternative B), the removal of DBOC-cultured bivalves under alternative A would result in adverse impacts on eelgrass at these sites. Thus, minor adverse impacts to water quality in Drakes Estero would be expected to occur under this alternative. Removal of the racks and bags would cause a short-term minor adverse impact on water quality due to the sediment disturbances from personnel removing the offshore structures. These adverse impacts would be temporary and localized. The cumulative impact would be long-term beneficial, and alternative A would contribute a noticeable beneficial impact to the cumulative impact. With regards to water quality, alternative A would satisfy the goals and objectives of NPS Management Policies 2006 (NPS 2006d) and would be consistent with the purpose of the CWA, which is to "restore and maintain the chemical, physical, and biological integrity of the nation's waters."	would be introduced. Point-source discharges would include small amounts of marine sediments and fouling organisms removed at the washing station; no chemical contaminants would be discharged into Drakes Estero under this alternative. Non-point-source pollution from runoff is currently very small (less than 3 acres of impervious surface within a watershed of several square miles). The cumulative impact would be long-term minor adverse, and alternative B would contribute a noticeable adverse increment to the cumulative impact. With regards to water quality, alternative B would satisfy the goals and objectives of NPS Management Policies 2006 (NPS 2006d) and would be consistent with the purpose of the CWA, which is to "restore and maintain the chemical, physical, and biological integrity of the nation's waters."	and fouling organisms removed at the washing station; no chemical contaminants would be discharged into Drakes Estero under this alternative. Nonpoint-source pollution from runoff is currently very small (less than 3 acres of impervious surface within a watershed of several square miles). The cumulative impact would be long-term minor adverse, and alternative C would contribute a noticeable adverse increment to the overall cumulative impacts. With regards to water quality, alternative C would satisfy the goals and objectives of NPS Management Policies 2006 (NPS 2006d) and would be consistent with the purpose of the CWA, which is to "restore and maintain the chemical, physical, and biological integrity of the nation's waters."	add minor adverse impacts to water quality. In addition, onshore sediment may enter waters due to the construction of new facilities, although this action could be mitigated with the installation of silt fencing. Alternative D also would result in short-term minor adverse impacts on water quality during construction of new DBOC facilities because impacts would include temporary (lasting less than a year), localized impacts that would not have long-lasting effects on water quality. The cumulative impact would be long-term minor adverse, and alternative D would contribute a noticeable adverse increment to the cumulative impact. With regards to water quality, alternative D would satisfy the goals and objectives of NPS Management Policies 2006 (NPS 2006d) and would be consistent with the purpose of the CWA, which is to "restore and maintain the chemical, physical, and biological integrity of the nation's waters."
Soundscapes			
Alternative A would result in long-term beneficial impacts due to the elimination of human-caused noise levels associated with the commercial shellfish operation. Alternative A would also result in adverse impacts to soundscapes because the noise associated with the use of heavy machinery and motorized boats to remove DBOC structures and property would be at a level that would cause vocal communication to be difficult at a distance of less than 16 feet. However, this impact would interfere with the natural soundscape for less than 5 percent of one year; therefore, Alternative A would result in short-term minor to moderate adverse impacts on soundscapes. The cumulative impact would be long-term beneficial,	Overall, alternative B would result in short-term minor and long-term major adverse impacts on soundscapes. Short-term minor adverse impacts on the natural soundscape would result from the use of heavy machinery during replacement of the main dock, work platform, and associated structures. The use of heavy machinery would be at a level that would cause vocal communication to be difficult at distances of less than 16 feet. However, this impact would interfere with the natural soundscape for less than 5 percent of one year; therefore, alternative B would result in short-term minor adverse impacts to the natural soundscape. Alternative B would also result in continued long-term major adverse impacts on	Overall, alternative C would result in short-term minor and long-term major adverse impacts on soundscapes. Short-term minor adverse impacts on soundscapes would result from the use of heavy machinery during replacement of the main dock, work platform, and associated structures. The use of heavy machinery would be at a level that would cause vocal communication to be difficult at distances of less than 16 feet. However, this impact would interfere with the natural soundscape for less than 5 percent of one year; therefore, alternative C would result in short-term minor adverse impacts to the natural soundscape. Alternative C would also result in continued long-term major adverse impacts on the natural	Overall, alternative D would result in short-term moderate and long-term major adverse impacts on soundscapes. Alternative D would result in short-term moderate adverse impacts on soundscapes due to the use of heavy machinery during the construction of additional onshore facilities. The use of heavy machinery would be at a level that would cause vocal communication to be difficult at distances of less than 16 feet. However, this impact would interfere with the natural soundscape for between 5 and 10 percent of one year, therefore alternative D would result in short-term moderate adverse impacts to the natural soundscape. The operation of boats and other onshore machinery for an additional 10

TABLE 2-6. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
and alternative A would contribute an appreciable beneficial increment to the cumulative impact. With regard to soundscapes, alternative A would further the goals for soundscape management as set forth in relevant law and policy. NPS Management Policies 2006 and Director's Order 47: Soundscape Preservation and Noise Management direct NPS managers to preserve and restore the natural soundscape, where possible.	the natural soundscape due to the operation of boats and other onshore machinery that would be at a level that would cause vocal communication to be difficult at distances of less than 16 feet. This impact would interfere with the natural soundscape between 14 and 29 percent of the time over the 10-year SUP term; therefore, alternative B would result in long-term major adverse impacts on the natural soundscape. The cumulative impact would be long-term major adverse, and alternative B would contribute an appreciable increment to the cumulative impact. With regard to soundscapes, alternative B would not further the goals for soundscape management as set forth in relevant law and policy. For instance, NPS Management Policies 2006 (NPS 2006d) directs park managers to take steps to restore and maintain natural soundscapes, whereas alternative B would include continued impacts to the natural soundscape from DBOC activities. This aspect of Alternative B would also be inconsistent with 36 CFR 2.12 because it would allow DBOC to continue to use several mechanical tools that emit noise over 60 dBA at 50 feet. In addition to DBOC trucks, pneumatic drill, and oyster tumbler operating onshore, DBOC would continue to operate its motorboats in potential wilderness, where motorboats are not allowed (except for those used occasionally by NPS for administration of the wilderness in accordance with a minimum requirements analysis). Contributions of human-caused noise to the natural soundscape are also a detriment to wilderness values, as described in more detail under that impact topic.	soundscape due to the operation of boats and other onshore machinery that would be at a level that would cause vocal communication to be difficult at distances of less than 16 feet. This impact would interfere with the natural soundscape between 14 and 29 percent of the time; therefore, alternative C would result in long-term major adverse impacts on the natural soundscape. The cumulative impact would be long-term major adverse, and alternative C would contribute an appreciable adverse increment to the cumulative impact. With regard to soundscapes, alternative C would not further the goals for soundscape management as set forth in relevant law and policy. For instance, NPS Management Policies 2006 (NPS 2006d) directs park managers to take steps to restore and maintain natural soundscapes, whereas alternative C would include continued impacts to the natural soundscape from DBOC activities. This aspect of alternative C would also be inconsistent with 36 CFR 2.12 because it would allow DBOC to continue to use several mechanical tools that emit noise over 60 dBA at 50 feet. In addition to DBOC trucks, pneumatic drill, and oyster tumbler operating onshore, DBOC would continue to operate its motorboats in potential wilderness, where motorboats are not allowed (except for those used occasionally by NPS for administration of the wilderness in accordance with a minimum requirements analysis). Contributions of human-caused noise to the natural soundscape are also a detriment to wilderness values, as described in more detail under that impact topic.	years would result in long-term major adverse impacts. Impacts would be at a level that would cause vocal communication to be difficult at distances of less than 16 feet and would interfere with the natural soundscape between 14 and 29 percent of the time. The cumulative impact on soundscapes would be long-term major adverse, and alternative D would contribute an appreciable adverse increment to the cumulative impact. With regard to soundscapes, alternative D would not further the goals for soundscape management as set forth in relevant law and policy. For instance, NPS Management Policies 2006 (NPS 2006d) directs park managers to take steps to restore and maintain natural soundscapes, whereas alternative D would include continued impacts to the natural soundscape from DBOC activities. This aspect of Alternative D would also be inconsistent with 36 CFR 2.12 because it would allow DBOC to continue to use several mechanical tools that emit noise over 60 dBA at 50 feet. In addition to DBOC trucks, pneumatic drill, and oyster tumbler operating onshore, DBOC would continue to operate its motorboats in potential wilderness, where motorboats are not allowed (except for those used occasionally by NPS for administration of the wilderness in accordance with a minimum requirements analysis). Contributions of human-caused noise to the natural soundscape are also a detriment to wilderness values, as described in more detail under that impact topic.

TABLE 2-6. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
Wilderness			
Overall, alternative A would result in long-term beneficial impacts on wilderness because cessation of DBOC operations and removal of DBOC facilities would result in a readily apparent, widespread enhancement of wilderness character. The enhancement of wilderness character would be due to removal of a commercial shellfish operation that detracts from wilderness character in the following ways: ▪ cultivation of nonnative shellfish (approximately 585,000 in 2010) ▪ maintenance of human-made mariculture infrastructure including 5 miles of racks and up to 88 acres of bottom bags in up to 142 acres of Drakes Estero ▪ motorboat travel taking place for up to 8 hours per day, 6 days per week, in approximately 740 acres of Drakes Estero ▪ generation of human-caused noise affecting wilderness The cumulative impact would be long-term and beneficial, and alternative A would contribute an appreciable beneficial increment to the cumulative impact. Alternative A would enable NPS to fulfill its obligations under the acts designating wilderness within the Seashore—PL 94-544 and PL 94-567—and NPS Management Policies 2006 to actively seek to remove from potential wilderness the temporary, nonconforming conditions that preclude wilderness designation (NPS 2006d).	Overall, alternative B would result in long-term major adverse impacts on wilderness for an additional 10 years because it would result in a readily apparent, widespread, adverse impact on wilderness character and would prevent conversion to congressionally designated wilderness from congressionally designated potential wilderness. The elements of DBOC's commercial shellfish operation that detract from wilderness character include: ▪ cultivation of nonnative shellfish (up to 600,000 pounds per year, although a small portion of this production may be purple-hinged rock scallop which may be native to Drakes Estero in larval form but is not likely to be found in Drakes Estero) ▪ maintenance of human-made mariculture infrastructure including 5 miles of racks and up to 84 acres of bottom bags in up to 138 acres of Drakes Estero ▪ motorboat travel taking place for up to 8 hours per day, 6 days per week, in approximately 740 acres of Drakes Estero and damaging approximately 8.5 linear miles of eelgrass ▪ generation of human-caused noise affecting wilderness (emanating from both inside and outside wilderness) The cumulative impact would be long-term major adverse, and alternative B would contribute an appreciable adverse increment to the cumulative impact. Alternative B would prevent NPS from fulfilling its obligations under the acts designating wilderness within the Seashore—PL 94-544 and PL 94-	Overall, alternative C would result in long-term major adverse impacts on wilderness for an additional 10 years because it would result in a readily apparent, widespread, adverse impact on wilderness character and would prevent conversion to congressionally designated wilderness from congressionally designated potential wilderness. The elements of DBOC's commercial shellfish operation that detract from wilderness character include: ▪ cultivation of nonnative shellfish (up to 500,000 pounds per year, although a small portion of this production may be purple-hinged rock scallop which may be native to Drakes Estero in larval form but is not likely to be found in Drakes Estero) ▪ maintenance of human-made mariculture infrastructure including 7 miles of racks and up to 84 acres of bottom bags in up to 138 acres of Drakes Estero ▪ motorboat travel taking place for up to 8 hours per day, 6 days per week, in approximately 740 acres of Drakes Estero and damaging approximately 8.5 linear miles of eelgrass ▪ generation of human-caused noise affecting wilderness (emanating from both inside and outside wilderness) The cumulative impact would be long-term major adverse, and alternative C would contribute an appreciable adverse increment to the cumulative impact. Alternative C would prevent NPS from fulfilling its obligations under the acts designating wilderness within Point Reyes National Seashore—PL 94-	Overall, alternative D would result in long-term major adverse impacts on wilderness for an additional 10 years because it would result in a readily apparent, widespread, adverse impact on wilderness character and would prevent conversion to congressionally designated wilderness from congressionally designated potential wilderness. The elements of DBOC's commercial shellfish operation that detract from wilderness character include: ▪ cultivation of nonnative shellfish (up to 850,000 pounds per year, although a portion of this production may be purple-hinged rock scallop which may be native to Drakes Estero in larval form but is not likely to be found in Drakes Estero) ▪ maintenance of human-made mariculture infrastructure including 7 miles of racks and up to 84 acres of bottom bags in up to 138 acres of Drakes Estero ▪ motorboat travel taking place for up to 8 hours per day, 6 days per week, in approximately 740 acres of Drakes Estero and damaging approximately 8.5 linear miles of eelgrass ▪ generation of human-caused noise affecting wilderness (emanating from both inside and outside wilderness) The cumulative impact on wilderness would be long-term major adverse, and alternative D would contribute an appreciable adverse increment to the cumulative impacts. Alternative D would prevent NPS from fulfilling its obligations under the acts designating wilderness within Point Reyes National Seashore—PL 94-

TABLE 2-6. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
	567—and NPS Management Policies 2006 to actively seek to remove from potential wilderness the temporary, nonconforming conditions that preclude wilderness designation. However, section 124 of PL 111-88 allows the Secretary to issue a permit to DBOC notwithstanding any other law, including the 1976 wilderness legislation. During the term of the new permit, NPS would continue to manage Drakes Estero in accordance with the Wilderness Act and complementary NPS policy to the extent possible. However, motorboats and in-water infrastructure are necessary to support the shellfish operation. The use of motorboats six days per week, the presence of infrastructure related to the existing commercial shellfish operations, and the presence of a commercial enterprise within Drakes Estero would substantially detract from the wilderness characteristics of Drakes Estero for an additional 10 years.	544 and PL 94-567—and NPS Management Policies 2006 to actively seek to remove from potential wilderness the temporary, nonconforming conditions that preclude wilderness designation (NPS 2006d). However, section 124 of PL 111-88 allows the Secretary to issue a permit to DBOC notwithstanding any other law, including the 1976 wilderness legislation. During the term of the new permit, NPS would continue to manage Drakes Estero in accordance with the Wilderness Act and complementary NPS policy to the extent possible. However, motorboats and in-water infrastructure are necessary to support the shellfish operation. The use of motorboats six days per week, the presence of infrastructure related to commercial shellfish operations, and the presence of a commercial enterprise within Drakes Estero would substantially detract from the wilderness characteristics of Drakes Estero for an additional 10 years.	544 and PL 94-567—and NPS Management Policies 2006 to actively seek to remove from potential wilderness the temporary, nonconforming conditions that preclude wilderness designation (NPS 2006d). However, section 124 of PL 111-88 allows the Secretary to issue a permit to DBOC notwithstanding any other law, including the 1976 wilderness legislation. During the term of the new permit, NPS would continue to manage Drakes Estero in accordance with the Wilderness Act and complementary NPS policy to the extent possible. However, motorboats and in-water infrastructure are necessary to support the shellfish operation. The use of motorboats six days per week, the presence of infrastructure related to commercial shellfish operations, and the presence of a commercial enterprise within Drakes Estero would substantially detract from the wilderness characteristics of Drakes Estero for an additional 10 years.
Visitor Experience and Recreation			
Overall, alternative A would result in long-term beneficial impacts to visitor experience and recreation because it would increase the opportunity for solitude and primitive, unconfined recreation. Alternative A would maintain visitor access to Drakes Estero, limiting access to pedestrians during the annual seal pupping season (March 1 to June 30). As described above, those looking to experience an active commercial shellfish operation could be adversely impacted by alternative A. However, this population comprises 2.5 percent of the total annual visitors to the Seashore and other opportunities to experience an active commercial shellfish operation are provided in the immediate area. In addition, commercial shellfish operations are not considered a visitor service, a requirement for concession contracts within the Seashore. The	Overall, alternative B would result in a long-term moderate adverse impact on visitor experience and recreation within the project area for an additional 10 years because continued commercial shellfish operations within Drakes Estero (the primary resource area) would be readily apparent and would affect many visitors to the Seashore. The impacts would somewhat inhibit visitor enjoyment of resources for which the Seashore was established. Visual and sound disturbances associated with commercial shellfish operations would be readily apparent in the project area, and would be particularly adverse for visitors looking to enjoy solitude and primitive or unconfined type recreation within wilderness. Onshore and offshore structures and associated debris related to shellfish operations could detract from the views of Drakes Estero, especially during	Overall, alternative C would result in a long-term, moderate, adverse impact on visitor experience and recreation in the project area for an additional 10 years because continued commercial shellfish operations within Drakes Estero (the primary resource area) would be readily apparent and would affect many visitors to the Seashore. The impacts would somewhat inhibit visitor enjoyment of resources for which the Seashore was established. DBOC operations would be generally unchanged under alternative C, for an additional 10 years, despite some modifications proposed to the existing facilities and production levels. The visitor experience and recreational opportunities at the site would be similar to current conditions, except that the existing, unpermitted picnic area would be removed and would be replaced by NPS. Visual and sound disturbances associated	As described above, alternative D would result in a long-term moderate adverse impact on visitor experience and recreation within the project area for an additional 10 years because continued commercial shellfish operations within Drakes Estero (the primary resource area) would be readily apparent and would affect many visitors to the Seashore. The impacts would somewhat inhibit visitor enjoyment of resources for which the Seashore was established. Under alternative D, the visitor experience and recreational opportunities provided by DBOC would be generally similar to current conditions, despite proposed modifications to existing facilities and operations. Similar to alternatives B and C, visual and sound disturbances associated with commercial shellfish operations would be readily apparent in the project area, and this impact

TABLE 2-6. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
cumulative impact would be beneficial, and alternative A would contribute an appreciable increment to the overall beneficial cumulative impacts. With respect to visitor experience and recreation, alternative A is consistent with relevant law and policy because removal of DBOC would not represent the loss of a visitor service. Visitor services are defined by law as public accommodations, facilities, and services that are necessary and appropriate for public use and enjoyment of the Seashore (36 C.F.R. §51.3).	low tide when offshore equipment such as racks and bags are visible. Motorized boats also would continue to operate in Drakes Estero, which detracts from the natural soundscapes of the Seashore. The approximately 2.5 percent of visitors to the Seashore who are interested in experiencing an active commercial shellfish operation may consider alternative B to have a beneficial impact. However, the primary focus of DBOC is the commercial operation for sale of shellfish to restaurants and the wholesale shellfish market outside the park. These are not commercial services being offered to the visiting public to further the public's use and enjoyment of the park. Additionally, as described in alternative A, other opportunities to visit active shellfish operations are provided near the project area. The cumulative impact would be long-term moderate adverse, and alternative B would contribute an appreciable adverse increment to the cumulative impact. With respect to visitor experience and recreation, this alternative does not further the goals of relevant law and policy. Visitor services must be consistent, to the highest practicable degree, with the preservation and conservation of the resources and values of the Seashore (16 U.S.C. §§5951(b), 5952; 36 C.F.R. §51.3) (definition of "visitor service"). DBOC's operations are not consistent with the values for which Drakes Estero was congressionally designated as wilderness.	with commercial shellfish operations would be readily apparent in the project area, and the impact would be particularly adverse for visitors looking to enjoy solitude and primitive, unconfined type recreation within the Seashore. Onshore and offshore structures and associated debris related to shellfish operations could detract from the views of Drakes Estero, especially during low tide when offshore equipment such as racks and bags are visible. Motorized boats also would continue to operate in Drakes Estero, which detracts from the natural soundscapes of the Seashore. The approximately 2.5 percent of visitors to the Seashore who are interested in experiencing an active commercial shellfish operation may consider alternative C to have a beneficial impact. The primary focus of DBOC is the commercial operation for sale of shellfish to restaurants and the wholesale shellfish market outside the park. These are not commercial services being offered to the visiting public to further the public's use and enjoyment of the Seashore. Additionally, as described in alternative A, other opportunities to visit active shellfish operations are provided near the project area. The cumulative impact would be long-term moderate adverse, and alternative C would contribute an appreciable adverse increment to the cumulative impact. With respect to visitor experience and recreation, alternative C does not further the goals of relevant law and policy. Visitor services must be consistent, to the highest practicable degree, with the preservation and conservation of the resources and values of the Seashore (16 U.S.C. §§5951(b), 5952; 36 C.F.R. §51.3) (definition of "visitor service"). DBOC's operations are not consistent with the values for which Drakes Estero was congressionally designated as wilderness.	would be particularly adverse for visitors seeking solitude and a primitive, unconfined type of recreation. These adverse impacts would be greater than under alternatives B and C due to the increased production limits (approximately 40 percent greater than alternative B and 70 percent greater than alternative C), which would likely increase motorized boat activity and the quantity of bags and associated mariculture items within Drakes Estero. Additionally, in the short-term, construction activities associated with alternative D could result in additional adverse impacts on visitor experience and recreation in Drakes Estero. In particular, such activities could further disturb soundscapes and views within Drakes Estero. The approximately 2.5 percent of visitors to the Seashore who are interested in experiencing an active commercial shellfish operation may consider alternative D to have a greater beneficial impact than the other alternatives. However, the primary focus of DBOC is the commercial operation for sale of shellfish to restaurants and the wholesale shellfish market outside the park. These are not commercial services being offered to the visiting public to further the public's use and enjoyment of the park. Additionally, as described in alternative A, other opportunities to visit active shellfish operations are provided near the project area. The cumulative impact on visitor experience and recreation would be long-term moderate adverse, and alternative D would contribute an appreciable adverse increment to the cumulative impact. With respect to visitor experience and recreation, alternative D does not further the goals of relevant law and policy. Visitor services must be consistent, to the highest practicable degree, with the preservation and conservation of the resources and values of the Seashore (16 U.S.C.

TABLE 2-6. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
			§§5951(b), 5952; 36 C.F.R. §51.3) (definition of "visitor service"). DBOC's operations are not consistent with the values for which Drakes Estero was congressionally designated as wilderness.
Socioeconomic Resources			
Overall, alternative A would result in long-term minor adverse impacts on regional socioeconomic resources. DBOC staff and their families would experience a direct, adverse impact under alternative A due to the loss of jobs and housing. However, from a regional perspective, these impacts would be minimal, and would not affect the overall regional economy. DBOC staff comprises 0.01 percent of the Marin County population and 2.9 percent of the Inverness population (U.S. Census Bureau 2005–2009). Jobs lost in connection with the closure of DBOC make up only a small percentage of the total labor force for Marin and Sonoma counties and Inverness, and even with the added job loss, assuming these jobs are not replaced by expanded mariculture operations elsewhere, unemployment rates within Marin County and Inverness CDP would be well below statewide averages, at 7.9 percent and zero percent respectively (U.S. Census Bureau 2005–2009). In addition, the relocated households encompass a small percentage of the total households in the surrounding communities (less than 0.01 percent of the housing in Marin County and 0.4 percent of the homes in Inverness) (U.S. Census Bureau 2005–2009). Therefore, even if all former staff relocates to another community and/or county, the impact on the regional economy would be minimal. Additionally, it is assumed that the Seashore, as a whole, would continue to contribute to the regional economy, at current levels, through local spending (approximately $86 million in 2009) and by supporting jobs (resulted	Overall, alternative B would result in long-term beneficial impacts on socioeconomic resources due to the continued operation of a commercial shellfish facility within Drakes Estero for another 10 years. DBOC would continue to provide employment and housing to DBOC staff and their families. DBOC's contribution to the regional tax base would not change substantially from current levels (taxes are based on production levels), and DBOC would continue to provide a local food source for the region, for an additional 10 years, in quantities similar to current distribution. Additionally, it is assumed that visitor spending at the Seashore would continue at current levels. The cumulative impact on both the regional economy and statewide shellfish production would be long-term beneficial, and alternative B would contribute a noticeable beneficial increment to the cumulative impact.	Overall, alternative C would result in long-term beneficial impacts on socioeconomic resources due to the continued operation of a commercial shellfish facility within Drakes Estero for another 10 years. DBOC would continue to provide employment and housing to DBOC staff and their families. DBOC's contribution to the regional tax base (which is based on production rates) would not change substantially and DBOC would provide a local food source for the region, for an additional 10 years, in quantities similar to current distribution. Additionally, it is assumed that visitor spending at the Seashore would continue at current levels. The cumulative impact on both the regional economy and statewide shellfish production would be long-term beneficial, and alternative C would contribute a noticeable beneficial increment to the cumulative impact.	Overall, alternative D would result in long-term beneficial impacts on regional socioeconomic resources. Option 1 of alternative D would not change the availability of housing for DBOC staff and their families. In contrast, Option 2 of alternative D, which would include the elimination of four on-site housing units, would have an adverse direct impact on DBOC staff and the families that live on site. Under both options, DBOC would maintain its contributions to the regional economy in a manner similar to current conditions, for an additional 10 years, with some exceptions. The potential for increased shellfish production under alternative D could result in an increase in DBOC staff, providing additional jobs for local workers. Although the new facilities at DBOC could minimally increase visitation to shellfish operation, it is assumed that visitor spending associated with the Seashore as a whole would continue at current levels. The relocated households proposed under Option 2 represent a very small percentage of the total households in the surrounding communities (less than 0.01 percent of the housing in Marin County and 0.4 percent of the homes in Inverness) (U.S. Census Bureau 2005–2009). Therefore, even if all DBOC staff that currently reside in on-site housing move to another community and/or county, the impact on the regional economy would be

TABLE 2-6. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
in $13 million in added value to the region in 2009) (NPS 2011d). The cumulative impact on the regional economy would be long-term minor adverse, and alternative A would contribute a noticeable adverse increment to the cumulative impact. Alternative A could result in long-term major adverse impacts to California's shellfish market because DBOC produces 16–34 percent of the oysters harvested in California and 13–28 percent of the total shellfish grown in the state. The cessation of commercial shellfish operations within Drakes Estero would be highly noticeable and could substantially influence the production of shellfish in California. The cumulative impact on the California shellfish market would be long-term minor adverse, and alternative A would contribute a noticeable adverse increment to the cumulative impact.			minimal. Additionally, some short-term jobs would be created once new onshore facilities are approved by the NPS and developed by DBOC. The cumulative impact on the regional economy would be long-term beneficial, and alternative D would contribute a noticeable beneficial increment to the cumulative impact. Both Option 1 and Option 2 of alternative D would result in long-term beneficial impacts to shellfish production in California because DBOC would continue to contribute to the statewide shellfish market for an additional 10 years. Additionally, the increased production limits proposed under this alternative would allow DBOC to cultivate more diverse and larger quantities of shellfish, including the purple-hinged rock scallop and the Olympia oyster, which are not currently produced at DBOC. These increased production limits could result in DBOC increasing their contribution to the California shellfish market. The cumulative impact on statewide shellfish production would be long-term beneficial, and alternative D would contribute a noticeable beneficial increment to the cumulative impact.
NPS Operations			
Overall, alternative A would result in long-term minor adverse impacts on NPS operations because impacts would be slightly detectable but would not hinder the overall ability of the NPS to provide services, manage resources, or operate the Seashore. Additional NPS staff would be required for monitoring/enforcing Drakes Estero during boat closure periods (estimated approximately 1-2 FTE); however, such efforts would not hinder the overall ability of the NPS to provide services, manage resources, or operate the Seashore. The cumulative impact would be long-term minor adverse, and alternative A would	Overall, alternative B would result in long-term minor adverse impacts on NPS operations because this alternative would require establishment of one staff position to coordinate park oversight and enforcement of the existing operations. The NPS would oversee and enforce all aspects of the operation within the permit area. The staff increase under alternative B represents less than 1 percent of the overall FTE employed by the Seashore. These impacts would be slightly detectable but would not hinder the overall ability of the NPS to provide services, manage resources, or operate the Seashore. The	Overall, alternative C would result in a long-term minor adverse impact on NPS operations because this alternative would require establishment of one staff position to coordinate park oversight and enforcement of the existing operations. The NPS would oversee and enforce all aspects of the operation within the permit area. The staff increase under alternative C represents less than 1 percent of the overall FTE employed by the Seashore. These impacts would be slightly detectable but would not hinder the overall ability of the NPS to provide services, manage resources, or operate the Seashore. The	Overall, alternative D would result in long-term minor adverse impacts on NPS operations because this alternative would require establishment of one dedicated staff position to coordinate park oversight and enforcement of the existing operations as well as an additional staff position to coordinate NEPA compliance for the proposed onshore development. The NPS would oversee and enforce all aspects of the operation within the permit area. The staff increase under alternative D represents less than 2 percent of the overall FTE employed by the Seashore. These impacts would be slightly detectable but would not

TABLE 2-6. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
contribute noticeable adverse increment to the overall cumulative impact.	cumulative impact would be long-term minor adverse, and alternative B would contribute a noticeable adverse increment to the overall cumulative impact.	cumulative impact would be long-term minor adverse, and alternative C would contribute a noticeable adverse increment to the overall cumulative impact.	hinder the overall ability of the NPS to provide services, manage resources, or operate the Seashore. The cumulative impact on NPS operations would be long-term minor adverse, and alternative D would contribute a noticeable adverse increment to the cumulative impact.

ENDNOTES

i. Attachment 10b to the letter from Drakes Bay Oyster Company to Point Reyes National Seashore on November 15, 2010 regarding culture beds (November 2007). This attachment is a map depicting the beds within Drakes Estero as of November 2007. The map notes 147 acres of cultivation; however, the measurement contained within this document (142 acres) is based on GIS measurements of a digitized version of this map.

ii. Letter from Drakes Bay Oyster Company to Point Reyes National Seashore on March 15, 2011, regarding Lease M-438-01 lease line.

> "The California Department of Fish and Game (CDFG) informed Drakes Bay Oyster Company (DBOC) that the original Drakes Estero lease boundary lines were drawn on the kitchen table of Charlie Johnson's home. The intent, at the time, was to create a lease area that included all of the existing shellfish beds. The crude mapping method used, without benefit of current, modern-day technology, not surprisingly turned out to be inaccurate and resulted in an error. Many years later, CDFG realized that the rudimentarily-drawn lease lines errantly crossed Bed 6."

iii. Letter from Drakes Bay Oyster Company to California Department of Fish and Game on May 10, 2010, regarding Lease M-438-01—boundary revision.

> "Drakes Bay Oyster Company (DBOC) requests that the revised lease boundary lines be approved so that the historic oyster racks can remain in use as they have for roughly 50 years and the lease line can be moved away from the seal haul out area along the main channel."

iv. Letter from Drakes Bay Oyster Company to California Coastal Commission on January 31, 2008, regarding CCC-07-CD-04 Drakes Bay Oyster Company (section 3.2.10 of Consent Order).

> "Presently, and since Drakes Bay Oyster Company has been in contract with the California Department of Fish and Game under lease numbers M438-01 and M438-02, oyster have only been grown in the 'cultivation area' as defined in provision 3.2.11. No oysters will be grown outside of this cultivation area. The oysters currently being cultivated in Drakes Estero are Pacific oysters (Crassostrea gigas)."

v. Letter from Drakes Bay Oyster Company to California Coastal Commission on January 31, 2008 regarding CCC-07-CD-04 Drakes Bay Oyster Company (section 3.2.10 of Consent Order).

> "Small numbers of European flat oysters (Ostrea edulis) and Kumamoto oysters (Crassostrea sikamea), which were planted by the Johnson's Oyster Company prior to 2005, still exist within the cultivated area."

vi. Letter from Drakes Bay Oyster Company to California Coastal Commission on January 31, 2008 regarding CCC-07-CD-04 Drakes Bay Oyster Company (section 3.2.10 of Consent Order).

> "Small numbers of European flat oysters (Ostrea edulis) and Kumamoto oysters (Crassostrea sikamea), which were planted by the Johnson's Oyster Company prior to 2005, still exist within the cultivated area."

vii. Letter from Drakes Bay Oyster Company to California Coastal Commission on January 31, 2008, regarding CCC-07-CD-04 Drakes Bay Oyster Company (section 3.2.10 of Consent Order).

> "No oyster species other than the Pacific oyster and the European flat oyster will be planted in Drakes Estero by the Drakes Bay Oyster Company without prior approval from the California Department of Fish and Game, the California Fish and Game Commission and the California Coastal Commission. Kumamoto oysters are slow growing, and require approximately double the

EXHIBIT

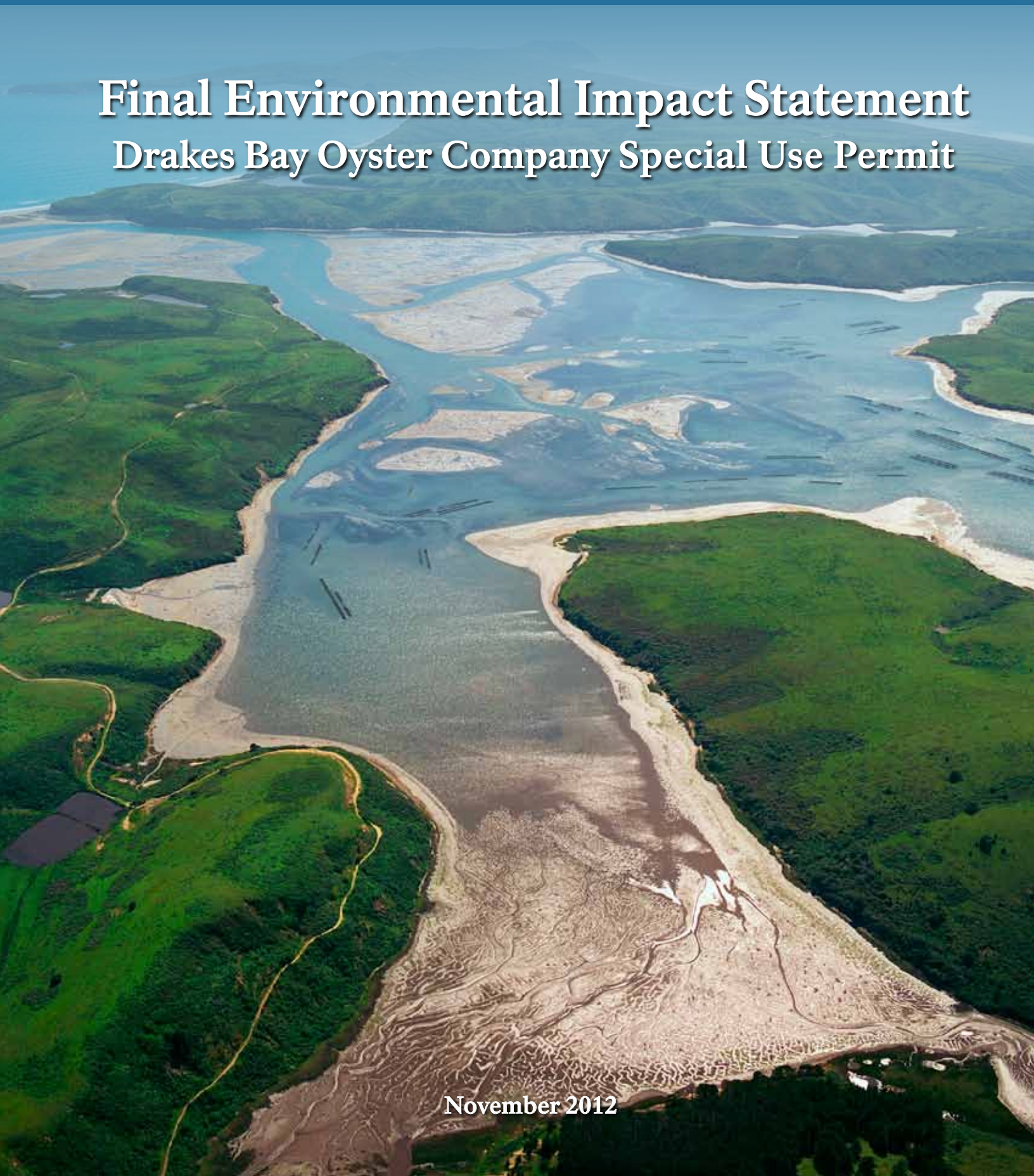
4

National Park Service
U.S. Department of the Interior

Point Reyes National Seashore
California

Final Environmental Impact Statement

Drakes Bay Oyster Company Special Use Permit



November 2012

2

ALTERNATIVES

SUMMARY OF ENVIRONMENTAL CONSEQUENCES

Table 2-6 provides a summary of the environmental consequences related to each alternative. A more detailed explanation of the impacts is presented in “Chapter 4: Environmental Consequences.”

TABLE 2-6. SUMMARY OF ENVIRONMENTAL CONSEQUENCES

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
Wetlands and Other Waters of the U.S.			
Overall, alternative A would result in long-term beneficial impacts on wetlands and other waters of the U.S., in the project area. Structures, processes, and functions of the wetlands and other waters of the U.S. would not be permanently affected as a result of actions from alternative A. However, climate change over the long term may result in sea level rise and the year-round inundation of current intertidal marsh. Vegetated wetlands in Drakes Estero occupy available habitat in the upper bays, and while tidal vegetation has the ability to shift with sea level rise, there is little room for vegetation to shift landward along much of the Drakes Estero shoreline due to the steep sideslopes of the surrounding terrain. The removal of personal property would increase the potential that approximately 3.8 acres of the project area could be converted back to historical wetland habitat at the onshore facilities. The removal of approximately 7 acres of racks and up to 88 acres of bags from nonvegetated sandbars and mudflats in Drakes Estero would allow benthic organisms and eelgrass in Drakes Estero to recolonize the space previously occupied by the commercial shellfish operation infrastructure (see "Impacts on Eelgrass" and "Impacts on Wildlife and Wildlife Habitat: Benthic Fauna" sections). Additionally, erosive forces on sediments caused by tidal water flowing across and around bags would be eliminated, restoring natural hydrodynamics in up to 88 acres of sandbars and mudflats currently available for use by DBOC. The reduction of propeller-caused turbidity in the water column also would result in increased sunlight penetration and therefore increased primary production. The removal of racks, including approximately 4,700 posts (2-inch by 6-inch boards), and the removal of bags from up to	During the life of the 10-year permit, impacts on wetlands and other waters of the U.S. under alternative B would be short-term, minor, and adverse and long-term, moderate, and adverse. In the 138 acres of documented culture beds, bottom bags with anchors and floating lines on up to 84 acres of tidal mudflats/sandbars and 5 miles (7 acres) of racks with floating bags/trays and anchors in subaquatic habitats would continue to occupy estuarine subtidal/intertidal aquatic bed/rooted vascular (E1/2AB3), estuarine intertidal unconsolidated shore-mud (E2US3), and estuarine intertidal unconsolidated shore-cobble-gravel-sand (E2US1/2) systems. Impacts associated with these offshore structures would include intermittent disturbances to mudflats and sandbars from the placement and rotation of bags/trays, lines and anchors, DBOC staff walking across the mudflats/sandbars, and boat propellers and hulls scraping the bottom sediment. The impacts associated with these actions would be slightly greater than alternative C but less than those described under alternative D. Onshore operations may cause a minimal decrease in wetland functions and values if refuse and runoff along the shoreline is not collected and hauled off site. No wetlands or other waters of the U.S. would be permanently converted to uplands under this alternative; however, impacts would be readily apparent and would affect the structure, processes, or functions of the wetlands and other waters of the U.S. for an additional 10 years. Temporary impacts would be associated with dredging under the new dock. Dredging would occur in a 30-by 60-foot area at the dock. Approximately 1,700 to 2,500 2-inch by 6-inch posts would be installed outside harbor seal pupping season during 2013, and approximately 380 to 750 posts would be	During the life of the 10-year permit, impacts on wetlands and other waters of the U.S. under alternative C would be short-term, minor, and adverse and long-term, moderate, and adverse. Actions associated with the placement of bottom bags on up to 84 acres of tidal mudflats/sandbars and 7 acres of subaquatic habitat for the racks would continue to disturb estuarine subtidal/intertidal aquatic bed/rooted vascular (E1/2AB3), estuarine intertidal unconsolidated shore-mud (E2US3), and estuarine intertidal unconsolidated shore-cobble-gravel-sand (E2US1/2) systems. Racks would be replaced on a schedule of 50 racks in year 2013 and 25 racks in year 2014. The replacements would occur over a few months in each year. Floating culture would likely continue, either attached to racks or using concrete anchors adjacent to racks, but at a reduced level compared to existing operations. Therefore, impacts to wetlands and other waters of the U.S. would be slightly reduced compared to alternative B. Of the 138 acres available for use, bottom bags have been placed on a rotational basis in approximately 22 acres of mudflats/sandbars each of the past two years and could be placed in up to 84 acres in Drakes Estero. Other than the physical presence of structures in wetlands and other waters of the U.S., additional impacts would include intermittent disturbances to mudflats/sandbars from the placement and rotation of bags/trays, DBOC staff walking across the mudflats/sandbars, and boat propellers and hulls scraping the bottom sediment. As under alternative B, onshore operations may cause a minimal decrease in wetland functions and values if refuse and runoff along the shoreline is not collected and hauled off site. No wetlands or other waters of the U.S. would be permanently converted to uplands	During the life of the 10-year permit, impacts on wetlands and other waters of the U.S. under alternative D would be short-term, minor, and adverse and long-term, moderate, and adverse. Actions associated with the placement of bottom bags on up to 84 acres of tidal mudflats/sandbars would continue under alternative D. Of the 138 acres available for use, bottom bags have been placed in approximately 22 acres of mudflats/sandbars each of the past two years and could be placed in up to 84 acres in Drakes Estero. Racks would be replaced or repaired, and the use of floating culture would continue adjacent to racks resulting in the use of concrete anchors. In addition to the physical objects placed in wetlands and other waters of the U.S., other impacts would include intermittent disturbances to mudflats/sandbars from the placement and rotation of bags/trays, DBOC staff walking across the mudflats/sandbars, and boat propellers and hulls scraping the mud bottom. Because of the potential for higher production under this alternative (approximately 40 percent greater than alternative B and 70 percent greater than alternative C), the impacts associated with these actions would likely be greater than those under alternatives B and C but are still expected to be at a moderate level. As under alternatives B and C, onshore operations may cause a minimal decrease in wetland functions and values if refuse and runoff along the shoreline is not collected and hauled off site. No wetlands or other waters of the U.S. would be permanently converted to uplands under this alternative; however, impacts would be readily apparent and would affect the structure, processes, and/or functions of the wetlands and other waters of the U.S. in the project area for an additional 10 years. Temporary impacts include dredging under the

TABLE 2-6. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
88 acres of mud flats would result in short-term minor adverse impacts on wetlands and other waters of the U.S. because of temporary bottom disturbances. Standard BMPs would be used during the removal of racks to minimize sediment disturbances and water turbidity. The increase in turbidity would be highly localized and would occur over a two to three month period. Governmental permit authorization from the USACE would not likely be required. The cumulative impact would be long-term and beneficial, and alternative A would contribute an appreciable beneficial increment to the cumulative impact. With respect to wetlands and other waters of the U.S., alternative A would be consistent with relevant law and policy. The natural recovery of wetlands would be consistent with NPS *Management Policies 2006* and DO-77-1, which sets a goal of a "net gain" of wetlands (NPS 2006d, 2002a). USACE would be consulted to determine whether the removal of commercial shellfish infrastructure would require permitting.	installed outside the harbor seal pupping season in 2014. Dredging and rack installation and repair would adversely impact the silted bottom of Drakes Estero. The post installation and rack repair would be conducted over a few months in each year, and impacts from dredging and post installation and rack repair would be expected to last one week (from disturbance) due to a localized increase in suspended sediments. The cumulative impact would be long-term, moderate, and adverse, and alternative B would contribute an appreciable adverse increment to the cumulative impact. Prior to undertaking any new or replacement activities under this alternative, DBOC would be responsible for obtaining all applicable permits, and complying with all permit conditions. By obtaining state and federal permits and complying with their conditions, DBOC would ensure that alternative B is consistent with relevant law and policy related to management of wetlands and other waters of the U.S. DBOC's commercial shellfish operations and any dredge or fill activities in the waters of the U.S. (including Drakes Estero and the pond behind the mobile homes) are subject to permitting by USACE, San Francisco Bay Regional Water Quality Control Board, CCC, and NMFS. DBOC has received written confirmation that shellfish operations fall within USACE jurisdiction and a permit application is required to ensure that DBOC activities comply with USACE regulations. The letter goes on to note that, if an individual permit is required, DBOC will need to "demonstrate to the USACE that any proposed fill is necessary because there are no practicable alternatives, as outlined in the EPA's section 404(b)(l) Guidelines" (USACE 2010). NWP 48, described under "Laws and Policies" in	under this alternative; however, impacts would be readily apparent and would affect the structure, processes, and/or functions of the wetlands and other waters of the U.S. in the project area for an additional 10 years. Temporary impacts would be associated with dredging under the new dock in a 30- by 60-foot area where the old dock is located and the installation/replacement of new rack infrastructure, including between 1,700 and 2,500 2-inch by 6-inch posts in 2012 and 380 to 750 posts in 2014. These actions would adversely impact the silted bottom of Drakes Estero due to a localized increase in sedimentation during the period of construction. The cumulative impact would be long-term, moderate, and adverse, and alternative C would contribute an appreciable adverse increment to the cumulative impact. Prior to undertaking any new or replacement activities under this alternative, DBOC would be responsible for obtaining all applicable permits and complying with all permit conditions. By obtaining the relevant state and federal permits and complying with their conditions, DBOC would ensure that alternative C is consistent with relevant law and policy related to the management of wetlands and other waters of the U.S. DBOC's commercial shellfish operations and any dredge or fill activities in the waters of the U.S. (including Drakes Estero and the pond behind the mobile homes) are subject to permitting by USACE, San Francisco Bay Regional Water Quality Control Board, CCC, and NMFS. For the reasons described under alternative B, dredging the area around the dock and installation of a new dock would not qualify for the NWP 48, and would require a separate USACE permit. USACE has provided written notification to DBOC	new dock (in a 30-by 60-foot area) at the onshore facilities and the installation/replacement of new rack infrastructure including between 1,700 and 2,500 2-inch by 6-inch posts in 2013 and 380 to 750 posts in 2014. DBOC would also place a new 1,050-foot water collection pipeline along the bottom of Drakes Estero using concrete anchors. The construction of a new processing facility would occur on existing uplands. These actions are expected to result in minimal short-term, adverse impacts due to an increase in local turbidity levels. The cumulative impact would be long-term, moderate, and adverse, and alternative D would contribute an appreciable adverse increment to the overall cumulative impact. Prior to undertaking any new or replacement activities under this alternative, DBOC would be responsible for obtaining all applicable permits and complying with all permit conditions. By obtaining relevant state and federal permits and complying with their conditions, DBOC would ensure that alternative D is consistent with relevant law and policy related to management of wetlands and other waters of the U.S. DBOC's commercial shellfish operations and any dredge or fill activities in the waters of the U.S. (including Drakes Estero and the pond behind the mobile homes) are subject to permitting by USACE, San Francisco Bay Regional Water Quality Control Board, CCC, and NMFS. Installation of the intake pipe, installation of a new dock, and dredging the area around the dock would require USACE permit authorization. NWP 48 (Commercial Shellfish Aquaculture Activities) was issued on February 21, 2012 with modifications. This permit authorizes "discharges of dredged or fill material in waters of the United States or structures or work in navigable waters of the United States necessary for commercial shellfish aquaculture

TABLE 2-6. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
	this section, authorizes "discharges of dredged or fill material in waters of the U.S. or structures or work in navigable waters of the U.S. necessary for commercial shellfish aquaculture operations in authorized areas" (33CFR 330[B][48]), provided notification is submitted to the USACE and includes a compensatory mitigation plan, habitat assessment, and assessment of impacts to eelgrass. Dredging the area around the dock and installing a new dock would not qualify for the NWP 48, and would require a separate USACE permit. Lastly, any future actions would be reviewed by NPS under DO-77-1; however, minor water-dependent actions (such as the installation of the new dock) are likely to be excepted from a statement of findings (per section 4.2.1 of NPS Procedural Manual 77-1; NPS 2002a).	that the commercial shellfish activities in waters of the U.S. are regulated by USACE and has advised DBOC to submit an application to ensure that its activities comply with USACE regulations. The letter goes on to note that, if an individual permit is required, DBOC will need to "demonstrate to the Corps that any proposed fill is necessary because there are no practicable alternatives, as outlined in the U.S. Environmental Protection Agency's Section 404(b)(l) Guidelines" (USACE 2010). Lastly, any future actions would be reviewed by the NPS under DO-77-1; however, minor water-dependent actions (such as the installation of the new dock) are likely to be excepted from a statement of findings (per section 4.2.1 of NPS Procedural Manual 77-1; NPS 2002a).	operations in authorized areas" (33CFR 330[B][48]). Dredging the area around the dock and installing a new dock would not qualify for NWP 48, and would require a separate USACE permit. USACE has provided written notification to DBOC that the activities are within USACE jurisdiction and has advised DBOC to submit a permit application to ensure that DBOC activities comply with USACE regulations. The letter goes on to note that, if an individual permit is required, DBOC will need to "demonstrate to the Corps that any proposed fill is necessary because there are no practicable alternatives, as outlined in the U.S. Environmental Protection Agency' Section 404(b)(l) Guidelines" (USACE 2010). Lastly, any future actions would be reviewed by the NPS under DO-77-1; however, minor water-dependent actions (such as the installation of the new dock and placement of the water intake line) are likely to be excepted from a statement of findings (per section 4.2.1 of NPS Procedural Manual 77-1; NPS 2002a).

TABLE 2-6. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
Eelgrass			
Overall, alternative A would result in long-term beneficial impacts on eelgrass habitat due to the termination of DBOC operations in Drakes Estero, the removal of scarring with discontinued use of motorboats in Drakes Estero, and the removal of structures that currently inhibit eelgrass abundance and serve as potential points of colonization and added substrate for the expansion of invasive species (e.g., tunicates) and macroalgae. There may be some highly localized adverse impacts on eelgrass associated with the removal of the commercially grown shellfish because they provide some benefits associated with nutrient cycling and water filtration; however, the overall long-term impacts of alternative A on eelgrass would be beneficial. Alternative A also would result in short-term minor adverse impacts on eelgrass because removing infrastructure related to commercial shellfish operations would result in localized, slightly detectable increases in sedimentation that would last two to three months, reducing the amount of sunlight available for photosynthesis during that time. BMPs would be used to reduce turbidity effects from temporary resuspension of sediment during removal activities, and the overall impact would result in limited change to eelgrass meadows or natural processes. The cumulative impact would be long-term and beneficial, and alternative A would contribute an appreciable beneficial increment to the overall cumulative impact. With respect to eelgrass, alternative A is consistent with relevant law and policy because it would preserve and enhance (1) a special aquatic site, a category of waters of the U.S. afforded additional consideration under the CWA; (2) essential fish habitat (habitat of particular	Overall, alternative B would result in long-term moderate adverse impacts on eelgrass in Drakes Estero due to the operation of DBOC boats for another 10 years and the continued presence of commercial shellfish infrastructure in Drakes Estero. DBOC activities in Drakes Estero under alternative B would allow the continuation of actions associated with commercial shellfish operations that could result in damage to eelgrass habitat, such as propeller scarring (estimated at 8.5 miles based on 2010 aerial photography), potential boat wake erosion, and potential temporary increases in turbidity from sediment resuspension given the area of boat operations in Drakes Estero. It is anticipated that the amount of scarring under alternative B would remain similar to that observed in the 2010 aerial photographs. Maintenance of offshore infrastructure would continue to preclude eelgrass colonization underneath the beds and approximately 7 acres of racks. Further, the continuation of DBOC activities and the presence of structures would increase the potential for colonization and expansion of nonnative species (e.g., colonial tunicates) and macroalgae, the latter of which can compete with seagrasses for important resources like light. These effects would have a long-term moderate adverse impact on eelgrass, which would be readily apparent and would affect eelgrass meadows and natural processes (such as eelgrass colonization and regeneration) through the continued effects of boat disturbance, shellfish infrastructure, and nonnative species. Rack repair and replacement would result in short-term minor adverse impacts on eelgrass because these activities would result in localized, slightly detectable increases in sedimentation, reducing the amount of sunlight available for photosynthesis. Mitigation for impacts to eelgrass	Overall, alternative C would result in long-term moderate adverse impacts on eelgrass in Drakes Estero due to the operation of DBOC boats for an additional 10 years and the continued presence of shellfish infrastructure in Drakes Estero. DBOC activities in Drakes Estero under alternative C would allow the continuation of actions associated with commercial shellfish operations that could result in damage to eelgrass habitat, such as propeller scarring (estimated at 8.5 miles based on 2010 aerial photography), boat wake erosion, and temporary increases in turbidity from sediment resuspension given the area of boat operations in Drakes Estero. It is anticipated that because the level of boat use would remain similar to existing conditions, the amount of scarring under alternative C would remain similar to that observed in the 2010 aerial photographs. Maintenance of offshore infrastructure would continue to preclude eelgrass colonization underneath the beds and approximately 7 acres of racks. Further, the continuation of DBOC activities would increase the potential for colonization and expansion of nonnative species (e.g., colonial tunicates) and macroalgae, as described above. However, DBOC would be responsible for modifying current harvest and distribution practices to minimize potential for *Didemnum* to spread to other areas in the Estero through fragmentation. Rack repair and replacement would result in short-term minor adverse impacts on eelgrass because these activities would result in localized, slightly detectable increases in sedimentation, reducing the amount of sunlight available for photosynthesis. Beneficial ecosystem effects typically attributed to bivalves, such as nutrient cycling and water clarity, would continue. These beneficial impacts would be expected to be	Overall, alternative D would result in long-term moderate adverse impacts on eelgrass in Drakes Estero due to an additional 10 years of DBOC operations. DBOC activities in Drakes Estero under alternative D would allow the continuation of and potential increase in actions associated with commercial shellfish operations that result in damage to eelgrass habitat, such as propeller scarring (estimated at 8.5 miles based on 2010 aerial photography), boat wake erosion, and temporary increases in turbidity from sediment resuspension. It is anticipated that due to the likely increase in boat traffic and area of vessel operations that the potential for scarring may be increased from the levels observed in the 2010 aerial photography. Maintenance of offshore infrastructure would continue to preclude eelgrass colonization underneath the beds and racks. Further, the continuation of DBOC activities would increase the potential for colonization and expansion of nonnative species (e.g., colonial tunicates) and macroalgae, as described above. These adverse impacts would be of greater magnitude than those associated with alternatives B and C due to the likely increase in boat traffic in Drakes Estero associated with the increased level of production (approximately 40 percent greater than alternative B and 70 percent greater than alternative C), and the increased use of bags and racks in shellfish operations, but are still expected to be of a moderate intensity. Impacts would be readily apparent and would affect eelgrass meadows or natural processes (such as eelgrass colonization and regeneration). Rack repair and replacement would result in short-term minor adverse impacts on eelgrass because these activities would result in localized, slightly detectable increases in sedimentation, reducing the amount of sunlight available for

TABLE 2-6. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
concern) under the Groundfish Plan; and (3) native species and natural processes encouraged by NPS *Management Policies 2006*.	would be required pursuant to California policy. Beneficial ecosystem effects typically attributed to bivalves, such as nutrient cycling and water clarity, would continue. These beneficial impacts would be expected to be localized around shellfish operation sites. In general, impacts would be clearly detectable and could appreciably affect individuals or groups of species, communities, or natural processes. The NAS concluded that commercial shellfish operations in Drakes Estero result in impacts on eelgrass from the presence of racks and from boat propeller scars, but that these impacts are somewhat offset by the "rapid regeneration capacity" for eelgrass and that "eelgrass productivity can be locally enhanced by the cultured oysters through a reduction in turbidity and fertilization via nutrient regeneration" (NAS 2009). Although there are some highly localized beneficial impacts on eelgrass associated with commercial shellfish operations, the overall impact of alternative B on eelgrass would be moderate and adverse. The cumulative impact would be long-term, moderate, and adverse, and alternative B would contribute an appreciable adverse increment to the overall cumulative impact. With respect to eelgrass, alternative B would not further the goals set forth in existing law and policy because it would allow ongoing adverse impacts on (1) a special aquatic site, a category of waters of the U.S. afforded additional consideration under the CWA; (2) essential fish habitat (habitat of particular concern) under the Groundfish Plan; and (3) native species and natural processes (including native species management) under NPS *Management Policies 2006*.	localized around structures in Drakes Estero associated with commercial shellfish operations. In general, impacts would be readily apparent and would affect eelgrass meadows or natural processes through the continued effects of boat disturbance, shellfish infrastructure, and nonnative species. The NAS concluded that shellfish operations in Drakes Estero result in impacts on eelgrass from the presence of racks and from boat propeller scars, but that these impacts are somewhat offset by the "rapid regeneration capacity" for eelgrass and "that eelgrass productivity can be locally enhanced by the cultured oysters through a reduction in turbidity and fertilization via nutrient regeneration" (NAS 2009). Although there would be some highly localized beneficial impacts on eelgrass associated with shellfish operations, the impact of alternative C on eelgrass would be moderate and adverse. The cumulative impact would be long-term, moderate, and adverse, and alternative C would contribute an appreciable adverse increment to the cumulative impact. With respect to eelgrass, alternative C would not further the goals set forth in existing law and policy because it would allow ongoing adverse impacts on (1) a special aquatic site, a category of waters of the U.S. afforded additional consideration under the CWA; (2) essential fish habitat (habitat of particular concern) under the Groundfish Plan; and (3) native species and natural processes (including native species management) under NPS *Management Policies 2006*.	photosynthesis. Beneficial ecosystem effects typically attributed to bivalves, such as nutrient cycling and water clarity, would continue. These beneficial impacts would be expected to be localized around shellfish operation-related structures. The cumulative impact would be long-term, moderate, and adverse, and alternative D would contribute an appreciable adverse increment to the overall cumulative impact. With respect to eelgrass, alternative D would not further the goals set forth in existing law and policy because it would allow ongoing adverse impacts on (1) a special aquatic site, a category of waters of the U.S. afforded additional consideration under the CWA; (2) essential fish habitat (habitat of particular concern) under the Groundfish Plan; and (3) native species and natural processes (including native species management) under NPS *Management Policies 2006*.

TABLE 2-6. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
Wildlife and Wildlife Habitat: Benthic Fauna			
Overall, alternative A would result in long-term beneficial impacts on native benthic fauna because the termination of DBOC operations and associated shellfish operations in Drakes Estero would remove shellfish operations from Drakes Estero and, therefore, reduce the risk for the spread of nonnative and invasive species in the future. Alternative A would result in the removal of structures related to shellfish operations in Drakes Estero. Some sediment re-suspension would be anticipated during the removal of the 7 acres of racks; however, any sedimentation resulting from this activity would be short-lived and would be reduced to the extent practicable using BMPs, making the impact undetectable in the benthic community and therefore negligible. Although artificial habitat for certain benthic species would be removed when DBOC's offshore infrastructure is removed, alternative natural habitats (e.g., eelgrass beds) would be expected to replace these structures. Further, the removal of structures under alternative A would remove substrates that support invasive tunicates and other fouling species. Native benthic species would benefit from the removal of offshore infrastructure, particularly from the approximately 88 acres of mudflats and sandbars where bottom bags can be placed (22 acres have been planted with bottom bags each of the past two years). Native benthic species are adapted to the soft-bottom habitat and eelgrass that would likely replace the structures related to shellfish operations once they are removed. The cumulative impact would be beneficial, and alternative A would contribute an appreciable beneficial increment to the beneficial cumulative impact. Alternative A would be consistent with the	Overall, alternative B would result in long-term moderate adverse impacts on native benthic fauna for an additional 10 years due to the continuation of DBOC operations and associated human activities in Drakes Estero, as well as the potential for such activities to introduce and/or facilitate the colonization of nonnative and invasive species. Specifically, the cultivation of nonnative species in Drakes Estero for an additional 10 years at production levels of 600,000 pounds of shellfish annually would result in the continued addition and subsequent harvest of approximately 7.06 million individual shellfish from Drakes Estero on an annual basis. Based on DBOC proof-of-use reports, the acreage of sandbars and mudflats occupied at this level of production would be 50 percent greater than that reported for 2008 in the 2009 NAS report. The effects on the natural benthic community from this would be readily apparent, including the continued use by nonnative species of resources that would otherwise be available to native species of bivalves and other benthic organisms, the introduction of molluscan diseases, and other harmful nonnative species being imported unintentionally (such as the invasive tunicate *Didemnum*). The use of both bottom bags and racks has been implicated in detectable changes in benthic communities. The continued maintenance and use of DBOC offshore infrastructure would result in a slight decrease in the abundance of certain benthic invertebrate species where the racks are currently located, while the continuation of bag cultivation in Drakes Estero would maintain artificial structured habitat for some benthic invertebrates. Rack repair and replacement would result in short-term negligible adverse impacts to benthic fauna, because the effects from these activities would not be	Overall, alternative C would result in long-term moderate adverse impacts on benthic fauna due to an additional 10 years of commercial shellfish operations and associated human activities in Drakes Estero and the potential for such activities to introduce nonnative species and to facilitate the colonization and expansion of invasive species. Although Manila clams would no longer be cultivated under this alternative, the cultivation of Pacific oyster in Drakes Estero would have readily apparent effects on the communities of natural benthic organisms, including increasing the risk of introduction of molluscan diseases and expansion of other nonnative species (such as the invasive tunicate *Didemnum*). As discussed under alternative B, DBOC's use of diploid stock rather than sterile triploid stock increases the risk of naturalization by cultivated species (NAS 2004), although the potential risk under alternative C would be incrementally less than under alternative B. DBOC would be responsible for modifying current harvest and distribution practices to minimize potential for *Didemnum* to spread to other areas in Drakes Estero through fragmentation. The use of both bottom bags and racks has contributed to detectable changes in benthic communities. Because shellfish production limits would be less under alternative C compared to alternatives B and D, the level of impact on benthic fauna would be incrementally less; however, the impacts would still be readily apparent and would affect benthic populations, natural processes, and/or habitat in the project area. Activities related to rack repair and/or replacement would be temporary in nature and subject to BMP requirements; therefore, impacts on benthic fauna from rack repair and/or replacement would be negligible (i.e., not detectable or measurable). Cumulative impacts	Overall, alternative D would result in long-term moderate adverse impacts on native benthic fauna due to an additional 10 years of DBOC operations and associated human activities in Drakes Estero. This would increase the potential for shellfish operations to introduce nonnative species to Drakes Estero and facilitate the colonization and expansion of invasive species. Specifically, the increase in shellfish production levels to 850,000 pounds shucked weight (approximately 10 million individual organisms harvested annually) represents a marked increase over alternatives B and C (approximately 40 percent greater than alternative B and 70 percent greater than alternative C); therefore, it is assumed alternative D would result in the greatest level of impact on native benthic fauna among all alternatives. The cultivation of nonnative species in Drakes Estero would be readily apparent and would affect populations, natural processes, and/or the habitat of natural benthic organisms, including increasing the risk of introduction of molluscan diseases and expansion of other nonnative species (such as the invasive tunicate *Didemnum*). While certain species introduced under alternative D are native to the region (i.e., purple-hinged rock scallops and Olympia oysters), they are not abundant in Drakes Estero in adult form. The use of both bottom bags and racks has contributed to detectable changes in benthic communities. These impacts would continue to be readily apparent, affecting benthic populations, natural processes, and/or habitat in the project area. Activities related to rack repair and/or replacement would be temporary in nature and subject to BMP requirements; therefore, impacts on benthic fauna from rack repair and/or replacement would be negligible. Cumulative impacts would be long term, moderate, and

TABLE 2-6. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
guidance set forth in NPS *Management Policies 2006* for the maintenance and restoration of natural native ecosystems, including the eradication of nonnative species where these species interfere with natural processes and habitat (NPS 2006d). Alternative A would also be consistent with Executive Order 13112 regarding invasive species management. Finally, alternative A would be consistent with the California MLPA, regarding protection of marine life and habitats, marine ecosystems, and marine natural heritage, and improvements to recreational, educational, and study opportunities provided by marine ecosystems subject to minimal human disturbance.	detectable or measurable. Activities such as continued maintenance and harvesting would allow for incidental mortality to continue, as described above, which would have an adverse impact on native bivalves. Further, the continued use of offshore infrastructure would maintain the potential for *Didemnum* expansion, and associated shellfish operations (such as continued infrastructure maintenance, vessel traffic, and harvesting) would pose a risk for further dispersal of this nonnative invasive tunicate via colonial fragments. The potential for increase in overall coverage of *Didemnum* would have an adverse impact on species diversity. Lastly, the nonnative Manila clam and Pacific oyster would continue to be produced under this alternative, increasing their chance for naturalization (NAS 2004, 2009; Grosholz 2011b). DBOC's use of diploid stock rather than sterile triploid stock further increases the risk of naturalization by cultivated species (NAS 2004). These impacts would be readily apparent on the populations, natural processes, and/or habitat of benthic organisms in the project area. The cumulative impact would be long term, moderate, and adverse, and alternative B would contribute an appreciable adverse increment to the overall cumulative impact. The continued introduction and maintenance of nonnative species in Drakes Estero would not be consistent with NPS *Management Policies 2006* in that it would not further the goal of policies, which, in this case, would be to minimize the impacts of human activities on native benthic fauna populations. The shellfish species that could be cultivated under this alternative are nonnative, with the exception of the purple-hinged rock scallop, which is native to the rocky California coast but is not likely to be found in	would be long term, moderate, and adverse, and alternative C would contribute an appreciable adverse increment to the overall cumulative impact. The continued introduction and maintenance of nonnative species in Drakes Estero would not be consistent with NPS *Management Policies 2006* in that it would not further the goal of the policies, which, in this case, would be to minimize the impacts of human activities on native benthic fauna populations. All species that could be cultivated are nonnative with the exception of the purple-hinged rock scallop, which is native to the rocky California coast but is not likely to be found in abundance in Drakes Estero due to the low availability of hard substrate for attachment. Further, alternative C would not be consistent with Executive Order 13112 regarding invasive species management.	adverse, and alternative D would contribute an appreciable adverse increment to the overall cumulative impact. The continued introduction and maintenance of nonnative species in Drakes Estero would not be consistent with NPS *Management Policies 2006* in that it would not further the goal of these policies, which, in this case, would be to minimize the impacts of human activities on native benthic fauna populations. The species that could be cultivated are nonnative with the exception of the purple-hinged rock scallop, which is native to the rocky California coast but is not likely to be found in abundance in Drakes Estero, and the Olympia oyster, which also prefers a hard substrate and is not abundant in adult form in Drakes Estero. Additionally, DBOC's proposal to collect native shellfish larvae in Drakes Estero would not be consistent with the NPS mission, per *Management Policies 2006* (NPS 2006d) or regulations. Further, alternative D would not be consistent with Executive Order 13112 regarding invasive species management.

TABLE 2-6. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
	abundance in Drakes Estero due to the low availability of hard substrate for attachment. Further, alternative B would not be consistent with Executive Order 13112 regarding invasive species management.		
Wildlife and Wildlife Habitat: Fish			
Overall, alternative A would result in long-term beneficial impacts on fish due to the restoration of natural fish habitat, including the restoration of natural eelgrass beds that serve as essential fish habitat for a variety of Pacific groundfish identified in the Groundfish Plan (PFMC 2008). Alternative A would result in a more natural species composition and spatial distribution of fish in the project area, which would likely result in minor adverse impacts on fish due to slightly detectable decreases in the abundance of structure-oriented fish species and their prey. Alternative A would also result in short-term minor adverse impacts on fish species because the disruption of fish during rack removal from Drakes Estero would be slightly detectable and would affect only a small portion of the population and/or habitat in the project area. Combined with the removal of a source of marine debris, changes resulting from this alternative would return the Drakes Estero ecosystem to a more natural state for the overall fish community. The cumulative impact for alternative A would be beneficial and would contribute a noticeable beneficial increment to the overall cumulative impact. Alternative A would be consistent with the guidance set forth in NPS *Management Policies 2006* for the maintenance and restoration of natural native ecosystems, including the restoration of native fish communities (NPS 2006d). Additionally, this alternative would be consistent with the goals set forth in the	Overall, alternative B would result in long-term minor adverse impacts on fish because, as discussed above, impacts on fish would be slightly detectable and would only affect a small segment of the population, their natural processes, and/or their habitat within the project area. While the natural species composition would remain altered due to the presence of nonnatural structured habitat, these alterations would be relatively localized and confined to the 7 acres of racks and would not affect the overall structure of any natural community. Additionally, eelgrass habitat fragmentation caused by 8.5 miles of DBOC motorboat propeller scars and 7 acres of oyster racks would have the potential to create a nonnatural spatial redistribution of fish that could locally influence the functionality of the fish habitat. The continued maintenance of shellfish racks would continue to displace approximately 7 acres of eelgrass habitat, which is essential fish habitat for Pacific groundfish identified in the Groundfish Plan (PFMC 2008). Shellfish rack repair and replacement would have the potential to degrade fish habitat by affecting water quality, but impacts would be short term due to a slightly detectable disruption of fish near racks. Assuming that fish would have a limited exposure to commercial shellfish operation debris pollution, adverse impacts on fish from the ingestion of small fragments or entrapment in PVC debris would be slightly detectable and would affect only a small segment of the population or their natural processes and/or habitat in the project area. The cumulative impact	Overall, alternative C would result in long-term minor adverse impacts on fish because, although the natural species composition would remain altered due to the presence of nonnatural structured habitat, impacts would be relatively localized and confined to the 7 acres of racks and would not affect the overall structure of any natural community. Eelgrass habitat fragmentation caused by 8.5 miles of DBOC motorboat propeller scars and 7 acres of oyster racks would have the potential to create a nonnatural spatial redistribution of fish that could locally influence the functionality of the fish habitat. The maintenance of shellfish racks would continue to displace approximately 7 acres of eelgrass habitat, which is identified as essential fish habitat for Pacific groundfish in the Groundfish Plan (PFMC 2008). The wide-scale repair and maintenance of shellfish racks would continue to have the potential to degrade water quality and affect the fish community, but impacts would be short term, minor, and adverse due to a slightly detectable disruption of fish near racks. Assuming that fish would have a limited exposure to commercial shellfish operation debris pollution, adverse impacts on fish from the ingestion of small fragments or entrapment in PVC debris would be slightly detectable and would affect only a small segment of the fish population or their natural processes and/or habitat in the project area. The cumulative impact would be long term and beneficial, and alternative C would contribute a noticeable adverse increment to the overall beneficial cumulative impact.	Overall, alternative D would result in long-term minor adverse impacts on fish because, although the natural species composition would remain altered due to the presence of nonnatural structured habitat, impacts would be relatively localized and confined to the 7 acres of racks and would not affect the overall structure of any natural community. Eelgrass habitat fragmentation caused by 8.5 miles of DBOC motorboat propeller scars and 7 acres of oyster racks would have the potential to create a nonnatural spatial redistribution of fish that could locally influence the functionality of the fish habitat. The maintenance of shellfish racks would continue to displace approximately 7 acres of eelgrass habitat, which is essential fish habitat for Pacific groundfish in the Groundfish Plan (PFMC 2008). The wide-scale repair and maintenance of shellfish racks would continue to have the potential to degrade water quality and affect the fish community, but impacts would be short term, minor, and adverse due to a slightly detectable disruption of fish near racks. Assuming that fish would have a limited exposure to commercial shellfish operation debris pollution, adverse impacts on fish from the ingestion of small fragments or entrapment in PVC debris would be slightly detectable and would affect only a small segment of the fish population or their natural processes and/or habitat in the project area. The cumulative impact would be long term and beneficial, and alternative D would contribute a noticeable adverse increment to the beneficial cumulative impact.

TABLE 2-6. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
Magnuson-Stevens Fishery Conservation and Management Act because the essential fish habitat (habitat of particular concern) designated in the Pacific Fishery Management Council's Groundfish Plan would be maintained and improved.	would be long term and beneficial, and alternative B would contribute a noticeable adverse increment to the overall beneficial cumulative impact. With regard to fish, the continued operation of DBOC for 10 additional years would not be consistent with relevant law and policy. The continued maintenance of a nonnatural community in Drakes Estero would not further the goal of NPS *Management Policies 2006* to preserve and restore natural communities and ecosystems. The perpetuation of nonnatural habitat would continue to attract fish communities that would not naturally be found in Drakes Estero. Additionally, this alternative would not be consistent with the goals set forth in the Magnuson-Stevens Fishery Conservation and Management Act because damage to eelgrass, which is designated as essential fish habitat (habitat of particular concern) in the Pacific Fishery Management Council's Groundfish Management Plan, would continue.	With regard to fish, the continued operation of DBOC for 10 additional years would not be consistent with relevant law and policy. The continued maintenance of a nonnatural community in Drakes Estero would not further the goal of NPS *Management Policies 2006* to preserve and restore natural communities and ecosystems. The perpetuation of nonnatural habitat would continue to attract fish communities that would not naturally be found in Drakes Estero. Additionally, this alternative would not be consistent with the goals set forth in the Magnuson-Stevens Fishery Conservation and Management Act because damage to eelgrass, which is designated as essential fish habitat (habitat of particular concern) in the Pacific Fishery Management Council's Groundfish Management Plan, would continue.	With regard to fish, the continued operation of DBOC for 10 additional years would not be consistent with relevant law and policy. The continued maintenance of a nonnatural community in Drakes Estero would not further the goal of NPS *Management Policies 2006* to preserve and restore natural communities and ecosystems. The perpetuation of nonnatural habitat would continue to attract fish communities that would not naturally be found in Drakes Estero. Additionally, this alternative would not be consistent with the goals set forth in the Magnuson-Stevens Fishery Conservation and Management Act because damage to eelgrass, which is designated as essential fish habitat (habitat of particular concern) within the Pacific Fishery Management Council's Groundfish Management Plan, would continue.
Wildlife and Wildlife Habitat: Harbor Seals			
Overall, alternative A would result in long-term beneficial impacts on harbor seals due to the termination of DBOC operations and associated human activities in Drakes Estero. Disturbance to harbor seals would be limited to recreational kayakers (outside of the harbor seal pupping season), hikers on the adjacent landscape and shoreline, and aircraft. Further, the termination of shellfish operations in Drakes Estero could benefit the distribution and abundance of the native harbor seal population, and could result in expansion of available habitat for harbor seals. Alternative A could also result in short-term minor adverse impacts associated with rack removal,	Overall, alternative B would result in long-term moderate adverse impacts on harbor seals due to the continuation of commercial shellfish operations in Drakes Estero year-round for another 10 years, and the associated use of motorboats and bottom bag cultivation on sandbars and mudflats adjacent to the designated harbor seal protection areas. This would result in continued human presence and potential disturbance of harbor seals throughout the year. Although the mandatory buffer of 100 yards from hauled-out harbor seals (year-round) and other restrictions during the harbor seal pupping season would be retained as part of the new SUP issued to DBOC, alternative B would result in moderate	Overall, alternative C would result in long-term moderate adverse impacts on harbor seals due to the continuation of commercial shellfish operations in Drakes Estero year-round for another 10 years, and the associated use of motorboats and bottom bag cultivation on sandbars and mudflats adjacent to the designated harbor seal protection areas. This would result in continued human presence and potential disturbance of harbor seals throughout the year. Although the mandatory buffer of 100 yards from hauled-out harbor seals (year-round) and other restrictions during the harbor seal pupping season would be retained in the new SUP issued to DBOC, alternative C would result in moderate	Overall, alternative D would result in long-term moderate adverse impacts on harbor seals due to the continuation of commercial shellfish operations in Drakes Estero year-round for another 10 years, and the associated use of motorboats and bottom bag cultivation on mudflats adjacent to the designated harbor seal protection areas. This would result in continued human presence and potential disturbance of harbor seals throughout the year. Although the mandatory buffer of 100 yards from hauled-out harbor seals (year-round) and other restrictions during the harbor seal pupping season would be retained in the new SUP issued to DBOC, alternative D would result in moderate adverse

TABLE 2-6. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
which would be localized and slightly detectable but would not affect the overall structure of the natural community (i.e., would affect only a small segment of the harbor seal population, natural processes, or habitat in the project area). These activities would be conducted outside the harbor seal pupping season to minimize adverse impacts. The cumulative impact would be long term and beneficial, including the removal of marine debris from Drakes Estero, and alternative A would contribute an appreciable beneficial increment to the overall cumulative impact. With respect to harbor seals, alternative A would be consistent with NPS policy because the removal of DBOC operations from Drakes Estero would remove an unnatural stimulus that is correlated with changes in harbor seal behavior. Similarly, the decrease in potential disturbance of this species would be consistent with MMPA (16 USC 1361 et seq., 1401–1407, 1538, 4107) by avoiding any potential take (as described above) of marine mammals and by maintaining the health and stability of the marine ecosystem.	adverse impacts on harbor seals due to the potential for displacement and continued disturbances that are known to be correlated with harbor seal behavior. These impacts would be readily apparent and would affect populations, natural processes, and/or habitat of harbor seals in the project area. Impacts related to rack repair and replacement activities in 2013 and 2014 would be slightly detectable and therefore short term, minor, and adverse. The potential for the continued introduction of marine debris into the environment would have adverse impacts on harbor seals due to the potential for ingestion. The cumulative impact would be long term, moderate, and adverse, and alternative B would contribute an appreciable adverse increment to the overall cumulative impact. With respect to harbor seals, alternative B would not further the goals of relevant law and policy because continued DBOC operations in Drakes Estero would maintain an unnatural stimulus that has the potential to affect harbor seal behavior. NPS *Management Policies 2006* specifies that NPS managers should strive to preserve and restore "behaviors of native plant and animal populations and the communities and ecosystems in which they occur" (NPS 2006d). Additionally, the continued disturbance to this species would be subject to regulation by the MMPA (16 USC 1361 et seq., 1401–1407, 1538, 4107). The MMPA prohibits, with certain exceptions, the take of marine mammals in U.S. waters and by U.S. citizens, and the importation of marine mammals and marine mammal products into the United States. Under the MMPA, "take" is defined as "harass, hunt, capture, kill or collect, or attempt to harass, hunt, capture, kill or collect." "Harassment" is defined as "any act of pursuit, torment, or annoyance which has the potential to	adverse impacts on harbor seals due to the potential for displacement and continued disturbances that are known to be correlated with harbor seal behavior. These impacts would be readily apparent and would affect populations, natural processes, and/or habitat of harbor seals in the project area. Impacts related to rack repair and replacement activities in 2013 and 2014 would be slightly detectable and therefore short term, minor, and adverse. The potential for the continued introduction of debris from the commercial shellfish operation into the environment would have adverse impacts on harbor seals due to the potential for ingestion. The cumulative impact would be long term, moderate, and adverse, and alternative C would contribute an appreciable adverse increment to the overall cumulative impact. With respect to harbor seals, alternative C would not further the goals of relevant law and policy because continued DBOC operations in Drakes Estero would maintain an unnatural stimulus that is negatively correlated with harbor seal use of haul-out sites. NPS *Management Policies 2006* specify that NPS managers should strive to preserve and restore "behaviors of native plant and animal populations and the communities and ecosystems in which they occur" (NPS 2006d). Additionally, the continued disturbance to this species would be subject to regulation by the MMPA (16 USC 1361 et seq., 1401–1407, 1538, 4107). The MMPA prohibits, with certain exceptions, the take of marine mammals in U.S. waters and by U.S. citizens, and the importation of marine mammals and marine mammal products into the United States. Under the MMPA, "take" is defined as "harass, hunt, capture, kill or collect, or attempt to harass, hunt, capture, kill or collect." "Harassment" is defined as "any act of	impacts on harbor seals due to the potential for displacement and continued disturbances that are known to be correlated with harbor seal behavior. These impacts would be readily apparent and would affect populations, natural processes, and/or habitat of harbor seals in the project area. Impacts related to rack repair and replacement activities in 2013 and 2014 would be slightly detectable and therefore short term, minor, and adverse. The potential for the continued introduction of debris from the commercial shellfish operation into the environment would have adverse impacts on harbor seals due to the potential for ingestion. The adverse impacts associated with alternative D would be of greater magnitude than those associated with alternatives B and C due to the likely increase in boat traffic in Drakes Estero associated with increased production levels (approximately 40 percent greater than alternative B and 70 percent greater than alternative C); however, these impacts are still expected to be moderate in intensity. The cumulative impact would be long term, moderate, and adverse, and alternative D would contribute an appreciable adverse increment to the overall cumulative impact. With respect to harbor seals, alternative D would not further the goals of relevant law and policy because continued DBOC operations in Drakes Estero would maintain an unnatural stimulus that has the potential to affect harbor seal behavior. NPS *Management Policies 2006* specify that NPS managers should strive to preserve and restore "behaviors of native plant and animal populations and the communities and ecosystems in which they occur" (NPS 2006d). Additionally, the continued disturbance to this species would be subject to regulation by the MMPA (16 USC 1361 et seq., 1401–1407, 1538, 4107). The MMPA

TABLE 2-6. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
	injure a marine mammal in the wild, or has the potential to disturb a marine mammal in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering." Under the MMPA, if an activity is defined as harassment under the above criteria, a specific permit called an Incidental Harassment Authorization may be required.	pursuit, torment, or annoyance which has the potential to injure a marine mammal in the wild, or has the potential to disturb a marine mammal in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering." Under the MMPA, if an activity is defined as harassment under the above criteria, a specific permit called an Incidental Harassment Authorization may be required.	prohibits, with certain exceptions, the take of marine mammals in U.S. waters and by U.S. citizens, and the importation of marine mammals and marine mammal products into the United States. Under the MMPA, "take" is defined as "harass, hunt, capture, kill or collect, or attempt to harass, hunt, capture, kill or collect." "Harassment" is defined as "any act of pursuit, torment, or annoyance which has the potential to injure a marine mammal in the wild, or has the potential to disturb a marine mammal in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering." Under the MMPA, if an activity is defined as harassment under the above criteria, a specific permit called an Incidental Harassment Authorization may be required.
Wildlife and Wildlife Habitat: Birds			
Overall, alternative A would result in long-term beneficial impacts on birds due to the removal of the commercial shellfish operation in Drakes Estero and its associated human activities. The removal of DBOC motorboats and related activities would minimize the disruption of biological activities such as foraging and resting for various types of birds that use Drakes Estero. Intertidal areas previously used by DBOC for the bottom bag cultivation in commercial operations would result in up to 88 additional acres of foraging, roosting, and resting habitat for resident and migratory birds. This increase in bird habitat would have greater importance for spring migrating birds, like the Pacific black brant, and natural processes would be enhanced due to the closure of Drakes Estero to all recreational boat access during the seal pupping season (March 1 – June 30). Alternative A may result in adverse impacts on birds from rack removal, due to the removal of food sources and resting habitat	Alternative B would result in long-term moderate adverse impacts on birds and bird habitat due to the continuation of commercial shellfish operations and the associated human activities in Drakes Estero for an additional 10 years. As described above, the impacts of alternative B on birds would result in readily apparent effects on bird populations, natural processes, and habitat within the project area. Because of Drakes Estero's importance to regional shorebird and Pacific black brant conservation, the failure to protect these species from disturbances related to shellfish operations, especially during spring migration, could result in long-term adverse impacts. Shellfish racks would remain as artificial features in Drakes Estero, and could continue to provide food sources and resting structure for some bird species. Assuming that birds would have a limited exposure to commercial shellfish operation-related debris pollution, adverse impacts on birds from the ingestion of small debris	Alternative C would result in long-term moderate adverse impacts on birds and bird habitat due to the continuation of commercial shellfish operations and associated human activities in Drakes Estero for an additional 10 years. The impacts of alternative C on birds would result in readily apparent effects on bird populations, natural processes, and habitat in the project area. Because of Drakes Estero's importance to regional shorebird and Pacific black brant conservation, the failure to protect these species from disturbances related to shellfish operations, especially during spring migration, could result in long-term adverse impacts. Shellfish racks would remain as artificial features in Drakes Estero and could continue to provide food sources and resting structure for some bird species. Assuming that birds would have a limited exposure to commercial shellfish operation-related debris pollution, adverse impacts on birds from the ingestion of small debris fragments would be	Alternative D would result in long-term moderate adverse impacts on birds and bird habitat due to the continuation of commercial shellfish operations and the associated human activities in Drakes Estero for an additional 10 years. The adverse impacts could be incrementally greater under this alternative than under alternatives B and C due to the potential for increased motorboat activities. Because of Drakes Estero's importance to regional shorebird and Pacific black brant conservation, the failure to protect these species from disturbances related to shellfish operations, especially during spring migration, could result in long-term adverse impacts. Shellfish racks would remain as artificial features in Drakes Estero, and could continue to provide food sources and resting structure for some bird species. Assuming that birds would have a limited exposure to commercial shellfish operation-related debris pollution, adverse impacts on birds from the ingestion of small debris fragments

TABLE 2-6. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
associated with the racks. However, these adverse impacts would be expected to be short term and minor because they would affect a small segment of bird populations, their natural processes, and habitat in the project area. Further, the removal of shellfish racks would eliminate unnatural habitat features and restore natural bird habitats in Drakes Estero. Under this alternative, birds would benefit from the removal of all racks and bags, thereby eliminating the potential for ingestion of debris from the commercial shellfish operation. Cumulative impacts would be long term and beneficial, and alternative A would contribute an appreciable beneficial increment to the overall cumulative impacts. Alternative A would be consistent with the goals set forth in both NPS *Management Policies 2006* and the MBTA. NPS *Management Policies 2006* specifies that NPS managers should strive to preserve and restore "behaviors of native plant and animal populations and the communities and ecosystems in which they occur" and "participate in local and regional scientific and planning efforts, identify ranges of populations of native plants and animals, and develop cooperative strategies for maintaining or restoring these populations in the parks" (NPS 2006d). The MBTA (16 USC 703–712, as amended) makes it illegal for people to "take" migratory birds, or their eggs, feathers, or nests. Additionally, alternative A would be consistent with Executive Order 13186 and the NPS MOU with USFWS, which directs agencies to avoid or minimize, to the extent practicable, adverse impacts on migratory bird resources when conducting agency actions (NPS and USFWS 2010). As described in Hickey et al. (2003) and other bird	fragments would be minimal because the impacts would be slightly detectable and would affect only a small segment of the populations, their natural processes, or habitat in the project area. The continued use of motorboats and other noise-producing equipment, as well as the continued maintenance of shellfish growing structures in Drakes Estero, would continue to disrupt biological activities of birds, such as foraging and resting behavior, potentially leading to a reduction in fitness and reproductive success. Noise disturbance from DBOC operations would also alter other biological activities of birds using Drakes Estero, such as predator avoidance. This would include additional short-term minor adverse impacts on birds associated with shellfish rack repairs outside the harbor seal pupping season in 2013 and 2014. The cumulative impact would be long term, moderate, and adverse, and alternative B would contribute an appreciable adverse increment to the overall impact. With respect to birds, alternative B would not be consistent with the goals set forth in the NPS *Management Policies 2006*, which specifies that NPS managers should strive to preserve and restore "behaviors of native plant and animal populations and the communities and ecosystems in which they occur" and "participate in local and regional scientific and planning efforts, identify ranges of populations of native plants and animals, and develop cooperative strategies for maintaining or restoring these populations in the parks" (NPS 2006d). Alternative B would not be consistent with NPS policies to preserve and restore natural abundances, dynamics, distributions, habitats, and behaviors of native bird populations, and to participate in regional protection. Specifically, NPS would not be meeting its responsibilities to the Pacific Flyway	minor because the impacts would be slightly detectable and would affect only a small segment of the populations, their natural processes, or habitat in the project area. The continued use of motorboats and other noise-producing equipment, as well as the continued maintenance of shellfish growing structures, in Drakes Estero would continue to disrupt biological activities of birds, such as foraging and resting behavior, potentially leading to a reduction in fitness and reproductive success. Noise disturbance from DBOC operations would also alter other biological activities of birds using Drakes Estero, such as predator avoidance. This would include additional short-term minor adverse impacts on birds associated with shellfish rack repairs outside the harbor seal pupping season in 2013 and 2014. The cumulative impact would be long term, moderate, and adverse, and alternative C would contribute an appreciable adverse increment to the cumulative impact. With respect to birds, alternative C would not be consistent with the goals set forth in the NPS *Management Policies 2006*, which specifies that NPS managers should strive to preserve and restore "behaviors of native plant and animal populations and the communities and ecosystems in which they occur" and "participate in local and regional scientific and planning efforts, identify ranges of populations of native plants and animals, and develop cooperative strategies for maintaining or restoring these populations in the parks" (NPS 2006d). Alternative C would not be consistent with NPS policies to preserve and restore natural abundances, dynamics, distributions, habitats, and behaviors of native bird populations, and to participate in regional protection. Specifically, NPS would not be meeting its responsibilities to the Pacific Flyway	would be minor because the impacts would be slightly detectable and would affect only a small segment of the populations, their natural processes, or habitat in the project area. The continued use of motorboats and other noise-producing equipment, as well as the continued maintenance of shellfish growing structures, in Drakes Estero would continue to disrupt biological activities of birds, such as foraging and resting behavior, potentially leading to a reduction in fitness and reproductive success. Noise disturbance from DBOC operations would also alter other biological activities of birds using Drakes Estero, such as predator avoidance. This would include additional short-term minor adverse impacts on birds associated with shellfish rack repairs outside the harbor seal pupping season in 2013 and 2014. The impacts of alternative D on birds would result in readily apparent effects on bird populations, natural processes, and habitat within the project area. The cumulative impact would be long-term moderate adverse, and alternative D would contribute an appreciable adverse increment to the overall impact. With respect to birds, alternative D would not be consistent with the goals set forth in the NPS *Management Policies 2006*, which specifies that NPS managers should strive to preserve and restore "behaviors of native plant and animal populations and the communities and ecosystems in which they occur" and "participate in local and regional scientific and planning efforts, identify ranges of populations of native plants and animals, and develop cooperative strategies for maintaining or restoring these populations in the parks" (NPS 2006d). Alternative D would not be consistent with NPS policies to preserve and restore natural abundances, dynamics, distributions, habitats, and behaviors of native bird

TABLE 2-6. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
conservation plans, because of restrictions on human activity (including kayaking and shellfish operations during the March 1 – June 30 seal pupping closure) and further alteration of tidal habitat, alternative A would be expected to support the recommended habitat goal of increasing the extent and quality of tidal flats for shorebirds (Hickey el al. 2003). Alternative A would also be expected to support the primary regional conservation goal of the U.S. Shorebird Conservation Plan to maintain the quality and quantity of habitat at local levels in order to support birds that breed, winter in, and migrate through each region (Brown et al. 2001). As such, the removal of DBOC shellfish operations would be expected to positively influence birds and bird habitat by supporting conservation strategies outlined in bird conservation plans.	Management Plan for Brant or the Southern Pacific Shorebird Conservation Plan. Alternative B would not be consistent with the NPS commitment to Executive Order 13186 which directs agencies to avoid or minimize, to the extent practicable, adverse impacts on migratory bird resources when conducting agency actions. Further, alternative B would also not be consistent with the NPS MOU with USFWS, according to which the NPS must incorporate bird conservation measures into agency actions and planning processes. Actions under alternative B would be consistent with the MBTA (16 USC 703–712, as amended), which makes it illegal to "take" migratory birds or their eggs, feathers, or nests. As described in Hickey et al. (2003) and other bird conservation plans, because of allowing human activity (including kayaking and shellfish operations) and continuing alteration of tidal habitat, alternative B would not be expected to support the recommended habitat goal of increasing the extent and quality of tidal flats for shorebirds (Hickey el al. 2003). Alternative B would not be expected to support the primary regional conservation goal of the U.S. Shorebird Conservation Plan to maintain the quality and quantity of habitat at local levels in order to support birds that breed, winter in, and migrate through each region (Brown et al. 2001). As such, DBOC shellfish operations under alternative B would be expected to adversely affect birds and bird habitat by not adhering to conservation strategies outlined in bird conservation plans.	Management Plan for Brant or the Southern Pacific Shorebird Conservation Plan. Alternative C would not be consistent with the NPS commitment to Executive Order 13186, which directs agencies to avoid or minimize, to the extent practicable, adverse impacts on migratory bird resources when conducting agency actions. Further, alternative C would also not be consistent with the NPS MOU with USFWS, according to which the NPS must incorporate bird conservation measures into agency actions and planning processes. Actions under alternative C would be consistent with the MBTA (16 USC 703–712, as amended), which makes it illegal to "take" migratory birds or their eggs, feathers, or nests. As described in Hickey et al. (2003) and other bird conservation plans, because of allowing human activity (including kayaking and shellfish operations) and continued alteration of tidal habitat, alternative C would not be expected to support the recommended habitat goal of increasing the extent and quality of tidal flats for shorebirds (Hickey el al. 2003). Alternative C would not be expected to support the primary regional conservation goal of the U.S. Shorebird Conservation Plan to maintain the quality and quantity of habitat at local levels in order to support birds that breed, winter in, and migrate through each region (Brown et al. 2001). As such, DBOC shellfish operations under alternative C would be expected to adversely affect birds and bird habitat by not adhering to conservation strategies outlined in bird conservation plans.	populations, and to participate in regional protection. Specifically, NPS would not be meeting its responsibilities to the Pacific Flyway Management Plan for Brant or the Southern Pacific Shorebird Conservation Plan. Alternative D would not be consistent with the NPS commitment to Executive Order 13186, which directs agencies to avoid or minimize, to the extent practicable, adverse impacts on migratory bird resources when conducting agency actions. Further, alternative D would also not be consistent with the NPS MOU with USFWS, according to which the NPS must incorporate bird conservation measures into agency actions and planning processes. Actions under alternative D are consistent with the MBTA (16 U.S.C. 703–712, as amended), which makes it illegal to "take" migratory birds or their eggs, feathers, or nests. As described in Hickey et al. (2003) and other bird conservation plans, by allowing human activity (including kayaking and shellfish operations) and continued alteration of tidal habitat, alternative D would not be expected to support the recommended habitat goal of increasing the extent and quality of tidal flats for shorebirds (Hickey el al. 2003). Alternative D would not be expected to support the primary regional conservation goal of the U.S. Shorebird Conservation Plan to maintain the quality and quantity of habitat at local levels in order to support birds that breed, winter in, and migrate through each region (Brown et al. 2001). As such, DBOC shellfish operations under alternative D would be expected to adversely affect birds and bird habitat by not adhering to conservation strategies outlined in bird conservation plans.

TABLE 2-6. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
Special-Status Species			
Overall, alternative A would result in a long-term beneficial impact on central California Coho salmon critical habitat and the central California steelhead. Alternative A could also result in short-term minor adverse impacts on these federally protected resources during the removal of DBOC facilities and personal property because these activities could disturb individuals or cause temporary sedimentation in designated critical habitat. The short-term impacts related to removal would be highly localized and would last for a period of two to three months. The cumulative impact would be long term and beneficial, and alternative A would contribute a noticeable beneficial increment to the overall cumulative impact. For central California Coho salmon critical habitat and the central California steelhead, alternative A would be consistent with relevant law and policy. Alternative A would forward the goal set forth in NPS *Management Policies 2006*, which states that the NPS will "survey for, protect, and strive to recover all species native to national park service units that are listed under the Endangered Species Act" (NPS 2006d). Alternative A would also fulfill the federal mandate set forth by the ESA to conserve listed species and to ensure that the proposed actions do not jeopardize the continued existence of the listed species.	Overall, alternative B would result in continued long-term minor adverse impacts on central California Coho salmon critical habitat and the central California steelhead for an additional 10 years because impacts from ongoing DBOC operations would be slightly detectable and localized, and could disrupt a small proportion of the individuals and/or designated critical habitat in the project area. Damage to eelgrass habitat and changes in water quality have the potential to cause localized and slightly detectable adverse impacts on Coho salmon critical habitat by reducing the quality of some required habitat elements, such as food and cover requirements. The displacement of eelgrass from propeller scars and oyster racks, as well as the nonnatural changes to habitat condition from oyster racks, could cause a nonnatural redistribution of steelhead prey species that would be expected to have slightly detectable adverse impacts on the natural foraging behavior and habitat of central California steelhead. Alternative B would also result in short-term minor adverse impacts because activities associated with the repair and replacement of racks in 2013 and 2014 could cause localized sedimentation for a few months each year (outside of the seal pupping season) that would cause slightly detectable impacts to federally listed individuals or populations and critical habitat within the project area. The extent of these impacts on water quality would be minimized by using standard sediment control BMPs and an approved coated lumber, which would further decrease the impacts to federally listed individuals, populations, and critical habitat. Assuming that commercial shellfish operation-related debris pollution would be limited in Drakes Estero, adverse impacts to central California Coho salmon critical habitat and the central	Overall, alternative C would result in continued long-term minor adverse impacts on central California Coho salmon critical habitat and the central California steelhead for an additional 10 years because impacts from ongoing DBOC operations would be slightly detectable and localized, and could disrupt individuals and/or designated critical habitat within the project area. Damage to eelgrass habitat and changes in water quality have the potential to cause localized and slightly detectable adverse impacts to Coho salmon critical habitat by reducing the quality of some required habitat elements, such as food and cover requirements. The displacement of eelgrass from propeller scars and oyster racks, as well as the nonnatural changes to habitat condition from oyster racks, could cause a nonnatural redistribution of steelhead prey species that would be expected to have slightly detectable adverse impacts on the natural foraging behavior and habitat of central California steelhead. Alternative C would also result in short-term minor adverse impacts because activities associated with the repair and replacement of racks in 2013 and 2014 could cause localized sedimentation for a period of two to three months per year that would be slightly detectable within the project area. The extent of these impacts on water quality would be minimized by using standard sediment control BMPs and an approved coated lumber, which would further decrease the impacts to federally listed individuals, populations, and critical habitat. Assuming that commercial shellfish operation-related debris pollution is limited in Drakes Estero, adverse impacts to central California Coho salmon critical habitat and the central California steelhead from this debris would not affect the overall structure of any natural community. Cumulative impacts would be long term and	Overall, alternative D would result in long-term minor adverse impacts on designated central California Coho salmon critical habitat and the central California steelhead for an additional 10 years because impacts from ongoing DBOC operations would be slightly detectable and localized (affecting a small proportion of the designated Coho salmon critical habitat and steelhead within the project area). Damage to eelgrass habitat and reduction in water quality have the potential to cause localized and slightly detectable adverse impacts to Coho salmon critical habitat by reducing the quality of some required habitat elements. The displacement of eelgrass from propeller scars and oyster racks, as well as the nonnatural changes to habitat condition from oyster racks, could cause a nonnatural redistribution of steelhead prey species that would be expected to have slightly detectable adverse impacts on the natural foraging behavior and habitat of central California steelhead. Alternative D would also result in short-term minor adverse impacts because activities associated with the repair and replacement of racks could cause localized sedimentation for a few months each year during 2013 and 2014 (outside of the seal pupping season) that would be slightly detectable within the project area. The extent of these impacts on water quality would be minimized by using standard sediment control BMPs and an approved coated lumber, which would further decrease the impacts to federally listed individuals, populations, and critical habitat. Assuming that commercial shellfish operation debris pollution would be limited in Drakes Estero, adverse impacts to central California Coho salmon critical habitat and the central California steelhead from commercial shellfish operation debris would not affect the overall structure of any

TABLE 2-6. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
	California steelhead from this debris would not affect the overall structure of any natural community. Cumulative impacts would be long term and beneficial, and alternative B would contribute a noticeable adverse increment to the overall cumulative impact. For central California Coho salmon critical habitat and the central California steelhead, alternative B would be consistent with relevant law and policy. However, alternative B would not fulfill the goals articulated in NPS *Management Policies 2006* as well as alternative A would. NPS *Management Policies 2006* states that the NPS will "survey for, protect, and strive to recover all species native to national park service units that are listed under the Endangered Species Act" (NPS 2006d). USFWS and NMFS are given the authority under the ESA to determine whether or not actions jeopardize the continued existence of listed species. NPS would complete consultation with USFWS and/or NMFS to ensure that the action would not jeopardize the species' continued existence or result in destruction or adverse modification of critical habitat.	beneficial, and alternative C would contribute a noticeable adverse increment to the overall cumulative impact. For central California Coho salmon critical habitat and the central California steelhead, alternative C would be consistent with relevant law and policy. However, alternative C would not fulfill the goals articulated in NPS *Management Policies 2006* as well as alternative A would. NPS *Management Policies 2006* states that the NPS will "survey for, protect, and strive to recover all species native to national park service units that are listed under the Endangered Species Act" (NPS 2006d). USFWS and NMFS are given the authority under the ESA to determine whether or not actions jeopardize the continued existence of listed species. NPS would complete consultation with USFWS and/or NMFS to ensure that the action would not jeopardize the species' continued existence or result in destruction or adverse modification of critical habitat.	natural community. The cumulative impact would be long term and beneficial, and alternative D would contribute a noticeable adverse increment to the overall cumulative impact. For central California Coho salmon critical habitat and the central California steelhead, alternative D would be consistent with relevant law and policy. However, alternative D would not fulfill the goals articulated in NPS *Management Policies 2006* as well as alternative A would. NPS *Management Policies 2006* states that the NPS will "survey for, protect, and strive to recover all species native to national park service units that are listed under the Endangered Species Act" (NPS 2006d). USFWS and NMFS are given the authority under the ESA to determine whether or not actions jeopardize the continued existence of listed species. NPS would complete consultation with USFWS and/or NMFS to ensure that the action would not jeopardize the species' continued existence or result in destruction or adverse modification of critical habitat.
Coastal Flood Zones			
Overall, alternative A would result in long-term beneficial impacts on the coastal flood zone due to an increase in the flood storage capacity of the onshore area and the removal of structures and materials that have the potential to become dislodged and spread into habitat buffer areas, such as tidal vegetated wetlands and shorelines, during a flood event. The cumulative impact would be long term and beneficial, and alternative A would contribute a noticeable beneficial increment to the cumulative impacts. With respect to coastal flood zones, alternative A	Overall, alternative B would result in long-term minor adverse impacts on the coastal flood zone within the project area for an additional 10 years because continued DBOC operations would take place within the flood zone and would result in continued potential for flood damage to property and/or environmental contamination at the project site. However, these activities, and the associated infrastructure would have a minimal impact on the ability of the coastal flood zone to absorb and store floodwater or storm surge, and would not increase the potential for flood damage. Offshore structures and materials could be damaged	Overall, alternative C would result in long-term minor adverse impacts on the coastal flood zone within the project area for an additional 10 years because continued DBOC operations would take place within the flood zone and would result in continued potential for flood damage to property and/or environmental contamination at the project site. However, these activities and the associated infrastructure would have a minimal impact on the ability of the coastal flood zone to absorb and store floodwater or storm surge, and would not increase the potential for flood damage. Offshore structures and materials could be damaged	Overall, alternative D would result in long-term minor to moderate adverse impacts on the coastal flood zone due to continued shellfish operations. Structures would remain within the flood zone, which could result in an increased potential for flood damage to property or environmental contamination at the project site. Alternative D impacts on the ability of the coastal flood zone to absorb and store floodwaters or storm surges would be readily apparent. The additional infrastructure proposed under this alternative at the onshore facilities could result in the increased potential for flood damage within the project area

TABLE 2-6. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
would be consistent with relevant law and policy. The removal of structures and residences in the flood zone would fulfill the goals set forth by Executive Order 11988, "Floodplain Management" and the subsequent NPS DO 77-2 and *Procedural Manual 77-2: Floodplain Management*, which are intended to properly conserve, manage, and protect flood zones on NPS lands to protect human health and the environment and prevent damage to property in the event of a flood event.	and/or dislodged during a flood event, potentially causing damage to resources within Drakes Estero. Onshore, it is anticipated that the punching shed, shop, processing plant, and stringing shed would be inundated during a 100-year flood event, potentially causing damage to the structures and contents as well as causing local contamination. Shell piles would reduce flood storage capacity in the area, whereas proposed dredging in the vicinity of the dock would offset these impacts to some extent. Wastewater collection tanks would also be inundated during a 100-year flood event, potentially causing untreated wastewater to enter Drakes Estero. The cumulative impact would be long term, minor, and adverse, and alternative B would contribute an appreciable adverse increment to the overall cumulative impact. NPS guidelines require that new actions within the flood zone comply with *Procedural Manual 77-2: Floodplain Management*. This alternative would allow the continued use of nonconforming structures and the replacement of storm damaged structures (dock and washing station) in the coastal flood zone. However, existing structures are grandfathered, and do not have to comply with Procedural Manual 77-2 guidelines. No new structures would be constructed under alternative B. As such, this alternative would comply with existing NPS guidelines and procedures.	and/or dislodged during a flood event, potentially causing damage to resources within Drakes Estero. At the onshore facility, it is anticipated that the punching shed, shop, processing plant, and stringing shed would be inundated during a 100-year flood event, potentially causing damage to the structures and contents as well as causing local contamination. Shell piles would reduce flood storage capacity in the area, whereas proposed dredging in the vicinity of the dock would offset these impacts to some extent. Wastewater collection tanks would also be inundated during a 100-year flood event, potentially causing untreated wastewater to enter Drakes Estero. The cumulative impact would be long term, minor, and adverse, and alternative C would contribute an appreciable adverse increment to the cumulative impact. NPS guidelines require that new actions within the flood zone comply with NPS *Procedural Manual 77-2: Floodplain Management*. This alternative would allow the continued use of nonconforming structures and the replacement of storm damaged structures (dock and washing station) in the coastal flood zone. However, existing structures are grandfathered, and do not have to comply with Procedural Manual 77-2 guidelines. No new structures would be constructed under alternative C. As such, this alternative would comply with existing NPS guidelines and procedures.	compared to other alternatives. However, this could be mitigated by following guidelines set forth in NPS Procedural Manual 77-2, complying with Marin County building codes and FEMA recommendations for structures in the flood zone, and implementing architectural design elements specific to minimizing flood damage. Compared to alternatives B and C, alternative D would result in a slight increase of flood zone impacts from the offshore facilities due to additional racks and bottom bags to accommodate the higher shellfish production level. The construction of new facilities may take place in the flood zone if alternative site locations outside the flood zone but within the SUP area were determined to be infeasible through a subsequent planning process. If located within the flood zone, the new facility would result in continued potential for flood damage to property and/or environmental contamination at the project site. Wastewater collection systems would remain as described in alternatives B and C, and flood zone impacts from other structures (punching shed, stringing shed, dock, washing station, and mobile homes) would be the same as those under alternatives B and C. An increase in production would likely result in additional shell being added to the shell piles located within the flood zone, resulting in a reduction of flood storage capacity. The cumulative impact would be long term minor to moderate, and adverse, and alternative D would contribute an appreciable adverse increment to the cumulative impact. Alternative D would include new onshore development, which is a Class I Action as specified in the NPS *Procedural Manual 77-2: Floodplain Management*. As such, the new structure would require a SOF if alternative site locations outside the coastal flood zone, but within the SUP area, were determined to be infeasible.

TABLE 2-6. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
			The SOF process would ensure that the structure is properly designed and constructed in a way that minimizes impacts to the flood zone. However, any remaining structures are grandfathered, and do not have to comply with these guidelines.
Water Quality			
Drakes Estero is not a highly turbid coastal embayment (NAS 2009), and based on west coast research (Dumbauld, Ruesink, and Rumrill 2009), the beneficial biochemical effects typically attributed to bivalves, such as nutrient cycling and water clarity, are expected to be highly localized in Drakes Estero. This is because the nutrient dynamics in these systems are driven by coastal upwelling and a strong tidal cycle rather than by bioprocesses from shellfish. However, bivalves remove particulates in the water column that may influence eelgrass productivity near beds and racks (see discussion under alternative B). Overall, alternative A would result in long-term beneficial impacts on water quality as a result of reduced non-point-source runoff and the elimination of future disturbances to the Drakes Estero bottom from boats and offshore structures. No releases of toxic levels of copper from wood preservatives would be expected under this alternative. The removal of the racks and bags would cause a short-term minor adverse impact on water quality due to the sediment disturbances from personnel removing the offshore structures. These adverse impacts would be temporary and localized. The cumulative impact would be long term and beneficial, and alternative A would contribute a noticeable beneficial increment to the cumulative impact. With regard to water quality, alternative A would	Overall, this alternative would result in short-term minor adverse as well as long-term minor adverse impacts on water quality for another 10 years. Alternative B would include activities causing intermittent disturbances to water quality that would result in recurring but not long-lasting effects on water quality. These temporary, localized impacts on water quality would be slightly detectable (affecting areas adjacent to culture beds) and would not alter natural water quality conditions in the project area. Cultivated shellfish as filter feeders would remain in Drakes Estero under this alternative, offering localized long-term beneficial impacts on water quality by removing suspended solids, nutrients, and phytoplankton from the water column. Sediment disturbances from offshore shellfish operations (bags/trays, boats, wading DBOC employees) would be locally temporary (pulsing) and would dissipate after each tide cycle, resulting in short-term minor adverse impacts on water quality. Dredging around the floating dock would be expected to create temporary disturbances to the water column from increased turbidity that would be mitigated by a floating silt screen. This alternative would include the replacement of between 1,700 and 2,500 posts in 2013 and between 380 and 750 posts in 2014 which also result in short-term adverse impacts on water quality as the sediment is disturbed. The use of pressure treated lumber to repair existing offshore racks and to construct a new dock is not expected to introduce wood preservatives containing	Overall, alternative C would result in short-term minor adverse as well as long-term minor adverse impacts on water quality for another 10 years. Alternative C would include activities causing intermittent disturbances to water quality that would result in recurring but not long-lasting effects on water quality. These temporary, localized impacts on water quality would be slightly detectable (affecting areas adjacent to culture beds) but would not alter natural water quality conditions in the project area. Alternative C would have recurring but not long-lasting effects on water quality. Cultivated shellfish would remain in Drakes Estero for another 10 years under this alternative, offering localized beneficial water filtering functions from the removal of suspended solids, nutrients, and phytoplankton from the water column. Impacts on water quality would include those described under alternative B. In particular, sediment disturbances from offshore shellfish operations (bags/trays, boats, wading DBOC employees) would be locally temporary (pulsing) and would dissipate after each tide cycle, resulting in short-term minor adverse impacts on water quality. This alternative would include the replacement of between 1,700 and 2,500 posts in year 2013 and between 380 and 750 posts in 2014, which would also result in short-term adverse impacts on water quality due to sediment disturbance. The use of pressure-treated lumber to repair existing offshore racks and to construct a new dock is not expected to introduce wood preservatives containing copper	Overall, alternative D would have short-term minor adverse as well long-term minor adverse impacts on water quality for 10 more years due to offshore and onshore activities associated with commercial shellfish operations in Drakes Estero. Alternative D would not be expected to exceed water quality standards, have long-lasting effects on water quality or impede the goals and objectives of NPS policies on water quality. These temporary, localized impacts on water quality would be slightly detectable (affecting areas adjacent to culture beds) and would not alter natural water quality conditions in the project area. Alternative D would have the highest population of cultivated shellfish occupying Drakes Estero. As a result, the localized water quality benefits from filter feeding bivalves would be greater compared to the other alternatives. The impacts associated with alternative D would be similar to those described under alternatives B and C. However, this alternative may cause slightly higher rates of sediment disturbance in Drakes Estero compared to alternatives B and C due to more frequent boat trips and bag/tray management. The use of pressure-treated lumber to repair existing offshore racks and to construct a new dock is not expected to introduce wood preservatives containing copper into the water because it is assumed that mitigating conditions such as the use of sealants would be employed as part of regulatory permit conditions. Dredging around the floating dock would be expected to create temporary disturbances to the water

TABLE 2-6. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
satisfy the goals and objectives of NPS *Management Policies 2006* (NPS 2006d) and would be consistent with the purpose of the CWA, which is to "restore and maintain the chemical, physical, and biological integrity of the nation's waters."	copper into the water because it is assumed that mitigating conditions such as the use of sealants would be employed as part of regulatory permit conditions. The point-source discharges (washing station and setting tanks) under this alternative would continue, but no new point-source outputs would be introduced. Point-source discharges would include water from the washing station after sediments and fouling organisms are filtered from the sediment basin resulting in beneficial impacts; no chemical contaminants would be discharged into Drakes Estero under this alternative. The amount of non-point-source pollution from runoff associated with the onshore facilities is currently very small (less than 3 acres of impervious surface in a watershed of several square miles). The cumulative impact would be long term, minor, and adverse, and alternative B would contribute a noticeable adverse increment to the cumulative impact. With regard to water quality, alternative B would satisfy the goals and objectives of NPS *Management Policies 2006* (NPS 2006d) and would be consistent with the purpose of the CWA, which is to "restore and maintain the chemical, physical, and biological integrity of the nation's waters."	into the water because it is assumed that mitigating conditions such as the use of sealants would be employed as part of regulatory permit conditions. Dredging around the floating dock would be expected to create temporary disturbances to the water column from increased turbidity, resulting in short-term adverse impacts on water quality. Standard BMPs would be employed during dredging such as the use of a floating silt screen. Point-source discharges would include discharging water from the washing station after marine sediments and fouling organisms are filtered and removed from the new sediment basin; no chemical contaminants would be discharged into Drakes Estero under this alternative. The amount of non-point source pollution from runoff at the onshore facility is currently very small (less than 3 acres of impervious surface in a watershed of several square miles). The cumulative impact would be long term, minor, and adverse, and alternative C would contribute a noticeable adverse increment to the overall cumulative impacts. With regard to water quality, alternative C would satisfy the goals and objectives of NPS *Management Policies 2006* (NPS 2006d) and would be consistent with the purpose of the CWA, which is to "restore and maintain the chemical, physical, and biological integrity of the nation's waters."	column from increased turbidity, resulting in short-term minor adverse impacts on water quality. Standard BMPs, such as the use of a floating silt screen, would be employed during dredging. Onshore discharge into Drakes Estero of pumped water serving the washing station and setting tanks would be filtered using the new sediment basin, resulting in beneficial impacts on water quality. In addition, onshore sediment may enter waters due to the construction of new facilities, although this action could be mitigated through a site-specific construction plan and the use of standard BMPs. Alternative D also would result in short-term minor adverse impacts on water quality during the construction of new DBOC facilities because impacts would include temporary (lasting less than a year), localized impacts that would not have long-lasting effects on water quality. The cumulative impact would be long term, minor, and adverse, and alternative D would contribute a noticeable adverse increment to the cumulative impact. With regard to water quality, alternative D would satisfy the goals and objectives of NPS *Management Policies 2006* (NPS 2006d) and would be consistent with the purpose of the CWA, which is to "restore and maintain the chemical, physical, and biological integrity of the nation's waters."
Soundscapes			
Alternative A would result in long-term beneficial impacts due to the elimination of human-caused noise levels associated with the commercial shellfish operation. The noise associated with the use of heavy machinery and motorized boats to remove DBOC structures and property would be at a level that would cause vocal communication	Overall, alternative B would result in long-term major adverse impacts on the natural soundscape from continued DBOC operations because human-caused noise would be at a level (greater than 41 dBA) that requires elevated vocal effort for communication between people separated by 16 feet, and the natural soundscape would be	Overall, issuance of a 10-year SUP under alternative C would result in long-term major adverse impacts on soundscapes for the additional 10 years of operations, because human-caused noise would be at a level (greater than 41 dBA) that requires elevated vocal effort for communication between people separated by	Overall, issuance of a 10-year SUP under alternative D would result in long-term major adverse impacts on soundscapes for the additional 10 years of operations, because human-caused noise would be at a level (greater than 41 dBA) that requires elevated vocal effort for communication between people separated by

TABLE 2-6. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
to be difficult at a distance of less than 16 feet. However, this impact would interfere with the natural soundscape for less than 5 percent of one year; therefore, alternative A would result in short-term minor adverse impacts on soundscapes. The cumulative impact would be long-term and beneficial, and alternative A would contribute an appreciable beneficial increment to the cumulative impact. With regard to soundscapes, alternative A would further the goals for soundscape management as set forth in relevant law and policy. NPS *Management Policies 2006* and *Director's Order 47: Soundscape Preservation and Noise Management* direct NPS managers to preserve and restore the natural soundscape, where possible.	interfered with more than 10 percent of the time. Additionally, the soundscape would be impacted temporarily by demolition and reconstruction of the dock facilities as well as the repair and replacement of racks in Drakes Estero. The noise associated with the use of heavy machinery and motorized boats to demolish and reconstruct the dock facilities and replace and repair the racks would be at a level that would cause vocal communication to be difficult at a distance of less than 16 feet. However, the impacts associated with these activities would interfere with the natural soundscape for less than 10 percent of each year; therefore, alternative B would result in short-term minor to moderate adverse impacts on soundscapes. The cumulative impact would be long term, major, and adverse, and alternative B would contribute an appreciable adverse increment to the cumulative impact. With regard to soundscapes, alternative B would not further the goals for soundscape management as set forth in relevant law and policy. For instance, NPS *Management Policies 2006* (NPS 2006d) directs park managers to take steps to restore and maintain natural soundscapes, whereas alternative B would include continued impacts on the natural soundscape from DBOC activities. This aspect of Alternative B would also be inconsistent with 36 CFR 2.12 because it would allow DBOC to continue to use several mechanical tools that emit noise far in excess of 60 dBA at 50 feet. In addition to DBOC trucks and processing station equipment, DBOC would continue to operate its motorboats in potential wilderness, where motorboats are not allowed (except for rare use by NPS for administration of the wilderness in accordance with a minimum requirements analysis). Contributions of human-caused noise to the natural soundscape are also	16 feet, and the natural soundscape is interfered with more than 10 percent of the 10-year permit. Additionally, the soundscape would be impacted temporarily by demolition and reconstruction of the dock facilities as well as the repair and replacement of the racks in Drakes Estero. The noise associated with the use of heavy machinery and motorized boats to demolish and reconstruct the dock facilities and replace and repair the racks would be at a level that would cause vocal communication to be difficult at a distance of less than 16 feet. However, the impacts associated with these activities would interfere with the natural soundscape for less than 10 percent of each year; therefore, alternative C would result in short-term minor to moderate adverse impacts on soundscapes. The cumulative impact would be long term, major, and adverse, and alternative C would contribute an appreciable adverse increment to the cumulative impact. With regard to soundscapes, alternative C would not further the goals for soundscape management as set forth in relevant law and policy. For instance, NPS *Management Policies 2006* (NPS 2006d) directs park managers to take steps to restore and maintain natural soundscapes, whereas alternative C would include continued impacts on the natural soundscape from DBOC activities. This aspect of alternative C would also be inconsistent with 36 CFR 2.12 because it would allow DBOC to continue to use several mechanical tools that emit noise substantially in excess of 60 dBA at 50 feet. In addition to the DBOC trucks, pneumatic drill, and oyster tumbler operating onshore, DBOC would continue to operate its motorboats in potential wilderness, where motorboats are not allowed (except for those used occasionally by NPS for administration of the wilderness in accordance	16 feet, and the natural soundscape is interfered with more than 10 percent of the time. Additionally, the soundscape would be impacted temporarily by demolition and reconstruction of onshore facilities as well as the repair and replacement of racks in Drakes Estero. Alternative D would also result in short-term major adverse impacts on the natural soundscape due to the use of heavy machinery during development of additional onshore facilities because human-caused noise would be at a level (greater than 41 dBA) that requires elevated vocal effort for communication between people separated by 16 feet, and the natural soundscape would be interfered with more than 10 percent of the year during which onshore construction would take place. The cumulative impact would be long term, major, and adverse, and alternative D would contribute an appreciable adverse increment to the cumulative impact. With regard to soundscapes, alternative D would not further the goals for soundscape management as set forth in relevant law and policy. For instance, NPS *Management Policies 2006* (NPS 2006d) directs park managers to take steps to restore and maintain natural soundscapes, whereas alternative D would include continued impacts on the natural soundscape from DBOC activities. This aspect of alternative D would also be inconsistent with 36 CFR 2.12 because it would allow DBOC to continue to use several mechanical tools that emit noise substantially in excess of 60 dBA at 50 feet. In addition to the DBOC trucks, pneumatic drill, and oyster tumbler operating onshore, DBOC would continue to operate its motorboats in potential wilderness, where motorboats are not allowed (except for those used occasionally by NPS for administration of the wilderness in accordance

TABLE 2-6. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
	a detriment to wilderness values, as described in more detail under "Impacts on Wilderness."	with a minimum requirements analysis). Contributions of human-caused noise to the natural soundscape are also a detriment to wilderness values, as described in more detail under "Impacts on Wilderness."	with a minimum requirements analysis). Contributions of human-caused noise to the natural soundscape are also a detriment to wilderness values, as described in more detail under "Impacts on Wilderness."
Wilderness			
Overall, alternative A would result in long-term beneficial impacts on wilderness because the cessation of DBOC operations and removal of DBOC facilities would result in a readily apparent, widespread enhancement of wilderness character. The enhancement of wilderness character would be due to the removal of a commercial shellfish operation that detracts from wilderness character, including: ▪ removal of nonnative shellfish cultivation (approximately 585,000 pounds in 2010); this equates to approximately 6 million oysters ▪ removal of human-made infrastructure associated with commercial shellfish operations, including 5 miles (7 acres) of racks and up to 88 acres of bottom bags in up to 142 acres of Drakes Estero ▪ discontinuation of motorboat operations, including use of 2-3 motorboats intermittently 8 hours per day, 6 days per week, covering approximately 740 acres of Drakes Estero; and discontinuation of ongoing eelgrass impacts similar to the 8.5 miles of linear propeller scarring as documented in the "Impacts on Eelgrass" section ▪ discontinuation of noise sources associated with commercial operation affecting wilderness Alternative A would also result in short-term minor	Overall, alternative B would result in long-term major adverse impacts on wilderness for an additional 10 years because it would result in a readily apparent, widespread, adverse impact on wilderness character and would prevent the conversion of Drakes Estero from congressionally designated potential wilderness to congressionally designated wilderness. The elements of DBOC's commercial shellfish operation that detract from wilderness character include ▪ continued cultivation of nonnative shellfish (up to 600,000 pounds per year, otherwise expressed as approximately 7.06 million oysters annually) ▪ continued maintenance of human-made infrastructure associated with commercial shellfish operations, including 5 miles of racks and up to 84 acres of bottom bags in up to 138 acres of Drakes Estero ▪ continued operation of 2-3 motorboats intermittently 8 hours per day, 6 days per week, covering approximately 740 acres of Drakes Estero; ongoing eelgrass impacts similar to the 8.5 miles of linear propeller scarring documented in "Impacts on Eelgrass" ▪ continued generation of noise sources associated with commercial shellfish operations affecting wilderness (emanating from both inside and outside wilderness)	Overall, alternative C would result in long-term major adverse impacts on wilderness for an additional 10 years because it would result in a readily apparent, widespread, adverse impact on wilderness character and would prevent the conversion of Drakes Estero from congressionally designated potential wilderness to congressionally designated wilderness. The elements of DBOC's commercial shellfish operation that detract from wilderness character include ▪ continued cultivation of nonnative shellfish (up to 500,000 pounds per year, otherwise expressed as approximately 5.88 million oysters annually) ▪ continued maintenance of human-made infrastructure associated with commercial shellfish operations, including 7 miles of racks and up to 84 acres of bottom bags in up to 138 acres of Drakes Estero ▪ continued operation of 2-3 motorboats intermittently 8 hours per day, 6 days per week, covering approximately 740 acres of Drakes Estero; ongoing eelgrass impacts similar to the 8.5 miles of linear propeller scarring documented in "Impacts on Eelgrass" ▪ continued generation of noise sources associated with commercial shellfish operations affecting wilderness (emanating from both inside and outside wilderness)	Overall, alternative D would result in long-term major adverse impacts on wilderness for an additional 10 years because it would result in a readily apparent, widespread, adverse impact on wilderness character and would prevent the conversion of Drakes Estero from congressionally designated potential wilderness to congressionally designated wilderness. The elements of DBOC's commercial shellfish operation that detract from wilderness character include ▪ continued cultivation of nonnative shellfish (up to 850,000 pounds per year, otherwise expressed as approximately 10 million oysters annually) ▪ continued maintenance of human-made infrastructure associated with commercial shellfish operations, including 7 miles of racks and up to 84 acres of bottom bags in up to 138 acres of Drakes Estero ▪ continued operation of 2-3 motorboats intermittently 8 hours per day, 6 days per week, covering approximately 740 acres of Drakes Estero; ongoing eelgrass impacts similar to the 8.5 miles of linear propeller scarring documented in "Impacts on Eelgrass" ▪ continued generation of noise sources associated with commercial shellfish operations affecting wilderness (emanating from both inside and outside wilderness)

TABLE 2-6. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
adverse impacts on wilderness because activities related to the removal of racks would detract from offering outstanding opportunities for solitude in highly localized areas of the congressionally designated wilderness in Drakes Estero. The cumulative impact would be long term and beneficial, and alternative A would contribute an appreciable beneficial increment to the cumulative impact. Alternative A would enable NPS to fulfill its obligations under the acts designating wilderness in the Seashore (PL 94-544 and PL 94-567) and NPS *Management Policies 2006* to actively seek to remove from potential wilderness the temporary, nonconforming conditions that preclude wilderness designation (NPS 2006d).	The cumulative impact would be long term, major, and adverse, and alternative B would contribute an appreciable adverse increment to the cumulative impact. Alternative B would prevent NPS from fulfilling its obligations under the acts designating wilderness in the Seashore (PL 94-544 and PL 94-567) and NPS *Management Policies 2006* to actively seek to remove from potential wilderness the temporary, nonconforming conditions that preclude wilderness designation. However, section 124 of PL 111-88 allows the Secretary to issue a permit to DBOC notwithstanding any other law, including the 1976 wilderness legislation. During the term of the new permit, NPS would continue to manage Drakes Estero in accordance with the Wilderness Act and complementary NPS policy to the extent possible. However, motorboats and in-water infrastructure are necessary to support the shellfish operation. The use of motorboats six days per week, the presence of infrastructure related to the existing commercial shellfish operations, and the presence of a commercial enterprise in Drakes Estero would substantially detract from the wilderness characteristics of Drakes Estero for an additional 10 years.	The cumulative impact would be long term, major, and adverse, and alternative C would contribute an appreciable adverse increment to the cumulative impact. Alternative C would prevent NPS from fulfilling its obligations under the acts designating wilderness in Point Reyes National Seashore (PL 94-544 and PL 94-567) and NPS *Management Policies 2006* to actively seek to remove from potential wilderness the temporary, nonconforming conditions that preclude wilderness designation (NPS 2006d). However, section 124 of PL 111-88 allows the Secretary to issue a permit to DBOC notwithstanding any other law, including the 1976 wilderness legislation. During the term of the new permit, NPS would continue to manage Drakes Estero in accordance with the Wilderness Act and complementary NPS policy to the extent possible. However, motorboats and in-water infrastructure are necessary to support the shellfish operation. The use of motorboats six days per week, the presence of infrastructure related to commercial shellfish operations, and the presence of a commercial enterprise in Drakes Estero would substantially detract from the wilderness characteristics of Drakes Estero for an additional 10 years.	The cumulative impact on wilderness would be long term, major, and adverse, and alternative D would contribute an appreciable adverse increment to the cumulative impacts. Alternative D would prevent NPS from fulfilling its obligations under the acts designating wilderness in Point Reyes National Seashore (PL 94-544 and PL 94-567) and NPS *Management Policies 2006* to actively seek to remove from potential wilderness the temporary, nonconforming conditions that preclude wilderness designation (NPS 2006d). However, section 124 of PL 111-88 allows the Secretary to issue a permit to DBOC notwithstanding any other law, including the 1976 wilderness legislation. During the term of the new permit, NPS would continue to manage Drakes Estero in accordance with the Wilderness Act and complementary NPS policy to the extent possible. However, motorboats and in-water infrastructure are necessary to support the shellfish operation. The use of motorboats six days per week, the presence of infrastructure related to commercial shellfish operations, and the presence of a commercial enterprise in Drakes Estero would substantially detract from the wilderness characteristics of Drakes Estero for an additional 10 years. Collection of larvae is considered and analyzed as part of this alternative; however, DBOC's proposal to collect native shellfish larvae in Drakes Estero would not be consistent with the NPS mission, per *Management Policies 2006* (NPS 2006d), or regulations.
Visitor Experience and Recreation			
Overall, alternative A would result in a long-term beneficial or long-term minor adverse impact on visitor experience and recreation, depending on the interests of the visitor. From the perspective of	Overall, alternative B would result in short-term minor adverse impacts as well as long-term minor adverse or long-term beneficial impacts on visitor experience and recreation in the project area for	Overall, alternative C would result in short-term minor adverse and long-term minor adverse or long-term beneficial impact on visitor experience and recreation in the project area for an additional	As described above, alternative D would result in short-term moderate adverse as well as long-term minor adverse or long-term beneficial impacts on visitor experience and recreation in the project

TABLE 2-6. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
visitors seeking a natural park experience in Drakes Estero, alternative A would be beneficial because it would increase these opportunities. Alternative A would maintain visitor access to Drakes Estero, limiting access to recreational boaters only during the annual seal pupping season (March 1 to June 30). As described above, those looking to experience an active commercial shellfish operation would be adversely impacted by alternative A because they would no longer have this opportunity in the Seashore. The latter group of visitors composes up to 2.5 percent of the total visitors to the Seashore. Therefore, at a Seashore-wide scale, the adverse impacts associated with this alternative would affect a small portion of Seashore visitors. The cumulative impact would be long term and beneficial or long term, minor, and adverse, and alternative A would contribute an appreciable beneficial or noticeable adverse increment to the overall cumulative impacts. With respect to visitor experience and recreation, alternative A would be consistent with relevant law and policy because the removal of DBOC would not represent the loss of a visitor service. Visitor services are defined by law as public accommodations, facilities, and services that are necessary and appropriate for public use and enjoyment of the Seashore (36 CFR 51.3).	an additional 10 years, depending on the interests of the visitor. Impacts from continued commercial shellfish operations in Drakes Estero (the primary resource area) would be detectable and would affect a small portion of visitors to the Seashore. In particular, from the perspective of those seeking a natural park experience in Drakes Estero, including those interested in experiencing solitude and a primitive, unconfined type of recreation, the impacts would somewhat inhibit visitor enjoyment of marine wilderness resources. Visual and sound disturbances associated with commercial shellfish operations would continue in the project area and would be particularly adverse for visitors looking to enjoy solitude and a primitive or unconfined type of recreation in wilderness. Onshore and offshore structures and associated debris related to shellfish operations could detract from the views of Drakes Estero, especially during low tide when offshore equipment such as racks and bags are visible. Motorized boats also would continue to operate in Drakes Estero, and DBOC staff would continue to operate radios to listen to music while working, both of which would detract from the natural soundscapes of the Seashore. The smell of motorized boats and routine shellfish processing operations would also detract from the natural environment. Visitors to the Seashore who are interested in experiencing an active commercial shellfish operation would consider alternative B to have a beneficial impact because DBOC would continue to offer experiences such as educational tours and services and fresh oysters to visitors. The cumulative impact would be long term, minor, and adverse or long-term and beneficial, and alternative B would contribute a noticeable adverse or appreciable beneficial increment to the cumulative impact. In the short term, the repair and replacement of 50 racks in 2013 and another 25 racks in 2014, followed by regular	10 years, depending on the interests of the particular visitor. Continued commercial shellfish operations in Drakes Estero (the primary resource area) would be detectable at the Seashore scale and would affect a small portion of visitors to the Seashore. Specifically, from the perspective of those seeking a natural park experience in Drakes Estero, including those looking to experience solitude and a primitive, unconfined type of recreation, the impacts would somewhat inhibit visitor enjoyment of the resources for which the Seashore was established. DBOC operations would be generally unchanged under alternative C for an additional 10 years despite some modifications proposed to the existing facilities and production levels. The visitor experience and recreational opportunities at the site would be similar to current conditions, except that the existing, unpermitted picnic area, located adjacent to the retail area and away from the shoreline, would be removed and would be replaced by NPS with another picnic area nearby. Visual and sound disturbances associated with commercial shellfish operations would be apparent in the project area, although the associated impacts would be mostly limited to those visitors looking to enjoy a natural park experience in Drakes Estero. Onshore and offshore structures and associated debris related to shellfish operations could detract from the views of Drakes Estero, especially during low tide when offshore equipment such as racks and bags are visible. This debris also would continue to wash up on surrounding shorelines and beaches. In addition, motorized boats would continue to operate in Drakes Estero, and DBOC staff would continue to operate radios to listen to music, both of which would detract from the natural soundscapes of the Seashore. The smell of motorized boats and routine shellfish processing operations also would detract from the natural environment. Visitors to the Seashore who	area for an additional 10 years, depending on the interests of the particular visitor. Continued commercial shellfish operations in Drakes Estero (the primary resource area) would be detectable at the Seashore scale and would affect a small portion of visitors to the Seashore. In particular, from the perspective of those seeking a natural park experience, the impacts would somewhat inhibit visitor enjoyment of marine wilderness resources. Similar to alternatives B and C, visual and sound disturbances associated with commercial shellfish operations could be readily apparent in the project area, and this impact would be particularly adverse for visitors seeking a natural park experience in Drakes Estero. Visual and sound disturbances associated with commercial shellfish operations would continue in the project area, and would be particularly adverse for visitors looking to enjoy solitude and a primitive or unconfined type of recreation in wilderness. Onshore and offshore structures and associated debris related to shellfish operations could detract from the views of Drakes Estero, especially during low tide when offshore equipment such as racks and bags are visible. Motorized boats also would continue to operate in Drakes Estero, and DBOC staff would continue to use radios to listen to music, both of which would detract from the natural soundscapes of the Seashore. The smell of motorized boats and routine shellfish processing operations also would detract from the natural environment. These adverse impacts would be greater than under alternatives B and C due to the increased production limits (approximately 40 percent greater than alternative B and 70 percent greater than alternative C), which would likely increase motorized boat activity and the quantity of bags and other items associated with shellfish operations in Drakes Estero. Visitors to the Seashore who are interested in experiencing an

TABLE 2-6. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
	maintenance, would temporarily increase disruptions to the visitor experience in Drakes Estero, both for visitors to the Seashore and DBOC visitors. With respect to visitor experience and recreation, this alternative would not further the goals of relevant law and policy. Visitor services must be consistent, to the highest practicable degree, with the preservation and conservation of the resources and values of the Seashore (16 USC 5951[b]; 16 USC 5952; 36 CFR 51.3 [definition of "visitor service"]). The primary focus of DBOC is the commercial operation for the sale of shellfish to restaurants and the wholesale shellfish market outside the Seashore. These are not commercial services being offered to the visiting public to further the public's use and enjoyment of the Seashore. Therefore, DBOC's operations would not be consistent with the values for which Drakes Estero was congressionally designated as wilderness.	are interested in experiencing an active commercial shellfish operation would consider alternative C to have a beneficial impact because DBOC would continue to offer visitor experiences such as educational tours and services and fresh oysters. The cumulative impact would be long term, minor, and adverse or long-term and beneficial, and alternative C would contribute a noticeable adverse or appreciable beneficial increment to the cumulative impact. In the short term, the repair and replacement of 50 racks in 2013 and another 25 racks in 2014, followed by regular maintenance, would temporarily increase disruptions to the visitor experience in Drakes Estero, both for visitors to the Seashore and DBOC visitors. With respect to visitor experience and recreation, alternative C would not further the goals of relevant law and policy. Visitor services must be consistent, to the highest practicable degree, with the preservation and conservation of the resources and values of the Seashore (16 USC 5951[b]; 16 USC 5952; 36 CFR 51.3 [definition of "visitor service"]). The primary focus of DBOC is the commercial operation for the sale of shellfish to restaurants and the wholesale shellfish market outside the Seashore. These are not commercial services being offered to the visiting public to further the public's use and enjoyment of the Seashore. Therefore, DBOC's operations would not be consistent with the values for which Drakes Estero was congressionally designated as wilderness.	active shellfish operation may consider alternative D to have a greater beneficial impact on visitor experience and recreation than the other alternatives because under this alterative the new facilities would enhance interpretation and educational opportunities at DBOC. However, in the short term, construction activities associated with alternative D could result in adverse impacts on visitor experience and recreation in Drakes Estero for both types of visitors. In particular, such activities could further disturb soundscapes and views in Drakes Estero and could temporarily limit interpretive and educational experiences at DBOC. In addition, the repair and replacement of 50 racks in 2013 and another 25 racks in 2014, followed by regular maintenance, also would temporarily increase disruptions to the visitor experience in Drakes Estero, both for visitors to the Seashore and DBOC visitors. The cumulative impact on visitor experience and recreation would be long term, minor, and adverse or long term and beneficial, and alternative D would contribute a noticeable adverse and appreciable beneficial increment to the cumulative impact. With respect to visitor experience and recreation, alternative D would not further the goals of relevant law and policy. Visitor services must be consistent, to the highest practicable degree, with the preservation and conservation of the resources and values of the Seashore (16 USC 5951[b]; 16 USC 5952; 36 CFR 51.3 [definition of "visitor service"]. The primary focus of DBOC is the commercial operation for the sale of shellfish to restaurants and the wholesale shellfish market outside the Seashore. These are not commercial services being offered to the visiting public to further the public's use and enjoyment of the Seashore. Therefore, DBOC's operations would not be consistent with the values for which Drakes

TABLE 2-6. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
			Estero was congressionally designated as wilderness.
Socioeconomic Resources			
Overall, alternative A would result in long-term minor adverse impacts on local and regional socioeconomic resources. DBOC staff and their families would experience a direct adverse impact under alternative A due to the loss of jobs and housing. However, from a regional socioeconomic perspective, these impacts would be minimal and would not affect the overall regional economy. Based on employment, payroll, and revenue, DBOC accounts for 0.006 percent of the total value added in Marin County. DBOC staff composes 0.01 percent of the Marin County population and 2.1 percent of the Inverness population (U.S. Census Bureau 2010). Jobs lost in connection with the closure of DBOC make up only a small percentage of the total labor force for Marin and Sonoma counties and Inverness CDP, and even with the added job loss, assuming these jobs are not replaced by expanded shellfish operations elsewhere, unemployment rates in Marin County and Inverness CDP would be well below statewide averages of 12.4 percent (U.S. Department of Labor 2011). In addition, the relocated households encompass a small percentage of the total households in the surrounding communities (less than 0.01 percent of the housing in Marin County and 0.5 percent of the homes in Inverness CDP) (U.S. Census Bureau 2010). Therefore, even if all former staff relocates to another community and/or county, the impact on the regional economy would be minimal. Additionally, it is assumed that the Seashore, as a whole, would continue to contribute to the regional economy at current levels through local spending (approximately $85	Overall, alternative B would result in long-term beneficial impacts on local, regional, and statewide socioeconomic resources due to the continued operation of a commercial shellfish facility in Drakes Estero for another 10 years. DBOC would continue to provide employment and housing to DBOC staff and their families. DBOC's contribution to the regional economy would not change substantially from current levels, and DBOC would continue to provide a local food source for the region for an additional 10 years in quantities similar to current distribution. Additionally, it is assumed that visitor spending at the Seashore would continue at current levels. The cumulative impact on both the local and regional economy and statewide shellfish production would be long term and beneficial, and alternative B would contribute a noticeable beneficial increment to the cumulative impact.	Overall, alternative C would result in long-term beneficial impacts on local, regional, and statewide socioeconomic resources due to the continued operation of a commercial shellfish facility in Drakes Estero for another 10 years. DBOC would continue to provide employment and housing to DBOC staff and their families. DBOC's contribution to the regional economy would not change substantially, and DBOC would provide a local food source for the region for an additional 10 years in quantities similar to current distribution. Additionally, it is assumed that visitor spending at the Seashore would continue at current levels. The cumulative impact on both the local and regional economy and statewide shellfish production would be long term and beneficial, and alternative C would contribute a noticeable beneficial increment to the cumulative impact.	Overall, alternative D would result in long-term beneficial impacts on local and regional socioeconomic resources. Option 1 of alternative D would not change the availability of housing for DBOC staff and their families. In contrast, Option 2 of alternative D, which would include the elimination of four on-site housing units, would have an adverse direct impact on DBOC staff and the families that live on site. Under both options, DBOC would maintain its contributions to the regional economy in a manner similar to current conditions for an additional 10 years, with some exceptions; however, due to expanded opportunities for product diversification, these contributions could be slightly increased. The potential for increased shellfish production under alternative D could result in an increase in DBOC staff, providing additional jobs for local workers. Although the new facilities at DBOC could minimally increase visitation to the commercial shellfish operation, it is assumed that visitor spending associated with the Seashore as a whole would continue at current levels. The relocated households proposed under Option 2 represent a very small percentage of the total households in the surrounding communities (less than 0.01 percent of the housing in Marin County and 0.4 percent of the homes in Inverness CDP) (U.S. Census Bureau 2005-2009). Therefore, even if all DBOC staff who currently reside in on-site housing move to another community and/or

TABLE 2-6. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
million in 2010) and by supporting jobs (resulted in $12 million in added value to the region in 2010) (NPS 2011d). The cumulative impact on the local and regional economy would be long term, minor, and adverse, and alternative A would contribute a noticeable adverse increment to the cumulative impact. Alternative A could result in long-term major adverse impacts on California's shellfish market because DBOC produces 16 to 35 percent of the oysters harvested in California and 13 to 33 percent of the total shellfish grown in the state. The cessation of commercial shellfish operations in Drakes Estero would be readily apparent and could substantially influence the production of shellfish in California. The cumulative impact on the California shellfish market would be long term, minor, and adverse, and alternative A would contribute a noticeable adverse increment to the cumulative impact.			county, the impact on the local and regional economy would be minimal. Additionally, some short-term jobs would be created once new onshore facilities are approved by the NPS and developed by DBOC. The cumulative impact on the regional economy would be long term and beneficial, and alternative D would contribute a noticeable beneficial increment to the cumulative impact. Both Option 1 and Option 2 of alternative D would result in long-term beneficial impacts on shellfish production in California because DBOC would continue to contribute to the statewide shellfish market for an additional 10 years. Additionally, the increased production limits proposed under this alternative would allow DBOC to cultivate more diverse and larger quantities of shellfish, including the purple-hinged rock scallop and the Olympia oyster, which are not currently produced at DBOC. These increased production limits could result in DBOC increasing its contribution to the California shellfish market. The cumulative impact on statewide shellfish production would be long term and beneficial, and alternative D would contribute a noticeable beneficial increment to the cumulative impact.
NPS Operations			
Overall, alternative A would result in long-term minor adverse impacts on NPS operations because impacts would be slightly detectable but would not hinder the overall ability of the NPS to provide services, manage resources, or operate the Seashore. While existing NPS staff would be required for monitoring and enforcement during the Drakes Estero boat closure period, the installation of an access gate would increase effectiveness of the closure and further protect harbor seal pupping habitat. Two new part-time	Overall, alternative B would result in long-term minor adverse impacts on NPS operations because this alternative would require the establishment of one FTE position to manage and oversee all aspects of the SUP. In addition, two half-time (seasonal) positions would conduct monitoring and management of invasive species and other resources of concern in the Drakes Estero portion of the Phillip Burton Wilderness. These impacts would be slightly detectable but would not hinder the overall ability of NPS to	Overall, alternative C would result in a long-term minor adverse impact on NPS operations because this alternative would require the establishment of one FTE position to manage and oversee all aspects of the SUP and two part-time (seasonal) staff who would assess, monitor, and manage invasive species and other resources of concern in the Drakes Estero portion of the Phillip Burton Wilderness. These impacts would be slightly detectable but would not hinder the overall ability of NPS to provide services, manage	Overall, alternative D would result in long-term minor adverse impacts on NPS operations because this alternative would require the establishment of one dedicated FTE position to coordinate Seashore oversight and enforcement of all aspects of the SUP. The NPS would oversee and enforce all aspects of the operation in the permit area. Construction on new onshore facilities also would require one 2-year planning position to oversee additional planning and compliance associated with the proposed onshore

TABLE 2-6. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
(seasonal) positions also would be required to assess and monitor invasive species and other resources of concern in the Drakes Estero portion of the Phillip Burton Wilderness. These efforts would not hinder the overall ability of NPS to provide services, manage resources, or operate the Seashore. The cumulative impact would be long term, minor, and adverse, and alternative A would contribute a noticeable adverse increment to the overall cumulative impact.	provide services, manage resources, or operate the Seashore. The cumulative impact would be long term, minor, and adverse, and alternative B would contribute a noticeable adverse increment to the overall cumulative impact.	resources, or operate the Seashore. The cumulative impact would be long term, minor, and adverse, and alternative C would contribute a noticeable adverse increment to the overall cumulative impact.	development evaluated at the conceptual level in alternative D. The staff increase under alternative D also would include two half-time FTEs who would conduct assessment, monitoring, and management of invasive species and other resources of concern in the Drakes Estero portion of the Phillip Burton Wilderness. These impacts would be slightly detectable but would not hinder the overall ability of NPS to provide services, manage resources, or operate the Seashore. The cumulative impact on NPS operations would be long term, minor, and adverse, and alternative D would contribute a noticeable adverse increment to the cumulative impact.

ENDNOTES

i. DBOC 2010c, Attachment 10c to the letter from Drakes Bay Oyster Company to Point Reyes National Seashore on November 15, 2010 regarding culture beds (November 2007). This attachment is a map depicting the beds within Drakes Estero as of November 2007. The map notes 147 acres of cultivation; however, the measurement contained within this document (142 acres) is based on GIS measurements of a digitized version of this map.

ii. DBOC 2011e, Letter from Drakes Bay Oyster Company to Point Reyes National Seashore on March 15, 2011, regarding Lease M-438-01 lease line.

> "The California Department of Fish and Game (CDFG) informed Drakes Bay Oyster Company (DBOC) that the original Drakes Estero lease boundary lines were drawn on the kitchen table of Charlie Johnson's home. The intent, at the time, was to create a lease area that included all of the existing shellfish beds. The crude mapping method used, without benefit of current, modern-day technology, not surprisingly turned out to be inaccurate and resulted in an error. Many years later, CDFG realized that the rudimentarily-drawn lease lines errantly crossed Bed 6."

iii. DBOC 2010e, Attachment 12c to the letter from Drakes Bay Oyster Company to Point Reyes National Seashore on November 15, 2010, regarding oyster rack GPS data. This attachment is a spreadsheet listing rack condition, length, and GPS location.

iv. DBOC 2010h, Letter from Drakes Bay Oyster Company to California Department of Fish and Game on May 10, 2010, regarding Lease M-438-01—boundary revision.

> "Drakes Bay Oyster Company (DBOC) requests that the revised lease boundary lines be approved so that the historic oyster racks can remain in use as they have for roughly 50 years and the lease line can be moved away from the seal haul out area along the main channel."

v. DBOC 2008b, Letter from Drakes Bay Oyster Company to California Coastal Commission on January 31, 2008, regarding CCC-07-CD-04 Drakes Bay Oyster Company (section 3.2.10 of Consent Order).

> "Presently, and since Drakes Bay Oyster Company has been in contract with the California Department of Fish and Game under lease numbers M438-01 and M438-02, oyster have only been grown in the 'cultivation area' as defined in provision 3.2.11. No oysters will be grown outside of this cultivation area. The oysters currently being cultivated in Drakes Estero are Pacific oysters (*Crassostrea gigas*)."

vi. DBOC 2008b, Letter from Drakes Bay Oyster Company to California Coastal Commission on January 31, 2008 regarding CCC-07-CD-04 Drakes Bay Oyster Company (section 3.2.10 of Consent Order).

> "Small numbers of European flat oysters (*Ostrea edulis*) and Kumamoto oysters (*Crassostrea sikamea*), which were planted by the Johnson's Oyster Company prior to 2005, still exist within the cultivated area."

vii. DBOC 2012b, Letter (with attachments) from Drakes Bay Oyster Company to Superintendent, Point Reyes National Seashore on June 5, 2012,regarding DBOC responses to the National Park Service's April 2012 questions.

> "At the time of the referenced DBOC letter to the CCC, DBOC was under the belief that the Johnson's grew European flat oysters in Drakes Estero. Later, DBOC was informed by members of the Johnson family, and by CDFG, that no European flat oysters were produced in Drakes Estero."

EXHIBIT

5

THE SECRETARY OF THE INTERIOR
WASHINGTON

NOV 2 9 2012

To: Director, National Park Service

Through: Principal Deputy Assistant Secretary for Fish and Wildlife and Parks

From: Secretary Ken Salazar

Subject: Point Reyes National Seashore – Drakes Bay Oyster Company

After giving due consideration to the request of the Drakes Bay Oyster Company ("DBOC") to conduct commercial operations within Point Reyes National Seashore in the State of California ("Point Reyes"), I have directed the National Park Service (NPS) to allow the permit to expire at the end of its current term. This decision is based on matters of law and policy including:

1) The explicit terms of the 1972 conveyance from the Johnson Oyster Company to the United States of America. The Johnson Oyster Company received $79,200 for the property. The Johnson Oyster Company also reserved a 40 year right of use and occupancy expiring November 30, 2012. Under these terms and consideration paid, the United States purchased all the fee interest that housed the oyster operation. In 2004, DBOC acquired the business from Johnson Oyster Company, including the remaining term of the reservation of use and occupancy and was explicitly informed "no new permit will be issued" after the 2012 expiration date.

2) The continuation of the DBOC operation would violate the policies of NPS concerning commercial use within a unit of the National Park System and nonconforming uses within potential or designated wilderness, as well as specific wilderness legislation for Point Reyes National Seashore.

The area within Point Reyes that Congress identified as potential wilderness includes a biologically rich estuary known as Drakes Estero, consisting of several tidal inlets tributary to Drakes Bay, on the southern side of the Point Reyes peninsula. Drakes Estero encompasses approximately 2,500 acres of tidelands and submerged lands and is home to one of the largest harbor seal populations in California. In 1999 the eastern portion of Drakes Estero, known as the Estero de Limantour, was converted from potential to designated wilderness, becoming the first (and still the only) marine wilderness on the Pacific coast of the United States outside of Alaska. DBOC's commercial mariculture operation is the only use in the remaining portion of Drakes Estero preventing its conversion from potential to designated wilderness.

Therefore, I direct you to:

1) Notify DBOC that both the Reservation of Use and Occupancy ("RUO") and the Special Use Permit ("SUP") held by DBOC expire according to their terms on November 30, 2012.

2) Allow DBOC a period of 90 days after November 30, 2012, to remove its personal property, including shellfish and racks, from the lands and waters covered by the RUO and SUP in order for DBOC to minimize the loss of its personal property and to meet its obligations to vacate and restore all areas covered by the RUO and SUP. No commercial activities may take place in the waters of Drakes Estero after November 30, 2012. During this 90 day period, DBOC may conduct limited commercial activities onshore to the extent authorized in writing by NPS.

3) Effectuate the conversion of Drakes Estero from potential to designated wilderness.

Because of the importance of sustainable agriculture on the pastoral lands within Point Reyes, I direct that you pursue extending permits for the ranchers within those pastoral lands to 20-year terms.

Finally, I direct you to use all existing legal authorizations at your disposal to help DBOC workers who might be affected by this decision, including assisting with relocation, employment opportunities, and training.

I have taken this matter very seriously. I have personally traveled to Point Reyes National Seashore, visited DBOC, met with a wide variety of interested parties on all sides of this issue, and considered many letters, scientific reports, and other documents. The purpose of this memorandum is to document the reasons for my decision and to direct you to take all necessary and appropriate steps to implement it.

I. Factual and Legal Background

A. Point Reyes National Seashore

Congress authorized the establishment of Point Reyes National Seashore in the Act of September 13, 1962, Pub. L. No. 87-657, 76 Stat. 538, codified as amended at 16 U.S.C. §§ 459c through 459c-7 (2012). The NPS subsequently began to acquire privately owned lands within Point Reyes's legislated boundaries. In 1965 the State of California granted the United States all of the State's right, title, and interest to the tide and submerged lands within the national seashore except for certain mineral rights. On October 20, 1972, the national seashore was formally established by publication of the required notice in the Federal Register. 37 Fed. Reg. 23,366 (1972). The legislation does authorize the Secretary of the Interior to lease agricultural ranch and dairy lands within Point Reyes' pastoral zone in keeping with the historic use of that land. The enabling legislation does not authorize mariculture.

Point Reyes comprises approximately 71,067 acres, of which approximately 65,090 are federally owned. The National Seashore, located about an hour's drive north of San Francisco, currently attracts more than two million visitors per year. In 1976, Congress designated 25,370 acres of land within Point Reyes as wilderness and identified an additional 8,003 acres of land and water as potential wilderness. Act of October 18, 1976, Pub. L. No. 95-544, 90 Stat. 2515, and § 1(k)

of the Act of October 20, 1976, Pub. L. No. 94-567, 90 Stat. 2692, 2693.[1] With respect to the area identified as potential wilderness, Congress provided, "All lands which represent potential wilderness additions, upon publication in the Federal Register of a notice by the Secretary of the Interior that all uses thereon prohibited by the Wilderness Act have ceased, shall thereby be designated wilderness." *Id.* § 3.[2] The House of Representatives committee report accompanying the October 18, 1976, act states, "As is well established, it is the intention that those lands and waters designated as potential wilderness additions will be essentially managed as wilderness, to the extent possible, with efforts to steadily continue to remove all obstacles to the eventual conversion of these lands and waters to wilderness status." H.R. REP. NO. 94-1680 at 3 (1976).[3] Sections 4(c) and 4(d)(5) of the Wilderness Act prohibit commercial activities such as mariculture in designated wilderness. 16 U.S.C. §§ 1133(c) and 1133(d)(5).

B. Commercial Mariculture Operations within Point Reyes National Seashore

Since the 1930s commercial oyster operations have been conducted on lands and waters now included within Point Reyes. In 1958 Charles W. Johnson assumed control over state-issued water-bottom leases in Drakes Estero, and in 1961 he purchased five acres of uplands near the estero and expanded an existing oyster processing facility on it. In 1972 Mr. Johnson, dba Johnson Oyster Company (JOC), conveyed fee title to his property to the United States, reserving in the deed a 40-year right to use and occupy 1.5 acres of land, including the processing facility, "for the purpose of processing and selling wholesale and retail oysters, seafood and complimentary [*sic*; probably should read "complementary"] food items, the interpretation of oyster cultivation to the visiting public, and residential purposes reasonably incident thereto." The reservation indicated that possibility of a new permit after the RUO's expiration but in no way suggested that one would definitely be issued. The United States paid JOC fair market value for the interest the United States acquired, taking into consideration the value of the 40-year reserved use and occupancy. The deed of conveyance refers to the reservation as "a terminable right to use and occupy."

In 2004 DBOC purchased the assets of Johnson's Oyster Company, including the remaining term of the RUO, with full knowledge that the reserved use and occupancy would expire in 2012.

On March 28, 2005, then Superintendent of Point Reyes, Don Neubacher, sent a letter to DBOC "to ensure clarity and avoid any misunderstanding….[r]egarding the 2012 expiration date and the potential wilderness designation, based on our legal review, no new permits will be issued after that date."

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[1] The official map referenced in both pieces of legislation indicated that Congress actually designated approximately 24,200 acres of land as wilderness and identified approximately 8,530 acres of additional land as potential wilderness.

[2] It is worth noting that under the statute's clear terms the conversion from potential to designated wilderness occurs automatically by operation of law when the required Federal Register notice is published.

[3] In 1999 approximately 1,752 acres of uplands, tidelands, and submerged lands within Point Reyes were converted from potential to designated wilderness. 64 Fed. Reg. 63,057 (1999).

The DBOC subsequently applied for, and was issued, an NPS special use permit authorizing it to use approximately 1,050 acres offshore and 3.1 additional acres onshore for its operations. Both authorizations—the RUO and the SUP— expire by their own terms on November 30, 2012.

C. SEC. 124

In 2009 Congress enacted SEC. 124 of the Act of October 30, 2009, Pub. L. No. 111-88, 123 Stat. 2932, which provides in its entirety as follows:

> SEC. 124. Prior to the expiration on November 30, 2012, of the Drakes Bay Oyster Company's Reservation of Use and Occupancy and associated special use permit ("existing authorization") within Drake's (sic) Estero at Point Reyes National Seashore, notwithstanding any other provision of law, the Secretary of the Interior is authorized to issue a special use permit with the same terms and conditions as the existing authorization, except as provided herein, for a period of 10 years from November 30, 2012: Provided, That such extended authorization is subject to annual payments to the United States based on the fair market value of the use of the Federal property for the duration of such renewal. The Secretary shall take into consideration recommendations of the National Academy of Sciences Report pertaining to shellfish mariculture in Point Reyes National Seashore before modifying any terms and conditions of the extended authorization. Nothing in this section shall be construed to have any application to any location other than Point Reyes National Seashore; nor shall anything in this section be cited as precedent for management of any potential wilderness outside the Seashore.

D. Preparation of Draft and Final Environmental Impact Statements

After SEC. 124 was enacted in 2009, the NPS initiated the process of preparing a draft environmental impact statement (DEIS) to analyze the environmental impacts associated with various alternatives related to a decision to permit or not to permit DBOC's continued commercial operations in Drakes Estero and to obtain robust public input into this matter. The NPS issued a scoping notice, hosted public scoping meetings, produced and released to the public a thousand-page-long DEIS, and invited and accepted public comments on the DEIS. As a result of that public process, the NPS prepared a final environmental impact statement (FEIS), which includes responses to public comments on the DEIS. The NPS released the FEIS to the public earlier this month.

SEC. 124 does not require me (or the NPS) to prepare a DEIS or an FEIS or otherwise to comply with the National Environmental Policy Act of 1969 (NEPA) or any other law. The "notwithstanding any other provision of law" language in SEC. 124 expressly exempts my decision from any substantive or procedural legal requirements. Nothing in the DEIS or FEIS that the NPS released to the public suggests otherwise. As the FEIS explained:

> Although the Secretary's authority under Section 124 is 'notwithstanding any other provision of law,' the Department has determined that it is helpful to

> generally follow the procedures of NEPA. The EIS provides decision-makers with sufficient information on potential environmental impacts, within the context of law and policy, to make an informed decision on whether or not to issue a new SUP. In addition, the EIS process provides the public with an opportunity to provide input to the decision-makers on the topics covered by this document.

FEIS at 2. The FEIS also stated, "The NEPA process will be used to inform the decision of whether a new [special use permit] should be issued to DBOC for a period of 10 years." *Id.* at 5. The NEPA process, like SEC. 124 itself, does not dictate a result or constrain my discretion in this matter.

II. Discussion

I understand and appreciate that the scientific methodology employed by the NPS in preparing the DEIS and FEIS and the scientific conclusions contained in those documents have generated much controversy and have been the subject of several reports. Collectively, those reports indicate that there is a level of debate with respect to the scientific analyses of the impacts of DBOC's commercial mariculture operations on the natural environment within Drakes Estero.

Although there is scientific uncertainty and a lack of consensus in the record regarding the precise nature and scope of the impacts that DBOC's operations have on wilderness resources, visitor experience and recreation, socioeconomic resources and NPS operations, the DEIS and FEIS support the proposition that the removal of DBOC's commercial operations in the estero would result in long-term beneficial impacts to the estero's natural environment.[4] Thus while the DEIS and FEIS do not resolve all the uncertainty surrounding the impacts of the mariculture operations on Drakes Estero, and while they are not material to the legal and policy factors that provide the central basis for my decision, they have informed me with respect to the complexities, subtleties, and uncertainties of this matter and have been helpful to me in making my decision.[5]

SEC. 124 grants me the authority and discretion to issue DBOC a new special use permit, but it does not direct me to do so. SEC. 124 also does not prescribe the factors on which I must base my decision. In addition to considering the documents described above, I gave great weight to matters of public policy, particularly the public policy inherent in the 1976 act of Congress that identified Drakes Estero as potential wilderness.

In enacting that provision, Congress clearly expressed its view that, but for the nonconforming uses, the estero possessed wilderness characteristics and was worthy of wilderness designation.

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[4] While NEPA review was not legally required, NEPA as a general matter does not require absolute scientific certainty or the full resolution of any uncertainty regarding the impacts of the federal action. *See League of Wilderness Defenders-Blue Mountain Biodiversity Project v. U.S. Forest Service*, 689 F.3d 1060 (9th Cir. 2012) and *Lands Council v. McNair, 537F.3d 981,988 (9th Cir 2008) (en banc)* (overruled in part on other grounds by *Winter v. Natural Res. Def. Council,, 555 U.S. 7 (2008).*

[5] In a letter to me dated November 27, 2012, counsel for DBOC has asserted that the FEIS is "fatally flawed" and I should avoid any consideration "of the FEIS in its entirety." My decision today is based on the incompatibility of commercial activities in wilderness and not on the data that was asserted to be flawed.

Congress also clearly expressed its intention that the estero become designated wilderness by operation of law when "all uses thereon prohibited by the Wilderness Act have ceased." The DBOC's commercial operations currently are the only use of the estero prohibited by the Wilderness Act. Therefore, DBOC's commercial operations are the only use preventing the conversion of Drakes Estero to designated wilderness. Since the RUO and SUP allowing DBOC's commercial operations in the estero will expire by their own terms, after November 30, 2012, DBOC no longer will have legal authorization to conduct those operations, and approximately 1,363 acres can become designated wilderness.

Although SEC. 124 grants me the authority to issue a new SUP and provides that such a decision would not be considered to establish any national precedent with respect to wilderness, it in no way overrides the intent of Congress as expressed in the 1976 act to establish wilderness at the estero. With that in mind, my decision effectuates that Congressional intent.

III. Implementation

Based on the foregoing, I hereby direct that you expeditiously take all necessary and appropriate steps to implement my decision. My decision means that, after November 30, 2012, DBOC no longer will be legally authorized to conduct commercial operations within Point Reyes. Accordingly, I direct that the NPS publish in the Federal Register the notice announcing the conversion of Drakes Estero from potential to designated wilderness. I direct that the NPS allow DBOC a period of 90 days after November 30, 2012, to remove its personal property, including shellfish and racks, from the lands and waters covered by the RUO and SUP in order for DBOC to minimize the loss of its personal property and to meet its obligations to vacate and restore all areas covered by the RUO and SUP. No commercial activities may take place in the waters of Drakes Estero after November 30, 2012. During this 90 day period, DBOC may conduct limited commercial activities onshore to the extent authorized in writing by NPS.

I am aware that allowing DBOC's existing authorizations to expire by their terms will result in dislocation of DBOC's business and may result in the loss of jobs for the approximately 30 people currently employed by DBOC. I therefore direct that you use existing legal authorities to ameliorate to the extent possible the economic and other impacts on DBOC's employees, including providing information and other assistance to those employees to the full extent authorized under the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, codified as amended at 42 U.S.C. §§ 4601-4655. Additionally, I direct you to develop a plan for training and to work with the local community to identify job opportunities for DBOC employees..

Finally, the Department of the Interior and the NPS support the continued presence of dairy and beef ranching operations in Point Reyes' pastoral zone. I recognize that ranching has a long and important history on the Point Reyes peninsula, which began after centuries old Coast Miwok traditions were replaced by Spanish mission culture at the beginning of the 19th century. Long-term preservation of ranching was a central concern of local interests and members of Congress as they considered legislation to establish the Point Reyes National Seashore in the late 1950s and early 1960s. In establishing the pastoral zone (Point Reyes enabling legislation PL 87-657, Section 4) Congress limited the Government's power of eminent domain and recognized "the

value to the Government and the public of continuation of ranching activities, as presently practiced, in preserving the beauty of the area." (House Report No. 1628 at pages 2503-04). Congress amended the Point Reyes enabling legislation in 1978 to authorize the NPS to lease agricultural property that had been used for ranching or dairying purposes. (Section 318, Public Law 95-625, 92 Stat. 3487, 1978). The House Report explained that the "use of agricultural lease-backs is encouraged to maintain this compatible activity, and the Secretary is encouraged to utilize this authority to the fullest extent possible." (House Report 95-1165, page 344).

Accordingly, I direct that the Superintendent work with the operators of the cattle and dairy ranches within the pastoral zone to reaffirm my intention that, consistent with applicable laws and planning processes, recognition of the role of ranching be maintained and to pursue extending permits to 20-year terms for the dairy and cattle ranches within that pastoral zone. In addition, the values of multi-generational ranching and farming at Point Reyes should be fully considered in future planning efforts. These working ranches are a vibrant and compatible part of Point Reyes National Seashore, and both now and in the future represent an important contribution to the Point Reyes' superlative natural and cultural resources.

IV. Conclusion

My decision honors Congress's direction to "steadily continue to remove all obstacles to the eventual conversion of these lands and waters to wilderness status" and thus ensures that these precious resources are preserved for the enjoyment of future generations of the American public, for whom Point Reyes National Seashore was created. As President Lyndon Johnson said on signing the Wilderness Act in 1964, "If future generations are to remember us with gratitude rather than contempt, we must leave them something more than the miracles of technology. We must leave them a glimpse of the world as it was in the beginning, not just after we got through with it."

cc: Regional Director, Pacific West Region, NPS
Superintendent, Point Reyes National Seashore

EXHIBIT

6

U.S. evicting Point Reyes oyster farmer

Peter Fimrite and Justin Berton
Updated 11:23 pm, Thursday, November 29, 2012

VIEW: LARGER | SMALLER

U.S. Interior Secretary Ken Salazar told a popular oyster farm at Drakes Bay on Thursday to pack up and leave, effectively ending more than a century of shellfish harvesting on the picturesque inlet where Europeans first set foot in California.

Salazar's decision ends a long-running dispute between the Drakes Bay Oyster Co. and the National Park Service over the estuary at Point Reyes National Seashore where Sir Francis Drake landed more than 400 years ago.

The National Park Service intends to turn the 2,700-acre area into the first federally designated marine wilderness area on the West Coast, giving the estuary special protected status as an unaltered ecological region. To do that, Salazar rejected the oyster company's proposal to extend its 40-year lease to harvest shellfish on 1,100 acres of the property.

Salazar gave the farm 90 days to move out, issuing his decision a day before the lease was set to expire and one week after visiting the Point Reyes National Seashore for a tour.

"After careful consideration of the applicable law and policy, I have directed the National Park Service to allow the permit for the Drakes Bay Oyster Co. to expire at the end of its current term and to return the Drakes Estero to the state of wilderness that Congress designated for it in 1976," Salazar said in a statement. "I believe it is the right decision for Point Reyes National Seashore and for future generations who will enjoy this treasured landscape."

The estuary, known as Drakes Estero, is home to tens of thousands of endangered birds, including 90 species, and the largest seal colony on the coast. It is within the boundaries of the national seashore, which is visited by 2 million people a year, providing $85 million in economic activity and 1,000 jobs to surrounding communities, according to park officials.

Salazar had the option to extend the lease for 10 years after Sen. Dianne Feinstein, D-Calif., included the provision in a rider on an appropriations bill.

Owner shocked

Kevin Lunny, a local rancher who bought the shellfish operation from Johnson Oyster Co. in 2004, said he was shocked when he got a call directly from Salazar on Thursday morning telling him that the 40-year occupancy agreement would not be renewed.

"It's disbelief and excruciating sorrow," he said of the mood at the oyster farm, where 30 people are employed, including seven families that live on the property.

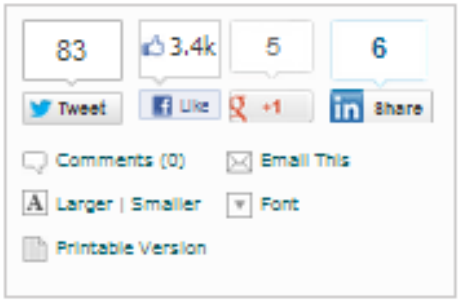
"There are 30 people, all in tears this morning, who are going to lose their jobs and their homes," Lunny said. "They are experts in seafood handling and processing in the last oyster cannery in California, and there is nowhere for them to go."

Many local conservationists were nevertheless overjoyed. Congressional representatives, including Rep. Lynn Woolsey, D-Petaluma, former Park Service employees, the Sierra Club, Natural Resources Defense Council, the Wilderness Society and the Marin Audubon Society applauded the decision.

"A heartfelt salute to Secretary Salazar for his wisdom and statesmanship in choosing long-term public good over short-term private interests," said Sylvia Earle, a local environmentalist and the former chief scientist at the National Oceanic and Atmospheric Administration. "Protecting Drakes Estero, America's only West Coast marine wilderness park, will restore health and hope for the ocean and for the interests of all of the people of this country."

Impact on supply

The decision to shut down the shellfish operation and establish a marine wilderness will have a major impact in rural west Marin County, where many consider the oysters from Drakes Bay a delicacy. The vast coastal area is home to 15 historic dairy farms and cattle ranches, sheepherders and organic farmers who live and work next to, and in some cases on, National Park Service land.



The oyster farm has been in business for nearly 80 years. It is California's largest commercial shellfish operation, producing 460,000 pounds of shucked oysters a year, an amount the proprietor says is almost 40 percent of all the oysters harvested in California. It far outstrips the production of growers in nearby Tomales Bay.

Salazar, who is a strong supporter of sustainable agriculture, promised to maintain the seashore's ranching and farming heritage, directing Park Service officials to pursue extensions of agriculture permits from 10 to 20 years within the seashore's pastoral zone, but the promise did little to calm the many shellfish lovers along the coast.

Wade Childress, 59, of San Anselmo, was among the afternoon crowd who stopped by the Drakes Bay oyster shack after news spread that the doors would soon close. Childress said he came to the shack as a boy to eat oysters with his parents and later took his daughter for a tradition they called "seafood day."

Oyster lovers shocked

"I'm mourning right now," Childress said.

Other customers called it a travesty perpetrated by the government.

"This is a good organic food source in our backyard," said Sarah Cane, 48, of San Rafael. "We can co-exist. A department head in Washington, D.C., shouldn't be able to tell this community it can't eat oysters."

There were still unanswered questions as Lunny, his son, Sean, and daughter, Brigid, tried to comfort longtime customers. One was what Lunny is expected to do with the millions of oysters that are still in plastic grow bags in the bay, many of which won't reach market size for another two years. The order requires him to immediately begin bringing them onshore.

"We've got 5 to 10 million juvenile oysters out there," Lunny said. "So what do we do with these oysters, just kill them all? That would be forcing us to destroy the entire inventory, which has incredible financial consequences."

Wilderness advocates said Lunny knew when he bought the oyster farm that the lease was going to expire and should have prepared.

"This isn't about an oyster company, for us," said Neal Desai, the associate director of the National Parks Conservation Association. "This is about taking care of our national parks for future generations and honoring a decades-old agreement to protect our heritage and create a marine wilderness. Letting the lease expire, removing all the motorboats and removing all the non-native oysters is good for the environment."

Powerful supporters

Lunny's request for an extension had powerful supporters, including Feinstein, Marin County Supervisor Steve Kinsey and former Peninsula Rep. Pete McCloskey, who put up a major fight to keep the operation going.

Park officials had long contended that the oyster company was harming the ecosystem, but Lunny's supporters accused them of selectively presenting information, misrepresenting facts and essentially fudging data in an effort to oust the oyster company.

The complaints gained momentum when the National Academy of Sciences, and the Interior Department's office of the solicitor found major flaws in Park Service reports, including what they termed mistake-ridden and, in some cases, biased work by park scientists.

"I am extremely disappointed," Feinstein said Thursday in a statement. "The National Park Service's review process has been flawed from the beginning with false and misleading science, which was also used in the Environmental Impact Statement. The secretary's decision effectively puts this historic California oyster farm out of business. As a result, the farm will be forced to cease operations and 30 Californians will lose their jobs."

Salazar ordered the Park Service to help the oyster company remove property, oysters and racks from the estuary and assist oyster company employees in relocating and finding jobs and employment training.

"We are taking the final step to recognize this pristine area as wilderness," Salazar said. "The estero is one of our nation's crown jewels, and today we are fulfilling the vision to protect this special place for generations to come."

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EXHIBIT

7

United States Department of the Interior

OFFICE OF INSPECTOR GENERAL
Washington, D.C. 20240

JUL 21 2008

Memorandum

To: Mary A. Bomar,
Director, National Park Service

From: Earl E. Devaney
Inspector General

Subject: Report of Investigation - Point Reyes National Seashore

With this memorandum, I am transmitting the Office of Inspector General (OIG) Report Of Investigation (ROI) into issues related to the management of the Point Reyes National Seashore (PRNS).

Upon receipt of allegations by Kevin and Nancy Lunny against National Park Service (NPS) officials of scientific misconduct and disparate treatment in April 2007, a team of OIG investigators interviewed nearly 80 people from California, Colorado, Maine and the Washington, DC area, some of them multiple times. We also conducted a voluntary search of the PRNS Senior Science Advisor's office, retrieved and analyzed computer files from the PRNS Superintendant's and Senior Science Advisor's government computers, and reviewed over 1,100 documents and e-mail messages.

We did not, however, analyze the science involved, nor did we thoroughly parse the legalities of the issue of extending the lease beyond 2012. For the former, we simply do not have the in house expertise. For the latter, we believe that this issue has been considered and resolved between the NPS and the Office of Solicitor.

We are also providing this Report to you for whatever administrative action you deem appropriate.

If you have any questions, please feel free to contact me at (202) 208-5745.

Attachment

Investigative Report

Point Reyes National Seashore

Report Date: July 11, 2008
Date Posted to Web: July 23, 2008

This report contains information that has been redacted pursuant to 5 U.S.C. §§ 552(b)(2), (b)(6), and (b)(7)(C) of the Freedom of Information Act. Some references indicating gender were written in the masculine form to protect the identities of individuals and to facilitate the reading of the report. Supporting documentation for this report may be requested by sending a written request to the OIG Freedom of Information Office.

RESULTS IN BRIEF

In April of 2007, Kevin and Nancy Lunny wrote to us requesting an investigation into the actions of Point Reyes National Seashore (PRNS) Superintendent Donald Neubacher. Specifically, the Lunny family, which owns and operates the Drakes Bay Oyster Company (DBOC) and the G Ranch, both located within the PRNS, alleged that Neubacher had undermined and interfered with the Lunny family's businesses and had slandered the family's name. Further, they believed there was a movement by Neubacher and local environmentalists to shut down the family's oyster farm by crippling the family financially. We opened an investigation shortly after receiving the Lunnys' allegations.

Our investigation determined that PRNS published a report on Drakes Estero, where the Lunny family farms oysters, containing several inaccuracies regarding the source of sedimentation in the estero. After receiving complaints from Corey Goodman, a neurobiologist, NPS removed the report from its Web site on July 23, 2007, and 2 days later, it posted an "acknowledgement of errors" in its place. Our investigation determined that in this report and in a newspaper article, PRNS Senior Science Advisor Sarah Allen had misrepresented research regarding sedimentation in Drakes Estero completed in the 1980s by U.S. Geological Survey scientist Roberto Anima. In addition, we determined that she failed to (1) provide a copy of a germane e-mail message between Anima and herself in response to a FOIA request that specifically sought such correspondence and (2) stated in a public forum that NPS had over 25 years of seal data from Drakes Estero when in fact that was inaccurate.

While Allen denied any intentional misrepresentation of Anima's work, our investigation revealed that Allen was privy to information contrary to her characterization of Anima's findings in the Sheltered Wilderness Report and other public releases, and she did nothing to correct the information before its release to the public.

Additionally, Neubacher and Allen made concerted attempts to refute Kevin Lunny's disputed portrayal of oyster farming as beneficial for Drakes Estero. Our investigation revealed that although Neubacher intended to bring the potential negative effects of the DBOC operation to the public's eye to counter what he considered "misinformation," in several instances he could have exercised better judgment and expressed NPS' position with greater clarity and transparency. Further, he exaggerated the Marine Mammal Commission's role in responding to DBOC's impact on the harbor seal population in Drakes Estero when he spoke before the Marin County Board of Supervisors (MCBS).

Although the complainants provided numerous examples of what they perceived as disparate treatment by Neubacher, our investigation revealed no indication that Neubacher treated the Lunny family with any disparity regarding either of their businesses in the park. We found no indication that Neubacher was planning to shut DBOC down prior to 2012, when DBOC's Reservation of Use and Occupancy (RUO) expires. Further, we found that Neubacher did not have the authority to extend any RUO. In addition, an extension of DBOC's particular RUO would violate a congressional mandate that the oyster operation be removed as soon as the RUO expires in order to manage Drakes Estero as wilderness.

Conversely, our investigation revealed that, until April 22, 2008, Kevin Lunny had been operating DBOC without a Special Use Permit since he bought the oyster operation in 2005 and had refused to sign a permit despite ongoing negotiations with PRNS, the Pacific West Region of the National Park Service (NPS), U.S. Department of the Interior (DOI), and the San Francisco Field Office of the DOI Solicitor's Office. Similarly, his parents had been operating the G Ranch without a signed Special Use

Permit since it came up for renewal in 2004 despite efforts by PRNS to bring him into compliance with federal regulations. According to the Code of Federal Regulations, engaging in any business within a national park is prohibited without a "permit, contract, or other written agreement with the United States."

This report is being forwarded to the Director of NPS for whatever administrative action for Allen and/or Neubacher she deems appropriate.

BACKGROUND

The Point Reyes National Seashore Act, which was signed into law by President John F. Kennedy on September 13, 1962,[i] made the PRNS the third of fourteen national seashores eventually added to the national park system. The intent of Congress in the passage of the PRNS Act was to preserve the diminishing coastal shoreline.[ii]

As a national seashore, PRNS is managed by NPS and is considered to be one of the most geologically and ecologically diverse parks in the NPS system.[iii]

LAND ACQUISITIONS

Drakes Bay Oyster Company

Soon after the PRNS Act became law in 1962, NPS officials began the task of acquiring the land designated as the PRNS from private entities and individuals who owned the land within PRNS boundaries. The three primary methods by which NPS purchased this land included the outright purchase of the land, the acquisition of titles with reservations for ranchers to continue working the land, and the exchange of federal lands of equal value elsewhere in California or an adjacent state.[iv]

After a decade of negotiations, Charles W. Johnson, owner of the Johnson Oyster Company, sold 5 acres of onshore property located within Drakes Estero (estuary), located on PRNS, to the NPS in 1972. As a condition of this sale, Johnson agreed to operate on NPS land under an RUO agreement by which he retained the right to use and occupy approximately 1.5 of those acres in order to operate his oyster farm for 40 years, until the year 2012.[v] According to its terms, Johnson's RUO was "for the purpose of processing and selling wholesale and retail oysters, seafood and complimentary food items, the interpretation of oyster cultivation to the visiting public, and residential purposes reasonably incidental thereto…."[vi]

NPS RUOs are deeded interests in the real estate and by policy cannot be renewed beyond their expiration dates.[vii] In 2005, Johnson assigned the right of the remaining years in this RUO agreement to Kevin Lunny, who renamed the oyster farm the Drakes Bay Oyster Company (DBOC).[viii]

G Ranch

Beginning in 1947, the Lunny family began leasing the G Ranch (currently located on PRNS) from the Radio Corporation of America, an arrangement that continued until NPS bought the ranch from the corporation in 1974. At that point, the Lunny family began leasing the G Ranch from NPS.[ix]

When the PRNS Act was enacted in 1962, the legislation charged NPS with stewardship of the park to conserve and manage its natural resource and provided funds to NPS to purchase ranch lands and lease the land back to the existing ranch owners.[x]

The PRNS Act states, "The government may not acquire land in the pastoral zone without the consent of the owner so long as it remains in its natural state, or is used exclusively for ranching and dairying purposes."[xi] When NPS purchased the ranch owners' land for the creation of PRNS, NPS initially granted RUOs, or in some instances, life estates, to ranch owners who wanted to continue their cattle grazing or dairy businesses. By the early 1990s, the terms of the ranchers' RUOs began to expire, but due to public support and the legislative backing of ranching activities, NPS supported the continuation of the ranchers' business operations within PRNS.[xii]

NPS policy does not allow for renewal of RUOs.[xiii] Instead, NPS negotiated renewable leases and grazing permits of 5-year terms with the ranchers, which could be renewed indefinitely as long as the ranch remained a viable agricultural operation.[xiv]

WILDERNESS ACT of 1964

Public Law 88-544 (Wilderness Act) was signed into law by President Lyndon B. Johnson on September 3, 1964.[xv] This legislation not only protected over 9 million acres of federal land throughout the United States, it also created the legal definition of "wilderness" in the United States as "an area where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain."[xvi]

The National Wilderness Preservation System (NWPS), created by the signing of the Wilderness Act of 1964, established a process for congressional designation of future acreage of land within the national parks and wildlife refuges. The NWPS directed federal land management agencies to survey their territory and submit their recommendations to Congress as to which land qualified for consideration as wilderness designation, but Congress had the power to bypass agency recommendations.[xvii]

PRNS WILDNERNESS ACT of 1976

In conformance with the NWPS, in 1964, Stuart Udall, then Secretary of the Interior, directed NPS to evaluate potential wilderness designations of all suitable areas of 5,000 or more continuous acres in all existing NPS units.[xviii] Based on Udall's directive, NPS studied PRNS, among other areas, to determine the suitability of designating any of its land as wilderness. In late 1973, the NPS PRNS wilderness plan was submitted to Congress with a recommendation that 10,600 acres within PRNS be designated as wilderness and added to the NWPS.[xix] Addressing Drakes Estero, located within PRNS, and the location of DBOC's operation, the NPS PRNS wilderness plan stated, "In terms of preserving and protecting marine life systems, Drakes Estero and Limantour Estero could well be considered the most significant ecological units within the national seashore."[xx]

Testimony in public and congressional hearings on NPS' proposed PRNS wilderness plan favored preserving more PRNS land than was originally recommended by the PRNS wilderness plan. Congress expanded PRNS' boundaries and increased the acreage initially recommended by the NPS PRNS wilderness plan to 25,370 acres of designated wilderness and identified an additional 8,003 acres as "potential wilderness." On October 18, 1976, Public Law 94-544 (PRNS Wilderness Act) was

signed into law by President Jimmy Carter, designating much of PRNS' coastal land and water as "wilderness."[xxi]

"Potential wilderness" included the waters of Drakes Estero and the adjoining inter-tidal land upon which DBOC currently operates as a commercial oyster business.[xxii] "Potential wilderness" is defined as "an area which contains lands that are surrounded by or adjacent to lands with the wilderness designation but that do not themselves qualify for immediate designation due to temporary, nonconforming, or incompatible conditions."[xxiii]

The congressional report accompanying the 1976 PRNS Wilderness Act legislation addressing the term potential wilderness states, "As is well established, it is the intention that those lands and waters designated as potential wilderness additions will be essentially managed as wilderness, to the extent possible, with efforts to steadily continue to remove all obstacles to the eventual conversion of these lands and waters to wilderness status."[xxiv]

While most of Drakes Estero has been designated or converted to wilderness status, the acreage used by DBOC remains potential wilderness because the oyster mariculture operation (cultivation of marine life for food) is a nonconforming use that is allowed to operate in PRNS until its RUO with NPS expires. NPS is required to actively seek to remove from potential wilderness the temporary, nonconforming conditions that preclude wilderness designation.[xxv]

DETAILS OF INVESTIGATION

In a letter to the OIG, dated April 23, 2007, Kevin Lunny and his wife, Nancy, requested an investigation of the "conduct, actions and decisions" of PRNS Superintendent Neubacher relative to the DBOC and G Ranch. Along with their letter to the OIG, the Lunny family provided a letter they had delivered to Neubacher, dated April 18, 2007, which addressed the disposition of a Cease and Desist Order that DBOC inherited from the Johnson Oyster Company.

According to their letter to the OIG and an attachment titled, "Statement of Conflict," Neubacher was "undermining Lunny family leases, permits, grants and certifications," "interfering" with the family's ability to do business, and slandering the family's name. Specifically, their letter and statement alleged that Neubacher had harmed their businesses by doing the following:

- Ordering the removal of a sign displaying the oyster farm's hours of operation.
- Prohibiting the Lunny family from doing repair work to the road leading to the oyster farm.
- Planning to oust the oyster farm from the park before their "lease" (Special Use Permit) expired in 2012.
- Denying the restoration of native oysters to Drakes Estero.
- Obstructing their ability to resolve an outstanding Cease and Desist Order issued to the previous owner of the oyster farm (Johnson).
- Asserting that the Wilderness Act mandated that the oyster farm had to leave the park upon the expiration of the "lease" in 2012.
- Applying "punitive" provisions to the Lunny family's "lease" for the G Ranch.

In addition, the Lunny family speculated that NPS was using "selective science" to portray Kevin Lunny as a "bad actor," "environmentally and ecologically."

During his initial interview, Kevin Lunny elaborated that he felt there was a movement by Neubacher and local environmentalists to shut down his family's oyster farm by crippling his family financially. He provided more detailed information on ways he felt NPS had made it difficult to operate a successful business and added that several people told him that Neubacher was determined to shut down DBOC no matter how it was run. Lunny added that opponents of his shellfish operation were using faulty science to vilify him in the media as someone without regard for the environment.

In addition to the aforementioned members of the Lunny family, other individuals who worked on their behalf provided information to us in the form of charts, e-mails, documents, and correspondence at various times over the course of this investigation, most notably Dr. Corey Goodman, a neurobiologist and member of the National Academy of Sciences.

To adequately address all of the pertinent issues that surfaced during this inquiry, a team of Office of Inspector General (OIG) investigators from the Western Region, the Computer Crimes Unit, and the Program Integrity Division worked together to interview 78 individuals from California, Colorado, Maine, and the Washington, D.C., area. We also conducted a voluntary search of NPS Senior Science Advisor Sarah Allen's office, retrieved and analyzed computer files from Neubacher and Allen's government computers, and reviewed over 1,100 documents and e-mail messages.

Based on the initial complaint letter from the Lunny family, and subsequent information we received from Weiman and Goodman on their behalf, we have organized this report into two sections, according to the pertinent allegations: Part I: Scientific Misconduct and Part II: Disparate Treatment.

For the convenience of the reader, at the end of the report, we have provided lists of attachments and names and titles of individuals identified throughout this report.

PART I: SCIENTIFIC MISCONDUCT

Our investigation into the issue of NPS' potential misuse of scientific data focused only on allegations of scientific misconduct. We did not evaluate the validity of the scientific interpretations made by NPS or by those whose interpretations differed from NPS.

Goodman disputed NPS' portrayal of the potential impact that oyster mariculture (culturing of marine life for food) had on Drakes Estero and its resources. Specifically, he took issue with conclusions regarding oyster mariculture's impact on sediment, eelgrass, and fish composition in the estero that PRNS disclosed in a "Park News" report titled, "Drakes Estero: A Sheltered Wilderness Estuary," which was first uploaded to PRNS' Web site on February 9, 2007. The report was later revised and uploaded to the Web site again on May 11, 2007. Goodman alleged that NPS intentionally misrepresented or omitted scientific data in the Sheltered Wilderness report, in a newspaper article, and before the MCBS in order to convince the public that oyster mariculture negatively affected the estero.

In addition, Lunny and Goodman contested PRNS' characterization of DBOC's impact on harbor seals in Drakes Estero and specifically questioned the authenticity of a "trip report" documenting DBOC employees disturbing seals in April 2007.

We focused our investigative efforts on the information contained in the Sheltered Wilderness report, examining each of the contested conclusions, as well as the questioned trip report and a harbor seal site map that PRNS revised without explanation to Kevin Lunny.

The questions of whether, and to what extent, the oyster operation impacts the natural resources of Drakes Estero continue to be the subject of debate among scientists. To remedy this dispute over the validity of science involving the potential effects of oyster mariculture on Drakes Estero, NPS and the complainants enlisted the help of the National Academy of Sciences, which submitted a two-part proposal to NPS on January 16, 2008, titled, "Best Practices for Shellfish Mariculture and a Scientific Review of Ecological Effects in Drakes Estero, Pt. Reyes National Seashore, California." The National Academy of Sciences proposed to "assess the nature and degree to which commercial mariculture operations affect natural ecosystems" and to "produce a short report on the specific case of a commercial shellfish farm in Drakes Estero that will include an evaluation of the existing body of scientific studies and a comparison to the assessment offered by the National Park Service in public documents and statements." The National Academy of Sciences anticipated that the project would commence on April 1, 2008, and finish on September 30, 2009.

Sheltered Wilderness Report

Our investigation revealed that Allen and others wrote the Sheltered Wilderness report to counter local newspaper articles, such as one in the *Point Reyes Light* titled, "Drakes Bay Oyster Company has little impact on estero," issued on May 18, 2006. That article presented the findings of a 2005 NPS-sponsored report titled, "Drakes Estero Assessment of Oyster Farming Final Completion Report" (DE Assessment report) that Dr. Deborah Elliott-Fisk of the University of California at Davis (UC Davis) wrote with Allen's input. The report reflected the findings of research done by graduate students Angie Harbin (currently Harbin-Ireland) and Jesse Wechsler, whose master's theses summarized their work in the estero.

The May 18, 2006 *Point Reyes Light* article pointed to the DE Assessment report as support for its conclusion that mariculture "has no statistically significant effects on the estuary's water quality, fish, and eelgrass." The article read, in part:

> A century of oyster farming has had much less impact than scientists expected on the ecosystem of Drakes Estero...according to studies completed in the last two years and funded by the National Park Service. Researchers from the University of California at Davis and Park Service employees carried out the two studies, which have not been published and were obtained by The Light this month. Their findings shed new light on the controversy that has gripped West Marin since February, when it was revealed that the Park Service plans to close the oyster farm and convert the estuary to wilderness in 2012.

Lunny was quoted in the article as saying, "There's no way else to interpret that data than that [the oyster farm]'s helping the environment…."

A reporter from the *Point Reyes Light* requested and received the DE Assessment report from a PRNS Marine Ecologist, something Neubacher described in an interview as a mistake.

During his interview, the PRNS Marine Ecologist said, "I just generally share information pretty freely, so it didn't occur to me that it was not a good thing to send it to the reporter."

The day after the article was published, Allen sent the following e-mail message to Dr. Elliott-Fisk, UC Davis:

> Check out the article – as is usual, I am misquoted and the article is heavily slanted pro oyster. I stated to them that when your study occurred that the oyster farming was at its lowest level in 30 years, talked about other invasive species introduced by oyster farming, and about the major source for sediment being from oyster feces based on a USGS study, but he chose not to include that information.

A PRNS Ecologist was also unhappy with the article's portrayal of findings from the DE Assessment report, as evidenced by the following message he sent to Allen on May 22, 2006:

> As you can imagine, I have serious problems with how the Light and Kevin Lunny have interpreted Wechsler's thesis and [Elliott-Fisk's] final report. As you know, our work in Drakes Estero indicated absolutely no positive influence of the oyster racks on the ecology of Drakes Estero….There are also a couple points in [Elliott-Fisk's] report that should be corrected. First, [Elliott-Fisk] incorrectly states that 'exotic, introduced organisms were not definitively found'. Didemnum and several other introduced marine invertebrates were definitavely [sic] found associated with the oyster racks. Second, although quoted in the Light article, the report inaccurately assesses the impact of the oyster racks on the eelgrass beds. Eelgrass beds are extensive in the Estero, but they do not exist under active oyster racks, presumably due to poor light conditions. This is a localized, but obviously extreme negative impact….

With the Ecologist's input, Allen began working on a report to counter the conclusions drawn in the article, as indicated by an e-mail message from the Ecologist to Allen on July 18, 2006, and a statement by Neubacher during a local radio program regarding DBOC the following day. In the July 18, 2006 e-mail, the Ecologist wrote the following to Allen:

> This version is much more polished and looks really good....Mostly I just want to make [sic] this paper is air-tight – hard facts, lots of references, and little speculation. We have enough knowledge about ecology of the Estero and measured impacts to make a strong case….

During the radio broadcast on July 19, 2006, the next day, Neubacher said Allen had recently put together a paper listing "long term, serious impacts" caused by oyster farming. He subsequently confirmed to the OIG that he was referring to what became the Sheltered Wilderness report during that broadcast. He explained that from NPS' perspective of "pristine" wilderness, "…somebody coming in and doing a harvesting operation [in Drakes Estero] just intuitively is negative."

On October 13, 2006, the PRNS Ecologist e-mailed Allen and Neubacher a document he had written titled, "Understanding How Oyster Mariculture Affects the Ecology of Drakes Estero, Point Reyes National Seashore." He suggested that PRNS upload the DE Assessment Report, the master's theses by Harbin and Wechsler, and the documents he and Allen had written to give the public "information on what's really going on" in Drakes Estero. Although we saw no evidence that the Ecologist's document was ever released to the public, portions of his text were incorporated into the first version of the Sheltered Wilderness report that was first released to the public later that month.

An Adobe Acrobat document (PDF) of the Sheltered Wilderness report was placed on a shared drive of PRNS on October 23, 2006. According to Gordon Bennett, Vice Chair of the Marin Group of the Sierra Club, at some point in the fall of 2006, Neubacher gave him a copy of a report that Bennett described as similar to, if not identical to, the Sheltered Wilderness report. Bennett recalled that he passed out copies of the report to people during a tour of DBOC that Marin Agricultural Land Trust

sponsored in the fall of 2006. ***Agent's Note****: According to the Fall 2006 edition of the Marin Agricultural Land Trust News, a tour of DBOC was scheduled for October 28, 2006.*

Neubacher said the Sheltered Wilderness report was made available to anyone who wanted a copy when it first came out in the fall of 2006, and there was a stack of copies in his office. Although he did not specifically recall Bennett getting a copy of the report then, he said he was sure Bennett got one because he (Bennett) was very active in local politics in Marin County. Neubacher said he did not ask Bennett to disseminate the report.

In a briefing paper prepared in July 2007, Neubacher described the Sheltered Wilderness report as a "Park News" handout that was produced "in response to public comments about the estuary and the potential wilderness designation." He further described it to OIG agents as a "public information piece" that was not intended to be a "definitive study." As such, he explained, it was subject to less scrutiny than a "scientific paper," and the review of the report was therefore "informal." Allen also described the peer review process for the report as "informal" because it was "Park News."

A Scientist for the Pacific West Region of NPS described the Sheltered Wilderness report as an "interpretative document" that, in his opinion, had "no policy implications" and therefore did not require extensive peer review.

Neubacher explained to the OIG that prior to the issuance of the Sheltered Wilderness report, there was a "dearth of information" from NPS about Drakes Estero and the wilderness legislation, and some people were saying that the estero "wasn't really potential wilderness, which it was." He said PRNS was not attempting to counter the *Point Reyes Light* article but to get "objective information" to the public.

Although Neubacher said he never read that *Point Reyes Light* article and did not direct anyone to rebut it, he remembered talking to a PRNS Ecologist and Allen about "misinformation that was coming out" at one point. He opined that although the *Point Reyes Light* was not very objective, it "…carrie[d] a certain amount of weight in the community, but not a lot." He stated, "I do think we have an obligation to give the public as much good information as we can…we thought we were doing that." He added, "I think what we were trying to do was put out what we consider facts. I know that's being debated now, but that was our intent."

Neubacher stated that the Sheltered Wilderness report was reviewed by several PRNS staff members, including him, before it was released, but nobody gave any indication that they thought it was biased or inaccurate. He said that to his knowledge, from the time the report was made public in October 2006 until the MCBS hearing in May 2007, no one raised any concerns about it or thought it would be controversial.

To understand the issuance of the Sheltered Wilderness report, we examined the DE Assessment report and the events leading to its issuance. In 2001, Allen wrote a proposal for the scientific research project, which culminated in the DE Assessment report.

The first version of the DE Assessment report of March 2005 was labeled "final," but the report was subsequently revised and issued under the same name in May 2005. Although the March 2005 version concluded that Johnson Oyster Company's mariculture operation caused "no significant or negative impacts" to sedimentation or water quality in Drakes Estero and stated that introduced organisms were "not definitively found" in the estero, the May 2005 version concluded the following:

> The oyster mariculture has had an impact on the marine fish and invertebrates of Drakes Estero. Invasive organisms as a fouling community, and in particular, the non-native species of tunicate Didemnum lahillei, have recruited into the estero.

The PRNS Marine Ecologist said his primary role in the work that culminated in the DE Assessment report was coordinating the logistics of getting boats into the estero for the researchers. He said that after he read the March 2005 version of UC Davis professor Deborah Elliott-Fisk's DE Assessment report, he noted that the researchers had found invasive species on a lot of the oyster racks. He recalled that he told Elliott-Fisk and Allen that he thought they should incorporate that information into the report. He said he did not participate in any meetings with former UC Davis graduate students Angie Harbin-Ireland or Jesse Wechsler to discuss that report.

UC Davis professor Elliott-Fisk verified that she was aware of the May 2005 version and concurred with its conclusions. She explained that during the interim between March and May 2005, she talked to experts about non-native species and realized how "bad" the introduction of non-native species was to the estero. She said that although the researchers could not definitively attribute the invasive species to the mariculture operation, the fact that non-native species existed in the estero was significant enough to document in the report.

Elliott-Fisk stated that no one from PRNS ever indicated that they hoped to find that the oyster operation negatively impacted the estero or tried to influence the researchers to meet any kind of agenda. Likewise, Harbin-Ireland and Wechsler told investigators that no one attempted to sway their results in any way.

John Wullschleger, a fishery biologist with NPS in Fort Collins, CO, said he provided technical oversight to the research that culminated in the DE Assessment report by Elliott-Fisk. Wullschleger said Allen did not send him an electronic copy of the May 2005 report until December 4, 2006, when she e-mailed him a copy of that report along with the Sheltered Wilderness report, which he was not expecting and knew nothing about.

Neubacher said he did not ask Allen to send Wullschleger the Sheltered Wilderness report.

Allen said she sent a copy of the Sheltered Wilderness report to Wullschleger along with the DE Assessment report to "give him more information." Allen sent Wullschleger the following message, with copies of both reports, at that time about the DE Assessment report:

> … I have been in a dilemma about the Drakes Estero report. We were going to have it revised because there were recommendations in the final draft that we were concerned about but the report was released to the oyster farmer and a few others (in error) before it was completed and peer-reviewed….We could submit the report as is if you feel alright with that. I also believe that it would be politically difficult to revise it now since it is out already. The oyster operator has been misusing some of the information out of the report to support his position. We have produced a follw [sic] up document summarizing the negative effects of the oyster operation (I attach for your reference)….

Allen explained that the DE Assessment report was sitting on her desk for a "final read through," which she never got to before the PRNS Marine Ecologist released the report to the newspaper. She said Wullschleger, and possibly the PRNS Marine Ecologist, should have had the opportunity to review it before it was finalized.

Wullschleger told the OIG he was concerned about the DE Assessment report because it was "basically trying to make statements from things…that weren't statistically significant and say, 'Well, they're different. So therefore there must be an impact on the estuary.'" He added, "I don't usually run into that kind of situation because most of the people I work with would say, 'Yeah, you're right. You can't draw those kinds of conclusions from these samples.'" He opined that PRNS was "aiming to find out a little too much in a relatively short period of time with a small amount of money" with the DE Assessment report by Elliott-Fisk.

According to Wullschleger, Allen expressed some concern about Elliott-Fisk's DE Assessment report, but it was not clear to him whether she had problems with the way it was written or with the content of the report. He said she did not express any disappointment to him about the lack of conclusive findings the research produced, and she did not elaborate on how the report was released to the oyster farmer "before it was completed and peer reviewed."

Wullschleger responded to Allen on February 6, 2007, with the following message about Elliott-Fisk's DE Assessment report:

> I'm not sure whether my input at this late date is of any value, especially if it is no longer feasible to revise the report. However, I do have some concerns with the the [sic] conclusions as written….Given that sample sizes were small and that most results were not statistically significant, I was surprised that the conclusions section began with the relatively strong statement '…oyster mariculture has had an impact on the marine fish and invertebrates of Drakes Estero'.... Although not well defined by NPS, the word impact is typically used to indicate an effect that is not only negative but substantive in magnitude. While I think that most would agree that any departure from natural conditions in an NPS natural area proposed for wilderness designation is negative, it seems clear that we are not in a position to quantify the effects of oyster culture on the Estero based on the results of this study…. I can see how the oyster grower could point to this [DE Assessment] report as evidence that their operation is not having an impact on the aquatic communities of the estero. After all, only one of the differences associated with the oyster racks was statistically significant.

Three days later, on February 9, 2007, the Sheltered Wilderness report, which drew upon the DE Assessment report, was uploaded to PRNS' Web site for the first time.

A Scientist for the Pacific West Region of NPS, opined that in the Sheltered Wilderness report, Allen and "probably her colleagues" had "drawn conclusions…that simply cannot be sustained, particularly since there was something a little bit sketchy about the Elliott-Fisk paper," which "…itself was overreaching."

Goodman questioned Allen's characterization of the impact oyster farming had on the ecological resources of Drakes Estero in the Sheltered Wilderness report. Specifically, he scrutinized her portrayal of oyster farming's impact on sediment, eelgrass, and fish composition in the estero.

Impact of Oyster Feces on Sedimentation

Corey Goodman was particularly critical of the way Allen portrayed research by U.S. Geological Survey Scientist Roberto Anima in the Sheltered Wilderness report and in a column that Allen co-authored in the April 26, 2007 edition of the *Point Reyes Light.* Goodman surmised that Allen could

be a "zealot" when it came to protecting the estero or that Neubacher may have "pushed her" to skew the science against DBOC.

As a graduate student in the 1980s, Anima conducted research in PRNS that resulted in two reports, both of which were titled, "Pollution Studies of Drakes Estero and Abbotts Lagoon." One of his reports was produced for NPS in 1990, while the other was produced for the USGS in 1991 as "USGS Open File Report 91-145." Anima recalled that he met Allen in the 1980s when he began conducting research in Drakes Estero for his master's thesis while she was studying the migration patterns of seals for her master's thesis. The research he conducted in the estero culminated in the 1990 NPS report and the 1991 USGS report.

Anima explained to the OIG that he did not "directly" study oyster feces, but he "made some observations" about oyster feces while diving in the estuary. He explained that he noted "fine grain material" on the "leeward" or "down current" side of the oyster racks that inspired him to review previous studies of oyster feces and pseudofeces. His report never said that oyster feces was affecting the sedimentation in Drakes Estero but rather reflected that studies done elsewhere indicated that oyster waste was a factor in sedimentation in those bodies of water. He recommended that similar studies be done in Drakes Estero. According to Anima, Allen did not speak to him before referencing his work in the Sheltered Wilderness report.

A comparison of the Sheltered Wilderness report, which was primarily written by Allen and was uploaded to PRNS' Web site on February 9, 2007, to the 1990 Anima report Allen referenced therein revealed the following discrepancies:

On page 10, Allen wrote the following:

> USGS (Anima 1990) collected sediment cores from the estero and identified pseudo feces of oysters as **the primary source** for sediment fill, as has been seen in studies elsewhere. **An estimate of 0.6 to 1.0 metric tons of fecal matter can be produced per year by a 60 meter square oyster raft.** This sediment material is resistant to erosion because oyster racks are located in upper reaches of the estero where tidal action is lowest and the arrangement of **the oyster racks acts as a 'baffle to tidal currents where rack density is highest…silt material accumulates on the leeward side of stacked oyster beds**'(Anima 1990)." [Emphasis added]

Later, in the Synopsis section of that same draft Allen wrote on page 14:

> A USGS researcher stated that **a primary source** for sediment fill in the estero was from oyster feces and from structures trapping sediment. [Emphasis added]

In a subsequent version of the Sheltered Wilderness report that was uploaded to PRNS' Web site on May 11, 2007, the word "primary" was dropped from the above sentence to reflect that Anima had identified oyster feces as **a source** for sediment fill.

Contrary to Allen's assertion that Anima identified oyster pseudofeces as *the* primary source or *a* primary source for sediment fill, page 147 of Anima's 1990 report actually stated the following:

> Because they are filter feeders, the oysters being grown and harvested in the estero **could be playing an important role** in the deposition of fine grained sediment. [Emphasis added]

As written in the Sheltered Wilderness report, Allen's reference to the volume of fecal matter that can be produced per year may have seemed specific to Drakes Estero. However, page 147 of Anima's 1990 report indicates that this estimate was actually based on a 1955 study done in Japanese waters:

> Ito and Imai **(1955)** calculated that in **Japanese** waters a raft of oysters 60 m square would annually produce 0.6 to 1.0 metric tons (dry weight) of fecal material. [Emphasis added]

In addition, Allen presented Anima's quote about the racks acting as a baffle (obstructing device) to tidal currents in a decisive manner, but Anima's full quote on the subject is speculative.

Allen said that although it may have been confusing not to specify that the estimate of annual fecal matter production was drawn from a Japanese study, she had no intention to mislead anyone. Allen told investigators that she had had conversations with Anima in the 1980s during which he had said the oyster racks were trapping sediment. She said, "If you put structures into an estuary and you have tides going in and out, it's going to trap sediment."

When interviewed, Anima agreed that, as written in the Sheltered Wilderness report, Allen's use of the estimate of how much waste oysters could produce in a year seemed attributable to Drakes Estero even though he attributed that estimate to a study done in Japan. Anima also contended that a partial quote Allen used in her report about oyster racks acting as a "baffle to tidal currents" was problematic because his report stated that the arrangement of oyster racks *appeared* to be serving as a baffle.

In September 2006, PRNS sent a letter to the California Department of Health Services (DHS) to address "incomplete" or inaccurate information contained in a draft "sanitary survey" report that a DHS Environmental Scientist had written pertaining to Drakes Estero.

The letter also referenced Anima's work and contained the following sentence, which Allen wrote: "Anima (1991) stated that the presence of the oysters and their feces were the primary source of sedimentation…."

The DHS Environmental Scientist said he told Allen in a telephone conversation in approximately October 2006 that Anima had not tested any correlation between sediment and oyster feces in Drakes Estero. Although he could not remember, specifically, how Allen responded to his comment, he thought Allen had said something like, "Oh. I didn't know that." He said he and Allen did not debate the issue.

Allen said she "vaguely" remembered the DHS Environmental Scientist's comment about Anima's study and that she was surprised by it. Allen recalled "trying to track down the reference so I could look at it more closely." She stated, "I remember flagging a couple pages [of Anima's report] where he had talked about the oyster feces and pseudo feces….But I just don't remember more than that…." When asked if she had then determined that she was not correct to state that Anima had determined oyster feces was the primary cause of sedimentation, she replied, "I don't remember, but I would assume so if I read it correctly. I look at it now, and I see it's an important source. It's not the primary source. I mean, that's the difference. It's an emphasis of degree."

Allen said she would have corrected the Sheltered Wilderness report if she had known it was incorrect at that point, but she did not realize that it was incorrect then. She stated, "There was no intent here to obfuscate that. If I had read [Anima's report] correctly … I would have put it correctly in." According to Allen, the report by the DHS Environmental Scientist contained a lot of incorrect information that

Allen was focused on correcting in a response to the California Department of Health Services at that time; the Sheltered Wilderness report was not her primary focus.

Allen stated that she first realized how she had misstated Anima's work about sedimentation after Corey Goodman brought up the issue at the MCBS hearing in May 2007. She recalled that she reviewed Anima's studies then and realized that she had "blundered" and felt like she had let Neubacher down by her mistake.

Neubacher recalled that Allen was "very frustrated" after speaking with the DHS Environmental Scientist because she felt DHS' report was not well done, but he did not know that the DHS Environmental Scientist had contradicted Allen's interpretation of Anima's work at that time.

A Research Cooperative Extension Specialist with UC Davis said he reviewed a draft of the Sheltered Wilderness report in October 2006. He said he acted as an objective consultant who provided expertise regarding coastal natural resources in California to private, local, state, and federal entities. On October 23, 2006, the day the Sheltered Wilderness report was placed on a shared drive at PRNS, he e-mailed the following statement to Allen, on which he copied the PRNS Marine Ecologist:

> Siltation is really a problem around the racks, but you should be careful not to make it sound like this occurs throughout the estuary. Towards the mouth there will be fewer finer sediments. Make sure to build a strong case where you have it, but don't oversell it.

Allen said she did not remember this message or what precipitated it. She also could not recall whether anyone had provided her feedback specifically related to the oyster feces as the primary source of sedimentation when some of her coworkers reviewed the draft.

The Research Cooperative Extension Specialist explained that he was recommending that Allen reconsider using broad language such as "significant impact on the estuary" in her report, because in his opinion, her statements about siltation having a negative impact on the overall estuary was too broad and could weaken her stronger case that "siltation" occurred within the immediate vicinity of the oyster racks.

In the same message, he also wrote the following:

> Overall, I think this document makes a strong case for designation as wilderness….And I understand the desire to get rid of the oyster farming once the lease expires. The presence of oyster farming certainly has negative effects on the estuary. It is clearly increasing the abundance of invasive species and decreasing (at least in the immediate area) the abundance of key taxa like bivalves, eelgrass, etc. I think you make these points well but be careful about pushing some of these points too hard. Especially given [Harbin's] thesis, it's a fairly preliminary data set …. It's not a case that can be made conclusively, but is a strong case based on the evidence currently in hand.

The Research Cooperative Extension Specialist explained that NPS' mission was to protect the estuary and natural resources of Drakes Estero and that as an NPS employee with that objective, Allen concluded in that report that oyster farming had a negative impact on the estuary. He added, "Bringing together what is known regarding how oyster farming has a detrimental impact on eelgrass, seals, and shellfish, sedimentation etc., Allen's report made a strong case for meeting NPS' objective of designating the estuary as wilderness in 2012." However, he opined that there was not enough

scientific data to conclusively determine whether oyster farming had a negative impact on Drakes Estero or not.

He explained that NPS was regularly asked to make decisions based on inadequate and limited scientific data, a belief that was shared by Neubacher, Allen, and a Scientist in the Pacific West region. The Research Cooperative Extension Specialist opined that the statements Allen made in the report were erring on the side of caution in order to protect the natural resources of Drakes Estero before any damage could be done. He said that although the preponderance of available research suggested that oyster farming had a negative impact on Drakes Estero, Allen primarily relied on Harbin's master's thesis. According to him, Harbin's thesis was "weak and not very well thought out." He stated that her thesis should have been viewed only as a reference document rather than a credible peer-reviewed scientific study.

As previously noted, Allen presented Anima's quote about the racks acting as a baffle to tidal currents in a decisive manner, but Anima's full quote on the subject is speculative. Still, NPS concluded that oyster racks "act as a baffle" in a letter to Senator Dianne Feinstein, dated October 26, 2006, which read, "The oyster bags and racks placed on sandbars in the bay act as a baffle and trap sediment."

Further, Anima's statements that the effects of oyster mariculture on sediment in Drakes Estero required further study were omitted from both versions of the Sheltered Wilderness report that were released to the public. Beginning on page 150 and continuing on page 153 of his 1990 report, Anima wrote the following:

> The methods used by the oyster industry in Drakes Estero **appear to be serving as a baffle** to tidal currents in those locations where rack density is highest, i.e., mouth of Creamery Bay, Schooner Bay, and Home Bay, **what the results of this is needs further study**. It has been observed that silt size material accumulates on the leeward side and/or down current side of the staked oyster beds. **Further study needs to be done** to ascertain what effects the methods and the large numbers of oysters, oyster racks, and staked oyster beds are having on the sedimentological makeup of the estero. [Emphasis added]

On page 148 of the same report, Anima wrote another reference to the matter requiring further study:

> The abundance of native filter feeders combined with the introduced oyster in Drakes Estero **raises questions of the impact the industry is having** to the sedimentation rate of the lagoon. **More research needs to be conducted to ascertain what amount of silt size material is being produced by the oysters being grown in Drakes Estero**. [Emphasis added]

In another example of omission, Allen did not include the following statement regarding the impact of oysters on sedimentation, drawn from the DE Assessment report, in either version of the Sheltered Wilderness report:

> Although pseudofeces from the suspended oysters may contribute to the amount of organic matter below the racks, adding to the system, the amount of organic matter resulting from eelgrass decomposition is likely far greater considering how expansive and dense the beds are within the estuary, making any significant organic inputs from the oysters undetectable in this study (Harbin 2004).

Likewise, the following statements that Elliott-Fisk wrote in the DE Assessment report in reference to Harbin's thesis were not addressed in the Sheltered Wilderness report: "The amount of organic matter in sediment from adjacent areas was not found to be significantly different from that beneath racks," and "A significant difference in the percent [sic] organic matter in areas below and adjacent to the oyster racks was not detected…."

NPS removed the Sheltered Wilderness report from the PRNS Web site on July 23, 2007. Two days later, NPS posted an "acknowledgment of corrections" statement on the site in which NPS addressed misrepresentations of Anima's work in the Sheltered Wilderness report. The acknowledgement stated that NPS had "incorrectly interpreted" the 1990 report by Anima by stating that Anima had "detected oyster feces and pseudofeces in sediment core samples," that he had "estimated the amount of fecal matter produced by oyster rafts," and that he had "considered oyster farming as the primary source of sedimentation in the estero."

To address some of the issues raised by the complainants, NPS produced a document titled, "National Park Service Clarification of Law, Policy, and Science on Drakes Estero" (Clarification Statement) in September 2007. In reference to the above supposition, that document stated, "…despite suggestions that decomposing eelgrass was a key source of sediment organic matter, no quantifiable evidence was presented to support this claim."

In its Clarification Statement, NPS specified that in his 1991 report, Anima wrote the following:

> Because they are filter feeders, the oysters being grown and harvested in the estero play **an important role** in the deposition of fine grained sediment….The combination of abundant native filter feeders and the introduced oyster raises questions of the impact the industry is having to the sedimentation rate of the lagoon. [Emphasis added]

In that statement, NPS acknowledged that Anima "did not quantify sedimentation related to the oyster farming" but said he "provided expert opinion in the report that the sediment material was likely resistant to erosion because oyster racks were located in the upper reaches of the estero where tidal action was limited." NPS also specified that the estimate of how much fecal matter an oyster raft would produce annually that was referenced in the Sheltered Wilderness report was drawn from a 1955 Japanese study.

Anima told OIG investigators that Allen did not consult him before citing his work. Anima said that when Allen first called him in May 2007, she asked him to read two newspaper articles in which his work was referenced. Anima recalled that one of the articles came from the *Point Reyes Light,* but he could not remember the source of the other article. After reading those articles, Anima told Allen that his report did not state that he had "collected sediment cores from the estero and identified pseudo feces of oysters as the primary source for sediment fill." He said he was "tick[ed]… off" that she had misrepresented his findings that way.

***Agent's Note**: Both the article titled, "Coastal Wilderness: The Naturalist," which Allen co-authored in the Point Reyes Light in April 2007, and an editorial piece titled, "Save Drakes Estero," published in the Coastal Post as a "collaborative effort" by various conservation groups on May 2007, refer to oyster feces as the primary cause of sediments in the estero).*

Anima said he let Allen know that he was "not happy" with her portrayal of his research. According to him, she did not offer a "good justification" for inaccurately referencing his work. She told him that she remembered him voicing concern about oysters contributing to sediment in a portion of Drakes

Estero known as Abbott's Lagoon during a conversation they had with a USGS Scientist in the late 1980s. He recalled that she tried to justify her actions by telling him about an agreement NPS had with the oyster company, which had been sold to a new owner. She explained that the current owner of the oyster farm wanted to extend his lease with NPS when it expired and that PRNS was trying not to allow the extension of that lease.

Anima said that during one of their conversations, he told Allen that he wished she had let him review his work before she used it in any way. According to Anima, Allen replied, "I know, Roberto. This is getting ugly." He said she mentioned to him that "hindsight is 20/20." Anima could not say that Allen personally had "an agenda" but opined that she had "stretched" his research.

Anima recalled that Allen reiterated her claim that day that Anima, the USGS Scientist, and she had had a conversation several years ago during which she believed Anima had said the primary source of sedimentation in the estero was oyster feces. Although Anima said he did not remember that particular conversation, he did recall having several conversations about the estero with the USGS Scientist during the time he (Anima) was gathering data for his master's thesis. During this final interview of Anima, he said he considered Allen a "friend" whom he "can't condemn" for misquoting him. He referred to her as a "very capable" scientist and said that she had apologized to him many times for "dragging" him into this conflict.

Allen told investigators that at some point during the 1980s, Anima told her the Johnson Oyster Company played an important role in sedimentation in Drakes Estero. She said that after the MCBS hearing, Anima told her she could quote him as concluding that the oyster operation played an "important" role in sedimentation but not a "major" role.

The USGS Scientist could not recall having a conversation with Anima and Allen in the 1980s such as Allen described, but he could not be certain that such a conversation did not take place. He thought it was "likely" that the three of them had conversations about the impact of oyster farming on the estero. He said he had not read Anima's thesis in over 10 years and could not remember if Allen asked him to look over the Sheltered Wilderness report before it was uploaded to PRNS' Web site. However, he said he would review "a huge number of documents," so it was possible that he may have reviewed it prior to its release on the Internet.

After speaking with Anima concerning Allen's misuse of his (Anima's) research, Corey Goodman was under the impression that Allen had called Anima and his supervisor, USGS Scientist Janet Thompson, to discuss the way she (Allen) had portrayed Anima's research, which angered Anima. Thompson said she had never supervised Anima. Anima identified Samuel Johnson and David Rubin as his supervisors, both of whom did not recall anyone from PRNS contacting them about Anima's research in Drakes Estero.

During an interview with the OIG in which he was placed under oath, Neubacher said he first learned of the potential problems with the Sheltered Wilderness report at the MCBS hearing in May 2007, when Goodman quoted Anima's work. He recalled that soon after that hearing, he looked at one of Anima's reports, which indicated that oyster feces play an "important role" in sedimentation. At the time, he "honestly didn't think it was a big deal" that the Sheltered Wilderness report indicated that oyster feces was the primary source of sedimentation, but he and Allen intended to "fix" the Sheltered Wilderness report.

He said they planned to upload a corrected version of the report to the PRNS Web site in late June or early July 2007, after Allen had spoken to Anima about his work, but Holly Bundock, NPS Pacific

Regional Director of Public Affairs, and Jon Jarvis, Director of NPS' Pacific West Region, did not want PRNS to upload another version of the report before a meeting scheduled with Senator Feinstein to discuss it in July 2007, during which the decision was made to remove the report from the Web site.

According to Neubacher, Allen was "devastated" that she had made mistakes in the Sheltered Wilderness report. He said, "It was just an honest mistake on her part."

Allen was adamant that no one tried to influence her to leave faulty information in the report.

A USGS Scientist, a PRNS Marine Ecologist, a PRNS Ecologist, and Gordon Bennett, Vice Chair of the Sierra Club's Marin Group, all said Allen had told them she had made a mistake in the way she represented Anima's research.

The PRNS Ecologist recalled that although he had read the sentence Allen had written about oyster feces being the primary cause of sedimentation in the estero in a draft of the Sheltered Wilderness report, the sentence "didn't jump out" at him as being incorrect, even though he was familiar with Anima's report. Since he knew that Anima had written about "oysters and … feces," he said he assumed that Allen must have gotten it "right."

In April 2007, Allen co-authored a *Point Reyes Light* column titled, "Coastal Wilderness: The Naturalist," which stated that oyster feces, which "smothers" native species, is the primary source of sediment in the estero. The other authors of that column, John Kelly, the Director of Conservation Science and Habitat Protection at the Cypress Grove Research Center, and Jules Evens, a self-described "naturalist and biologist," told investigators that Allen was the primary author of the column, a fact that Allen confirmed. Allen conceded that she was the one who made the reference to oyster feces as the primary source of sedimentation in the estero in the article and said the quote about the waste smothering species was something she had learned from talking to USGS Scientist Janet Thompson.

Thompson corresponded with Allen about the potential effects of oyster mariculture on Drakes Estero and subsequently sent a letter to Allen on May 7, 2007, the day before the MCBS hearing, detailing her expert opinion. Thompson's letter to Allen reads, "If the mass [of feces] is high, bacterial reduction of the organics can reduce the oxygen content of the sediment….This type of fecal pellet sequestration to the sediment…is likely to be most extreme under bags that lay on the sediment surface and therefore present a barrier to…aeration of the sediment surface." ***Agent's Note****: Although the letter reflects a date of May 7, 2006, the correct date for it is May 7, 2007, per Thompson.*

According to Allen, Neubacher and probably John Dell 'Osso, the Public Information Officer for PRNS, reviewed the article before it was published. Neubacher confirmed that he reviewed the article before it was published but said he did not ask Allen to write it and had no reason to think it would be controversial at that time.

Allen offered that she was upset and distracted at work by two events that occurred in 2005 and 2006 as a possible explanation for her errors. She recalled that her brother had died in 2005 and that her friend's baby had died in 2006. Additionally, she stated the following:

> I think that I put a lot of emphasis on my early discussions with Roberto [Anima], and I think that influenced how I was viewing things…When [Anima] was doing his master's thesis, he was very upset about the effects of the oyster operation on Drakes Estero, and he talked about the effects of sedimentation….

She added, "So, I feel, if anything, that tainted how I was viewing things, those earlier discussions. But there was no intent. There was no intent."

Impact of Oyster Mariculture on Eelgrass

In addition to the misrepresentations of Anima's work regarding oyster feces, the complainants opined that the following statement, drawn from the first version of the Sheltered Wilderness report, was not supported by the references cited therein:

> Although eelgrass cover has not been quantitatively measured in Drake's [sic] Estero, **UC Davis researchers working in co-operation** [sic] **with the NPS have all qualitatively noted that eelgrass growth is severely restricted under active oyster racks in Drake's Estero.** (Harbin-Ireland 2004, Wechsler 2004, Elliott-Fisk et al. 2005). [Emphasis added]

Essentially, that same statement was incorporated into the Sheltered Wilderness report from the August 2006 document that a PRNS Ecologist prepared to counter the *Point Reyes Light*'s portrayal of the DE Assessment report. Allen confirmed that she cut and pasted essentially the above statement and some of the Ecologist's other work into the Sheltered Wilderness report.

Substantially, the same quote appeared in the updated version of the Sheltered Wilderness report in May of 2007. The only difference in text was the omission of the word "all," so that the quote read, "UC Davis researchers…have qualitatively noted…."

As Goodman noted, Elliott-Fisk wrote the following sentence in both the March and May 2005 versions of the DE Assessment report, which contradicts the Sheltered Wilderness report:

> We found the oyster racks to also have **no pronounced impacts** on the eelgrass beds, which existed both under and away from the racks as an incredibly rich habitat type. [Emphasis added]

In its Clarification Statement, NPS explained that Elliott-Fisk had misrepresented the graduate students' findings in the DE Assessment report. The Clarification Statement addressed the issue as follows:

> Elliott-Fisk, the primary author, apparently contradicted her research staff that published qualitative statements that eelgrass growth was very limited under the oyster racks (Harbin-Ireland 2004, Wechsler 2005). The NPS regrets that it did not discover the inconsistency between Elliott-Fisk's comment and the results reported by these two studies when reviewing the final draft of Elliott-Fisk et al. (2005).

Former UC Davis graduate student Angie Harbin-Ireland said she completed her research on the estero in 2001 and was not familiar with the Sheltered Wilderness report. She said she did not feel that she had made enough observations of eelgrass in the estero to determine whether it was accurate to characterize eelgrass growth as "severely restricted" beneath active oyster racks, as indicated in the Sheltered Wilderness report. She wrote the following in her thesis:

> The eelgrass beds within the sampling areas in Schooner Bay were observed to be quite dense during the growing seasons preceding sample collection, and they were noted to be growing densely right up to the margins of the oyster rack structures. **Little eelgrass was**

> **observed growing beneath them, likely due to shading from the structures**. [Emphasis added]

In reference to that quote from her thesis, Harbin-Ireland said, "…I guess if I wrote it in there, it must have been based on my field notes. But it's been a while since I was out there, so I don't remember it specifically." When asked to comment about Elliott-Fisk's conclusion that the researchers found "no pronounced impacts" on eelgrass beds, Harbin-Ireland stated, "That may not be an accurate statement…." She explained that since eelgrass was "not the focus" of her study and since she had not collected "empirical data" on it, she had not drawn any "real conclusions" about potential impacts to eelgrass.

In the Synopsis section of the Sheltered Wilderness report, the statement about eelgrass being "severely restricted" under active oyster racks was tempered with the following statement:

> Eelgrass beds are found in all suitable habitats within Drakes Estero, except for between active oyster racks, where they do not exist due to shading effects.

Former UC Davis graduate student Jesse Wechsler told the OIG that he agreed with the statement in the Sheltered Wilderness report that the researchers had qualitatively noted that eelgrass growth was severely restricted under active oyster racks, and he disagreed with Elliott-Fisk's statement in the DE Assessment report that the oyster racks had "no pronounced impacts on eelgrass beds…." Therefore, he agreed with NPS' Clarification Statement that Elliott-Fisk had apparently contradicted her research staff regarding their observations about eelgrass growth in the estero.

Although Elliott-Fisk initially characterized the Sheltered Wilderness report as "all accurate," she expressed surprise that the statement about eelgrass growth being "severely restricted" was in the report and thought it must have been included in error. Elliott-Fisk contended that the racks did not have a "pronounced effect" on eelgrass. She agreed that the racks reduce the amount of light available to the eelgrass. She explained, "So probably the eelgrass is less productive as a green plant with less light, but we know it's still growing [under the racks] because when we were out there, we saw it." She added that the only "real impacts" she saw due to the oyster operation were tracks through the eelgrass caused by boat propellers.

The PRNS Marine Ecologist said he assumed that the DE Assessment report reflected that there was no eelgrass growing under the oyster racks and was therefore not in conflict with the Sheltered Wilderness report on that subject. He advised that he and a PRNS Cartographic Technician surveyed eelgrass in Drakes Estero in March 2007. At that time, he said he personally observed that "in most cases, there wasn't eelgrass under the racks…." In his opinion, there was "definitely" an impact on eelgrass under the oyster racks.

Allen said the "only point" she was making about eelgrass in the Sheltered Wilderness report was that it did not grow under oyster racks. She said what was important to know was that the oyster operation negatively affected eelgrass; the quantity of the eelgrass affected was not the main issue. She stated that it was clear that the oyster operation affected the eelgrass, and NPS and DBOC had to mitigate those effects.

Impact of Oyster Mariculture on Fish Composition and Non-Native Species

During the radio broadcast in July 2006, Allen said the most important impact to the estero due to oyster farming was the introduction of non-native species, particularly the Didemnum tunicate

(commonly referred to as "sea squirts"). She added that the oyster operation created structure in the estuary that normally would not be there, the presence of which changed fish diversity and abundance.

In the October 2006 version of the Sheltered Wilderness report, Allen wrote the following:

> Oyster racks create habitat in the estero by acting as a hard substrate in an ecosystem composed of predominantly soft-bottom substrate. This direct change in habitat substrate significantly alters the native species composition and abundance, and provides habitat for non-native species.

In that same report, Allen also wrote the following in the Synopsis section:

> Invasive organisms were found on the hard substrates provided by the oyster racks in Schooner Bay. These organisms were not present in Estero de Limantour where no oyster facilities exist….

Corey Goodman pointed out that in the April 2007 "Coastal Wilderness: The Naturalist" column, Allen and her co-authors claimed, "One highly invasive non-native species, a sponge-like colonial tunicate…is now commonly found on oyster racks and shells in the Estero and could substantially alter the ecology of the estuary." Goodman added that the tunicate "is found nowhere other than Lunny's oyster racks" and that the tunicate "can not [sic] and has not spread to any other substrate in the Estero."

During the May 8, 2007 MCBS hearing, Goodman stated that since the invasive colonial tunicate was only present on the oyster racks in the estero, it only posed a problem for Lunny since he might need to replace the racks in the future. Subsequent to that hearing, in the May 11, 2007 version of the Sheltered Wilderness report, NPS added a photograph demonstrating that, in addition to being present on the oyster racks, the tunicate was also attached to hard substrate in the Bull Point area of Drakes Estero. After that version of the report was released, Goodman no longer contended that the tunicate was only present on oyster racks in the estero.

Regarding Wechsler's research on the fish composition of the estero near and away from oyster racks, Allen wrote in the Sheltered Wilderness report the following:

> The species richness of fish (the number of species) was the same between Estero de Limantour and Drakes Estero, but the species guilds were different. **Schooner Bay where there are many oyster racks supported a completely different fish community than…Estero de Limantour where no mariculture occurs**. Wechsler (2004) concluded that the diversity of fish species was enhanced by the presence of the oyster rack structures (or any hard substrate); however, his sample size was small and he was not able to sample eelgrass beds thoroughly because of logistical difficulties. Consequently, he may have missed species that are dependent on eelgrass. **Surprisingly, Wechsler (2004) detected few herring, even though this species was historically found in high numbers and spawns in eelgrass beds** (Blunt 1984). [Emphasis added]

Goodman opined in his letter to the MCBS that Allen's conclusion about Schooner Bay supporting a "completely different fish community" than Estero de Limantour was false, a point with which Wechsler concurred. Goodman noted that Wechsler's thesis actually contained the following statements, which were confirmed by the OIG: "Similar numbers of eelgrass dependent fish were observed in all sites," and "I found no statistically significant differences in fish abundance or species

richness among the sampling locations, which indicated that the oyster farm had not exerted a noticeable effect on the ichthyofauna of Drakes Estero."

Goodman also called Allen's quote about herring into question and described NPS' decision to mention the lack of herring by the oyster racks without offering a possible explanation for it – "a case of selective omission." He wrote the following:

> Thus, the herring are mentioned as something that Wechsler should have found, but did not, suggesting trouble with the eelgrass beds …. Because most of his samples were outside the seasonal … period in which schools of herring enter the Estero to spawn, Wechsler missed the herring season altogether. He trapped only one herring in Limantour (the estero without oyster racks) and none in Drake's [sic] Estero.

Wechsler told the OIG that he did not know enough about herring to know whether he missed their spawning season.

NPS conceded in its Clarification Statement that there were "several inconsistencies" between "Wechsler's results" and the Sheltered Wilderness report. NPS elaborated in the statement, as follows:

> In summary then, Wechsler's thesis indicates that when he conducted his study prior to DBOC's operations, mariculture in Drakes Estero had no measurable effects on fish species abundance, diversity, or richness, but may have had an effect on fish composition….Oyster racks appeared to favor structure oriented fish; however, determining effects on fish composition within Drakes Estero by the current elevated level of oyster operations would require a more focused study.

Wechsler concurred with the points made about his research in the Clarification Statement but had no knowledge about the current level of oyster operations.

Goodman referred to the first half of Wechsler's hypothesis to demonstrate his contention that, as a former NPS employee, Wechsler had a "potential bias." As noted by Goodman, Wechsler wrote in his thesis the following:

> Because studies have shown that bivalve mariculture can affect the biological, physical, and chemical characteristics of an aquatic ecosystem, I hypothesized that adjacent to Drakes Estero oyster racks: (a) fish species diversity would be reduced, (b) fish abundance would be reduced, (c) fish species richness would be decreased, and (d) a few tolerant species would dominate the fish community.

Goodman described the above clause as "the hypothesis that the [PRNS] apparently hoped [Wechsler] would confirm." However, the next sentence in the same paragraph of Wechsler's thesis stated the following: "Alternatively, since the presence of bivalve filter feeders may bolster productivity and provide aquatic habitat, abundance, richness, and diversity of fishes may have increased.

NPS made the following statement about Wechsler's work in its July 25, 2007 "acknowledgement of corrections":

> The NPS incorrectly interpreted that the Estero de Limantour supports a different fish community than Schooner Bay. To clarify, the fish found at sampling sites in Estero de Limantour were most different from sites associated with the oyster racks in Schooner

> Bay, not the entirety of Schooner Bay. Although not tested for statistical significance, Wechsler reports that, 'Four of the five indices used to assess the similarity of the fish assemblage showed the greatest compositional divergence was between Estero de Limantour and Schooner Adjacent.'

Harbor Seals in Drakes Estero

In addition to the concerns he had about the Sheltered Wilderness report, Goodman took issue with statements Neubacher and Allen made before the MCBS on May 8, 2007. One of the topics addressed during the hearing was DBOC's continued operation in PRNS, which the county fully supported. Goodman opined that Neubacher and Allen exaggerated DBOC's impact on harbor seals in Drakes Estero when they spoke at the hearing. Goodman also questioned the veracity of a trip report in which Allen documented her observations of the estero on April 26, 2007, and alleged that NPS had redrawn the areas on a map where the seals pulled themselves out of the water (haul-out sites) to reflect that oyster bags were in prohibited areas where the seals gave birth (pupping areas) when they actually were not. We did not attempt to determine whether DBOC was disturbing seals or encroaching on their habitat in the estero. We examined the accuracy of statements that Neubacher and Allen made before the MCBS, the veracity of the April 2007 trip report, and the complaint about NPS redrawing the boundaries of harbor seal sites.

Statements before the MCBS on May 8, 2007

With regard to the statements made to the MCBS on May 8, 2007, Allen told us that prior to that hearing, she told Timothy Ragen, Executive Director of the Marine Mammal Commission, that the oyster operation had been discarding oyster bags on the beach where the seals gave birth, thus impacting their habitat. She said she asked Ragen if the Marine Mammal Commission would consider writing a letter raising questions about the farm's impacts on the seals.

During the hearing, Allen explained how the Marine Mammal Commission was involved in the matter by stating the following:

> This issue has been received and recognized by the Marine Mammal Commission and we received a fax today from the Executive Director of the Marine Mammal Commission, because they had just heard about this, which I will provide to you. And they're going to bring it up in their next commission meeting, because it has national significance.

During an interview with us, Ragen offered the distinction that the Marine Mammal Commission had been informed about the issue as opposed to Allen's portrayal that it had "received and recognized" the issue. He stated that Allen could have reasonably interpreted that the impact on the harbor seal habitat was of "national significance," as she said during the hearing, based on conversations he had had with her.

Neubacher told MCBS the following about the seal population during the hearing:

> … we believe because of recent actions taken…that the harbor seal pupping area in Drakes Estero is seriously threatened right now. And Dr. Sarah Allen is going to discuss this, but we have some major problems because you can see…that bags recently have been in pupping areas. And Sarah will give you the statistics, but it's amazing how many pups we have probably lost this year. So we've got a serious problem right now.

Neubacher portrayed the Marine Mammal Commission's interest in the issue by stating,"I mean, it's that complex, because now you're talking about the Marine Mammal Commission, for example, wrote us a letter this morning. They're going to take it up on a national level."

Our investigation determined that Ragen faxed a letter to Neubacher regarding Drakes Estero the day of the hearing based on Neubacher and Allen's request. That letter states the following, in part:

> It has been brought to my attention that activities associated with commercial shellfish operations (oyster farming) are leading to the disturbance of harbor seals at Drakes Estero….This is an issue that would be of interest to our Commissioners and Committee of Scientific Advisors on Marine Mammals, as protection of marine mammal habitat is one of the essential elements of marine mammal conservation.
>
> Unfortunately, I have just learned of this issue and have not had time to bring this matter to the attention of our Commissioners so that they might give it their full consideration and consult with our Committee regarding the implications for the affected harbor seals. I understand that a meeting is to be held today to consider possible management measures pertinent to this issue. If it is possible, I would appreciate an opportunity to inform our Commissioners regarding this situation so that we might comment on those measures.

Ragen said he first became aware of the issue at Drakes Estero when he received a call from Allen and Neubacher in the spring of 2007, who informed him that they were preparing for a hearing regarding an oyster farm that was attempting to get an extension on its lease.

Ragen recalled that it took him several days to write the letter because he wanted to consult with the commissioners to get their recommendations first. He said he did not have enough information at the time he wrote the letter to take a stance on the Drakes Estero issue.

Ragen stated that Neubacher's statement about the Marine Mammal Commission planning to "take up" the issue "on a national level" was "a shade of not quite accurate" and "not the best way to state it." He disagreed with Neubacher's characterization that the Marine Mammal Commission was in NPS' corner and had already decided to take action and summarized Neubacher's assertions about the Marine Mammal Commission's level of involvement as an "overstatement."

In retrospect, Neubacher conceded that it may have been a little misleading for him to say that the Marine Mammal Commission was taking up the issue and had written NPS a letter. However, he said he had about 2 days' notice about the hearing and "…my number one job is to protect park resources, so I just did what I thought was right. I mean, there's a judgment call there that you have to make, and…maybe I'd do it different now, but at the time, it seemed that we were having dramatic change in that estuary…."

The complainants also said NPS officials made the "inflammatory, provocative claim" that the harbor seal population was down 80 percent in the estero during the MCBS hearing without specifying that the decline was "site specific." A review of an official transcript of the hearing revealed that Allen did initially specify that seals had abandoned one area of the estero but did not clarify in her next sentence that the 80 percent reduction to which she referred only applied to that particular site in that estero. She stated the following:

> Over the past few weeks, we have documented oyster operations disturbing mothers with pups and oyster bags left on sandbars where seals would normally give birth and nurse

> their pups. The harm is resulting in abandonment of **one area** where more than 250 seals, including 100 pups two years ago, occurred in that spot. This year, chronic disturbance and the placement of bags on the nursery areas has caused **an 80-percent reduction in the seals**, dropping to around 35 this last Saturday. [Emphasis added]

***Agent's Note**: The first version of the Sheltered Wilderness report, uploaded to the PRNS Web site in February 2007, was written prior to the 2007 pupping season and reflected, "Disturbances to resting and breeding seals currently remain low because oyster activities are not occurring at existing seal haul out sites." The updated version of May 2007 stated that disturbances to the seals had "increased dramatically" in 2007 and specified that one area in the estero had experienced an 80 percent decline in seals. Allen and Neubacher explained that the situation with the seals did not become an issue until 2007, when DBOC began to expand its operation.*

April 26, 2007 Trip Report

Goodman and Lunny questioned the authenticity of a "trip report" Allen wrote in which she documented DBOC's oyster bags being placed on seal haul-out sites and oyster farm workers disturbing seals on April 26, 2007. Lunny stated that he was certain that DBOC did not have a boat in the estero matching the description given in the trip report on that date. In addition, Goodman pointed out that the data from that report was not initially included in PRNS' seal monitoring program's database and that on April 24, Allen had sent an e-mail message to the National Oceanic and Atmospheric Administration (NOAA) indicating that NPS had no "direct observations" of DBOC workers disturbing seals.

Allen summarized her observations in that report by writing, "A total of around 90 seals including around 50 pups were disturbed by the boat, and of these, I observed 14 seals including 7 pups directly flushed into the water…." Her trip report stated the following, in part:

> At 3:50 PM I noted a **white boat** (@ 20 ft long) with outboard motor and two people aboard in the east end of the OB seal haul out site. The boat was fowled [sic] in eelgrass and the operators were poling through the eelgrass bed. Once half way along the channel going west, they used the engine again….When the boat went by the seals at 3:55 PM, all flushed into the water except for one lone seal…The boat continued west along the channel…. [Emphasis added]
>
> The boat then landed at around 4:10 PM….Two men got off the boat, one taller in a green slicker and another in yellow slicker pants. They remained on the site until around 4:38 OM [sic]….During the interim time… seals hauled out at [the sandbar known as OB. When the boat proceeded back down the channel going east towards the seals at 4:55 PM, 5 seals flushed into the water included [sic] 2 mother-pup pairs at OB, another 3 mother pup pairs flushed at UEN sand bar, and around 75 seals alerted at UEN but did not enter the water….At 4:58 PM, the boat then proceeded up into Home Bay. I terminated the survey at 5:00 PM.

Lunny said DBOC had no boat or employees in the "UEN" or "OB" areas of the estero on April 26, 2007. According to him, of DBOC's two boats, only the "grey" one entered the estero that day but was only in the Home Bay area from 8:30 a.m. until 10 a.m. Lunny confirmed that DBOC's other boat was "white" but indicated that it was out of commission that day.

The OIG checked California Department of Motor Vehicles registration records to determine how many motorized boats are registered to DBOC. No boats were registered to the company. One boat was registered to Kevin Lunny, and one boat was registered to his father.

On October 5, 2007, Lunny sent an e-mail to the OIG indicating that he would make his two crew foremen available for interviews and that he had not told either of them "who they will be meeting…or why." When interviewed a few days later, one of the foremen told the OIG that Lunny had explained to him that there was an investigation regarding a report that seals had been disturbed on a certain date and that someone would talk to him to ascertain whether the disturbance happened or not. He added that he had not seen Lunny in about a week and that Lunny typically spent 1 to 3 days a week at the oyster farm.

This foreman explained that he oversaw a four- or five-person "single" crew, which harvested single oysters in DBOC's white boat. He described the boat that the remaining "cluster" crew used as "grey." He showed investigators a copy of a "job report" dated April 26, 2007, and a document titled, "Cost Codes," which together indicated that an employee had spent 8 hours engaged in "Facility Maintenance/Repairs" that day. He explained that since this employee spent 8 hours trying to repair the motor for the single crew's boat that day, the white boat could not have been in the estero on April 26 (as Allen's report indicated). He stated that there were no records that specified where a boat was at any given time on a particular day and that "ideally" each crew only used its assigned boat. On the day the OIG interviewed this foreman, the single crew was using the other crew's boat.

The other foreman, who spoke limited English, said he supervised eight members of the "cluster" crew, which harvested clusters of oysters. In contrast to Lunny and the previous foreman's description of the cluster crew's boat as grey, he described his crew's boat as "dark blue." He explained that based on the daily report for April 26, four of the cluster crew members were in the water for 2 hours that day, including himself, from about 8 until 10 a.m. that morning. He demonstrated that the time cards for three of his crew members indicated that they had all clocked out by 4:37 p.m. on April 26, 2007, contrary to Allen's report of workers heading for Home Bay at 4:58 p.m.

According to Lunny's daughter, this foreman did not use time cards because he was a salaried employee; however, his son did. ***Agent's note:*** *When interviewed, this foreman specified that a time card bearing the name "Jr." was his, not his son's.*

A forensic analysis by our Computer Crimes Unit concluded that the PDF file for the trip report was created on April 27, 2007. According to PRNS Chief Ranger Colin Smith, on either April 27 or the following Monday, April 30, Allen told him she had seen oyster workers disturbing seals in the estero on April 26 and asked him if she could borrow a video camera. Allen recalled that on April 27, she told Smith about her observations of the estero on April 26, but she did not remember asking him to borrow a camera. Smith also said it was not uncommon for DBOC employees to take boats out into the estero after hours to fish.

The PRNS Ecologist said he was responsible for managing harbor seal data that was collected pertaining to Drakes Estero. According to him, NPS did not initially include the information Allen obtained on April 26 in that database because her observations as a park scientist were not part of the volunteers' monitoring program, but when the complainants questioned why that report was not part of the database, they decided to incorporate it.

We confirmed that Allen sent an e-mail message to a Wildlife Biologist with the National Marine Fisheries Service of NOAA on April 24, 2007, to which she attached a previous trip report of April 13,

2007. Neubacher was copied on the message, which informed the Wildlife Biologist that the "oyster operator" was "clearly disturbing and displacing seals" but that NPS had "no direct observations" of such activity. In the message, Allen advised the Wildlife Biologist that oyster bags were located on seal haul-out sites and asked if he would write a letter to Lunny reminding him about the Marine Mammal Protection Act since he refused to acknowledge NPS' jurisdiction over his aquaculture lease with the California Department of Fish and Game. She also questioned whether DBOC was required to obtain an incidental harassment permit for disturbing the seals.

The Wildlife Biologist said he had known Allen as a "friend and colleague" since the 1980s. He recalled talking to Allen prior to the time he received the aforementioned e-mail, but he could not remember if he had had more than one conversation with her about the seals at Drakes Estero. He recalled sensing that Allen was frustrated with the owner of the oyster operation because he was "not listening" to NPS. He described Allen's emotional state during their interaction as "normal" and "not frantic." He said the National Marine Fisheries Service could not respond to every report of harassment of marine mammals, and an aquaculture operation such as DBOC did not need an incidental harassment permit for the incidental disturbance of seals.

The Wildlife Biologist said he believed that the National Marine Fisheries Service had a copy of the April 26 trip report, but he could not remember having any conversations with Allen about that report. His understanding was that his agency did not take any action relative to either NPS trip report about Drakes Estero. He said he did not know Lunny, and he did not think he had ever met Neubacher, with whom he had no conversations about this issue.

The Scientist, NPS Pacific West Region, explained that it was "absolutely pointless" for a scientist to fabricate one day's worth of data to reach a certain conclusion because it would not be considered anything more than an "anecdote," which "isn't worth anything."

Allen provided copies of handwritten notes dated April 26 to the OIG and showed investigators a bound field notebook containing those original notes. Under oath to the OIG, Allen stated that although she had brought a camera with her on April 26, she was unsuccessful taking photos through her spotting scope because the camera was not focusing properly through it. Allen subsequently provided investigators with a photo of a tripod that she had taken while viewing the estero that day. The property description file corresponding to the photo reflected the time as "14:41" on April 26, 2007. Although Allen believed that the clock on the camera was in Greenwich Mean Time, the OIG Computer Crimes Unit determined that it was not. The OIG Computer Crimes Unit determined that the camera's 24-hour clock was behind by 1 hour and 20 minutes. Assuming that the clock was not altered at some point after April 26, 2007, the photograph was taken at 4:01 p.m., Pacific Daylight Savings time, during the time Allen's trip report indicated she was conducting a survey at Drakes Estero.

Allen swore under oath that she did not fabricate any portion of the trip report and that it was an accurate depiction of what she had witnessed on April 26. Although Neubacher had no firsthand knowledge of whether Allen had fabricated the report, under oath, he was adamant in his belief that she had not.

Differing Seal Maps

The complainants stated that in May 2007, NPS provided the MCBS with an altered harbor seal site map that Allen gave to Lunny in 2005, which wrongfully indicated that DBOC was encroaching on

seal habitats in the estero. The OIG confirmed that NPS updated the 2005 map. The original map indicates a plot date of May 17, 2005, but the 2007 version provides no indication of its creation date.

At the OIG's request, the PRNS Cartographic Technician overlaid both versions on a single map of the estero for comparison purposes. The 2007 map defined a circular area near the center of DBOC's aquaculture lease as a seal "haulout/pupping area" that was not identified on the 2005 map as such. In addition, a pre-existing seal site from the 2005 map was extended in the 2007 map. Although the more recent version indicated a more extensive encroachment of bags on seal habitats, both versions of the map reflected oyster bags within prohibited areas.

Allen explained that the pre-existing seal site from the 2005 map that was extended on the 2007 map was a "lateral channel" that Lunny knew he was not supposed to use. She referred to a 1992 agreement between the Johnson Oyster Company and NPS that indicated as much. A review of the 1992 Record of Agreement between NPS, the National Marine Fisheries Service, the California Department of Fish and Game, and the Johnson Oyster Company reflected that the lateral channel was closed to boat traffic from March 15 through June 1 and that during the entire month of June, the channel "should be used as little as possible." Allen further explained that the new area circled on the 2007 map was not circled on the 2005 map because it was not a primary pupping area, which she was focused on showing Lunny in 2005. It illustrated a place where seals hauled out of the water.

On May 18, 2007, Allen wrote Neubacher an e-mail documenting the fact that she had met with Lunny to inform him which areas to avoid in the estero in order to prevent the disturbance of seals. In her e-mail, she wrote the following:

> I want to have on record that on March 17, 2006 [sic] when we met with Mr. Kevin Lunny about Drakes Estero in the administration conference room, one of the items that we discussed was not disturbing harbor seals in Drakes Estero. I met with Kevin afterwards, and on a park brochure map, I showed him where the seals haul out and pup and explained that he should avoid those areas. I told him that I would provide a better map for his reference. I explained that the upper estero was particularly important for females with pups. Mr. Lunny was receptive to what I said and wanted more information.
>
> That same week, I spoke with [the GIS Biologist of the park] about producing a map for Mr. Lunny so that the seal pupping and haul out areas were clearly shown. I met with [the Biologist] and he produced the map within a week. I sent the map to Mr. Lunny along with articles on harbor seals….This map was also included as Exhibit A in the draft permit to Drakes Bay Oyster Company.

Under oath, Allen clarified that the date she met with Lunny was in 2005, not 2006, as she mistakenly noted when she documented her interaction with Lunny following the MCBS hearing. Lunny confirmed that when he took over the oyster farm in 2005, he had a friendly meeting with Allen to discuss any impact the operation might have on species in the area, during which she pointed out the location of seal sites on a map.

Neubacher said he had asked Allen to document that meeting following Lunny's assertion at the MCBS hearing that NPS had not provided guidance to him about harbor seal areas that DBOC was to avoid.

At that hearing, Lunny stated the following:

> …there has been a lot of concern about environmental impacts to eelgrass, to seal pups, placing bags in seal pupping areas. That's never been brought to our attention. A lot of this is the first time we've ever heard…we're doing everything in our power to do the best we can….We have hundreds of acres in our leases to put oyster bags that are near haul-out zones and not near haul-out zones, and there's nothing that says we shouldn't have bags there. A simple phone call saying 'We're worried about the bags there,' or 'We're worried about the eelgrass' – we've not been party to this. This is purely punitive. It's purely worked out behind our back, so I just want to make that clear. If we knew that these were impacts and we could do anything positively, we would have.

Allen recalled that during the MCBS hearing in May 2007, Lunny said NPS had never told him where the seal pupping areas were, but she also said that in 2005 she had shown Lunny where those areas were on a map. She said she also had the Geographic Information Systems division of PRNS make him a map of the estero with an overlay of pupping areas and that exhibit "A" of DBOC's Special Use Permit was the map Allen gave Lunny that illustrated seal pupping and haul-out areas.

The PRNS Cartographic Technician overlaid the aquaculture lease boundary, the location of oyster racks and bags, and seal haul-out areas for the 2007 version. He said Allen wanted him to update the map to include additional seal haul-out areas than were displayed on the 2005 map, so they worked together to do that in March 2007 based on her knowledge of seal habitat in his office. He said he did not recall her telling him what the map would be used for.

When asked whether NPS had given Lunny any directives restricting DBOC from certain pupping areas since 2005, Neubacher responded that during a meeting in 2006, Lunny said NPS did not have any "expertise" to be telling him where he could put oyster bags and conduct activities in the estero, a reason he gave for not signing a Special Use Permit. When asked whether NPS had informed Lunny that DBOC was harming seals in any way, Neubacher responded that NPS had not "sat down" with him to discuss the issue since 2005, but NPS had discussed it at the MCBS hearing that Lunny attended.

When asked why NPS had not sat down with Lunny to address the issue since 2005, Neubacher stated the following:

> Well, we were coming out of the pupping season. We were in disagreement over the permit in general. Remember, he refused to get a permit for any operation, and he already refused to listen to any of our direction. So we were waiting for the Fish and Game letter to come, which pretty much said we had authority.

Neubacher elaborated that the letter from the California Department of Fish and Game documenting NPS' authority over the estero came on May 15, 2007, after the MCBS public hearing. Neubacher added that since Lunny had said the state had authority over the estero, he was not recognizing NPS' authority in that way.

Neubacher and Allen explained that DBOC's disturbance of the seals in 2007 caught NPS by surprise. Neubacher said volunteers who counted the seals had informed Allen that the oyster operation was placing bags in seal haul-out sites, which prompted NPS to document the location of the bags in the spring of 2007.

According to Allen, oyster bags were placed in seal haul-out areas for the first time in 2007 due to DBOC's dramatic increase in production. She said that according to the State of California, DBOC planned to increase its production of oysters from about 3 million in 2006 to about 9 million in 2007.

Allen recalled that she informed Neubacher about DBOC's oyster bags being placed in prohibited areas in mid or early April 2007. She said she did not talk to Lunny about it because her job was to guide policy, not to manage. She said she did not know if Neubacher had contacted Lunny about the issue. She described NPS as being in "a reactive mode" to DBOC's increased production.

NPS issued its Clarification Statement in response to Goodman's letters to the MCBS in May of 2007. It reflected NPS' contention that from 1997 through 2006, the oyster operation was not disturbing harbor seals during their breeding and pupping season and that the problems began in 2007. The statement reflected the following:

> During the 2007 harbor seal pupping season, the NPS documented 1) oyster boats disturbing mother seals with pups, and 2) oyster bags placed on sandbars where seals would normally give birth and nurse their pups (NPS Trip reports 4/13/2007 and 4/26/2007). Two oyster bag arrays (approximately 5 acres) were within a regular harbor seal haul out site, and one other oyster bag site was within 50 meters of a regular harbor seal haul out site.

In the statement, NPS conceded, "More focused analyses are required to determine if oyster operations are affecting seal distribution and productivity within Drakes Estero." NPS also conceded, "The overall Drakes Estero and regional population declined in 2007, but not necessarily in response to the oyster farming operations." However, NPS maintained its position that DBOC "has contributed to site-specific disturbance and displacement within the estero, where historically many females with pups occur."

NPS "Scientific Code of Conduct"

On August 23, 2007, attorney Samuel Plauché, GordonDerr LLP, submitted an Information Quality complaint to DOI on behalf of DBOC, the Pacific Coast Shellgrowers Association, the Marin County Farm Bureau, Marin Organic, and the Pacific Institute pertaining to the Sheltered Wilderness report. On October 23, 2007, Pacific West Regional Director Jon Jarvis addressed the complaint by responding that NPS had removed the Sheltered Wilderness report from PRNS' Web site, had posted a correction to the report, and had initiated an "independent scientific peer review" of the body of scientific studies concerning Drakes Estero. Jarvis indicated that he expected those actions to address the complainants' "concerns regarding accuracy, objectivity, transparency, and timeliness."

The complainants alleged "scientific misconduct" against Neubacher and Allen. Based upon those allegations and other indications of improprieties regarding the accuracy of scientific information reported by PRNS, OIG investigators attempted to locate a code of conduct applicable to DOI and/or NPS employees involved in reporting the results of scientific research.

Our investigation determined that NPS did not have a "Scientific Code of Conduct" in place until a document titled, "Interim Guidance Document Governing Code of Conduct, Peer Review, and Information Quality Correction for National Park Service Cultural and Natural Resource Disciplines" (Policy Guidance Document) was issued on January 31, 2008, contemporaneous to this investigation.

Although the guidance document was labeled "interim" and was in draft form, it was to remain in effect "until amended or superseded." An NPS Scientist confirmed that NPS did not have its own Scientific Code of Conduct until the Policy Guidance Document was issued.

***Agent's Note**: In a memorandum to the Secretary titled, "Allegations of Misbehavior on the part of FWS Employees Involved with the National Interagency Canadian Lynx Survey," dated March 1, 2002, the OIG recommended that the Department "…design and implement a DOI Scientific Code of Ethics."*

A review of the Departmental Manual (370 DM 752), under Appendix B, "Table of Offenses and Penalties" [Nature of Offense (General Misconduct) – Offense #30], reveals a chargeable offense described as "Violating the Department's Code of Scientific Conduct (or other professional code of conduct that applies to employees required to maintain professional license or membership)." The table refers the reader to 305 DM 3; however, attempts to retrieve this section via the Electronic Library of Interior Policies or "ELIPS" resulted in a determination that this manual section was under revision.

A departmental letterhead "draft" document titled, "The Code of Scientific Conduct," dated March 16, 2004, was located. Further inquiry determined that this document had never been enacted, even though the information had been released to the public indicating that it was pending.

Inquiries with the Office of the Secretary as to a signed/approved Scientific Code of Conduct determined that there was no such record. Further, contact with the Departmental Manual Office regarding the status of the Scientific Code of Conduct (305 DM 3) determined that a completed Code had been routed through the approval process in April and May 2006, and then sent to the Office of the Secretary for signature. However, the document had not been approved or returned to the Departmental Manual Office.

The Scientist also made reference to NPS Director's Order 11B: **"**Ensuring Quality of Information Disseminated by the National Park Service."

***Agent's Note**: While this order provides guidance to NPS employees in an effort to ensure the quality and accuracy of information collected and disseminated by NPS, this order does not serve in place of a "Scientific Code of Conduct," nor does it remedy NPS' obligation to implement such a policy.*

When investigators were unable to locate either a Departmental or NPS Scientific Code of Conduct, the search was broadened to determine if there was an applicable code for the federal government as a whole. It was determined that the White House Office of Science and Technology Policy announced on December 6, 2000, the establishment of the "Federal Policy on Research Misconduct." According to the announcement, "The policy will apply to Federally-funded research regardless of where the research is conducted or by whom." The announcement also reported that federal agencies would have 1 year to implement the policy, which was published in the December 6, 2000 edition of the Federal Register. Included in the Office of Science and Technology Policy were definitions of research misconduct, a statement of the responsibilities of federal agencies, and very general guidelines for dealing with federal employees who violated said policy.

Part II: DISPARATE TREATMENT

In support of their allegations of Neubacher's pattern of mistreatment of them, the Lunny family offered several examples of what they felt constituted disparate treatment by the superintendent. They

stated that Neubacher had (1) prevented Kevin from displaying certain signs for DBOC, (2) disallowed him from maintaining a road leading to DBOC, and (3) intended to try to shut down DBOC prior to 2012. Further, they alleged Neubacher had (4) prevented DBOC from participating in a proposal to study the reintroduction of native oysters to Drakes Estero and (5) prevented DBOC from clearing a Cease and Desist Order that had been issued to the previous owners of the oyster farm. In addition, they claimed Neubacher was (6) misinterpreting the Wilderness Act to mean that DBOC could not operate past 2012 and (7) imposing unnecessary restrictions on the G Ranch, which Kevin Lunny's parents operated. Finally, they alleged that NPS had (8) not sufficiently responded to Freedom of Information Act (FOIA) requests that Goodman had filed. The OIG examined all of these allegations of disparate treatment, which are addressed below.

DBOC Signage

Lunny complained that he was not afforded the same opportunity as the previous operator to display signs for DBOC within the PRNS boundary. He claimed that in the early part of 2006, NPS made and installed two new DBOC signs. According to Lunny, the second sign displaying DBOC's operating hours was removed within a few weeks of its installment with no explanation from NPS.

Our investigation determined that due to a miscommunication between a PRNS sign maker and Neubacher, a DBOC sign bearing a commercial message was erected on NPS property, in violation of NPS' sign policy. That policy was implemented in 1988 and was regulated by the Department of Transportation's "Manual on Uniform Traffic Control Devices," which states, in part, "No traffic control device or its support shall bear any advertising or commercial message, or any other message that is not essential to traffic control."

We determined that within a few days of erecting the signs, the PRNS Buildings and Utilities Supervisor and the sign maker's boss, the Chief of Facility Management, had informed the sign maker that the sign advertising DBOC's hours of operation needed to come down immediately because PRNS could not advertise commercial messages for its concessionaires. The PRNS sign maker said that when he discussed the issue with Neubacher, he (Neubacher) admitted that he had not noticed some verbiage on the sign designs that the sign maker had sent him.

Neubacher confirmed that prior to his term as the PRNS superintendent, there was one sign on the main road leading to the Johnson Oyster Company that was out of compliance with NPS' current policy, and with the change in ownership of the oyster operation, he wanted to bring the signs into compliance with policy. As of mid 2007, Lunny had not complained to the sign maker or Neubacher about the state of DBOC's new signage.

Road Maintenance

Lunny said he assumed that he would maintain the road leading to DBOC himself; however, he said Neubacher told him that NPS would be taking over the maintenance of the road despite the fact that the Lunnys owned a paving business. Lunny said Neubacher followed up his decision with a letter stating that NPS would conduct all road maintenance.

While Lunny claimed that in a conversation with the PRNS Building and Utilities Supervisor and the PRNS Chief of Facility Management that he offered to maintain the road for NPS at a cost of one dollar, we could not substantiate this claim. The Building and Utilities Supervisor did not recall Lunny offering to maintain the road for a dollar and added that he had never discussed this issue with Neubacher.

The Chief of Facility Management said he and Neubacher felt that with the Lunnys taking over the oyster farm from the Johnsons, it was a good opportunity for PRNS to assume the responsibility of maintaining the road, as this would reduce potential liability issues of a private entity providing maintenance on a government road. According to the Chief, Lunny agreed and had never complained to him about PRNS taking over the responsibility of maintaining the road. He also did not remember Lunny offering to maintain the road himself for a dollar. According to the Chief, in addition to the road leading to DBOC, NPS maintained all other government-owned roads in PRNS.

Neubacher stated that there was an arrangement established by the previous superintendent that allowed the Johnsons to maintain the road before Lunny took over DBOC. He said an environmental group had complained about Lunny pushing dirt into the estuary, and when he (Neubacher) did research to determine who should maintain the road, he found no easement that would allow Lunny to maintain the government road himself. Neubacher expressed concern about the possibility of NPS getting sued if a private citizen got hurt while working on a public road.

A review of PRNS' files revealed a letter from Lunny to Neubacher, dated June 7, 2005, in which Lunny wrote, "DBOC has no problem with NPS providing road maintenance." On January 3, 2006, DBOC sent another letter to Neubacher in which Lunny wrote that a recent "reprimand" from Neubacher about DBOC not having authorization to maintain the road had come "as a complete surprise."

On January 12, 2006, Neubacher responded to Lunny by confirming that NPS had discussed the road maintenance issue with Lunny over the phone. A subsequent letter from Neubacher to Lunny, dated February 23, 2006, documented that NPS had noted during a visit to DBOC on February 17, 2006, that the Lunny family had repaired the road with asphalt. In that letter, Neubacher wrote that he thought that the issue of who was to maintain the entrance road "had been resolved."

Intention to Oust DBOC Prior to 2012

The Lunny family claimed that Neubacher and NPS had conversations and had taken actions to actively try to shut down DBOC prior to the expiration of its lease in 2012. These allegations stemmed from discussions at two meetings – one in January 2005 between Neubacher and local environmentalists Ken Fox, President of the Tomales Bay Association; Jerry Meral, member of the Environmental Action Committee of West Marin; and Gordon Bennett, Vice Chair of the Sierra Club's Marin Group, and one in April 2007 between Marin County Supervisor Steve Kinsey and Neubacher. Regarding the January 2005 meeting, Lunny stated that Ken Fox told him that during a meeting Fox attended with Bennett, Neubacher, and Meral, Neubacher had an "affirmative reaction" to their suggestion of financially harming DBOC.

Fox recalled attending a meeting on January 23, 2005, with several people, including Bennett and Meral, at what was commonly known as the "red barn" in PRNS soon after Lunny took over the oyster operation. Fox stated that no one spoke of trying to shut DBOC down prior to 2012 and denied that there was any discussion about financially ruining the Lunnys or about putting DBOC out of business. Additionally, Fox said he was not certain that Neubacher had attended the meeting in question.

Bennett recalled attending at least one meeting at PRNS with Neubacher, Fox, and Meral but denied that they ever discussed a plan to oust DBOC from the park prior to 2012 or to financially ruin DBOC. He provided a copy of minutes from the meeting of January 23, 2005, which reflect that NPS staff was in attendance but do not specify which NPS officials were present. Bennett added that no one from NPS had ever told him that they would like to see DBOC "gone" before 2012.

Meral stated that he had never participated in a discussion with Neubacher or any other PRNS employee about the possibility of financially undermining DBOC to hasten the farm's exit from the park. He added that he had never heard any NPS employee say that they would like to see DBOC gone from the park before 2012. Similarly, Neubacher denied that anyone had ever made suggestions to him about ways to remove DBOC's operation from the park prior to 2012.

Another example that Lunny gave to illustrate his contention that Neubacher wanted to shut down DBOC was a conversation he had with Marin County Supervisor Steve Kinsey, who met with Neubacher in April 2007. According to Lunny, Kinsey told him that Neubacher was going to shut down the farm before 2012 because the Lunnys were doing so much environmental damage. Lunny said Kinsey warned him that Neubacher was "crazed" and that he was "going to war" against the oyster farm. Lunny said that Kinsey's aide corroborated Kinsey's account of the meeting.

Kinsey told OIG investigators he had met with members of the Lunny family at various times since approximately the end of 2005 to discuss their concerns about the future of DBOC. In Kinsey's opinion, Neubacher was "holding [the Lunnys] hostage" until they agreed to sign a document agreeing to leave by 2012. He opined that Neubacher was "throwing down a gauntlet of obstacles" for the Lunnys by refusing to sign off on some building permits that the county was ready to issue to DBOC, thereby making it impossible for Lunny to clear a longstanding Cease and Desist Order that the California Coastal Commission had issued to the Johnson Oyster Company.

Kinsey confirmed that he and his aide met with Neubacher at PRNS in April 2007 to discuss several issues, including DBOC. When Kinsey suggested that they convene a scientific panel to evaluate DBOC's impact on the estuary, Neubacher said that would not be necessary and then showed Kinsey and his aide documents and aerial photographs or "photomaps" demonstrating cuts that DBOC's boats had made through the eelgrass. Kinsey said the atmosphere was like that of a "war room." Kinsey could not recall whether he told Lunny that Neubacher was "crazed," but he felt it was accurate to say that Neubacher was "very upset" and "seemed obsessed" with proving that DBOC was harming seals and eelgrass in the estuary.

Kinsey confirmed that he told Lunny that Neubacher intended to shut DBOC down. Kinsey stated that although he did not specifically remember Neubacher saying this, the tenor of the meeting left no doubt in Kinsey's mind that Neubacher intended to shut DBOC down prior to 2012.

According to Kinsey, Neubacher made "strong environmental accusations" against DBOC during their April 2007 meeting and made reference to DBOC committing environmental felonies. Kinsey summed up Neubacher's portrayal of Lunny as a "character assassination." Kinsey recalled that during the April 2007 meeting, Neubacher said he had been trying to find a way to keep Lunny operating in the park through the end of his lease with NPS but that a recent "pro oyster" editorial titled, "Fergie the Oyster versus Smokey the Bear," in the *Coastal Post* had changed his mind. Kinsey recalled that Neubacher said something along the lines of, "I tried to work with [Lunny], but I'm done." ***Agent's Note****: An editorial titled, "Ollie 'Erster versus Smokey the Bear," was published in the April 2007 edition of the Coastal Post.*

Following their meeting, Kinsey said he invited Neubacher to attend a hearing before the MCBS on May 8, 2007, to consider the "adoption of a draft letter to our federally elected representatives" supporting the continued operation of DBOC.

Kinsey's aide recalled that Neubacher was "entirely courteous" during the April 2007 meeting, but he was surprised by his "vehemence" about Lunny's supposed disregard for the environment. During the meeting, he said Neubacher explained that he had to comply with a potential wilderness mandate that will be enacted in 2012. Kinsey's aide speculated that Neubacher was "putting the brakes on" DBOC's permitting process so that he would have a better argument for converting the site to wilderness in 2012, but he said he never heard Neubacher say that he planned to shut DBOC down before then.

Neubacher recalled telling Kinsey that he had some concerns about the operation's impact on the estero and explained that Lunny would have to go through the National Environmental Policy Act process. He stated that he had always said DBOC had the right to operate in the park until 2012.

Neubacher clarified that the comment attributed to him about "going to war" pertained to his comment to Kinsey that environmental groups might "go to war" to ensure that Drakes Estero becomes wilderness in 2012. When asked if he said something about being willing to work with Lunny until the *Coastal Post* article came out, Neubacher responded the following under oath:

> I don't know if I said that….I did say that I was very frustrated that we were trying to work really closely with Kevin, and we were getting this kind of information through the press. But there's no way. I mean, I don't have the authority to even not work with him 'til 2012. The reservation of use is a legal right.

Neubacher conceded that he told Kinsey about some criminal violations he believed had occurred related to the G Ranch, not DBOC. ***Agent's Note***: *Issues regarding the G Ranch are addressed later in this report.*

With the exception of Kinsey, no other individuals interviewed during this investigation said Neubacher or any NPS official had ever indicated that they wanted to shut DBOC down prior to 2012, including the following California Coastal Commission officials: Deputy Director Alison Dettmer; Chief Enforcement Officer Lisa Haage; Deputy Director Alfred Wanger, Jr.; and District Enforcement Officer Joanne Ginsburg, as well as an Attorney-Advisor of the Solicitor's Office; a Field Solicitor; Elliott-Fisk; Harbin-Ireland; a PRNS Cartographic Technician; the PRNS Marine Ecologist; a retired NOAA employee who had been detailed to NPS; an Ecologist with NOAA; and Phyllis Faber, the co-founder of the Marin Agricultural Land Trust and an advocate for DBOC.

The Attorney-Advisor and a DOI Field Solicitor opined that NPS had the legal authority to shut DBOC down prior to the expiration of its Reservation of Use and Occupancy in 2012, but they were not aware of NPS terminating any other Reservation of Use and Occupancies in the past. They felt that NPS and Neubacher had been trying to work things out with Lunny. The Field Solicitor opined that NPS had been "bending over backwards to try and accommodate [Lunny]" with his permitting process.

There was no indication that any NPS employees planned to oust DBOC from PRNS prior to the expiration of the Reservation of Use and Occupancy in 2012 in any of the documentation that was reviewed for this investigation, including internal PRNS e-mails and other correspondence. Two e-mails obtained during the investigation specified that NPS intended for DBOC to operate until 2012. One e-mail from the Solicitor's Office to Neubacher in June 2006 indicated that NPS planned for DBOC to operate in PRNS until 2012.

Another e-mail that Neubacher received on July 17, 2007, from Assistant Regional Director Holly Bundock of the Pacific West Region of NPS reflected, "We do not want to put Mr. Lunny out of

business but he must comply with our stipulations, including that the operations must cease when the reservation expires in 2012 date."

Proposal to Introduce Native Oysters to Drakes Estero

In another example that Lunny claimed illustrated his mistreatment by Neubacher, Lunny wanted to determine the feasibility of introducing native oysters to Drakes Estero but was told that Neubacher would not allow the project because the Lunny family was financially irresponsible. Lunny said a company called "MACTEC" was studying native oyster populations in the San Francisco Bay and wanted to use DBOC's spare oyster shells for a San Francisco Bay project. In return, MACTEC planned to conduct research in PRNS to see whether introducing native oysters to the estero would be possible. Lunny said NPS issued a Special Use Permit to MACTEC for the removal of the shells, but since NPS would not let MACTEC conduct its study of the estero, he paid $20,000 toward the project without the benefit of MACTEC's research.

According to Lunny, when a Biologist of MACTEC approached Neubacher about the possibility of doing the study, Neubacher told the Biologist that DBOC was going to close in 2012 and that NPS would not allow the project because the Lunnys were financially irresponsible. Lunny described the Biologist as "livid" about Neubacher's characterization of the Lunny family.

The Senior Biologist for MACTEC Engineering and Consulting said he wrote a proposal for the project, which was submitted to the Ocean Trust for funding and was reviewed by the U.S. Fish and Wildlife Service and NOAA. He recalled that at some point in March or April 2006, Allen called and told him that MACTEC could not use DBOC's shells because the company did not have a permit from NPS. Although NPS required MACTEC to obtain a Special use Permit in order to take the oyster shells from DBOC, the Biologist said he subsequently obtained one from PRNS with "no difficulty."

The Biologist for MACTEC recalled that about 2 weeks after Allen's call, Neubacher and Allen participated in a teleconference with the Ecologist of NOAA. He said Neubacher and Allen were opposed to MACTEC conducting research in the estero because NPS felt there were not enough native oysters living there to justify MACTEC's study. He recalled that Neubacher also explained that since the Wilderness Act required the estero to revert to wilderness at some point, he did not want to do anything to encourage Lunny to continue his oyster operation past that time. He added that Neubacher implied that Lunny was unreliable because he did not pay his bills on time.

The NOAA Ecologist said that prior to speaking with Neubacher and Allen, he thought that either the Biologist for MACTEC or Lunny had already obtained any necessary authorization or permits for the project from NPS. He said Neubacher and Allen were caught off guard by the project because they had not been informed of it sooner, something for which the NOAA Ecologist apologized to them. At the time the proposal was discussed with NPS, he said he did not know the history of PRNS' ongoing dispute with Lunny. The NOAA Ecologist described all participants in the teleconference as professional and said he would not have described the Biologist for MACTEC as "livid" about anything that was discussed. He also recalled Neubacher mentioning something about Lunny not being very responsible with money, but he characterized it as a "heads up" comment in the event that Lunny was to handle money for the project and did not consider it malicious.

Neubacher explained that because Lunny submitted a grant to NOAA without notifying NPS about the proposal, the first time PRNS became aware of the project was when someone from NOAA called Allen to ask what NPS thought of it. Neubacher denied the research portion of the proposal because it was "research with implementation," meaning that MACTEC planned to put unnatural structures in the

estero to create substrate where native oysters could grow, thereby potentially altering natural ecological processes. Neubacher conceded that when he spoke to someone from MACTEC about the proposal, he commented that MACTEC "ought to double check" a donation that the Lunnys were supposed to make toward the project because the Lunnys had been in default on payments to NPS for 10 years.

Clearing the Cease and Desist Order

In their April 18, 2007 letter to NPS requesting an investigation of Neubacher, the Lunnys complained that DBOC was unable to complete all the requirements of the Cease and Desist Order from the California Coastal Commission because Neubacher had impeded their ability to obtain a building permit from Marin County "without reason or explanation" for "more than a year." The Lunnys characterized NPS' delay as "inexplicable" and "punitive." During a subsequent interview of Lunny to seek clarification of this and other issues, Lunny stated that the reason he was unable to comply with all the provisions of the Cease and Desist Order was because he did not have a Special Use Permit from NPS.

DOI regulations require anyone operating a business within a national park to have a "permit, contract, or other written agreement with the United States." NPS issues permits to "impose conditions to manage the activity and prevent impairment or derogation of resources, values, and purposes for which the park was established" and "to obtain the signature of the permittee agreeing to the conditions" of the permit. Special uses within national parks are to be "consistent with applicable legislation, federal regulations and administrative policies" and "not create unacceptable impacts to park resources."

At the MCBS hearing on May 8, 2007, Lunny claimed that DBOC had been working with NPS to obtain a Special Use Permit but that DBOC was out of compliance with the Cease and Desist Order because NPS had not renewed the Special Use Permit. He told MCBS, "We've been hoping for that permit to be renewed."

Our investigation determined that until April 22, 2008, Lunny had refused to sign a Special Use Permit from the time he bought the mariculture business in 2005 despite ongoing efforts by NPS to negotiate with him. Lunny offered the OIG two reasons why he had not signed a Special Use Permit. One reason he gave was a dispute he had with NPS over the boundaries of land that were subject to the Reservation of Use and Occupancy and therefore did not require him to obtain a Special Use Permit for its use. The second reason he gave was that he questioned why NPS wanted him to sign a Special Use Permit that was over 20 pages long when the Special Use Permit for the previous operator, Johnson Oyster Company, was much shorter. In addition, Lunny initially complained that Neubacher wanted him to sign an unspecified document agreeing that DBOC would leave the park in 2012 when the Reservation of Use and Occupancy expired; he later conceded to the OIG that the document in question was actually the Special Use Permit.

In reference to the dispute Lunny had with NPS regarding the boundaries of land subject to a Special Use Permit, Lunny told the OIG that he hired a surveyor to clear up a property dispute regarding a survey that Johnson Oyster Company had commissioned that indicated that DBOC's shucking building, hatchery building, and retail building were at least partially located off DBOC's reserved area. Lunny complained that Neubacher would not recognize his new survey and was therefore complicating and slowing down the Special Use Permit process.

Our investigation determined that Lunny sought a new survey in 2005 in an attempt to avoid having to sign a Special Use Permit for the use of those buildings. The process of waiting for the surveyor

whom Lunny hired to complete his work and the subsequent disagreement between NPS and Lunny about which survey was more accurate significantly delayed the process of Lunny obtaining a Special Use Permit.

When Neubacher realized that the original survey placed DBOC's buildings off the reserved area while Lunny's survey placed them on the reserved area, he sent both surveys to the Chief, Pacific Land Resources Program Center, Gregory Gress.

Gress said he subsequently sent both surveys to Lance Bishop, the Chief of Geographic Services for Cadastral Survey of the Bureau of Land Management, who opined that the original survey by Johnson Oyster Company was the more reliable of the two. Both Gress and Bishop denied that Neubacher or anyone had tried to influence their opinion about the surveys.

After Gress notified Lunny that he had directed Neubacher to go by the original survey in June 2006, Lunny subsequently produced a letter from the surveyor who had worked for Johnson that stated that *his* survey was not intended for the purpose for which it was being considered. At that point, PRNS sent both surveys to a private title company, which recommended that Lunny's survey be used. Neubacher ultimately agreed to allow Lunny to use the three buildings in question without them being subject to the Special Use Permit since they would still be held to the conditions of the Reservation of Use and Occupancy agreement.

PRNS files indicate that Neubacher wrote to Lunny on January 25, 2007, to document that on January 12, 2007, Lunny and PRNS staff had "agreed to work around" the survey dispute and move forward with finalizing the Special Use Permit. Lunny responded to Neubacher with a letter stating, "We believe that the survey issue has been resolved, and that there is no need to 'work around it.'"

When interviewed in June 2007, Neubacher said he did not understand why Lunny still considered the surveys an issue since he had told Lunny that NPS was only going to hold DBOC to the terms of the Reservation of Use and Occupancy Agreement for those buildings, not the Special Use Permit. He subsequently stated that he had never told Lunny that he would not be able to use the buildings in question unless they were on the reserved land. He stated, "Personally, I don't care where [the boundary] is…I can't give up…United States government land to anybody….I just wanted it to be accurate…." Neubacher added that no matter what, Lunny was still required to get a Special Use Permit for part of the shoreline that was not affected by either survey.

In order to determine why the Special Use Permit for DBOC was lengthier than the previous one for the Johnson Oyster Company from 1972, we spoke to the PRNS Special Use Coordinator. The Coordinator recalled that Neubacher asked him to write a draft Special Use Permit for the Lunnys to get DBOC's permitting process started in 2005. He described the Special Use Permit he wrote as "pretty standard" and said he had used Johnson Oyster Company's pre-existing Special Use Permit as a starting point and referred to other Special Use Permits in PRNS as a guideline. According to the Coordinator, when the Solicitor's Office incorporated "universal stock language" into the permit, Lunny felt the permit was too restrictive.

Neubacher explained that in 1972, Special Use Permits were "very simplistic" because NPS had not "come of age in terms of authority." He said that current Special Use Permits were a lot more sophisticated and included standard clauses that were not included in historic permits. He added that all Special Use Permits were now "20 to 30 pages."

An additional issue Lunny initially cited as evidence of disparate treatment by Neubacher was the fact that Neubacher had asked him to sign "a document" acknowledging that DBOC would "be gone" when the Reservation of Use and Occupancy expired in 2012, which Lunny said he would not sign because his attorney advised against it. Lunny told the OIG that although he did not believe he had an absolute right to keep DBOC operational in the park past 2012, he wanted the opportunity to do so. Lunny later confirmed Neubacher's contention that the only document Neubacher had asked him to sign acknowledging that DBOC had to leave PRNS in 2012 was the Special Use Permit.

In June 2005, Lunny sent Neubacher an e-mail requesting that the following language be incorporated into the Special Use Permit:

> Permittee and Permitter acknowledge and recognize that…the Reservation of Use and Occupancy…does allow for issuance of a special use permit for the continued occupancy of the property…beyond the 2012 term, at the discretion of the Permitter.

Neubacher had informed Lunny that his suggested text would not be a part of the permit "because the wilderness designation came after the signing of the [Reservation of Use and Occupancy]." ***Agent's Note:*** *The relationship between the Reservation of Use and Occupancy and the Wilderness Act is addressed in the next section of this report.*

A second draft of the Special Use Permit, dated June 7, 2005, from NPS contained the following similar clause, which was added by the Solicitor's Office:

> The Permittee acknowledges that they have been informed about the Congressional designation of the adjacent Drakes Estero area as potential wilderness. The Permittee also acknowledges that they have been provided the National Park Service legal opinion dated February 26, 2004 regarding the future of the potential wilderness area and legal options after the expiration of the 1.43 acres of land under the 2012 Use and Occupancy Permit.

DBOC subsequently faxed the June 7, 2005 version back to NPS a few days later with the language added by the Solicitor's Office deleted.

A subsequent undated draft of DBOC's Special Use Permit sent to Lunny on December 20, 2005, contained a space for the "Permittee's Initials" next to the following text:

> The permittee and permitter acknowledge and recognize that extension of this permit is not currently authorized beyond the expiration of the reservation of use and occupancy referenced in the deed from Johnson Oyster Company to the United States of America….This Reservation of Use and Occupancy expires on November 9, 2012. The permittee acknowledges that they have been informed about the Congressional designation of Drakes Estero as potential wilderness. The permittee also acknowledges that they have been provided the Office of the Solicitor legal opinion…regarding the future of the potential wilderness area. [Emphasis included]

The Attorney-Advisor , DOI Solicitor's Office, said he drafted the above section of the draft Special Use Permit because "we wanted to be very clear with Mr. Lunny that it was the position of the Solicitor's Office and the Park Service that it [RUO] wasn't going to be extended beyond 2012, so that he was fully aware of that going into it." The Field Solicitor said he wanted such language in the permit because he had learned from past experience that as the "sunset" dates approached, some

permittees tried to extend that date by claiming that there was some "ambiguity as to whether or not whatever the operation was could be continued."

When we first interviewed Lunny to follow up on his request for an investigation, he stated that the California Department of Fish and Game owned and managed the submerged lands of Drakes Estero. Neubacher explained that one of the reasons Lunny had not signed a Special Use Permit for the use of the estero was due to "jurisdictional issues over the waters" between the California Department of Fish and Game and NPS.

PRNS documented its understanding that, during a meeting with PRNS and California Coastal Commission staff members in January of 2007, Lunny had agreed that the use of the submerged lands of the estero would be subject to a Special Use Permit. NPS wrote a letter to Lunny, dated January 25, 2007, outlining this understanding, but Lunny disputed that he had agreed to obtain a Special Use Permit for the submerged lands of the estero in a letter he wrote to NPS dated January 29, 2007.

We determined that although the State of California granted the tidelands and submerged lands, including "leased state water bottoms" within the boundaries of PRNS, to the United States in 1965, the California Department of Fish and Game did not officially acknowledge NPS' authority over the estero until 2 weeks after the MCBS hearing in May 2007. At that time, California Department of Fish and Game Director L. Ryan Broddrick memorialized CDFG's position that DBOC's mariculture operation "is properly within the primary management authority of the PRNS…."

As previously mentioned, Lunny alleged that Neubacher was preventing him from complying with the Cease and Desist Order that DBOC assumed from the Johnson Oyster Company – by not allowing him (Lunny) to obtain a building permit from Marin County. Our investigation determined that even if Lunny had obtained a building permit from the county, that still would not have put him in good standing with the California Coastal Commission because he had committed violations of the Coastal Act due to unauthorized development he had undertaken on the DBOC site. The California Coastal Commission had been awaiting a complete application for a coastal development permit from Lunny so that he could obtain such a permit. However, DBOC's lack of an effective Special Use Permit with NPS was preventing Lunny from completing that application. No California Coastal Commission officials who were interviewed during this investigation were aware of Neubacher or any NPS official doing anything improper to stall the process of DBOC obtaining permits from either the California Coastal Commission or NPS.

On September 11, 2007, John Dixon, an Ecologist with the California Coastal Commission, issued a memorandum documenting impacts that DBOC's operation was likely having on Drakes Estero, including the disturbance of harbor seals. Dixon told the OIG that the California Coastal Commission had directed him to "independently assess what sort of issues were involved with aquaculture" in Drakes Estero due to the ongoing controversy regarding permits. One of the 43 references he cited was Allen's trip report of April 26, 2007. Dixon vehemently denied that anyone from NPS had tried to influence his findings.

Lunny responded to the California Coastal Commission about Dixon's memorandum on September 27, 2007, by stating that the allegations made by NPS of disruption to the seals were false and solely based on the April 26 trip report he questioned. Lunny offered Dixon's memorandum and the trip report as reasons for further delaying the Special Use Permit process. He wrote the following:

> The Commission Report arrived at the very time DBOC is in the middle of Permit discussions with the NPS. However, the NPS Trip Report is so disturbing and inaccurate

> that we are compelled to halt our internal evaluation of our pending NPS permit. This is delaying our scheduled meetings with NPS while we address their allegations of harm and disruption to harbor seals.

On October 3, 2007, the California Coastal Commission issued a Notice of Intent to Commence Cease and Desist Order Proceedings against DBOC. On November 29, Lunny signed a Cease and Desist Consent Order, which the California Coastal Commission adopted on December 12, 2007, regarding DBOC's "unpermitted development of offshore aquaculture operations, onshore processing and retail facilities, and related residential use." The Consent Order required Lunny to "fully participate and cooperate in good faith in the National Park Service permitting process, provide timely responses, and work to advance the process as efficiently as possible…." The Consent Order further indicated that DBOC would obtain its coastal development application after NPS had taken action on the Special Use Permit.

A few weeks after the California Coastal Commission hearing, Lunny and his wife sent a 12-page letter to NPS Pacific West Region Director Jon Jarvis primarily addressing their dispute with scientific data previously addressed in this report, including the April 26 trip report. Their letter concluded with the following statement:

> Something is terribly wrong. Instead of resolving our differences, you are working overtime to make them worse. For that, our hearts are heavy. We are being treated unjustly. Our family is intimidated and fearful for our future and our financial survival.

In response, Jarvis sent Lunny another copy of the Special Use Permit on January 14, 2008, and wrote the following: "I think it is in all of our interests that we try to bring [this issue] to a mutually agreeable solution as soon as possible." Jarvis further wrote:

> DBOC is currently operating a commercial business within a unit of the National Park System without any permit. Our regulations require that any special use permit to carry out any activity in a unit of the National Park System….You are not being singled out in any way. You need the [Special Use Permit] to be in compliance with [the California Coastal Commission]…we have structured the permit to be nearly identical to the dairy permits in the insurance and other 'boiler plate' provisions….We have offered the permit until 2012, when the [Reservation of Use and Occupancy] expires….As for the environmental provisions, they are nearly identical to those required by the…Consent…Order….

Jarvis further wrote:

> Kevin, you have stated many times that you would like to go back to a former time, when the relations with the NPS were cordial. I agree. Unfortunately, this issue now involves attorneys, reporters, DC lobbyists, environmental and agricultural constituency groups, elected officials, scientists, investigators, state regulators and now the highest scientific body in the United States....The best way we can bring back that relationship back is for you to negotiate in good faith. We have attached a permit that meets all the points we discussed with the Senator and it is my hope you will sign it. With your signature, we can move this back to an on-going operation and collaborative relationship.

On February 17, 2008, lobbyist David Weiman of Agricultural Resources, in Washington, D.C., informed the OIG that he had recently met with NPS Deputy Director Daniel Wenk regarding DBOC,

whom he had asked to proceed with DBOC's Special Use Permit only "AFTER the IG has acted." ***Agent's Note****: No one from the OIG has ever requested that Weiman, the NPS, or anyone else wait for the completion of this investigation or report before proceeding with enactment of the Special Use Permit or any matter.* On April 24, 2008, Kevin Lunny informed the OIG that he had signed a Special Use Permit for DBOC on April 22, 2008.

Interpretation of Wilderness Act

The Lunny family alleged that Neubacher was misinterpreting the Wilderness Act as a means to force DBOC's departure from the park when the Reservation of Use and Occupancy expires in 2012. In their letter to the OIG, the Lunny family wrote, "It's not clear that 'Wilderness' excludes the operation of the shellfish farm. And, it's not clear that Congress intended, in making [Drake's Estero] potential wilderness, to exclude shellfish production in Drakes Bay." They also wrote, "It makes no sense to insist that the estero is 'Wilderness' while surrounded by cattle and beef operations down to within a few feet of the shoreline."

Neubacher explained to the OIG that he had no authority to renew DBOC's Reservation of Use and Occupancy because the Wilderness Act required Drakes Estero to revert to wilderness when the Reservation of Use and Occupancy expires in 2012. He provided a legal opinion from the Solicitor's Office indicating as much to the OIG.

A retired Field Solicitor recalled that he issued that legal opinion to Neubacher in February of 2004 based on a request from Jarvis and Neubacher. His opinion concluded that "…the Park Service is mandated by the Wilderness Act, the Point Reyes Wilderness Act and its Management Policies to convert potential wilderness, i.e., the Johnson Oyster Company tract and the adjoining Estero, to wilderness status as soon as the non-conforming use can be eliminated."

According to the retired Field Solicitor, "potential" wilderness areas such as the DBOC site required NPS to manage them as wilderness once any "non conforming use," such as the mariculture operation, expired. In his opinion, no one had the authority to circumvent the Wilderness Act by allowing Lunny to operate DBOC in the estero past the expiration date of the Reservation of Use and Occupancy, and the only way Lunny could prolong DBOC's departure from PRNS would be through the passage of new legislation by Congress. In his opinion, if Congress were to pass legislation authorizing Lunny to operate past 2012, they would be establishing a "dangerous precedent" with nationwide ramifications.

During a July 2006 radio broadcast, Neubacher agreed that removing Drakes Estero from wilderness status would set a "dangerous precedent."

Restrictions on G Ranch

In addition to expressing concerns regarding what they considered disparate treatment pertaining to DBOC, the Lunnys' letter requesting an investigation explained that they had not signed a "lease" with NPS for the G Ranch since 2004 because the latest "lease" was "arbitrary" and "punitive." ***Agent's Note****: What the Lunnys referred to as a lease is actually a Special Use Permit.* The Lunnys complained that NPS inappropriately claimed that they had violated the terms of the Special Use Permit and ordered all of the cattle off the ranch. The Lunnys disagreed with NPS that they had exceeded their allotment of cattle as delineated in the Special Use Permit based on their contention that they rotate their herd between several pastures, some of which were not PRNS land.

The Lunny family also complained in their letter to the OIG that in the latest version of the Special Use Permit, NPS had "either deliberately or accidentally" failed to include "Field # 11" as a field from which the Lunny family could cut hay or silage (animal feed). According to the Lunnys, the family had cut silage from that field since the 1960s and was entitled to continue doing so.

To illustrate their point that the Special Use Permit was arbitrary, the Lunnys pointed out that while the first version of the 2004 Special Use Permit for the G Ranch allowed for an annual, *average* stocking level of 90 Animal Units per year, the more recent draft only allowed a *maximum* stocking level of 90 Animal Units *at any one time*, with both versions limiting the total number of Animal Unit Months (a measurement of forage/food consumed per month) to 1,080 annually. They also complained that the Special Use Permit did not allow them to cut silage from Field #11, which they claimed to have used in "rotational silage production since the 1960s."

Joseph Lunny, Sr., and his wife, Joan Lunny, operate the G Ranch. When interviewed, Joseph Lunny, Sr., (hereafter referred to as "Lunny Sr.") made several conflicting statements and admitted that he had a hard time remembering events. He said that from the time NPS bought the G Ranch in 1974, he had signed Special Use Permits with NPS every 5 years when they came up for renewal until 2004. Lunny Sr. said that, unlike the previous PRNS Superintendent John Sansing, Neubacher would not compromise on the terms of the ranch's Special Use Permit.

Lunny Sr. then said he had actually signed the first version of the 2004 Special Use Permit but that he had not sent it back to NPS. Kevin Lunny subsequently provided the OIG with a copy of the Special Use Permit, which Neubacher had signed in December 2004, which reflected that Lunny Sr. had signed it on April 11, 2007, 12 days prior to the date the Lunnys requested an investigation by the OIG.

Lunny Sr. conceded that he had more than 90 Animal Units on the ranch at a time, a situation he attributed to raising grass-fed, organic beef. He explained that it took almost twice as long for his grass-fed cows to gain enough weight before they could be sold than it would if they were eating feed. He said that since his cattle had to stay on the ranch longer than they used to before his operation became organic in 2004, more calves were being born, which also increased the number of animals. Lunny Sr. opined that it was unreasonable for NPS to be concerned about the number of Animal Units on the G Ranch because Neubacher knew he was going to convert the ranch into an organic operation and because Neubacher did not make the number of cows at the ranch an issue until a Rangeland Manager began working at PRNS.

According to the Rangeland Manager, Lunny Sr. had agreed to a Special Use Permit allowing the G Ranch to maintain a maximum of 90 Animal Units on the ranch not to exceed 1,080 Animal Unit Months a year since 1993. He added that PRNS used the Animal Unit Months pricing method in all of its ranch Special Use Permits.

PRNS records indicate that during a meeting on January 30, 2007, PRNS informed the Lunnys that their "cow count" far exceeded the amount allowed in the Special Use Permit based on several counts by the Rangeland Manager, and the Lunnys agreed to provide PRNS with a copy of their grazing plan. On February 15, 2007, the Rangeland Manager informed Neubacher that by his calculations, the Lunnys had already reached their allotment of 1,080 Animal Unit Months for the year. ***Agent's Note****: At this time, the original version of the Special Use Permit was the only version under negotiation.*

As of March 21, 2007, the Lunnys had not provided NPS with information concerning the number of animals in their grazing operation. On that date, Neubacher notified them that they were going to have

met their allowable Animal Unit Months of 1,080 annually for the year by April 14, and he instructed them to remove the cattle from the ranch by that date.

Neubacher's March 21 letter further explained that the number of cattle grazing was out of compliance with a biological opinion issued by the U.S. Fish and Wildlife Service on grazing impacts within PRNS for the protection of endangered or threatened animal and plant species. It was not until this date that NPS sent the Lunnys the second version of the Special Use Permit. Neubacher explained that changes had been made to the previous Special Use Permit in part to "further clarify allowable stocking rates" on the ranch.

At some point between March 21 and April 6, 2007, the Lunnys submitted a handwritten, undated grazing plan to NPS. On April 10, the Rangeland Manager informed Neubacher that the G Ranch still contained "approximately 250 animal units," even though their grazing plan stated that they would have only 147 Animal Units on the ranch for the month of April. He noted, "They are not even compliant with their own plan."

In addition to examining the issue of the allotted number of cattle on the ranch, we addressed the Lunnys' contention that they were entitled to cut silage from Field #11 with Neubacher. According to Neubacher, years ago, Special Use Permits for the G Ranch authorized the Lunnys to cut more than the current Special Use Permit allowed, but over the years, the Lunnys had requested that NPS reduce the amount of silage they could cut so that the Lunnys' permit fee would be lower. On January 30, 2007, Lunny family members met with PRNS officials about issues concerning the unsigned G Ranch permit. At that time, the Lunnys indicated that they believed the silage map attached to the permit was inaccurate because it was missing an approved field, an issue which PRNS agreed to review.

In February 2007, Neubacher notified the Lunnys that PRNS had reviewed its silage maps as Kevin Lunny had requested. He wrote, "Based on our review, the 190 acres designated on the map attached to the permit…is the only area authorized for silage." According to Neubacher and the Rangeland Manager, the silage area for the ranch was mapped by the Natural Resources Conservation Service in 1992.

According to the Rangeland Manager, the Lunnys "[grazed] down their authorized silage areas" by having too many Animal Units, which left them nothing to cut in their permitted area. In a May 2007 briefing statement, Neubacher explained that he was aware that the G Ranch was an organic beef operation but noted that the Lunnys had exhausted their annual limit on Animal Unit Months in 4 months. He and the Rangeland Manager indicated that NPS had repeatedly denied the Lunnys' request to cut silage on Field #11 because the permit did not allow the cutting of more than 190 acres of silage in order to comply with the FWS biological opinion.

We learned that the permit fee for the use of the G Ranch was adjusted in the current Special Use Permit based on an appraisal of the premises in 2004 and that the Lunny family disagreed with that fee. The Lunnys disputed the permit fee set by that appraisal and requested a rate reduction based on improvements they had made to the ranch. In October 2006, Neubacher informed them that their "…proposal to offset permit fees with the cost of improvements is not appropriate as improvements are already factored into the appraisal." The PRNS Special Use Coordinator recalled that the Lunnys also offered their contention that they were good stewards of the land as a basis for a fee reduction.

Both versions of the permit contain the following language:

> The annual rental rate for this Permit shall be established by Permitter in an appraisal of the Premises ("Appraisal") and such Appraisal shall be conducted in accordance with the Uniform Appraisal Standards for Federal Lands….

PRNS provided a copy of the appraisal of the G Ranch to Joe and Joan Lunny in July 2004 and again in October 2005 to apply to the "next five-year permit renewal period" of the Special Use Permit. According to Neubacher, after PRNS sent the Lunnys the new appraisal, they did not respond to requests to discuss the Special Use Permit for a long time.

We also learned that although the Special Use Permit in question was to be in effect from December 7, 2004, through December 6, 2009, a term of 5 years, the Lunnys expressed a desire for their Special Use Permit to be in effect for more than 5 years. Neubacher officially informed them in October 2006 that it was not possible to extend the term of the permit beyond 5 years because Special Use Permits were "capped nationwide at five (5) years…." Neubacher's explanation is consistent with NPS Director's Order 53, which states, "Unless for experimental purposes or other short term considerations, permits for agricultural uses should be issued for a period of 3 to 5 years."

At the onset of this investigation, Kevin Lunny told us that the permit for the G Ranch had remained unsigned since December 2004. However, a year later, on April 24, 2008, he informed the OIG that, although his parents had not signed a new Special Use Permit for the G Ranch, his family and NPS worked out an agreement to abide by the 2004 Special Use Permit that his father, Joseph Lunny, Sr., had signed in April 2007 but had never sent to NPS. Lunny said they agreed to abide by that version of the Special Use Permit because it was not as restrictive as versions of the Special Use Permit that NPS had since put forth.

Freedom of Information Act Requests By Corey Goodman

While this investigation was ongoing, Corey Goodman filed four Freedom of Information Act (FOIA) requests and three FOIA appeals, with a supplemental request added to the third one to obtain information from NPS. On September 27, 2007, in a letter to the OIG, he contended that NPS had not complied completely with his requests. Goodman claimed that he had not received the following information as requested in a timely manner: legacy seal data from PRNS dating from 1973 to 1996, the key to abbreviations and codes by which to decipher harbor seal data that NPS provided him for the years 1997 through 2007, a version of the Sheltered Wilderness report dated May 8, 2007, and certain e-mails between PRNS Senior Science Advisor Sarah Allen and USGS Scientist Roberto Anima and between Allen and USGS Scientist Janet Thompson. He also alleged that PRNS had provided Sierra Club spokesman Gordon Bennett with information more readily than the park had provided him with information.

On three occasions in May 2007, Goodman filed FOIA requests with Neubacher. In his May 12 and 13, 2007 FOIA requests, Goodman asked for harbor seal monitoring data pertaining to Drakes Estero from 1973 through the "day you provide the data" in 2007. ***Agent's Note****: Goodman had surmised that PRNS had raw (quantitative) data from 1973 through the present because NPS claimed "over 25 years of [harbor seal] data" and because Allen "published a paper in 1999 with graphs based on her data from 1973 to 1996." During the hearing before the MCBS in May 2007, Allen began her presentation with the following introduction: "My name is Sarah Allen, and I'm a scientist with the National Park Service. And, more specifically, I've been studying the ecology of Drakes Estero for almost 30 years. I completed my master's thesis on the harbor seals in Drakes Estero, so I have some familiarity with that population." Later during the presentation, she stated, "The damage of the commercial oyster operations on Drakes Estero is more easily documented, because* ***the Park Service***

has over 25 years of continuous monitoring data from Drakes Estero*" (Emphasis added). She immediately followed that statement with information about seals and the significance of Drakes Estero as a "major seal nursery." In fact, Allen collected the majority of the seal data that she referenced prior to beginning her career with NPS; therefore, most of that data was not generated by NPS.*

Jon Jarvis, the Director of the Pacific West Region of NPS, responded to Goodman's first two May 2007 FOIA requests via a letter dated June 13, 2007, in which NPS provided Goodman with historical reports from 1988 through 2006 regarding harbor seal numbers. Jarvis responded to Goodman's third FOIA request of May 29, 2007, via a letter dated August 8, 2007. At that time, Jarvis wrote of the harbor seal data, "Primary data for years prior to 1996 is not contained in the records of the National Park Service. Consequently, we cannot provide this early primary data in response to your FOIA request."

On December 19, 2007, Goodman made his fourth FOIA request, which he e-mailed directly to FOIA Officer Holly Bundock. At that time, he remained steadfast that PRNS was withholding "legacy seal data for Drakes Estero…from 1973 to 1996 inclusive" from him.

In regard to the "legacy seal data" from 1973 through 1996, Bundock told the OIG:

> …[Allen] and [Neubacher] have assured me that we have given [Goodman] everything that exists in our files. You know, [Allen] didn't work for us until 1997. She worked in a lot of places, including the Point Reyes Bird Observatory. And so…she may have created primary data, but it belongs to the Bird Observatory or wherever she worked. So we believe we've given [Goodman] everything, based on what [Neubacher] and [Allen] have assured Jon Jarvis and myself.

When investigators asked Allen what she provided in response to FOIA requests filed by Goodman for harbor seal data, she responded:

> He asked for the legacy databases. And our legacy databases that he was pointing out had to do, one, with elephant seals, which he's not interested in….And, two, it was harbor seals at another site, which was at the Farallon Islands and at Double Point. They weren't Drakes Estero. The data was collected prior to my working in the National Park Service, and they're either with PRBO [Point Reyes Bird Observatory] when I worked there or part of my thesis. So we gave him reports that represented those data, but I didn't have a database….

As the data manager for PRNS, the Ecologist maintained that he was responsible for, and familiar with, all seal-related data held within his office. On February 11, 2008, the OIG received a letter from the Ecologist, which stated the following, in part:

> We've submitted all of the Drakes Estero harbor seal data housed on our server, and more….With data beginning in 1996, these databases contain our entire Drakes Estero harbor seal data set. Although data was collected prior to this time, that data does not exist with the National Park Service in either digital or hard-copy form. I have searched diligently and thoroughly, and the NPS simply does not have any more Drakes Estero harbor seal data.

The PRNS Ecologist also emphatically told the OIG, "Any of the claims made by NPS about the impact of Drakes Bay Oyster Company upon seals in Drakes Estero are based upon data that has already been given to Goodman."

DOI FOIA Policy as per 43 CFR 2.7(d) (1) states the following:

> In order for a record to be considered subject to your FOIA request, it must be in the bureau's possession and control at the time the bureau begins its search for responsive records. There is no obligation for the bureau to create or compile a record to satisfy a FOIA request (for example, by combining or compiling selected items from manual files, preparing a new computer program, calculating proportions, percentages, frequency distributions, trends and comparisons, or creating maps)….

In regard to Goodman's second complaint about NPS not providing him with a "key" by which to decipher harbor seal data that the agency provided him from 1997 through 2007, in an e-mail message to the OIG dated March 5, 2008, Goodman conceded that NPS had, in fact, provided him with the means to interpret the seal data that NPS ultimately provided him.

Another reason Goodman related that he was unsatisfied with NPS' response to his FOIA requests was his contention that Jarvis only provided two versions of the Sheltered Wilderness report – one dated February 9, 2007, and another dated May 11, 2007. Goodman maintained that there was at least one other version of the report, dated May 8, 2007, that NPS would not turn over to him. As previously mentioned in this report, the OIG Computer Crimes Unit determined that there were only two versions of the Sheltered Wilderness report, which match the versions NPS provided to Goodman.

In Goodman's third FOIA request of May 29, 2007, he also requested documentation of "All e-mails…and correspondence between PRNS staff and Dr. Roberto Anima…from January 1, 2007…" to May 29, 2007.

In response to that request, dated August 8, 2007, NPS provided him with copies of the following four e-mail messages between Allen and Anima: one dated May 15, 2007, sent at 17:59 Pacific Standard Time (PST), one dated May 30, 2007, at 8:07 Mountain Standard Time (MST), another one dated May 30, 2007, at 8:48 MST, and, finally, one dated June 4, 2007, at 8:16 MST.

Goodman was not satisfied with NPS' response to his third FOIA request in part because he surmised that another e-mail between Allen and Anima had to exist, dated either May 14 or May 15, 2007. He arrived at that conclusion based on the e-mail message NPS sent him, dated May 15, 2007, in which Allen began her message to Anima by writing, "Many thanks for your quick reply…." Goodman described the likely missing e-mail exchange as a potential "smoking gun."

Goodman again requested e-mails between Anima and Allen in his fourth FOIA request, dated December 19, 2007. In that request, he wrote, "…I requested all emails between Sarah Allen and Roberto Anima, particularly in May of 2007 (in the 2 weeks following May 8, particularly around May 14 and 15). You sent me emails with a striking gap of the key communication between them. Could you please send the complete set."

NPS responded to Goodman's fourth request via a letter from Pacific West Region Director Jon Jarvis, dated January 25, 2008. Regarding the e-mails, Jarvis wrote that the same four aforementioned e-mails between Allen and Anima "exist in park files" and were enclosed. He added, "No additional records exist that are responsive to your request."

During a consensual search of Allen's office conducted in August 2007, investigators recovered one e-mail dated May 15, 2007, which Anima sent to Allen at 13:31 MST, which NPS did not submit to Goodman, in a

file labeled "Communication." ***Agent's Note****: Our Computer Crimes Unit determined that the e-mail in question was not contained in Allen's active or archived NPS e-mail file, leading the Computer Crimes Unit to deduce that it had been deleted from her e-mail file on the NPS e-mail system.*

The May 15, 2007 e-mail that Goodman did not receive as a result of his FOIA requests contained the following text from Anima to Allen:

> Hi Sarah,
>
> After reading the Kinsey-Goodman Testimony and the statements made in the Pt. Reyes Light, and the Coastal Post, I really can't support the statements made that:
>
> 'Research has identified oyster feces as the primary source of sediment in the Estero, and this sediment smother [sic] native species.'
>
> or
>
> 'Futhermore oyster feces add sediment to the eelgrass beds of the Estero. Researchers from the U.S. Geological Survey identified the feces of oysters – as much as a metric ton per 60 meter square oyster raft – as the primary source of sedimentation, which degrades eelgrass habitat and its ability to support abundant marine life.'
>
> After re-reading my thesis I do suggest that the quiet water environment of the upper parts of the estero could allow for the deposition of silt-sized material in the form of feces and pseudofeces produced by oysters. And that once deposited the material is resistant to erosion. I end by stating that more research is needed to ascertain what amount of silt-sized material is being produced by oysters in the lagoon.
>
> I did not directly study the amounts or the areal extent of the deposition of feces in the estero. The statements made in the thesis were based on observations and literature sited to support the observations. No hard evidence of the effects of oysters on fine sediment accumulation were [sic] made.
>
> I wish I could have been more help.
>
> Roberto

In his September 2007 e-mail to the OIG summarizing his complaints regarding NPS' perceived insufficient response to his FOIA requests, Goodman also surmised that there was a "gap" in the e-mail messages between Allen and USGS scientist Janet Thompson that he had received pursuant to his FOIA request of May 29, 2007. According to Goodman, he received copies of e-mail messages between Allen and Thompson dated March 5, May 6, May 7, and May 10, 2007. Goodman speculated that additional correspondence most likely existed between Allen and Thompson between March 5 and May 6, 2007.

The only e-mail between Allen and Thompson that we found that was not provided to Goodman was the one from Thompson to Allen dated March 9, 2007. In it, Thompson wrote, "I'm now back but will be gone next week. Isn't this fun. Back in the office March 19."

On October 12, 2007, investigators took a sworn statement from an NPS Information Technology Specialist in which he swore that no person within NPS or otherwise had directed him to "alter, delete, or create any record or paper via electronic media."

In addition to questioning whether he had received all of the e-mail correspondence he requested from NPS, Goodman questioned NPS' use of FOIA Exemption 5, the "deliberative process privilege,"[xxvi] as a reason for initially withholding 2007 harbor seal data from him in response to his May 13, 2007 FOIA request. Goodman maintained that this was not an appropriate response to his request because the information he had asked for was not subject to deliberation since he had asked simply for data, not an opinion about that data. On June 27, 2007, Goodman filed an appeal to Jarvis' FOIA response with the Solicitor's Office on the grounds that the data he had requested was not subject to the deliberative process.

In referencing that exemption, Jarvis explained the following to Goodman in a letter dated June 13, 2007, regarding the 2007 harbor seal data that he had requested:

> We are withholding the draft records pending the final annual report under FOIA exemption 5 (5 USC 552(b)(5)) which is designed to protect those inter-agency and intra-agency memorandums or letters which would not be available by law to a party in litigation with the agency. This exemption includes information that would be protected under the deliberative process privilege. The purpose of this privilege is to encourage open and frank discussions on matters of policy between subordinates and superiors, to protect against premature disclosure of proposed policies before they are finally adopted, and to protect against public confusion that might result from disclosure of reasons and rationales that were not in fact ultimately the grounds for an agency's action.

When the OIG asked Jarvis if the deliberative process would apply to raw data, such as the number of seals on any given day in the estero, Jarvis said the following:

> Potentially, but probably unlikely...generally…an individual goes to the field and collects data….I guess in theory that stuff's available under FOIA. But generally that needs to be put into some sort of usable format…put into an Excel web sheet or…some sort of database before it's usable….And there's, in some cases, a quality review that it has to go through before it goes through that. And I would consider some of that internally deliberative. But I don't know the specifics on this one.

On June 27, 2007, Goodman filed a FOIA appeal to Solicitor David Bernhardt. In it, he argued that NPS' use of Exemption 5 to deny him 2007 seal data was inappropriate. Goodman subsequently submitted a supplemental appeal on July 19, 2007, as an addendum to his June 27 appeal to the Solicitor's Office, in which he questioned the use of Exemption 5.

On August 8, 2007, Jarvis responded to Goodman in the following way:

> With regard to the data for 2007, the data collection season for 2007 ended as of July 31….FOIA does not require agencies to create records in order to respond to requests. As we discussed at the July 21 meeting [with Senator Feinstein], we have agreed, as a courtesy, to expedite data entry for 2007. This data entry and error checking should also be completed within the next week, and the park will provide the 2007 data, including subsite data on Drakes Estero, on disk.

In that same letter, Jarvis informed Goodman that, regarding the harbor seal data from the years 1996 through 2006, NPS planned to provide that information to him on "one or more disks by August 13, 2007." Jarvis explained the following to Goodman:

> Summary data and associated metadata for the years 1996 to 2006 exist in one or more park databases. This information must be checked before transmittal because the database(s) may contain information about Volunteers in Parks (VIPs) that is exempt from disclosure under FOIA exemption 6 (5 USC 552 (b)(6)). Exemption 6 permits an agency to withhold information about individuals in 'personnel and medical files and similar files' when the disclosure of such information 'would constitute a clearly unwarranted invasion of personal privacy.'

In that same letter, Jarvis informed Goodman that although prior to his FOIA requests the databases did not contain subsite (specific sites within the estero) information for Drakes Estero, NPS had agreed to enter subsite data, where available, into the database as a "courtesy" for Goodman. Jarvis informed Goodman that NPS would finish entering subsite data for Drakes Estero from 1996 to 2006, a process which "should be completed within the next week."

According to Goodman, on August 13, 2007, Neubacher sent him three CDs containing harbor seal data from 1997 to 2007.

On January 25, 2008, Jarvis provided Goodman with the 2007 seal data and informed him, "Since the completion of your earlier FOIA request, the park staff conducted additional error checking and review of the harbor seal data set. We are therefore providing you with the most recent versions of the complete harbor seal dataset and the Drakes Estero subsite dataset…."

In his FOIA appeal dated June 27, 2007, Goodman contended that NPS failed to respond to his first two FOIA requests of May 12 and May 13, 2007, in a "timely manner." Specifically, Goodman alleged that Jarvis' response to his (Goodman's) first two FOIA requests, via the June 13, 2007 letter, fell outside the 20 workdays allowed for a response. According to 5 USC 552(6)(A):

> Each agency, upon any request for records…shall…determine within 20 days (excepting Saturdays, Sundays, and legal public holidays) after the receipt of any such request whether to comply with such request and shall immediately notify the person making such request of such determination and the reasons therefore….

Goodman e-mailed his first two FOIA requests to Neubacher on Saturday, May 12, and Sunday, May 13, 2007, making the first qualifying day of receipt of those requests Monday, May 14, 2007. Counting 20 qualifying days from May 14 – and excluding Monday, May 28, which was a federal holiday (Memorial Day) – Goodman should have received a response by June 12, 2007. Thus, NPS was apparently 1 day late in responding to Goodman's first two FOIA requests.

E-mail correspondence from PRNS FOIA Officer Ann Nelson to PRNS staff members indicates that she was attempting to respond to Goodman's first two requests in a timely manner. On May 15, 2007, Nelson sent two messages to Bundock. The first one referenced Goodman's May 12 request, and Nelson informed Bundock that she and Allen would be working on it "ASAP." In the second e-mail from Nelson to Bundock that day, Nelson informed Bundock of Goodman's second request, which "covers basically the same information" as his first request.

Bundock responded to Nelson's e-mails later that morning by telling her not to create records in response to Goodman's request and by stating that she had 20 days to respond to the requests. Bundock also informed Nelson that she (Nelson) "may not be giving him" the seal data he had requested "in light of pre decision or financial info or whatever…."

On June 14, 2007, Nelson sent an e-mail message to Allen, a PRNS Marine Ecologist, and a PRNS Wildlife Biologist regarding Goodman's May 29 FOIA request. In her message, Nelson asked Allen, the PRNS Marine Ecologist, and the PRNS Wildlife Biologist to check for, among other items, "…any email, correspondence, etc., between PRNS staff and Roberto Anima…POST 1/1/07…."

Nelson followed up her June 14 e-mail with one dated June 20, 2007, to the same recipients. She wrote, "Would you please let me know if you do not have anything in your files re this FOIA, and/or please provide the documents to me – I would LOVE it if you would give them to [sic] in hardcopy form ASAP….I need to get this out by no later than Monday, June 24. Thanks…."

On July 19, 2007, Goodman provided supplemental information to his third appeal with the Solicitor's Office by claiming that there was a "double standard" in the way NPS supplied information to members of the public. Specifically, Goodman referenced an article that Gordon Bennett of the Sierra Club had published in the July/August issue of the *Sierra Club Yodeler*. Goodman wrote the following:

> While I was denied access to 2007 harbor seal data based on deliberative process privilege…Bennett…appears to have free access to this data, and refers to specific 2007 harbor seal pup numbers that come directly from PRNS. Moreover, while my 3rd FOIA request from May 29 for letters and documents from USGS researcher Janet Thompson is now overdue and unresponsive, it appears as if…Bennett…has access to those documents, since he freely quotes a USGS researcher's (likely to be Thompson) findings on nutrient levels in the Estero….

In reference to seal numbers from 2007 in Drakes Estero, the article reflects that "expanded oyster operations and oyster bags placed in seal nursery areas have reduced baby seals on the middle sandbars to…less than 10 so far in 2007."

According to Bennett, he talked to Allen about their mutual interest in marine mammals, among other issues. As a member of a volunteer group called "Beach Walk," Bennett said he patrolled Drakes Beach. He said there were times he would simply ask for materials from either Neubacher or Allen and he would receive the information. Bennett said that when he was writing the *Yodeler* article, he asked Allen for a copy of a letter from a female USGS scientist, and she provided it to him informally. He said he also obtained specific numbers pertaining to seals for that article from Allen without filing a FOIA request. According to Bennett, Allen shared seal data with all of her seal volunteers. He added that it was a "standard thing" for them to talk about seal numbers.

When asked if the people who volunteered to count the seals were regularly discussing seal numbers with Allen, Jarvis said, "… in many cases, they have ready access to this information, because they're participants in it, in the gathering of it, probably in its raw form, not so much in its sort of assembled form."

In an effort to explain why Goodman was initially denied the 2007 harbor seal data, Jarvis explained that NPS collected data for its inventory and monitoring program, which was funded by federal funds and was "publicly available." He added the following:

> …we don't require FOIAs generally to get this kind of information…because it's…gathered with Federal money, in…most cases…it's publicly accessible information. But we generally don't just toss it out there for anybody to interpret it. It has to go through some protocol review quality control to make sure that it's good information. You don't want just all kinds of things out there....

***Agent's Note**: Although we confirmed that Bennett was able to obtain some information from PRNS with only an informal verbal request, it should be noted that the information that Goodman sought through the FOIA process was different from the information Bennett obtained informally.*

Goodman received a response letter dated July 31, 2007, from the Solicitor's Office regarding his appeal about Bennett's access to information advising that no one had reviewed his appeal due to lack of time and informing him that he could seek "judicial appeal."

According to FOIA Appeals Officer Darrell Strayhorn, Goodman was dissatisfied with NPS' August 8, 2007 response to his May 29, 2007 request and wanted to challenge a statement that NPS made in its letter. However, Strayhorn informed him that his time limit for appealing that letter had expired and that she could no longer review the issue. She explained that Goodman had only 30 work days from the date he received a response to file an appeal.

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[i] PRNS falls under the National Park Service, which uses the acronym "PORE" to represent PRNS.
[ii] House Report (Interior and Insular Affairs Committee) *Point Reyes National Seashore Act* No. 94-1680, September 24, 1976 (To accompany H.R. 8002), 3.
[iii] *Point Reyes National Seashore – Marin County California*, (accessed March 18, 2008); available from http://BeachCalifornia.com.
[iv] Paul Sadin, "Managing a Land in Motion: An Administrative History of Point Reyes National Seashore," *National Park Service*, October 2007, 129.
[v] NPS, "Tracts Conveyed Between 01/01/1950 and 05/20/2003 for Point Reyes NS," computer run date April 20, 2003, I, File L1425 Land Acquisition Priority List and LWC Fund Calls, Land Files, CCF, PRNS.
[vi] Ibid
[vii] National Park Service Director's Order No. 25: Land Protection, dated January 19, 2001.
[viii] National Park Service Grant Deed with Johnson Oyster Company, dated November 9, 1972.
[ix] Interview of Joseph Lunny, Sr., conducted on September 26, 2007.
[x] Deanne Kloepfer, *State of the Parks - A Resource Assessment Point Reyes National Seashore*, (Ft. Collins, CO: National Parks Conservation Association, 2002), 4.
[xi] *An Act to Establish the Point Reyes National Seashore in the State of California*, Public Law 657, 87th Congress., 2nd sess. (September 13, 1962).
[xii] PRNS, "Statement for Management, Point Reyes National Seashore, 1990," rev., Planning and Management Documents, PRA, 10-11.
[xiii] NPS, "Briefing Statement: Expiration of Residential RUOs," February 18, 1999, File A2623 Situation Rpts – Briefing Statements, Administrative Files, CCF, PRNS.
[xiv] NPS, "Grazing Permits, Lease Lengths, and Fees at Point Reyes National Seashore," Briefing Statement 2004.
[xv] House, *Point Reyes National Seashore Wilderness Act,* 94th Congress, 1976, Public Law 94-544, (accessed March 21, 2008); available from Congressional Universe.
[xvi] Ibid
[xvii] Ibid
[xviii] *Digest of Federal Resource Laws of Interest to the U.S. Fish and Wildlife Service* (accessed March 24, 2008); available from *http://fws.gov/lawsdigest/WILDRNS.HTML*.
[xix] Department of Interior, *Final Environmental Statement, Proposed Wilderness Point Reyes National Seashore*, prepared by Western Region, Regional Park Service, Department of Interior, April 23, 1974, p 1.
[xx] Department of Interior, *Final Environmental Statement, Proposed Wilderness Point Reyes National Seashore*, prepared by Western Region, Regional Park Service, Department of Interior, April 23, 1974, p 18.
[xxi] House Report (Interior and Insular Affairs Committee) *Point Reyes National Seashore Act* No. 94-1680, September 24, 1976 (To accompany H.R. 8002).
[xxii] Field Solicitor, Office of the Solicitor, San Francisco, California, "Point Reyes Wilderness Act," to Superintendent,

Point Reyes National Seashore, February 26, 2004.

[xxiii] NPS Management Policies Manual, Section 6.2.2.1, 2001.

[xxiv] House Report (Interior and Insular Affairs Committee) *Point Reyes National Seashore Act* No. 94-1680, September 24, 1976 (To accompany H.R. 8002), 1.

[xxv] Field Solicitor, Office of the Solicitor, San Francisco, California, "Point Reyes Wilderness Act," to Superintendent, Point Reyes National Seashore, February 26, 2004.

[xxvi] Department of Interior policy per 43 CFR Part 2, Appendix E to Part 2 – FOIA Exemptions – Exemption No. 5) "Inter-agency or intra-agency memorandums or letters, which would not be available by law to a party other than an agency in litigation with the agency.

EXHIBIT

8

Shellfish Mariculture in Drakes Estero, Point Reyes National Seashore, California

Committee on Best Practices for Shellfish Mariculture and the Effects of Commercial Activities in Drakes Estero, Pt. Reyes National Seashore, California; National Research Council

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Shellfish Mariculture in Drakes Estero, Point Reyes National Seashore, California

Committee on Best Practices for Shellfish Mariculture
and the Effects of Commercial Activities in
Drakes Estero, Pt. Reyes National Seashore, California

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COMMITTEE ON BEST PRACTICES FOR SHELLFISH MARICULTURE AND THE EFFECTS OF COMMERCIAL ACTIVITIES IN DRAKES ESTERO, PT. REYES NATIONAL SEASHORE, CALIFORNIA

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The committee would like to thank Kevin and Nancy Lunny and Luis Armienta of the Drakes Bay Oyster Company (DBOC) for the tour of the oyster growing areas and processing facilities, as well as the overview of DBOC operations; David Press (National Park Service) for help with the map of Point Reyes National Seashore and the seal monitoring database; Tom Moore for oyster harvest data and photographs relating to oyster growing in Drakes Estero; Mike Beck for the photograph of Olympia oysters in British Columbia; and National Park Service personnel who assisted with meeting logistics and provided background material for the committee, including Sarah Allen, Ben Becker, John Dennis, David Graber, and Don Neubacher. The committee is also grateful to a number of people who provided important discussion and/or material for the preparation of this report: Gordon Bennett, Melissa Cichantek, Peter Douglas, Jon M.

Erlandson, Corey Goodman, Ted Grosholz, Frances Gulland, John Hull, M.X. Kirby, Kent Lightfoot, Kevin and Nancy Lunny, Elizabeth Mathews, Robert Rheault, Anja Robinson, David Weiman, and Susan Williams.

This report has been reviewed in draft form by individuals chosen for their diverse perspectives and technical expertise, in accordance with procedures approved by the NRC's Report Review Committee. The purpose of this independent review is to provide candid and critical comments that will assist the institution in making its published report as sound as possible and to ensure that the report meets institutional standards for objectivity, evidence, and responsiveness to the study charge. The review comments and draft manuscript remain confidential to protect the integrity of the deliberative process. We wish to thank the following individuals for their participation in their review of this report:

Peter Boveng, National Oceanic and Atmospheric Administration, Seattle, WA
William Dewey, Taylor Shellfish Company, Inc., Shelton, WA
Matthew Elliot, Sea Change Investment Fund, San Francisco, CA
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Tom Moore, California Department of Fish and Game, Bodega Bay, CA
Steve Rumrill, South Slough National Estuarine Research Reserve, Charleston, OR
Sandra Shumway, University of Connecticut, Groton, CT

Although the reviewers listed above have provided many constructive comments and suggestions, they were not asked to endorse the conclusions or recommendations nor did they see the final draft of the report before its release. The review of this report was overseen by **Dr. Bonnie McCay**, Rutgers University, appointed by the Divison on Earth and Life Studies, and **W.L. Chameides**, Duke University, appointed by the Report Review Committee, who were responsible for making certain that an independent examination of this report was carried out in accordance with institutional procedures and that all review comments were carefully considered. Responsibility for the final content of this report rests entirely with the authoring committee and the institution.

Contents

Summary

When Drakes Estero, which lies within the Point Reyes National Seashore (PRNS) about 25 miles northwest of San Francisco, California, was designated by Congress in 1976 as Potential Wilderness, it contained a commercial shellfish (nonnative oyster and clam) mariculture operation. Oyster mariculture began in Drakes Estero with the introduction of the nonnative Pacific oyster (*Crassotrea gigas*) in 1932, after the beds of the native Olympia oyster (*Ostrea lurida*) had been depleted throughout the region by overharvest, and has been conducted continuously from that date forward. Hence, the cultural history of oyster farming predates the designation of Point Reyes as a National Seashore in 1962. Nevertheless, with the approach of the 2012 expiration date of the current National Park Service (NPS) Reservation of Use and Occupancy (RUO) and Special Use Permit (SUP) that allows Drakes Bay Oyster Company (DBOC) to operate within the estero,[1] NPS has expressed concern over the scope and intensity of impacts of the shellfish culture operations on the estero's ecosystem. Recent public documents produced by NPS characterizing the impacts of shellfish culturing in Drakes Estero have stimulated public debate over the pending expiration of the RUO and the presentation of scientific information that appeared to justify closing the oyster farm. The increasingly contentious nature of the debate led to the request for this

[1]The term estero is used instead of estuary because Drakes Estero has more in common with coastal lagoons (low freshwater input and high salinity) than in a typical estuary.

study to help clarify the scientific issues raised with regard to the shellfish mariculture activities in Drakes Estero (See Box 1 for Statement of Task).

Oyster mariculture necessarily has ecological consequences in Drakes Estero as in other lagoons and estuaries, the magnitude and significance of which vary with the intensity of the culturing operations. These effects derive from two different sources: the presence of and biological activity of the oysters, and the activities of the culturists. Oysters provide many ecosystem services, so the return of oysters to Drakes Estero through commercial mariculture could enhance the ecosystem by restoring some historic baseline functions. The degree to which the presence and biogeochemical activities of the nonnative Pacific oysters in Drakes Estero reproduce the historic contributions of the original Olympia oysters to the ecological functioning of the estero depends on how closely historic oyster abundances, collective biomass, and thus filtering capacity plus hard-substrate habitat are matched by the cultured nonnative oysters. The hard

BOX 1
Statement of Task—Part 1[a]

An ad hoc committee will be formed to produce two reports on shellfish mariculture in coastal areas. In the first report, the committee will assess the scientific basis for the National Park Service (NPS) presentations and the report (including revisions), "Drakes Estero: A Sheltered Wilderness Estuary," on the ecological effects of the Drakes Bay Oyster Company operations on Drakes Estero, Pt. Reyes National Seashore in California. In carrying out its task, the committee will address the following questions:

- What is the body of scientific studies on the impact of the oyster farm on Drakes Estero, and what have they shown?
- What effects can be directly demonstrated by research conducted in Drakes Estero itself?
- What effects can reasonably be inferred from research conducted in similar ecosystems?
- What conclusions can be drawn from the body of scientific studies, and how do they compare with what the NPS presented to the public? Have these conclusions affected NPS decision making?

What are the most important subjects for future research to better understand the ecological consequences of anthropogenic influences on the estero, so as to inform NPS decision making?

[a]The committee will prepare a second report, published separately, that will address in more general terms the elements of best management practices for application to shellfish mariculture to enhance the benefits and minimize any negative ecological effects (See Appendix B).

substrate habitat provided by oysters, elevated wooden racks, and plastic mesh bags on the bottom does not replicate the exact nature of structural habitat once offered by beds of native oysters on the bottom. Insufficient information is available to know how many oysters and how much biomass existed under historical baseline conditions, but Olympia oysters form extensive reefs covering the lower intertidal zone and extending into the subtidal of some relatively pristine lagoons, bays, and estuaries of British Columbia, a possible analog of the ecosystem in Drakes Estero prior to overharvesting of the native oyster. The activities of the oyster culturists can disturb wildlife such as harbor seals, which are of particular concern because they use the estero for resting, mating, pupping, suckling, molting, foraging, and sheltering from oceanic predators.

NPS has recently released documents to inform the public about the impacts of oyster mariculture on the Drakes Estero ecosystem. Scientific conclusions presented in *Drakes Estero: A Sheltered Wilderness Estuary* change in successive versions from late 2006 through 2007, with some notable deletions of earlier material and a few additions. However, *Drakes Estero: A Sheltered Wilderness Estuary* never achieved a rigorous and balanced synthesis of the mariculture impacts. Overall, the report gave an interpretation of the science that exaggerated the negative and overlooked potentially beneficial effects of the oyster culture operation. Ultimately, the NPS "Acknowledgment of Corrections" (July 2007) and "Clarification of Law, Policy, and Science" (September 2007) retracted several misrepresentations of the Anima (1991) and (Elliot-Fisk, 2005) studies and presented descriptions of ecological impacts of the shellfish culture operations that closely approach the conclusions reached by this committee, with two major exceptions. First, NPS does not acknowledge the changing ecological baseline of Drakes Estero, in which native Olympia oysters probably played an important role in structuring the estuary's ecosystem for millennia until human exploitation eliminated them in the period from the mid 1800s to the early 1900s. Second, NPS selectively presents harbor seal survey data in Drakes Estero and over-interprets the disturbance data which are incomplete and non-representative of the full spectrum of disturbance activities in the estero.

The committee reached the following conclusions about how oyster and clam mariculture affects key aspects and ecological functions of Drakes Estero:

1. Ecological impacts of enhancing benthic/pelagic coupling. Oysters have a prodigious filtering capacity that can provide resilience in the event of an algal bloom or increased sedimentation from stormwater runoff. As a by-product of this filtering activity, oysters deposit large quantities of pseudofeces and feces and thus transfer materials, including

nutrients and organic carbon, from the water column to the sediments on the bottom. Oysters also release ammonium, thereby fertilizing and stimulating growth of phytoplankton, seagrasses, and macro- and microalgae. Limited studies of Drakes Estero show the following: (1) relatively high flushing and exchange with the ocean in the areas where most of the oysters are grown, and thus low likelihood of development of sediment anoxia; (2) no empirical evidence of enhanced organic content or sediment hypoxia in eelgrass beds proximate to oyster culture racks; (3) only small increases in sand content of sediments under racks; (4) little change in benthic macro-invertebrate communities with proximity to racks—only enhanced amphipod abundances and an apparent negative effect on another crustacean, the tanaid (*Leptochelia dubia*), and; (5) relatively low dissolved nutrient concentrations. Based on studies of oysters in other estuaries, cultured oysters in Drakes Estero will contribute to water filtration, the transfer of nutrients and carbon to the sediments, and biogeochemical cycling, although the magnitude of these effects will depend on the stocking density and may be limited by the estero's high rate of flushing through tidal exchange.

2. Effects of the mariculture on eelgrass. Limited observations of eelgrass in Drakes Estero demonstrate absence of eelgrass directly under oyster culture racks and from propeller scar damage attributable to boats operated by the oyster farm. Mariculture activities had an impact on about 8% of the eelgrass habitat in Drakes Estero in 2007: 1% of eelgrass acreage was displaced by oyster racks and 7% was partially scarred by boat transit through the eelgrass beds. Research elsewhere demonstrates that damaged eelgrass blades have rapid regeneration capacity and that eelgrass productivity can be locally enhanced by the cultured oysters through a reduction in turbidity and fertilization via nutrient regeneration. Eelgrass habitat within Drakes Estero has doubled from 1991 to 2007, a trend seen in some other west coast estuaries.

3. Effects of the mariculture on fishes. Only one study of the effects of oyster mariculture on fishes has been conducted in Drakes Estero. No statistically significant differences in species richness, abundance, or community composition of fish were detected among samples taken in eelgrass adjacent to oyster culture racks, 75 m away, or in neighboring Estero de Limantour. The guild of fishes known to associate with hard substrates exhibited a trend of higher abundances adjacent to the racks, driven largely by one species (kelp surfperch, *Brachyistius frenatus*). This observation is consistent with other research showing that fishes are attracted to structured habitat for protection and/or feeding.

4. Effects of the mariculture on harbor seals. Drakes Estero is a significant breeding location for harbor seals, and about 20% of the mainland California population come ashore, or "haul-out", on sandbanks within

the estero during pupping season. Ongoing harbor seal surveys, conducted mainly by volunteers with NPS oversight, were not designed to test the influence of shellfish mariculture on the seal population, but have been used to track trends in the size of seal colonies at the main locations, or sites, in the Point Reyes region where seals come ashore. Within a site, there may be several distinct features, such as a sandbar or rock outcrop, which are monitored as haul-out subsites. Since the restriction of kayakers from the estero during the breeding season (March 1 to June 30), mariculture has become the main anthropogenic activity in the upper estero at that time of year. Statistical analyses of Drakes Estero harbor seal count data during the breeding season suggest a possible relationship between mean counts at two of three subsites where seals haul out on sand bars in the upper estero and the combined signals from the 1998 El Niño and oyster production level. Although these results cannot be used to infer cause and effect for many reasons, as explained in the body of this report, they highlight the need for a more detailed assessment of the extent to which different disturbance sources may impact harbor seals both on land and in the water. In Europe buffers of up to 500–1,500 m have been established around seal haul-outs to protect them from disruption by human activities. No studies have determined whether short-term responses to disturbance have long-term population consequences for harbor seals, but if the disturbance affects behavior during the breeding season, a precautionary approach to management would seek to reduce these types of disturbance to avoid potentially significant population effects.

5. Past, present, and future effects of mariculture on nonnative species. The oysters and clams cultured in Drakes Estero are nonnative species that have some risk of establishing self-sustaining populations. In the past, importations of nonnative oysters were associated with the introduction of a salt marsh snail, *Batillaria attramentaria*, and the oyster pathogenic parasite, *Haplosporidium nelsoni*. Currently, the oyster farm imports oyster larvae and spat that meet certification requirements as specific pathogen free, which greatly reduces the potential for new introductions but does not eliminate the possibility of transmission of all oyster pathogens such as oyster herpes viruses. The invasive clonal tunicate, *Didemnum vexillum*, is considered a pest because it fouls submerged surfaces, including eelgrass to a small degree, and has rapidly overgrown valuable shellfish beds in some other areas. This nonnative tunicate has become established in Drakes Estero, where it covers much of the subtidal hard surfaces provided by oyster shells, racks, and other structures. The cultured oysters together with wooden culture racks and plastic mesh bags increase the availability of hard surface for colonization by tunicates in Drakes Estero, which has few natural hard substrates such as rocky bottom, although shells of native Olympia oysters would have provided

substrate had they not been over-harvested to virtual extinction. The high coverage of tunicates increases the potential for spread of this invasive species within Drakes Estero and Estero de Limantour and possibly beyond through transport of the short-lived larvae and body fragments capable of regeneration.

6. Effects of the mariculture on birds. Drakes Estero is recognized as an ecologically significant overwintering site for shorebirds and waterfowl, especially for overwintering and migrating black brant. The oyster farm likely has some impacts on birds caused by culture bags lying on intertidal sand flats, which limit access to and availability of soft-sediment invertebrate prey. Other shorebirds may benefit from enhanced foraging on small crustaceans and other invertebrates growing on and around intertidal bags and other mariculture structures. Birds can be flushed by the activities of the culturists, particularly while driving boats to and from culture sites, with unknown population consequences.

7. Effects of the mariculture on economics, recreation, and aesthetics. The effect of oyster farming in Drakes Estero on the aggregate economic values generated by PRNS is likely to be small relative to recreational value (on the order of $100 million per year) and value of ecological services (on the order of $20 million to $30 million per year). Recreation is probably not influenced by the mariculture operation except to the degree that the construction and improvement of the road into the land-based oyster farm facilities provides access for launching kayaks and canoes. Visits to DBOC could be considered a form of recreation and the oyster farm represents part of the cultural history of the estero. Conversely, the low-tide appearance of culture racks holding oysters partially covered by the invasive, yellow tunicate and the sight of plastic mesh culture bags lying on some intertidal flats conflict with the aesthetics of the vistas expected in a National Park Wilderness Area.

After evaluating the limited scientific literature on Drakes Estero and the relevant research from other areas, the committee concludes that there is a lack of strong scientific evidence that shellfish farming has major adverse ecological effects on Drakes Estero at the current (2008–2009) levels of production and under current (2008–2009) operational practices, including compliance with restrictions to protect eelgrass, seals, waterbirds, and other natural resources. Adaptive management could help address effects, if any, that emerge with additional scientific research and monitoring to more fully understand the Drakes Estero ecosystem and the effects of shellfish farming.

Based on their own conclusions on how shellfish mariculture affects the Drakes Estero ecosystem, NPS made some documented decisions. NPS and DBOC reached agreement in April 2008 on the Special Use Per-

mit giving the company the right to operate in Drakes Estero until 2012, when the current RUO expires, and specifying conditions of operations. According to the Department of the Interior (DOI), the Superintendent of Point Reyes National Seashore does not have the authority to extend the RUO because of the congressional mandate designating Drakes Estero as a Potential Wilderness. Under this interpretation of the Wilderness Act, NPS has the mandate to convert a Potential Wilderness to Wilderness status as soon as the non-conforming activity can be removed.

Because the likely beneficial functions of oysters in biogeochemical processes were not acknowledged, they did not appear to play a role in NPS decision making. Similarly, NPS did not mention that Olympia oysters were part of the historic ecological baseline condition of Drakes Estero and that, in the past, Olympia oysters could have played a significant role in the biogeochemical processes of the estero.

The ultimate decision to permit or prohibit shellfish farming in Drakes Estero necessarily requires value judgments and tradeoffs that can be informed, but not resolved, by science. This report provides information that may be used by policymakers to reach a decision on the DBOC request to extend the mariculture lease beyond 2012, but statements in the report should not be interpreted as recommendations in support of or in opposition to an extension of the lease. If the legal opinion of the DOI Solicitor's Office stands, then NPS has no authority to offer a new RUO because the mariculture operation is judged as a nonconforming use in a Wilderness area, preventing conversion to full Wilderness status. If a decision were made to extend the lease of DBOC, science would be required to help establish and adjust permit conditions to enhance the benefits (derived largely from the presence and biological activities of oysters) and minimize the risks (derived largely from the activities of the culturists) of the mariculture operation.

The challenges faced by the Point Reyes National Seashore in managing their natural and cultural assets in Drakes Estero represent an example of the NPS dilemma nationwide. NPS receives inadequate financial support to conduct the research necessary to follow its dual mandate of promoting access and enjoyment by the public yet preserving natural processes and values of its public trust assets. Research conducted to meet NPS management needs in Drakes Estero would have broader applicability to local, state, and federal agencies and would contribute to basic scientific understanding. Science could also contribute to educational exhibits if an educational demonstration project were developed to illustrate the beneficial ecological roles of oysters, the challenges of nonnative species, best practices for mariculture, the history of shellfish harvesting reflected in Coast Miwok middens beside the estero, conservation issues, and the biology of oyster propagation. Another possible application for

science in management could emerge from a partnership between NPS and DBOC or other entity to restore the native Olympia oyster to Drakes Estero.

Research needs for effective management of Drakes Estero include most importantly evaluation of how to manage and control potential human disturbances to harbor seals from mariculturists, kayaks, hikers, and other sources. Assessing impacts of disturbance on seals, shorebirds, and waterbirds at the population level would help determine the long-term population impacts. Further research is needed to understand why eelgrass is expanding in Drakes Estero and not in some other systems. Additional research could be directed at understanding the relative habitat value of eelgrass, mud flat, and mariculture structures for fish at a landscape scale in the estero and similar systems. Additional observational and experimental studies are needed for use in carrying capacity models to determine how many oysters can be cultured in Drakes Estero without depleting phytoplankton and organic matter also used by native species and to avoid sediment anoxia from excess production of feces and pseudofeces by oysters. Research on control of abundance and risk of spread of the invasive tunicate, *Didemnum vexillum*, is urgently needed, not just in Drakes Estero, but worldwide. And research into the most effective way to control diseases that may be spread with transport of shellfish is important to the public trust and the mariculture industry broadly.

Introduction to Drakes Estero

Drakes Estero is located approximately 25 miles northwest of San Francisco, California, within the Point Reyes National Seashore, a unit of the National Park Service (NPS) that was established by Congress in 1962 (Point Reyes National Seashore Enabling Act, 16 U.S.C. § 459c–459c-7). In 1976, Drakes Estero was designated as "Potential Wilderness" by Congress (Point Reyes Wilderness Act, Public Law 95-544), one of eleven marine Wilderness areas in the United States (NPS, 2007c). There is also a designated Wilderness Area in Point Reyes National Seashore that includes Estero de Limantour and the mouth of Drakes Estero (Figure 1). Several agencies have jurisdiction over various aspects of the Point Reyes National Seashore and Drakes Estero, including NPS, the California Fish and Game Commission, the California Coastal Commission, the National Marine Fisheries Service, and the U.S. Fish and Wildlife Service (Figure 2). NPS holds primary management authority over the Point Reyes National Seashore, including its tidelands and submerged lands (DOI, 2008). The California Department of Fish and Game regulates use of state water bottoms, including two mariculture leases located in Drakes Estero and currently operated by the Drakes Bay Oyster Company (DBOC); however, the Point Reyes National Seashore is acknowledged to have primary management authority over the mariculture operation. The California Coastal Commission holds primary enforcement authority for coastal development, enforcement, and violations under the Coastal Act Sections (e.g., 30106, 30600, 30610, and 30810). Section 30810 delineates the Commission's permitting jurisdiction over sea bottoms and submerged

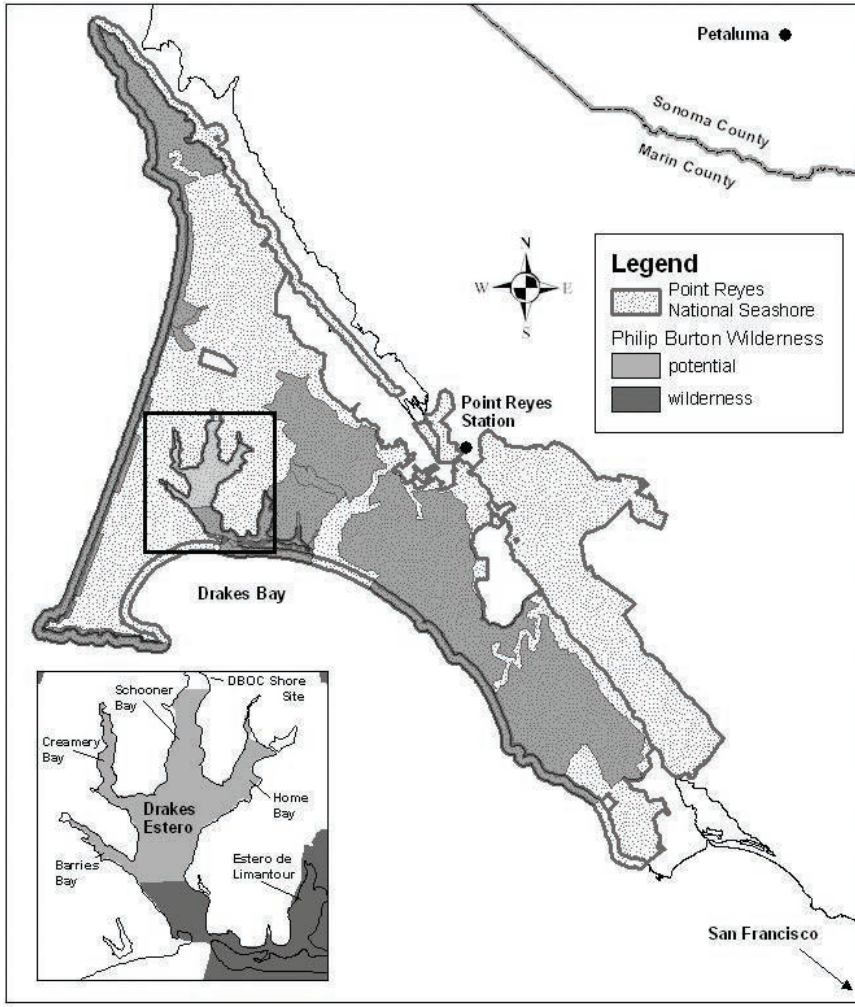

FIGURE 1 Drakes Estero is located within the Point Reyes National Seashore in Marin County, California. Inset provides larger view of Drakes Estero and shows the location of Drakes Bay Oyster Company. Map provided by courtesy of David Press, NPS.

areas and property (those below the mean high tide level). Marin County asked the California Coastal Commission in 2003 to assume primary enforcement authority for Coastal Act violations resulting from mariculture activities on the portion of the property above the mean high tide line. The coastal waters off the Point Reyes National Seashore, including Drakes Bay, are part of the Gulf of the Farallones National Marine Sanctu-

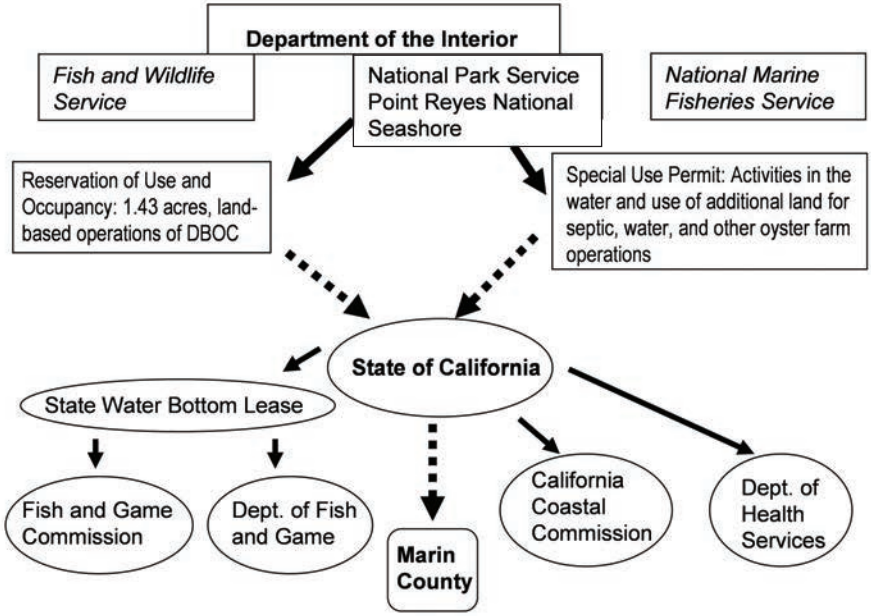

FIGURE 2 Jurisdictions that have a regulatory or advisory role in permitting for DBOC operations in Drakes Estero. Rectangles indicated federal agencies and authorities; ovals indicate state agencies and authorities, and rounded square indicates county authority. Responsibilities of the various entities are described in the text.

ary, which encompasses 1,255 square miles of marine waters extending just north of San Francisco, west beyond the Farallon Islands and north to Bodega Head. The National Marine Fisheries Service's Office of Protected Resources is responsible for protecting marine mammals and endangered marine life by working to conserve, protect, and recover species under the Marine Mammal Protection Act and the Endangered Species Act. The U.S. Fish and Wildlife Service is the primary federal agency tasked with protecting and enhancing the populations of and habitats for all types of water birds and migratory birds that spend some portion of their lives in the United States.

Both Drakes Estero and Estero de Limantour are under consideration for designation as state marine conservation areas under California's Marine Life Protection Act, in the Integrated Preferred Alternative from the Blue Ribbon Task Force for the North Central Coast. In its recommendations to the California Fish and Game Commission, the Task Force notes: "While the stakeholders generally preferred a state marine reserve designation for the entire estuary, accommodating the existing maricul-

ture lease required an additional state marine conservation area designation in part of the area" (California Marine Life Protection Act Initiative Blue Ribbon Task Force, 2008).

Ocean waters bordering and flowing into Drakes Estero are characterized by local upwelling and are influenced by outflows from San Francisco Bay (John Largier, unpublished data), a highly modified ecosystem and urbanized area. Drakes Estero is a large, shallow coastal marine lagoon encompassing 2,270 acres or about 9 km^2 at high tide. Water depth is typically less than 2 m with the exception of the mouth and a channel with a depth of up to 7–8 m in the central lagoon (Dixon, 2007; NPS, 2007). The lagoonal system encompassing Drakes Estero has five branches off a main 1,300-acre lagoon; four of these branches plus the central lagoon are considered part of Drakes Estero including Home, Schooner, Creamery, and Barries Bays (Figure 1, inset). A fifth branch constitutes Estero de Limantour. A single passage to the sea remains open year-round and allows tidal exchange between Drakes Estero and Drakes Bay. Freshwater input consists of perennial and ephemeral streams that provide the majority of the freshwater during the rainy season, which typically runs from October through April; the watershed covers approximately 31 square miles (Anima, 1991; Balton, 2006). Drakes Estero is considered a low-inflow marine lagoon in which all but the innermost branch (Schooner Bay) is marine-driven and thus possesses salinities and temperatures reflecting nearby oceanic conditions. Two tidal cycles exchange a volume of water equal to that contained within the estero, although the estimated residence time of water in the innermost branch, Schooner Bay, is 20 days. Tidal excursion is the major driver of circulation in Drakes Estero (Largier et al., 1997; Balton, 2006; John Largier, unpublished data). Like other marine lagoons with little freshwater input, hypersaline conditions may develop during a dry summer season (Harbin-Ireland, 2004).

Drakes Estero is bordered by cattle grazing lands, all part of the Point Reyes National Seashore (Harbin-Ireland, 2004; Balton, 2006). In addition to cattle ranching, a single commercial oyster operation, DBOC, operates within the Point Reyes National Seashore. Oyster culture began in Drakes Estero in the early 1930s and has continued to the present under various owners. For most of that time, 1954 until 2005, the farm was operated by the Johnson Oyster Company (see Box 2 for details). DBOC took over the farm in 2005, which currently is composed of two leases administered by the California Department of Fish and Game. DBOC is the lease holder and operator of both leases in Drakes Estero. The on-land operations occur adjacent to Schooner Bay (Figure 1, inset) and house the shellfish hatchery, processing, and packing, and include boat docks and piers, two septic systems, a water well, worker housing, parking, interpretation for the visiting public, and retail sales.

BOX 2
History of Oyster Mariculture in Drakes Estero

1932: Initial test plants of imported *Crassotrea gigas* seed in Drakes Estero.
1934: Earliest state water bottom leases in Drakes Estero that led in the next year to the establishment of the original DBOC.
1962: Point Reyes National Seashore established (Point Reyes National Seashore Enabling Act, 16 U.S.C. § 459c–459c-7).
1965: California conveys the tidal and submerged lands within the boundaries of Point Reyes National Seashore to the United States and these areas, including Drakes Estero, become subject to the laws, regulations, and policies governing NPS property.
1972: Charles W. Johnson sells his property on Drakes Estero to NPS, subject to reservation of the right to use the property for 40 years ". . . for the purpose of processing and selling wholesale and retail oysters, seafood, and complimentary food items, the interpretations of oyster cultivation to the visiting public, and residential purposes reasonably incidental thereto. . . ." (DOI, 2004; see Appendix A).
1976: Point Reyes Wilderness Act of 1976 designates 25,370 acres as Wilderness and 8,003 acres as Potential Wilderness which includes Drakes Estero (P.L. 94-544, Oct. 18, 1976).
1992 Record of Agreement (ROA) restricts boat access to main and lateral channels during pupping season March 15–June 1 (ROA with NPS, the National Marine Fisheries Service, the California Department of Fish and Game, and the Johnson Oyster Company).
1997: Marin County Stipulated Court Order (Marin County Superior Court #165361) that orders Johnson Oyster Company to be in compliance with the law (Coastal Act, building code, and health and safety code violations) and meet conditions as specified.
2003: California Coastal Commission's Cease and Desist Order No. CCC-03-CD-12 concerns onshore development by Johnson Oyster Company without the required coastal development permit. This followed the Marin County request that the Commission assume primary enforcement authority with regards to Coastal Act violations on the property (California Coastal Commission, 2007).
2004: California Fish and Game Commission issues a 25-year renewal of water bottom leases to Johnson Oyster Company contingent upon the term of the Reservation of Use and Occupancy agreement with NPS.
2005: Tom Johnson (son of Charles W.) sells oyster farm with remainder of Reservation of Use and Occupancy to Kevin Lunny.
2008: In April, DBOC and NPS reach agreement on the terms of a new Special Use Permit that authorizes operation of the oyster farm in Drakes Estero until November 2012.

DBOC holds a Reservation of Use and Occupancy (RUO) from the Point Reyes National Seashore for the use of 1.43 acres of land at the north end of Schooner Bay and operates in the estero waters under the conditions stipulated in an NPS Special Use Permit and the state lease from the California Fish and Game Commission (see Figure 2). The state lease is subject to the terms of the RUO and the conditions of the Special Use Permit: the present RUO expires in 2012.

DBOC practices two types of oyster mariculture. The first is Japanese rack culture that is used to grow oysters on shell cultch predominantly for the shucked product. The second is cultchless culture, in which individual oysters are grown in bags for the half shell market. These methods are described below with specific reference to their application in Drakes Estero.

DBOC imports Pacific oysters as eyed larvae from West Coast hatcheries. The larvae are cultured in tanks where they set on bagged cultch, consisting of cleaned oyster shells from the shucking operation, or on ground oyster shell fragments (250–300 µm in size) for cultchless culture, depending on the desired end product. At DBOC, oysters can be set successfully from April to October. While in the tanks, the young oysters feed on algae from the estero's naturally productive water that is pumped into the shoreside facility.

For rack culture, the bags of cultch with oyster spat are suspended in the water column in the nursery area (area 6 in Drakes Estero, see Figure 3), a site with high productivity that supports rapid growth. After about two months, the bags of seeded cultch are brought back onshore and strung onto wires. At DBOC, the stringing can take place from April to December or January. Boats then transfer the loaded wires from the shoreside facility to racks, which are located near the main channels of Drakes Estero. Wires are hung over the racks, such that at the lowest point the cultch is 0.5 m off the bottom and at the top of the rack the cultch is 2 m above the bottom. The racks are submerged at high tide and become partially exposed during low tide (Figure 4). Once the oysters have matured to market size, the wires are brought onshore, and workers use a pneumatic hammer to remove and separate the oysters. Oysters are sorted and graded to determine whether they will be sold in the shell or shucked; both occur onsite. DBOC is the last on-site shucking and packing facility in California (Kevin Lunny, during October 30, 2008 site visit).

For cultchless culture, ground oyster shells are used to ensure settlement of a single larva per fragment. These seed oysters are put into a container with a mesh screen bottom and placed in another tank where an upwelling system pumps estero water through the screens to feed the young oysters. As the seed oysters grow, they are serially transferred into bags of increasing mesh size at lower densities for hanging bag culture

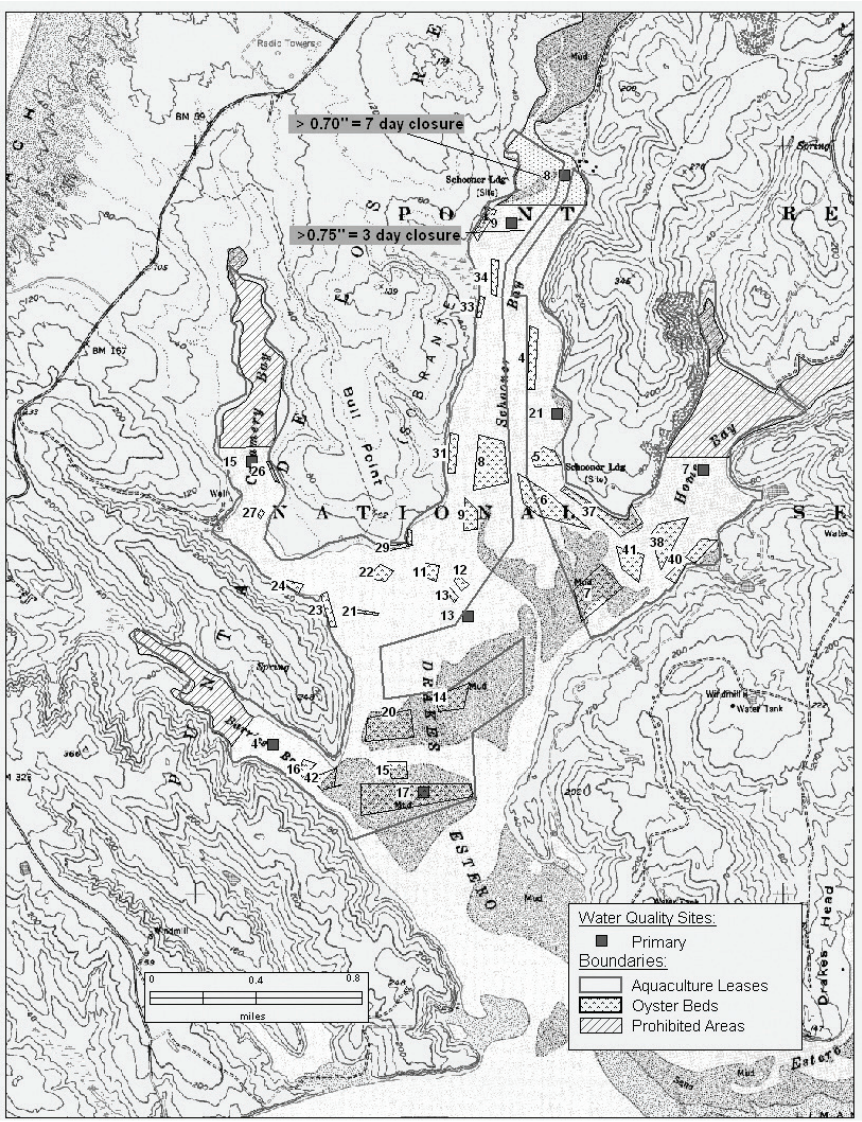

FIGURE 3 Map of Drakes Estero illustrating mariculture lease areas and oyster beds (sites used for growing oysters on racks or in bags). California Department of Health Services, 2007 (this map does not represent a legal description of the actual lease/bed locations).

FIGURE 4 Oyster cultch strung on wire with spacers and hung over racks. Eelgrass, *Zostera marina*, appears in the foreground (photograph courtesy of T. Moore).

in the estero. When the oysters reach a size of 3 mm, they are bagged and placed in the intertidal area where they float during high tide and sit on the substrate during low tide. When the oysters are approximately 2 inches long, about 120 oysters are bagged and tethered to groundlines staked on the sand bars in the estero. The bags are flipped once every 2–3 weeks both to reduce fouling and also to ensure more uniform shell growth (Figure 5). The oysters stay in these bags for 1–4 months for "beach hardening time" or "finishing time" to induce shell growth. This process is necessary in order to condition the oysters for transport of live animals to be sold to the half-shell market. The production of single oysters requires more effort and a longer culture period, but results in a higher value product.

Weekly oyster and water samples are provided to the Department of Health Services for monitoring of the presence and or levels of toxic phytoplankton. In Drakes Estero, biotoxins (e.g., saxitoxin, which is responsible for paralytic shellfish poisoning; domoic acid, which causes amnesic shellfish poisoning) are more of a problem towards the mouth of the bay and less of a problem in the upper reaches (Kevin Lunny, during October 30, 2008 site visit). During a biotoxin alert, it is possible that the water quality and/or harvested oysters will be sampled every day. However, after significant rainfall, automatic closures restrict harvesting to area 17, a 25 acre sand bar closer to the mouth of the estero approved for year-round

FIGURE 5 Oyster bags tethered to groundlines on a sand bar in Drakes Estero (photograph courtesy of T. Moore).

harvest, the only fully approved shellfish growing area in California. Part of area 17 is inside the seal protection area, and therefore may not be used for oyster culture. Boat transit to area 17 is also directed away from the main channel to avoid disturbance of harbor seals. In periods of high rainfall, DBOC helps other growers keep their markets open by providing them with oysters from the approved area.

According to Kevin Lunny (October 30, 2008 site visit), DBOC harvests oysters daily throughout the year. Between harvest and setting, DBOC boats may make more than one trip to the racks or bags per day. The typical work day is 8:00 a.m. to 4:30 p.m., Monday through Saturday and occasionally on Sunday when it coincides with a holiday. With the hanging rack culture, DBOC can work at more stages of the tidal cycle than most other oyster operations.

In addition to oysters, DBOC also grows Manila clams. The technique is the same as for cultchless oyster culture, with the clams grown in mesh bags, but the clams require less tending than the oysters (Kevin Lunny, 3.4.09 communication).

The State of California has production minima that oyster growers must meet in order to maintain a lease for the state water bottom. Growers must plant a minimum of 10,000 oysters per acre and harvest a minimum of 2,000 oysters per acre per year; therefore DBOC is required to harvest 180,200 lbs shucked weight to meet this minimum based on lease acreage

(Moore, 2008). According to the map produced by the California Department of Public Health, 147 acres of the total 1,059 acres available for oyster growing were under production in November 2007—this represents a snapshot in time because areas used for growing oysters will shift at different times of year depending on the planting schedule (Kevin Lunny, 3.4.09 communication). The actual footprint of the racks and bags on bottom in Drakes Estero in 2008 was less than 30 acres (Moore, 2008).

Since 1960, the size of the oyster harvest has fluctuated from lows of 29,799 lb and 34,094 lb in 1960 and 2000, respectively, to a high of 769,590 lb in 1995 (Figure 6). Insufficient information is available to explain the steep decline in the oyster harvest from 1996 to 2000. A change in planting methods in the early 1990s may be responsible for the massive increase in the reported number of seed oysters planted as estimated by the owner of Johnson Oyster Company (Figure 6).

The fate of DBOC after 2012 has become a matter of public controversy. Highly publicized disputes over the science addressing impacts of the oyster farm on Drakes Estero have erupted in the context of the continuing operation of a commercial shellfish farm within a designated Potential Wilderness area (DOI, 2004; see Appendix A) and an Office of the

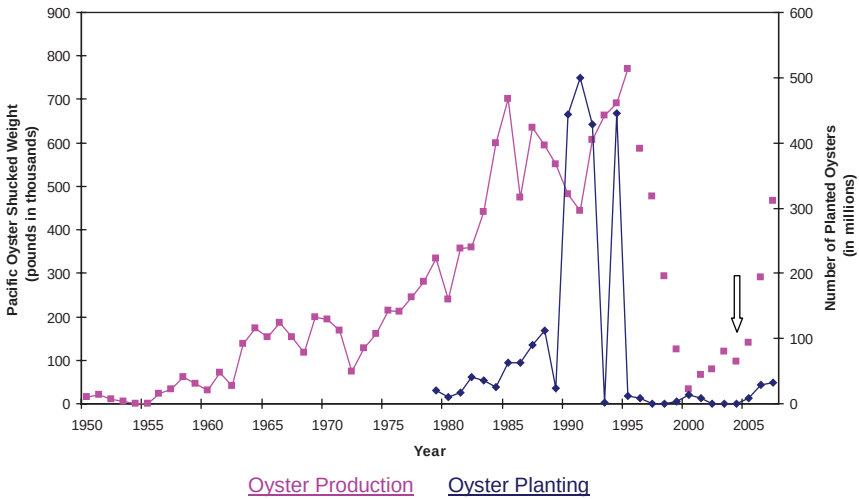

FIGURE 6 Drakes Estero Oyster Planting and Production 1950–2007. Shucked weight = 100 oysters per gallon × 8.5 pounds per gallon. Oyster shucked weight is calculated from Shellfish Harvest Tax Reports which are filed monthly for all state water bottom leases. Arrow indicates the year (2005) in which DBOC assumed operation of the oyster farm. (Oyster production and planting values were obtained from Tom Moore, Marine Region Aquaculture Coordinator, California Department of Fish and Game).

Inspector General investigative report (DOI, 2008) that was undertaken in response to complaints from the owners of DBOC with regard to the Point Reyes National Seashore actions. To resolve some of these issues, Senator Dianne Feinstein and the NPS requested that the National Research Council (NRC) of the National Academies conduct an independent assessment of the scientific basis for NPS presentations and reports on the ecological effects of DBOC operations on the Drakes Estero ecosystem. In addition to the review of the science on Drakes Estero, the committee will produce a second report, published separately, that will address in more general terms the elements of best management practices that could be employed to enhance the benefits of shellfish mariculture and minimize any negative ecological effects (see Appendix B for the NRC statement of task).

The committee held its first meeting in Mill Valley, California, and spent the first day receiving oral and written input directly from key participants in the controversy over the impacts of DBOC and the second day visiting Drakes Estero with guidance from NPS and DBOC principals (see Appendix C for meeting agenda). To fulfill part one of the statement of task, the committee organized a framework to answer the ecological questions using information from local empirical studies, studies in comparable ecosystems, and a conceptual understanding based on a synthesis of scientific studies and ecological theory. This report is organized according to this framework and includes an introduction to the Drakes Estero environment and the controversy, followed by sections that address questions about the accuracy of the science presented by NPS, the effects on NPS decision making, and suggestions for future research. The committee relied on the published scientific literature, presentations at the first committee meeting, and the many documents provided to the committee both on Drakes Estero and other sites worldwide in which studies have been conducted that could provide insight into impacts of shellfish culture on the Drakes Estero ecosystem.

HISTORICAL BASELINES AND HUMAN MODIFICATIONS

Although relatively unmodified by human interventions, especially as compared to highly developed portions of San Francisco Bay, Drakes Estero is not a pristine coastal lagoon. The current status of the estero's ecosystem reflects many influences of human populations both past and present. Modifications to the ecosystem include both local interventions and local manifestations of distant interventions operating on wider spatial scales.

Perhaps the ecologically most significant modifications of coastal bays and estuaries, possibly including Drakes Estero, follow from the local human over-exploitation and functional extinction of the native

Olympia oyster population. The Olympia oyster, *Ostrea lurida*, was a former constituent of Drakes Estero of some unquantifiable abundance as evidenced by the mounds of its shells in the Coast Miwok midden near the on-land facilities of DBOC.[1] Kirby (2004) describes a pattern of regional over-exploitation of the native oyster during the 1800s across every estuary of the western states for which historical fisheries landings data are available. These oysters were harvested to supply the growing San Francisco market during the Gold Rush period (Conte and Dupuy, 1982). Baker (1995) provides a personal communication from C. Johnson that Olympia oysters are "common but not abundant" in Drakes Estero, but it is unclear what information this comment was based upon and when such observations were made. There are no recent observations of the Olympia oyster in Drakes Estero. This oyster has been functionally removed by unsustainable exploitation from most of its natural range in California, Oregon, and Washington (Kirby, 2004), but a recent 2008 photograph of natural Olympia oyster populations in Nootka Sound in British Columbia (Figure 7) and descriptions of Olympia oyster populations at several sites throughout British Columbia (Gillespie, 2009) indicate conditions that may have prevailed in Drakes Estero before the mid-1800s. The natural Olympia oyster reefs form a nearly continuous band covering the low-intertidal surfaces of many tidal flats sheltered in lagoons, bays, and estuaries, where recent quantitative sampling of three such flats revealed densities of 109–360 per square meter (Gillespie, 2009). Before intense exploitation by fishermen, densities were described as far higher in locations in the Strait of Georgia, where populations now remain relatively low (Gillespie, 2009). The tidal flat in the Figure 7 photograph ends with a steep slope into the subtidal and the oysters do not extend below about mean low water, although the Olympia oyster typically extends into the subtidal where the slope is gradual (Couch and Hassler, 1989; Shaw, 1997; Gillespie, 2009).

Although no fisheries data are available for Drakes Estero per se, the lack of effective management of the native oyster fishery in the late 1800s to the early 1900s that led to overfishing and functional extinction of the native oyster throughout the western states (Kirby, 2004) for transport to San Francisco markets suggests that a similar pattern of over-exploitation occurred in the nearby Drakes Estero. Limited sampling of the bottom benthos in Drakes Estero (Harbin-Ireland, 2004 [in eelgrass beds]; Press, 2005 [on intertidal flats]) did not detect evidence of this native oyster, implying little or no recovery during the recent decades. The loss of

[1]The prepublication of this report erroneously cited a paper by Stewart and Praetzellis (2003). The paragraph has been edited to correct this error.

FIGURE 7 Photograph of a natural Olympia oyster reef in Nootka Sound in British Columbia at low tide (taken in 2008 by Michael Beck, The Nature Conservancy).

oysters from estuaries and coastal lagoons has cascading consequences on the functioning, resilience, and value of ecosystem services of these environments worldwide (Jackson, J.B.C. et al., 2001; Lotze et al., 2006). Oysters have been characterized as ecosystem engineers (term from Jones et al. [1994]; application to oysters in Lenihan and Peterson [1998]) and a foundation species (term from Dayton [1972]; application to oysters in Bruno and Bertness [2001]); these terms are used to imply the dramatic impacts that the presence and biological activities of oysters have on the composition and dynamics of an entire ecosystem. The Atlantic States Marine Fisheries Commission identifies oyster reef habitat as valuable, serving perhaps as essential fish habitat for some fish (Coen et al., 1999; Atlantic States Marine Fisheries Commission, 2007). Our report details the most important of these ecological consequences below.

Drakes Estero has also been modified by introductions of nonnative species. The most evident and aggressively invasive of these is the clonal tunicate, *Didemnum vexillum*, which forms yellow blankets over many subtidal hard substrates, especially shells of cultured oysters and oyster racks. Although the *Didemnum* introduction cannot be attributed to local human importation, other nonnative species were introduced by the shellfish mariculture operations, including the intentionally imported shellfish—the Pacific oyster (*Crassostrea gigas*), the Kumamoto oyster (*Crassostrea sicamea*), and the Manila clam (*Venerupis* [*Ruditapes*] *philippinarum*); and two hitchhikers—a nonnative marsh snail (*Batillaria attramentaria*) (Byers, 1999) and a protozoan parasite of oysters (Burreson et al., 2000).

Other local and regional interventions of humans have also modified the ecosystem of Drakes Estero from its baseline conditions. Cattle ranching takes place on many of the lands abutting the estero, probably modifying the composition and appearance of terrestrial vegetation in the Point Reyes National Seashore but with little apparent contribution to nutrient run-off in streams that feed into Drakes Estero, as noted in Anima (1991) that "it seems unlikely that surface nutrient inputs to Drakes Estero are of concern." Cattle typically destabilize stream banks, potentially enhancing erosion and sedimentation into Drakes Estero. Documented increases of sedimentation over the past 150 years in Drakes Estero (Anima, 1991) can be attributed to increased land use, such as "trail and road use, road building, increase in paved areas" as well as effects of cattle grazing (Anima, 1991). Kayakers and hikers make use of the lands surrounding Drakes Estero, and those who approach wildlife closely can cause seals and water birds to flush. Since 1900, California has lost over half of its coastal wetland habitat to development (Dahl, 1990, 2006) so these changes elsewhere in the state probably affect the numbers of shorebirds and wetland-dependent birds using Drakes Estero and elevate the value of Drakes Estero because of the comparatively high quality of its estuarine environment. Human activities and development have displaced harbor seals from traditional habitats in areas such as San Francisco Bay, highlighting the importance of Drakes Estero as a relatively unmodified habitat. Global climate change is modifying not only the distributions of individual species but also changing many communities as new mixes of species induce new dynamics in estuarine and lagoonal environments (Scavia et al., 2002; Parmesan and Yohe, 2003; Parmesan and Galbraith, 2004; Parmesan, 2006).

The initiation of commercial mariculture of *Crassostrea gigas* in the 1930s and its perpetuation through present represents another human intervention of significance to the ecosystem of Drakes Estero. The oyster re-introduction and enhancement through mariculture (albeit not the native oyster) represents a form of restoration of historic functionality of the estero, although there may be differences in the habitat functions of the native oyster beds compared to nonnative oysters grown in mariculture. Effects of nonnative oyster presence and its biogeochemical processing can be viewed as contributions towards restoring an historic baseline ecosystem in Drakes Estero (e.g., Jackson et al., 2001; Lotze et al., 2006). Past oyster culture came at a cost—modifying the ecosystem state by leaving a legacy of nonnative species. In addition, continued culture of nonnative oysters and clams poses some risk of their eventual naturalization in Drakes Estero and larval spread to other coastal lagoons, a risk that could be minimized but not entirely eliminated by culturing triploids (NRC, 2004a). Given the proximity of the estero to a large urban area and the

influence of the highly modified San Francisco Bay, and the other activities in the Point Reyes National Seashore (ranches and recreational use), the ecosystem of Drakes Estero will be affected by both legacy effects of earlier human interventions and also ongoing human activities, even if the oyster farm were closed and all the associated equipment removed. Nevertheless, removal of the Pacific oysters and nonnative clams under culture and all the structures used in the culture process would carry the consequences of removing the direct and indirect influences of the biogeochemical processes now provided by the filtration, excretion, and biodeposition of the shellfish and the influences of structural substrates of the oysters and the racks and bags that now hold them. In addition, the activities of the oyster culturists would also cease so impacts of those activities would disappear, some immediately and others gradually over time. The committee describes these effects, positive and negative, of oyster and shellfish feeding and biodeposition, of hard structures, and of activities of culturists in detail below.

ECOLOGICAL AND ENVIRONMENTAL RESPONSES

The committee organized its synthesis of the assessment of impacts of culturing nonnative oysters and clams in Drakes Estero by first preparing Table 1, which breaks down the question of mariculture impacts into seven largely separate ecosystem responses and one response for human use values. Columns separate the synthesis into a series of questions about each potential response. Answers to each question are presented in the report by treating each of the eight potential responses and addressing four questions: (1) reviewing relevant background science of Drakes Estero, (2) identifying the body of relevant studies on mariculture impacts in Drakes Estero, (3) specifying the impacts of mariculture that can be directly demonstrated by studies of Drakes Estero, and (4) specifying the impacts of the Drakes Estero mariculture that can be reasonably inferred from research conducted in other systems. The committee was asked to address two additional questions: (5) identify conclusions that can be drawn from the body of scientific studies, how they compare with what the NPS presented to the public, and how these conclusions affected NPS decision making; and (6) what research is recommended to resolve important remaining uncertainties—the answers to these questions were combined across all eight types of ecological/environmental/human use value responses and are presented after the discussion of the individual responses.

TABLE 1 Ecological, Environmental, and Human Use Values in Response to Mariculture Operations

Potential ecological or environmental response or effect on human use value	Background of relevant science in Drakes Estero	Studies of relevant mariculture impacts in Drakes Estero	Impacts directly demonstrated by studies of Drakes Estero	Impacts reasonably inferred from research conducted in other systems
Benthic/pelagic coupling—nutrients and particulates	I. A	I. B	I. C	I. D
Eelgrass	II. A	II. B	II. C	II. D
Fish	III. A	III. B	III. C	III. D
Benthic invertebrates in soft sediments	IV. A	IV. B	IV. C	IV. D
Harbor seals	V. A	V. B	V. C	V. D
Nonnative species	VI. A	VI. B	VI. C	VI. D
Birds	VII. A	VII. B	VII. C	VII. D
Human-use values—economics, recreation, aesthetics	VIII. A	VIII. B	VIII. C	VIII. D

NOTE: The column headings correspond to questions posed in the Statement of Task and the rows identify the various components of the Drakes Estero ecosystem that could be affected by mariculture. The table provides a guide (Roman numerals) to the presentation of the committee's findings.

I. Benthic/Pelagic Coupling—Nutrients and Particulates

A. BACKGROUND

Suspension feeders, such as oysters, mussels, and other bivalve molluscs, have been shown to influence the nutrient, organic, and materials coupling of benthic and pelagic systems in a broad range of habitats (Dame, 1996). Oysters feed by filtering particulates from the water column and when populations are abundant they can depress turbidity in their local vicinity and help graze down algal blooms in estuaries (Herman and Scholten, 1990; Haamer, 1996; Rice, 2000; Smaal et al., 2001; Landry, 2002; Newell, 2004). Epifaunal shellfish such as oysters have a very plastic response to increasing levels of phytoplankton and detritus in water, increasing their filtration rate and production of pseudofeces. This adaptability is not observed in infaunal shellfish (clams and cockles); they stop filtering when suspended particulate levels exceed their tolerance (Foster-Smith, 1975; Prins et al., 1991). Because oysters and other bivalves can filter so much material from the water, producing a large quantity of pseudofeces and feces, they function in the transfer of organic and inorganic particulates from the water column to the sediments—a process referred to as benthic-pelagic coupling (Dame, 1996; see review in Dame and Olenin, 2005).

The deposition of feces and pseudofeces can modify sediments in the vicinity of high abundances of bivalves, increasing concentrations of fine particles and organic content and altering sediment biogeochemistry (e.g., Newell et al., 2002). Under circumstances of limited physical flushing and transport of these biodeposits, high rates of transfer of organics from the

water column to the bottom can result in sedimentary anoxia, diminishing the capacity of the sediments to sustain benthic invertebrates. On the other hand, low rates of organic enrichment from pseudofeces and feces may fertilize eelgrass and benthic macro- and microalgae, thereby increasing benthic primary production (Asmus and Asmus, 1991; Reusch et al., 1994; Peterson and Heck, 1999; Carroll et al., 2008).

B. WHAT IS THE BODY OF SCIENTIFIC STUDIES ON THE IMPACT OF THE OYSTER FARM ON DRAKES ESTERO?

There are few and limited studies of sedimentation and nutrient inputs in Drakes Estero. Anima (1990, 1991) presents results from studies on sedimentation and pollution in Drakes Estero funded by NPS. In another study funded by NPS, researchers provided a preliminary inventory and assessment of the effects of the oyster farm on some of the biota in the estero, including analysis of sediment cores for benthic infauna, organic content, and particle size (Harbin-Ireland, 2004; summarized in Elliott-Fisk et al., 2005).

Anima (1990, 1991) conducted a survey of the sedimentation rate and composition of sediments in Drakes Estero in 1984–1986. Sedimentation appeared to increase over the past 150 years, potentially a response to changing land use as the population increased. In the report to NPS, Anima (1990) noted a few potential impacts associated with oysters or oyster farm activities on sedimentation in the estero. First, he observed that the Schooner Bay channel appears to be artificially maintained by boat traffic associated with oyster operations. Propeller action was inferred to maintain the navigation channel and prevent sedimentary in-filling from the adjacent, extensive eelgrass beds. In addition, Anima speculated on the role of oysters in deposition of fine sediments in the estero, based predominantly on studies of oyster biodeposition rates in other systems. Noting that the flushing rate in the upper reaches seems insufficient to transport fine sediments out of the estero, Anima (1990, 1991) concluded that "more research is needed to ascertain what amount of silt-sized material is being produced by oysters in the lagoon."

Anima (1990, 1991) also reported results from a study of nutrient inputs to the estero based on the monitoring of streams in areas with or without agricultural land use (cited as Hagar, 1990 [unpublished]). From short-term monitoring of nutrients (phosphorus and nitrogen) in the various streams, it appeared that the estero was unlikely to experience excess nutrient loading from the watershed (Anima, 1990, 1991). This report also asserted that there is low risk of eutrophication due to the high rate of tidal flushing relative to stream inputs.

In January and October 2003, Harbin-Ireland (2004) sampled sedi-

ments below oyster racks and 10 m away from the racks in eelgrass habitat and found that the sediments were slightly but significantly sandier immediately below the racks, appeared to be oxygenated to a depth of at least 10 cm in all locations, and did not exhibit a significant difference in the organic content among sampling locations. The report attributed the lack of a detectable difference in organic content beneath the racks to the already high inputs of detritus from eelgrass and concluded that the strong tidal flux appeared sufficient to prevent oxygen depletion in the sediments of eelgrass beds near oyster racks (Harbin-Ireland, 2004).

C. WHAT EFFECTS CAN BE DIRECTLY DEMONSTRATED BY RESEARCH CONDUCTED IN DRAKES ESTERO ITSELF?

The relatively small, low-flow watershed and high-energy hydrography of Drakes Estero, dominated by strong tidal flux (Anima, 1991; John Largier, unpublished data), appears to be sufficient to produce low risk of eutrophication in most of Drakes Estero. Even though these properties endow the estero with excellent water quality, filtration by the cultured oysters could provide additional benefits to eelgrass production by lowering turbidity and adding nutrients because these limit eelgrass distribution and production even in relatively oligotrophic estuaries (Carroll et al., 2008). In addition, the oysters in Drakes Estero could add ecosystem resilience in the event of a phytoplankton bloom or a high-turbidity event like sedimentation during run-off of stormwaters (Jackson et al., 2001). Also, the strong tidal currents and shallow water depths help maintain the oxygenation of sediments even under oyster racks where biodeposition (feces and pseudofeces) is expected to be highest. Thus, sedimentary anoxia induced by DBOC shellfish is unlikely.

D. WHAT EFFECTS CAN REASONABLY BE INFERRED FROM RESEARCH CONDUCTED IN SIMILAR ECOSYSTEMS?

Studies have shown that oyster reefs and oyster mariculture installations can contribute to the transfer of suspended material into the sediments (Mazouni et al., 1996; Nugues et al., 1996). These dense aggregations of oysters also release dissolved nutrients that can support new growth of algae or seagrasses (Asmus and Asmus, 1991; Reusch et al., 1994; reviewed in Dame and Olenin, 2005). To varying degrees, suspension feeders enhance benthic–pelagic coupling, nutrient remineralization, primary productivity, sediment transfer from water column to the bottom, and habitat complexity. Kaiser (2001) reviewed the effects of shellfish cultivation on estuarine ecosystems and identified a similar set of mechanistic influences, concluding that such processes have a generally positive

influence on the overall water quality of a system. Oyster enhancement and oyster reef restoration is a major and expanding component of estuarine restoration throughout the United States (Coen and Luckenbach, 2000; Lotze et al., 2006), now widely promoted by several environmental organizations (M. Beck, The Nature Conservancy, Feb 2009).

Several reviews have highlighted the positive and negative feedback mechanisms observed in aquatic systems as a consequence of nutrient dynamics mediated by shellfish (Dame, 1996; Prins et al., 1998; Newell et al., 2005). Concentrated bivalve assemblages have been documented to play a role in regulating the abundance of phytoplankton in shallow seas (Newell et al., 2005; McKindsey et al., 2006). In summary, large populations of filter-feeding molluscs provide the system with a capacity to buffer episodic influxes of suspended materials such as turbidity after storms or excess phytoplankton blooms (De Angelis, 1986), thus enhancing and sustaining water clarity.

In their review, McKindsey et al. (2006) maintain that bivalve shellfish facilitate the cycling of nutrients both by direct excretion and through remineralization of organic biodeposits in the sediments. Nutrient regeneration in aquatic systems may be governed by flushing rates and water residence times as well as the abundance and location of bivalves in the systems (i.e., shallow versus deep water) (Dame, 1996; Newell et al., 2005). Subsequent primary production is therefore influenced by the degree of internal cycling of nutrients such as phosphorus, silicon, and nitrogen, as well as the degree of import and export from the systems, as determined by flushing rate (Dame and Prins, 1998). For example, some measurements of phosphorous budgets in and around shellfish assemblages have indicated a considerable removal of phosphorous from the system through biodeposition (reviewed in Dame, 1996; Newell et al., 2005). In relation to the cycling of silicon, Prins and Smaal (1994) concluded that the majority of silicon, a structural component of diatoms, was transferred to the sediment with little being released by bivalves.

Most nutrient studies have focused upon the fate of nitrogen because this nutrient is generally considered to be the most limiting for primary production in marine and estuarine systems. Benthic bivalves play an important role in nitrogen cycling in both subtidal and intertidal systems, usually through the release of ammonium (NH_4^+). Nixon et al. (1976) concluded that nitrogen flux across oyster reefs was highly variable and was heavily influenced by tidal flow. Dame (1986) reviewed a body of work relating to nutrient fluxes induced by *Crassostrea gigas* filtration and biodeposition in northern France and concluded that 15–40% of nitrogen input to the water column was recycled from oysters and that the measured values were always higher than the estimated values, probably enhanced by mineralization occurring in adjacent sediments containing oyster

biodeposits. However, Dame and Libes (1993) contended that nitrogen is retained within the water column through direct recycling of nitrogen from shellfish (*Crassostrea virginica*) to phytoplankton. Newell et al. (2002) showed that oyster biodeposits can also serve as sites for the removal of nitrate from the ecosystem through the conversion of nitrate to nitrogen gas by anaerobic bacterially mediated processes (denitrification).

Although no specific study relating oysters to nutrient dynamics, sediment deposition, and water quality has been conducted in Drakes Estero, it is reasonable to assume that processes identified here apply under similar conditions (i.e., oyster production levels, and hydrological flushing and water residence times).

II. Eelgrass

A. BACKGROUND

Seagrasses are important to estuarine and coastal lagoonal ecosystems because they provide food for some herbivores, notably black brant (*Branta bernicla nigrans*) on the Pacific coast of the United States and Canada, generate detritus to feed deposit-feeding invertebrates, and form structured habitat for fish and invertebrates in what would otherwise be a plain of soft sediments (Jackson, E.L. et al., 2001; Williams and Heck, Jr., 2001; Heck et al., 2003; Bostrom et al., 2006). Seagrasses are susceptible to multiple anthropogenic disturbances, which have been shown to be at least partly responsible for a general worldwide decline in their abundance (Orth et al., 2006). Although several species are found along the west coast of the United States, eelgrass (*Zostera marina*) is the dominant native species and apparently the only one found in Drakes Estero. The now common nonnative eelgrass, *Zostera japonica*, has not been documented in Drakes Estero, although *Ruppia maritime* may occur there (S. Williams, personal communication). *Zostera marina* typically occurs from about 1 m above to 1.5 m below mean low water (MLW) in estuaries along the West Coast of the United States with its upper limit determined primarily by desiccation (Boese et al., 2005) and the lower limit determined by light. Consequently, its distribution varies by location and extends to almost 10-m depth where water clarity is high (Phillips, 1984; Thom et al., 2003). The *Z. marina* distribution, thus, overlaps directly with the depth range across which most oysters are cultured (Conte et al., 1994). The structured habitat formed by *Z. marina* in West Coast estuaries has been shown to influence the abundance and diversity of everything from small

epibenthic invertebrates to large fish and birds (Simenstad and Fresh, 1995; Moore et al., 2004; Dumbauld et al., 2005; Hosack et al., 2006; Ferraro and Cole, 2007). While seagrass abundance has declined worldwide (Orth et al., 2006), at least 24% of seagrass populations along the west coast have shown increasing trends in abundance (S. Williams, personal communication), including Drakes Estero, although, in some estuaries, this increase may be attributed to expansion of the introduced nonnative eelgrass *Z. japonica*.

B. WHAT IS THE BODY OF SCIENTIFIC STUDIES ON THE IMPACT OF THE OYSTER FARM ON DRAKES ESTERO?

No study has comprehensively evaluated the impacts of shellfish mariculture on eelgrass in Drakes Estero. Eelgrass information is limited to some observations of eelgrass distribution relative to oyster mariculture racks in research examining potential impacts of the oyster mariculture on eelgrass invertebrate and fish communities (Harbin-Ireland, 2004; Wechsler, 2004), a visual analysis of the extent of tracks of boat propeller damage by NPS scientists and apparent eelgrass displacement by oyster racks (NPS Trip Report of March 13, 2007), and a monitoring of both eelgrass abundance and persistence over 18 months from April 1996 to October 1997, which included some structural parameters like densities of blades and turions at two sites in Drakes Estero and one in Estero de Limantour using six plots per site (Applied Marine Sciences, 2002).

C. WHAT EFFECTS CAN BE DIRECTLY DEMONSTRATED BY RESEARCH CONDUCTED IN DRAKES ESTERO ITSELF?

The limited scope and effort of the studies that infer impacts of shellfish mariculture on eelgrass of Drakes Estero prevent any definitive conclusions. The Applied Marine Sciences (2002) study did not control for tidal elevation in establishing its sites in Drakes Estero and Estero de Limantour. Reasonable inferences can be drawn, however, from the observations of propeller damage in the NPS GIS map of July 2007 and from the Harbin-Ireland (2004) and Wechsler (2004) observations, consistent with research conducted elsewhere along the west coast as presented below.

D. WHAT EFFECTS CAN REASONABLY BE INFERRED FROM RESEARCH CONDUCTED IN SIMILAR ECOSYSTEMS?

Shellfish mariculture and eelgrass compete directly for space; however, they also interact indirectly via changes each makes to the immediate environment like altering water flow, sediment structure, light pen-

etration, and nutrient supply. Other environmental changes arising from mariculture come from the addition of structures (e.g., bags, racks, and lines) and disturbances of transportation and culture operations. Whereas no directed research has been undertaken on these interactions in Drakes Estero, a fairly substantial amount of applicable information is available from elsewhere along the west coast of the United States (Rumrill and Poulton, 2004; Dumbauld et al., 2005). Oysters and other bivalve molluscs feed by extracting particulates from the water column, which can locally increase water clarity, thereby promoting spread of eelgrass, especially to depths where light would otherwise be limiting (Dennison et al., 1993; Peterson and Heck, 2001; Newell and Koch, 2004). Competition for space has been noted, particularly for on-bottom shellfish culture, with an apparent threshold loading function observed in Willapa Bay, Washington, above which eelgrass can "under-yield" or decline by more than the percent cover of oysters present; however, eelgrass can also over-yield or increase at lower levels of oyster cover (Dumbauld et al., 2005, [unpublished data]). Part of the under-yield response has been attributed to eelgrass blades rubbing across the sharp edges of growing oysters and being cut off (Schreffler and Griffen, 2000). Perhaps the most relevant to off-bottom rack-and-line culture—the dominant form of oyster culture in Drakes Estero—is work conducted by Everett et al. (1995) in Coos Bay, Oregon. This study demonstrated complete absence of eelgrass directly under oyster racks and lines, presumably due to shading and sediment erosion (10–15 cm at the base of the structure). The absence of eelgrass immediately beneath racks in Drakes Estero (as reported by Harbin-Ireland [2004] and Wechsler [2004]) can therefore be reasonably attributed to mariculture. Small reductions in eelgrass cover and density have been documented with other forms of off-bottom culture, such as long-lines and stakes, but losses tended to scale with density or spacing and were restricted primarily to the area beneath lines and stakes where there is shading or sedimentation (Everett et al., 1995; Rumrill and Poulton, 2004; Tallis et al., in press). Nonetheless, all culture methods were shown to result in decreased production of eelgrass in Willapa Bay (Tallis et al., in press).

Recovery of eelgrass from areas disturbed by mariculture can be fairly rapid, either by rhizome spread or from seed dispersal. Pregnall (1993) found that eelgrass density remained depressed five months after removal of oyster stake culture in Coos Bay, Oregon. Recovery was from vegetative propagation and related to the density of eelgrass plants present before oysters were added. Wisehart et al. (2007), who examined recovery over a longer period, found enhanced seedling survival following disturbance caused by on-bottom culture and dredge harvest versus long-line oyster culture in Willapa Bay, Washington. They speculated that dredging

had removed more adult eelgrass plants as competitors and found that remaining plants in dredge areas also produced more seeds, suggesting that the mechanism for recovery is more complex and likely depends on surrounding eelgrass beds and other culture areas as well. Eelgrass may recruit to some areas where seeds are deposited or sediment has been stabilized by some mariculture practices.

In Drakes Estero, the mariculture footprint is roughly 8 acres for racks predominantly in areas of eelgrass and perhaps an additional 10 acres of bottom bag culture, most of which occurs on intertidal flats with no eelgrass (Brown and Becker, 2007: Figures 2 and 3). A secondary impact to eelgrass arises from damage by boat propellers; scars or disturbance tracks are visually documented in aerial photos of Drakes Estero (total area with scars loosely quantified to be about 50 acres; NPS GIS Map, July 27, 2007). The committee infers that these scars were caused by DBOC boats because the scars are located near the site of rack deployment and are aligned in the direction that leads from or to those racks. In addition, all other motorboats were excluded from Drakes Estero upon passage of the Point Reyes Wilderness Act of 1976. This photograph was thus taken in 2007 and is therefore indicative of current impacts of mariculture boating activities. In past years, such as 2000, when shellfish culturing activities were dramatically lower (Figure 6) as the Johnson Oyster Company became less active and before the sale to DBOC, eelgrass scarring by boats may have differed. Oyster production levels varied by more than an order of magnitude over the decades, shown in Figure 6, for a variety of reasons, and the past impacts of the oysters, clams, and mariculture activities doubtlessly varied as well. Recovery from scars has been shown to take up to four years in other areas for turtle grass, *Thalassia testudinum*, but this set of observations was made on a different species, only from small disturbance tracks, and in a very different system; recovery rate on a larger scale is unknown (Dawes et al., 1997). Based on existing data on growth and recovery of *Zostera marina* in Willapa Bay and elsewhere on the West Coast, recovery from propeller scars should be rapid (weeks) for this species, unless the rhizomes were removed from the sediment (still less than two years based on above studies) or there was repeated scarring on a regularly travelled route. While bivalves have been shown in other systems to enhance eelgrass production via secondary mechanisms such as water clarification and fertilization of the sediments (Peterson and Heck, 2001; Newell and Koch 2004), the relatively small culture footprint in Drakes Estero suggests that these effects would be localized. Areal coverage of eelgrass in Drakes Estero has expanded from 368 acres in 1991 to about 740 acres in 2007 (Brown and Becker, 2007). At the 2007 level of mariculture activity in Drakes Estero, the estimates for potential eelgrass lost to rack culture (8 acres) and partially degraded by propeller scars (50

acres, likely an overestimate as a consequence of the spatial resolution of images used to estimate eelgrass loss from propeller tracks), represent less than 8% of the total eelgrass cover (NPS, 2007e; Brown and Becker, 2007) in the estuary. Changes in spatial scale of eelgrass cover at the estuarine landscape scale rarely have been assessed in areas with aquaculture, but a decline was attributed to storm events and not the presence of aquaculture in Bahia de San Quentin, despite a large increase in the number of oyster racks placed in that estuary between 1987 and 2000 (Ward et al., 2003).

III. Fish

A. BACKGROUND

Fishes have been widely shown to associate with natural three-dimensional biogenic structures that emerge off the bottom like eelgrass and bivalve reefs (Heck et al., 2003; Peterson et al., 2003; Coen and Grizzle, 2007; Horinouchi, 2007), but less work has been conducted on the effects of shellfish mariculture on fish populations and communities. Studies of mostly off-bottom mariculture operations have shown higher abundances of some fishes and invertebrates in areas with mariculture structures than in nearby areas with eelgrass, unstructured open mudflat, and even nearby oyster reefs and rocky substrates, although eelgrass generally also harbors a few unique species (DeAlteris et al., 2004; Clynick et al., 2008; Erbland and Ozbay, 2008). Powers et al. (2007) demonstrated that densities of fish and nektonic invertebrates were as high over plastic bottom netting used to cover infaunal cultured clams and colonized by macroalgae and epifauna as in eelgrass beds in North Carolina, with much lower densities over unvegetated bottom. However, abundance estimates are not a definitive indication of how structured habitat benefits fishes because structures often attract fishes without necessarily enhancing their productivity (reproduction, growth, or survival). Nevertheless, a substantial body of experimental research has shown that structure provides nektonic organisms with protection against predation, thereby offering a survival advantage, especially to more vulnerable juvenile life stages.

B. WHAT IS THE BODY OF SCIENTIFIC STUDIES ON THE IMPACT OF THE OYSTER FARM ON DRAKES ESTERO?

Only one study (Wechsler, 2004) has been conducted on the potential effects of oyster mariculture on fish communities in Drakes Estero, which was described as a preliminary study in the project report submitted to NPS (Elliott-Fisk et al., 2005). The lack of any additional fish research or population monitoring in this estero is notable. Wechsler sampled the eelgrass fish community using multiple techniques (trawls, traps, and experimental gill nets) in three settings: next to oyster racks in Drakes Estero, 75 m away from those racks, and in neighboring Estero de Limantour, which lacks mariculture operations. Because of difficulties collecting acceptable samples, only seven of the nine approximately monthly sampling dates were used in the analyses—from December 2002 to January 2004. No significant difference in fish abundance or species richness was detected among the three sampling sites; however, there is an indication that the composition of fish assemblages was modified near oyster racks by enhanced numbers of the guild characterized as structure-associated fishes. This pattern was driven by one species (kelp surfperch, *Brachyistius frenatus*) typically associated with hard substrate (Wechsler, 2004; Elliot-Fisk et al., 2005).

C. WHAT EFFECTS CAN BE DIRECTLY DEMONSTRATED BY RESEARCH CONDUCTED IN DRAKES ESTERO ITSELF?

The only study of fish in Drakes Estero (Wechsler, 2004) failed to detect impacts of oyster mariculture on fish abundances or community composition. This study appeared to have low statistical detection power.

D. WHAT EFFECTS CAN REASONABLY BE INFERRED FROM RESEARCH CONDUCTED IN SIMILAR ECOSYSTEMS?

Few reports address the effects of oyster mariculture on fish communities in circumstances that allow extrapolation to Drakes Estero, but there are numerous studies documenting enhanced densities of fish in structured habitats that include natural bivalve reefs (summarized in Peterson et al., 2003; Coen and Grizzle, 2007). Mariculture studies include one demonstrating that juvenile sole utilized oyster trestle culture areas for protection during the day and foraged over adjacent sand flats at night (Laffargue et al., 2006). A study in Narragansett Bay, Rhode Island, found that scup (*Stenotomus chrysops*) grew slightly faster on adjacent rocky habitat than on oyster grow-out cages, although tagging suggested that they had greater fidelity to the cages (Tallman and Forrester, 2007).

Other studies of fish around mariculture operations from U.S. West

Coast estuaries provide useful insights into processes that may occur in Drakes Estero. In Humboldt Bay, California, oyster long-lines were found to harbor more fish than either eelgrass or open mudflats (Pinnix et al., 2005). In addition, Rumrill and Poulton (2004) observed substantial numbers of staghorn sculpin (*Leptocottus armatus*) and juvenile Dungeness crab (*Cancer magister*) within baited minnow-traps deployed beneath oyster long-lines in Humboldt Bay. In Willapa Bay, Washington, few statistically significant differences in density were found among the more than 20 species of fish and crabs collected at intertidal locations when oyster bottom culture, eelgrass, and open mudflat were comparatively sampled (Hosack et al., 2006). In both studies, some individual species like tubesnouts (*Aulorhynchus flavidus*) were more abundant in structured habitats. Larger mobile invertebrates have also been shown to display species-specific and even life stage-specific behavior around structure in response to the availability of prey and/or protection from larger predators. Juvenile Dungeness crabs (*C. magister*) rely on structured habitat for protection while older individuals utilize open mudflat to forage; however, red rock crabs (*Cancer productus*) prefer bottom oyster culture habitat (Holsman et al., 2006). These functional associations with habitat and links to population processes are little explored, especially on a larger spatial scale where it is known that patch size, connectivity, and proximity to other habitats are also important such that patchy habitats with more edges may actually enhance diversity and abundance (Bostrom et al., 2006; Selgrath et al., 2007). Based upon the (non-significant) trend of enhanced abundances of structure-associated fishes associated with oyster racks reported in Wechsler (2004) and Elliott-Fisk et al. (2005) and the often demonstrated affinity of many fishes to structural habitat, including oyster culture structures, it is reasonable to expect that some species of fishes are attracted to oyster racks in Drakes Estero. Additional research would be necessary to test this expectation and evaluate the significance of any such responses to the overall fish community of the estero.

IV. Benthic Invertebrates in Soft Sediments

A. BACKGROUND

The benthic infaunal community would be expected to be modified by oyster mariculture through several processes: (1) provision of hard substrates in what is otherwise generally a flat plain of sediments, thereby occupying space and harboring predators of infaunal invertebrates; (2) deposition of oyster feces and pseudofeces, which under conditions of low flushing could induce sediment anoxia intolerable to most infaunal invertebrates; (3) modification of sediment organic content and thereby production of microbial foods for deposit feeders; (4) changes in sediment size, coarsening from erosion around bases of structures and fining where biodeposits settle, which can have large impacts on benthic invertebrate community composition; and (5) physical disturbance associated with culturists tending to and finally harvesting the shellfish. These separate processes are rarely distinguished experimentally; instead, comparisons are made between areas with and without all mariculture activity (Newell, 2004).

B. WHAT IS THE BODY OF SCIENTIFIC STUDIES ON THE IMPACT OF THE OYSTER FARM ON DRAKES ESTERO?

Only one study has been conducted on the effects of oyster mariculture on the benthic invertebrate community in Drakes Estero (Harbin-Ireland, 2004; summarized in Elliott-Fisk et al., 2005). Comparisons were made between benthic macro-invertebrate assemblages directly under

oyster culture racks and those at varying distances from the racks at two locations in Schooner Bay during January and October 2001. With the exception of enhanced abundance of amphipods and a decrease in abundance of a tanaid crustacean (*Leptochelia dubia*) under racks, few differences in community composition or diversity were found. No differences in sediment organic content were detected comparing the areas under and away from the racks, but there were small but significant changes in grain size, with proportionately more sand and less silt found under the racks.

C. WHAT EFFECTS CAN BE DIRECTLY DEMONSTRATED BY RESEARCH CONDUCTED IN DRAKES ESTERO ITSELF?

Few definitive conclusions can be drawn from the Harbin-Ireland (2004) research described above because of the limited nature of the study. Sampling was done during the winter and fall when invertebrate abundance is typically lower in temperate estuaries. Only eelgrass habitat was sampled and the test involved only oyster rack culture, whereas bottom bag culture on intertidal flats is now also an important part of the oyster operation. Nonetheless, some conclusions can be reached, which are supported by significant parallels to other work (see below) in several U.S. West Coast estuaries and elsewhere. Specifically, the flushing by tidal currents in Drakes Estero is sufficient to induce erosion around the stakes holding the oyster racks in eelgrass beds, but the resulting change in size composition of sediments is minor. These tidal currents also are sufficient to disperse the organic rich oyster bio-deposits sufficiently widely to avoid inducing detectable organic enrichment of the sediments nearby and subsequent mass mortality of benthic macro-invertebrates from sediment anoxia. Any changes in the benthic infaunal communities of the eelgrass habitat induced by flow modifications and biodeposition are subtle.

D. WHAT EFFECTS CAN REASONABLY BE INFERRED FROM RESEARCH CONDUCTED IN SIMILAR ECOSYSTEMS?

Comparable studies of shellfish mariculture show that sediment enrichment from biodeposits varies depending on the culture practices, species cultured, biomass or stocking density, and the physical environment in which it is conducted (Callier et al., 2006; Nizzoli et al., 2006). When organic enrichment of sediments occurs, the typical response to the resulting decrease in sediment oxygenation involves a change from a diverse benthic community dominated by suspension feeders (mollusks, crustaceans, and some polychaetes) to a less diverse community domi-

nated by smaller deposit feeders (usually polychaetes). Such responses are associated with low current flow, very dense shellfish culture, or both (Castel et al., 1989; Nugues et al., 1996; Mirto et al., 2000; Christensen et al., 2003; Forrest and Creese, 2006; Lu and Grant, 2008). Such modifications of the benthos are generally absent where stocking density is low or moderate or where currents are strong enough to disperse the biodeposits (Crawford et al., 2003; Mallet et al., 2006).

Tidal currents have previously been shown to enhance erosion around the base of mariculture structures (Pregnall, 1993; Everett et al., 1995), and this process probably explains the slightly coarser substrate found under oyster culture racks in Drakes Estero. Such an explanation is consistent with the conclusion that tidal flows are sufficient to disperse the biodeposits far enough to prevent detectable organic loading at the relatively low oyster stocking densities used in Drakes Estero. The absence of eelgrass underneath the racks also implies faster near-bottom flows than underneath the eelgrass canopy, which baffles flow velocity by friction. Slower flows underneath seagrass canopies induce deposition of fine particles and thus create finer sediment sizes (Madsen et al., 2001).

The observed enhancement of amphipods and reduction in tanaids underneath racks might represent a response to (1) sedimentary changes induced by local loss of eelgrass, allowing faster flows under racks; (2) some aspect of oysters and epibiota on racks that influences the soft-sediment benthos below; or (3) secondary effects of rack structure acting on predators of benthic macro-invertebrates. For example, racks might attract predatory fishes that feed on tanaids. This suggestion is supported by the recognition that small benthic crustaceans are often preferred prey by demersal fishes and by the trend of more structure-oriented predators like kelp surfperch near the racks (Wechsler, 2004). On the other hand, amphipods are also preferred prey for many demersal fishes. Some amphipods have been shown to associate with oysters and structures, or else with the macroalgae and fouling organisms found on them, both on the west coast (*Eogammarus* and *Amphithoe*: Dumbauld et al., 2000; Dumbauld et al., 2001) and elsewhere (*Gammarus*: Rodney and Paynter, 2006). Scientific studies of both on-bottom culture (Trianni, 1995; Hosack et al., 2006; Ferraro and Cole, 2007) and off-bottom culture in other west coast estuaries (Pregnall, 1993; Rumrill and Poulton, 2004) generally indicate that the benthic community associated with oyster culture is more diverse than that of unstructured bottom, and either equal to or slightly less diverse than that of eelgrass habitat. Enhanced diversity in structured habitat has also been documented for epibenthic meiofauna, which represent important food items in fish diets (Castel et al., 1989; Simenstad and Fresh, 1995; Hosack et al., 2006) and may respond to oyster racks, but this has not been studied in the estero to date.

V. Harbor Seals

A. BACKGROUND

Harbor seals are widely distributed along the coasts of the North Pacific and North Atlantic. They can be found on exposed coasts and island archipelagos, but frequently inhabit estuaries or coastal lagoons such as Drakes Estero (Bigg, 1981). Intertidal sand banks provide habitat for seals to give birth and suckle their pups or rest during the nonbreeding season, and other estuarine areas provide foraging habitat (Wright et al., 2007) and areas where breeding adults engage in underwater display and aquatic mating (Van Parijs et al., 2000; Hayes et al., 2004).

B. WHAT IS THE BODY OF SCIENTIFIC STUDIES ON THE IMPACT OF THE OYSTER FARM ON DRAKES ESTERO?

Harbor seal research and monitoring projects have been conducted within Drakes Estero over the last 30 years, but none of this research was designed specifically to assess the impacts of mariculture operations. With the exception of individual-based studies carried out in the 1980s (Allen, 1988), research has focused on monitoring changes in abundance at haul-out sites and recording disturbances to hauled-out seals. The nature and intensity of surveys have varied over this period, and sub-site specific data exist only from 1995, when NPS initiated a standardized monitoring program. This monitoring program relies heavily upon the efforts of trained volunteers, and has since been integrated into a wider pinniped monitoring program across the San Francisco Area Network of Parks

(Adams et al., 2006). Trends in the abundance of harbor seals across the whole California coast are also monitored less frequently by state and federal agencies (Lowry and Carretta, 2003).

The data used to assess annual trends in abundance and distribution of harbor seals within Drakes Estero are from surveys made during the peak pupping season (March 15–June 1) and molting seasons (June 1–July 30) (Hester et al., 2004). During each two-hour survey, hauled-out seals were counted every 30 minutes. The timing of these surveys was determined primarily by the need to provide the most robust estimates of abundance trends. The time and source of all disturbances were also recorded throughout the observation period. Disturbances are listed as head alerts, flush (seals move toward but not into water), and flush to water (seals leave haul-out and enter water). Although a head alert indicates a potential for a more serious response, it is less likely to represent an action that depresses fitness or has a negative population-level consequence, and may be less informative as a response variable (Jansen et al. 2006). Assessment of population trends relies upon the assumption that observer bias and individual haul-out behavior and, thus detectability, have not changed over this period. Haul-out behavior could change as a function of prey availability or the level and types of disturbance.

Collectively, the data from these observer programs suggest that seals using the eight subsites within Drakes Estero are best considered a single unit, within which individual subsite choice may be influenced by factors such as disturbance (Allen, 1988). Mixing occurs between these seals and those at other local colonies, and there is more limited exchange among colonies outside the region. Consequently, any changes in abundance within the Drakes Estero/Limantour colony will result from a complex interaction between broader-scale drivers and local factors, such as disturbance. As examples, during the 1998 El Niño, adult and pup counts were depressed throughout the entire Point Reyes region, and in 2003 a northern elephant seal (*Mirounga angustirostris*) disrupted the Double Point harbor seal colony in Point Reyes, killing about 40 seals and probably inducing emigration of others, judging from temporally corresponding increases in pup counts at Drakes Estero and Bolinas Lagoon (NPS, 2006a; Becker et al., 2009). Abundance trends within Drakes Estero should therefore be considered in relation to wider-scale population trends, but the time series of data is limited to the past 11 years (1997 through 2007), which is not sufficient to make a robust comparison with trends at other sites in the Point Reyes region with even fewer years of standardized count data.

There has been one statistical modeling study that tested for potential impacts of mariculture activity on harbor seals. Becker et al. (2009) examined how oyster mariculture activities are related to both interan-

nual changes in counts of seals at haul-out subsites closest to mariculture operations and also records of disturbance to hauled-out seals by culturists, using annual oyster production levels as a proxy for mariculture activity. Becker et al. used data from 1997–2007 to assess whether counts of seals during the pupping season (April 15 to May 15) at different subsites within Drakes Estero varied in relation to oyster production levels in Drakes Estero, as well as to broader-scale effects such as density dependence (number of seals at haul-out sites) and the El Niño-Southern Oscillation (ENSO) events. In the statistical approach used by Becker et al., a statistically significant relationship was found between seal counts and years since the last ENSO event (positively related) and oyster harvest levels for two of the three subsites in Drakes Estero that are closest to the mariculture operations (negatively related). Neither ENSO alone nor oyster harvest alone significantly related to seal counts on these haul out subsites.

The statistical analyses serve as indicators of potential negative interactions between oyster harvest and seal attendance at these subsites but do not provide a causal link. Becker and colleagues did not have the official oyster harvest level for 2008 and hence did not include this 2008 datum in the statistical analyses. However, the relationship between the 2008 projected harvest and 2008 seal counts deviates from the pattern of the 11 previous years sufficiently as to call into question whether mariculture intensity would still be a statistically significant contributor to explaining patterns of seal use of upper-estero haul-outs had the analyses included the full 12 years of data (from 1997–2008). In the paper, Becker et al. (2009) acknowledge the marked deviation of the 2008 data from the previous 11 years. The authors attribute the departure from the previous pattern to new regulations issued by the California Coastal Commission which closed the lateral channel to the oyster farm's boats during the pupping season beginning in 2008 and further explain that this new restriction led to less disturbance of the seals and thus less displacement from their haul-out sites. However, this explanation is misleading because the previous owner of the oyster farm operated under a 1992 agreement to prohibit boat traffic in the main and lateral channels during the pupping season (DOI, 2008) and the current owners maintain that they have voluntarily complied with the 1992 agreement. More generally, the use of annual oyster harvest as a proxy for disturbance rate at the haul-out subsites relies on the assumption that mariculture methods and daily activities have not changed over the 11 years that were analyzed. Some potentially confounding factors include changes in the fraction of the harvest from oysters cultivated using the rack system (mostly more distant from the haul-out sites) and the fraction cultivated in bags placed on sand bars also used by seals as haul-out sites. Changes in boat traffic patterns as a

result of agreements between the regulatory agencies and the owners of the oyster farm, and level of compliance, could also influence the rate of disturbance independently of the annual level of harvest.

Although the NPS seal monitoring program at Point Reyes provides robust data on seal abundance trends, the disturbance data serve mainly as an indicator of a new source of disturbance or a large change in a known source of disturbance. These data have more limited utility in estimating changes in the level of disturbance within the estero or in the relative importance of different disturbance sources for the following reasons. First, surveys consider disturbance only of groups of seals that are hauled out, rather than seals that are foraging or mating locally. Second, surveys are conducted towards the middle of the day to capture the peak counts, and about half of the surveys occur during the weekends. This captures sources of disturbance that occur during these times (such as hikers on weekends); whereas other disturbances may occur more frequently on other days or at other times of day. Finally, surveys will miss disturbance events occurring early in the ebb tide, before seals come ashore. These disturbances will not result in flushing but could depress the numbers of seals that haul out at that location at the low tide. The high level of overdispersion (variance greater than the mean and increasing with the mean) in Drakes Estero count data suggests that this may be a common occurrence.

Assessments of the relative importance of disturbance from the oyster farm and from other sources are further constrained for two other reasons. First, responses of seals to different types of disturbance may differ. For example, if seals are flushed into the water by a hiker on the beach, it is possible that any perceived risk is reduced or absent once the seals are in the water. In contrast, if seals are flushed into the water by a motor boat, underwater engine noise may result in a continued perception of risk and a stronger response by the seal. Second, the lack of definitive data on spatial and temporal variations in the precise location and behavior of the oyster farm boats prevents any scientific assessment of the authenticity of either the observations of disturbance during the seal surveys (see Box 3), or the counter-evidence provided by DBOC that the boats were absent at these times. For example, "it was not uncommon for DBOC employees to take boats out into the estero after hours to fish," according to Point Reyes National Seashore Chief Ranger Colin Smith as discussed in the DOI Inspector General's report (DOI, 2008). If this statement is accurate, the work records of DBOC would not provide a complete accounting of motorboat activity that could cause seal disturbances.

In summary, research conducted in Drakes Estero confirms that this is an important year-round haul-out site and seasonal pupping area, supporting approximately 20% of the mainland California harbor seal

BOX 3
Harbor Seal Disturbance Data

There has been much discussion about the veracity of several observations of disturbance that appear in the NPS harbor seal database and have been referred to in various documents and public testimony prepared by NPS. It is beyond the scope of this study to try to determine the authenticity and reliability of these observations, and the committee does not have the investigative authority that would be required to assess any claims of falsification. The Office of the Inspector General for the Department of the Interior investigated charges about the deliberate misuse of scientific information by Point Reyes National Seashore and issued a report in 2008 (Department of the Interior, 2008). Nevertheless, in an effort to help clarify the issues raised in some of the documents provided by Dr. Corey Goodman and others, the committee provides here some general discussion on the nature of these types of observations and their significance for management.

The monitoring program at the Point Reyes National Seashore was developed with the following monitoring objectives:

- Determine long-term trends in annual population size and annual and seasonal distribution of pinniped populations at [the Point Reyes National Seashore] and Golden Gate National Recreational Area (GOGA).
- Determine long-term trends in reproductive success of elephant seal and harbor seal populations through annual estimates of productivity at [the Point Reyes National Seashore] and GOGA.
- Identify potential threats (i.e., presence of hikers, motor boats, or airplanes presence), and estimate degree of threat at harbor seal haul outs in order to identify management needs. (Adams et al., 2006)

Monitoring is conducted by trained volunteers and park staff who fill out standard survey forms. Each seal colony is surveyed at least twice per week during the breeding and molt seasons if possible. Seal counts are taken during low to medium tides (ideally 2+ feet MLW or less) between 10:00 and 16:00 because studies have shown that the maximum number of seals are hauled out during that part of the day in the San Francisco Bay region (Risebrough et al., 1978; Fancher, 1979; Allen, 1988; Stewart and Yochem, 1984 [as cited in Hester et al., 2004]; Allen et al., 1989; Grigg et al., 2002). In Drakes Estero, observers conduct the survey from a single location for monitoring the eight haul-out subsites. The surveys include both counts of seals (with adults and pups recorded separately in the pupping season) and notation of disturbance events. In the 2007 Harbor Seal Monitoring report (Truchinski et al., 2008), disturbance surveys are described as follows:

> Disturbance tallies were based on disturbance sources rather than the number of subsites or seals affected. Disturbance rates were calculated as the number of disturbance events that occurred during the time period from the first observation to the end of the final observation period. Because the disturbance data were not analyzed for effects on

continued

BOX 3 Continued

the seal count data in this report, all actual disturbance data were used for analysis regardless of the quality of the associated seal count data (Truchinski et al., 2008).

The important point for the current controversy is the last sentence which explains that the disturbance data are treated differently than the population count data. Specifically, the count data were screened to ensure that there was a high likelihood of obtaining reliable, maximum counts at a given site on a given day. Since disturbance events are not dependent on observing the maximum number of seals, the disturbance data are not screened to exclude less experienced observers or suboptimal viewing conditions. For example, disturbances are recorded throughout the survey and not just when the tide level is +2.0 feet (MLW) or lower. Seals will haul out at low to medium tides even when the sand bars are still submerged (see Figure 8). Typically, the highest number of seals will haul out when the sand bars are exposed. Limiting counts to these lower tide conditions provides a more consistent index of the abundance of seals in Drakes Estero for monitoring long term fluctuations in abundance. This filter was also important for Becker et al. (2009) in which only the qualifying count data were used in the statistical analysis. The differences in these two types of data (disturbances and counts) are reflected in the standard survey sheets. The seal counts survey form includes information on the low tide level while the disturbance survey form does not.

Perhaps the most important confounding factor in any monitoring database, but especially one staffed by volunteers, is the potential for simple recording errors, such as date, time, or tide level. Such an error would generally have little or no effect on the overall trends identified in the database, but would make it difficult to reconstruct the exact events recorded during any individual survey. It is not possible for the committee to resolve the controversy over individual survey sheets, but the focus on these observations highlights how this type of monitoring program is best utilized to indicate potential disturbance problems (that might result in decreased

population (Lowry and Caretta, 2003). The remote nature of the estero, combined with an absence of marine predators and other pinnipeds, make this an important habitat for harbor seals. This is reflected in the use of the estero by harbor seals for breeding—Drakes Estero, along with the Double Point colony, consistently accounts for a large fraction of the pups at Marin County haul-out sites (Truchinski et al., 2008). The observations of disturbance recorded in the NPS database cannot be reliably used to infer impacts of mariculture, relative importance of different sources of disturbance, or impacts on seal fitness. The disturbance observations that have been collected as part of the monitoring program serve to demonstrate that there are multiple sources of human and natural disturbances to seals hauled-out on sand bars in Drakes Estero, but they do not permit rigorous determination of which sources of disturbance, if any, have greater population-level consequences.

use of a haul-out habitat) rather than to quantify them definitively. The latter would require a data collection system that could be independently verified, such as time and date stamped photographs. This verification is especially important in circumstances where there is an indication of a source of disturbance that could lead to a regulatory action, as was the case with disturbances attributed to DBOC.

FIGURE 8. Harbor seals in Orkney rest on a submerged haul-out site in the early phase of the tidal cycle. Photograph provided by Paul Thompson.

C. WHAT EFFECTS CAN BE DIRECTLY DEMONSTRATED BY RESEARCH CONDUCTED IN DRAKES ESTERO ITSELF?

None of the scientific research projects within Drakes Estero was designed specifically to assess whether the oyster farm operations were impacting the local harbor seal population, and this constrains attempts to draw definitive conclusions about potential impacts. Analyses of monitoring data found a correlation between seal counts and years since the last ENSO event and oyster harvest levels at two haul-out sites within the upper estero (Becker et al., 2009), but this cannot be used to infer cause and effect. Consequently, research that has been conducted within Drakes Estero cannot be used either to directly demonstrate any effects of the oyster farm on harbor seals or to demonstrate the absence of potential effects.

D. WHAT EFFECTS CAN REASONABLY BE INFERRED FROM RESEARCH CONDUCTED IN SIMILAR ECOSYSTEMS?

Research on interactions between marine mammals and mariculture in other areas has focused on finfish farming and the economic and ecological impacts that result from seal depredation (e.g., Nash et al., 2000). There has been no research conducted in similar ecosystems that has directly assessed the impact of shellfish mariculture on harbor seals or indeed any other seal populations. Nevertheless, potential conflicts between marine mammals and shellfish mariculture have been recognized, and Wursig and Gailey (2002) highlight the need to consider potential loss of feeding and breeding habitat from shellfish and finfish farms, particularly given predicted increases in these facilities in in-shore environments.

There has, however, been research on responses of harbor seals to disturbance from other sources that can inform assessments of disturbance from shellfish mariculture. These studies have focused on impacts upon groups of seals that are already ashore at haul-out sites, with disturbance sources that include people and dogs (Allen et al., 1984; Brasseur and Fedak, 2003), recreational boaters (Lewis and Mathews, 2000; Lelli and Harris, 2001; Johnson and Acevedo-Gutierrez, 2007), commercial shipping (Jansen et al., 2006), industrial activity (Seuront and Prinzivalli, 2005), and aircraft (Perry et al., 2002). Depending upon the intensity and proximity of the disturbance source, a harbor seal's response can vary from an increase in vigilance, through movement within the haul-out site towards the water, to flushing into the water (Allen et al., 1984). Once groups are flushed into the water, some seals may return to the same or nearby haul-out sites, but counts typically do not return to pre-disturbance levels within the same tidal cycle, particularly if disturbance occurs after low tide (Allen et al., 1984; Suryan and Harvey, 1999). Several studies have explored how the likelihood of a response by seals varies according to the proximity of the disturbance source. This depends at least partly upon the source of disturbance, for example where stationary boats elicit a stronger response than boats moving along a predictable route (Johnson and Acevedo-Gutierrez, 2007). The mean distance at which seals are flushed into the water by small boats and people ranges between 80 m and 530 m, with some disturbances recorded at distances of over 1,000 m (Appendix D). These empirical studies have been used to underpin zonation of marine protected areas, for example where a 1.5-km buffer exists around harbor seal haul-out sites in the Dutch Wadden Sea to exclude recreational disturbance (Brasseur and Fedak, 2003) and where a 500-m exclusion zone around breeding and molting haul-out sites has been included in the mariculture industry's best practice guidelines in Shetland, United Kingdom. The 100-yd (91-m) buffer between seal haul-out sites and mariculture activities, designated in the current Special Use Permit issued to

DBOC, follows the guidelines of the National Marine Fisheries Service (http://www.nmfs.noaa.gov/pr/pdfs/education/viewing_northwest.pdf) for adherence to the Marine Mammal Protection Act. Nevertheless, there are few studies on the impact on seals as a function of distance of approach by various human activities. Allen et al. (1984), in a study of disturbance at Bolinas Lagoon, found that disturbances at a distance of 100 m or less were more likely to cause harbor seals to leave haul-out sites. Nonetheless, seals responded to boats (power and non-power) by leaving the haul-out in 20 out of 43 observations of boats at a distance greater than 100 m.

All of these studies assessed the likelihood of disturbing seals that are ashore on their haul-out sites. Because seals often remain in the vicinity of their intertidal haul-out sites at high tide (Allen, 1988), a full assessment of potential disturbance should also consider whether disturbance during other phases of the tidal cycle affects the seals' haul-out behavior. The only study to do this was an experimental study in the Dutch Wadden Sea, in which 13 harbor seals were satellite tagged to assess the impact of recreational boat traffic passing over their haul-out sites at high tide. During the experiment, tagged seals showed a 50% reduction in use of the area compared to use of the same area in years with less recreational boat traffic, and these disturbances also appeared to influence diving behavior (Brasseur and Fedak, 2003).

Some oyster rack and oyster bag areas within Drake Estero are located within 500 m of sand flats used by harbor seals as haul-out sites. Based upon the findings in the studies outlined above and the informal observations of biologists who study seals, visits to these areas by oyster farm workers can be expected to lead to the short-term disturbance of any seals using these haul-out areas at the time. Depending upon visibility and wind conditions, disturbance may also occur at greater distances. Furthermore, the work by Brasseur and Reijnders (2001) suggests that seals could be disturbed before they come ashore if boats pass through haul-out areas at high tide. It would be challenging to design a study that could demonstrate whether or not short-term responses to disturbance have long-term population consequences for harbor seals, and no studies of this kind have yet been conducted anywhere. This would require long-term study of known individuals, and high-quality data on those individuals' exposure both to disturbances and to other potential environmental stressors. In the absence of additional research, a precautionary approach to management would seek to reduce types of disturbance that affect behavior during the breeding season to avoid potential population effects that would only be evident with long-term monitoring.

VI. Nonnative Species

A. BACKGROUND

The introduction of nonnative species can result in dramatic environmental and economic impacts (Parker et al., 1999; Ruiz et al., 1999). The committee defines nonnative species as those ". . . that have been transported by human activities beyond their native ranges" (Wonham, 2003). Commonly employed synonyms are exotic or introduced; the definition explicitly excludes natural range extensions. The term invasive is sometimes used as a synonym for nonnative, but it can also carry the implication that the species is especially aggressive in its ability to spread or proliferate in the new environment. In this report, we use invasive in this latter context. Some introductions may go unnoticed, while others may have either negative or positive environmental or economic impacts. Most shellfish mariculture in the United States is based on nonnative species (Goldburg et al., 2001), including the Pacific oyster (originally imported from Japan), which is grown in Drakes Estero and nearby Tomales Bay in California, as well as many other locations worldwide . When examining the potential introduction of nonnative species via mariculture practices, it is important to distinguish between ongoing and historical practices. Oysters are now supplied to DBOC as eyed larvae or spat on shell or cultchless (single) seed that have been certified free of known pathogens and hitchhiking species (Carolyn Friedman, personal observation; Kevin Lunny, personal communication). Clams are supplied as 3–15 mm juveniles and are also certified free of known pathogens and hitchhiking species. It is in this context that we examine the potential of ongoing cul-

ture of the nonnative Pacific oyster in Drakes Estero as a vector of exotic species.

Historical importation of the juvenile Pacific oysters on cultch (large shells) has resulted in the introduction of other species such as the Manila clam (*V. philippinarum*; Quayle, 1941), now another farmed bivalve, and several pests and parasites into various west coast estuaries (Chew, 1979). For example, the Japanese oyster drill, *Ocinebrellus inornatus*, was introduced to the United States in shipments of Pacific oysters. Nonnative species have been shown to bring a small proportion of parasites from their native environment to their transplanted location (Mitchell and Power, 2003; Torchin et al., 2003). When these parasites encounter new hosts that lack resistance, they may become pathogenic and cause epidemic disease. Many of the devastating, emerging infectious diseases are attributable to exotic pathogens (Harvell et al., 1999; Daszak et al., 2001).

The Pacific oyster has been cultured in Drakes Estero since the 1930s. The following issues require closer examination before the potential of these nonnative oysters to become naturalized in the estero can be identified:

- Do the Pacific oysters spawn naturally in Drakes Estero? The exclusive use of triploid stock could reduce but would not eliminate successful reproduction and the production of viable, dispersing larvae (NRC, 2004). In addition, unknown numbers of diploid Pacific oysters from previous bottom culture operations may exist loose on the estero's bottom, a legacy from past on-bottom culture practices.
- Is sufficient natural hard substrate available in the estero for oyster establishment in the absence of oyster racks and shells of the cultured oysters? There appears to be limited natural hard substrate within the estero, present mostly at Bull Point, but it is possible that there is enough to support a small population.
- Oyster larvae spend 10–30 days or more in the plankton, duration being largely dependent on ambient temperature conditions (Strathmann, 1987). Given the high flushing rate in the mariculture lease areas in Drakes Estero, it is uncertain whether larvae would be retained in the estero in sufficient numbers to sustain a viable adult population.

Whether the nonnative oysters would persist or go locally extinct in the absence of DBOC requires answers to these questions. Equally, if the cultured oysters spawn successfully, could they serve as a source population, supplying larvae that disperse to other suitable habitats both within and beyond the spatial limits of the estero? The failure of *C. gigas* to naturalize in Drakes Estero in the past might be considered an unreliable indicator of future naturalization potential given that *C. gigas* only recently has

become established in the Wadden Sea, potentially in response to a warming climate, even though the species had been used in mariculture there since the 1960s (Diederich, et al., 2005). Notwithstanding the situation in the Wadden Sea, the combination of factors such as shellfish culture locations within the Estero, hydrography of the system (short residence time), and the lack of suitable natural habitat for settlement (as opposed to habitat associated with oyster culture) might mitigate against the successful establishment of the Pacific oysters in Drakes Estero.

The nonnative Manila clam, *V. philippinarum*, is also cultivated in Drakes Estero. DBOC currently raises about 1 million individuals (NPS, 2007c) in bags on an acre of intertidal flat, at a density of about 250 individuals per m^2. The Manila clam, *V. philippinarum* was introduced in the mid-1930s and has become naturalized in some estuaries along the Pacific coast. Culture of clams in bags reduces some of the risk of naturalization compared to the method of culturing clams in beds because bags of clams can be readily recovered whereas some of the loose clams in beds could persist for years in a reproductively mature status. Even with bags, there is some risk of release because bags may break and clams may spawn within the bags. If the Manila clam successfully reproduces and establishes populations in Drakes Estero, it may compete with native infaunal suspension-feeding bivalves, but is less likely to compete with Macoma clams which are surface deposit feeders. Any culture bags used to contain Manila clams would provide additional solid surfaces for epibionts (species that attach to other living organisms).

Oyster mariculture provides solid surfaces in the form of the shells of oysters and the structures, such as wooden racks and plastic mesh bags, used in the culture operations. Hard surfaces are attractive to and necessary for the successful settlement of epibionts such as sponges, bryozoans, barnacles, and tunicates. A nonnative compound tunicate, *Didemnum vexillum*, (Lambert, 2009; Stefaniak et al., 2009) (also referred to in the literature as *Didemnum* species A or *Didemnum* sp.) has established a worldwide distribution. It is now a very evident epibiont covering a substantial fraction (up to about half, judging from the committee's observations made during its September 2008 visit) of subtidal surface space on shell surfaces of living Pacific oysters and on associated oyster-rearing gear in Drakes Estero and is also common in nearby Tomales and Bodega Bays. It is reported to have colonized the limited natural solid mud and sandstone substrates and rocks at Bull Point in Drakes Estero (Dixon, 2007; NPS, 2007c, 2007d). Finally, three more nonnative epibiotic species, the bryozoans *Schizoporella unicornis* and *Watersipora subtorquata* and the sponge *Halichondria bowerbanki*, have been recorded on oyster culturing gear in Drakes Estero (Elliott-Fisk et al., 2005).

B. WHAT IS THE BODY OF SCIENTIFIC STUDIES ON THE IMPACT OF THE OYSTER FARM ON DRAKES ESTERO?

While numerous publications identify the extent to which nonnative species have invaded suitable marine habitats in California (Carlton, 1979, 1985; Carlton et al., 1990; Cohen and Carlton, 1998; Foss et al., 2007; Hhttp://www.dfg.ca.gov/ospr/about/science/misp.html), only one peer-reviewed publication (Byers, 1999) specifically addressed nonnatives in Drakes Estero. Byers examined the effect of the introduced mud snail, *Batillaria attramentaria*, on the native mud snail, *Cerithidea californica*, and found an interaction that could be detrimental to the native species. The nonnative mud snail is present in high intertidal salt pannes in Schooner Bay but ". . . remains very restricted" (Byers, 1999) in distribution for unknown reasons. In the study on infaunal invertebrates by Harbin-Ireland (2004), no nonnative invertebrate species were identified in unconsolidated sediment adjacent to the oyster racks in Drakes Estero. Unfortunately, one cannot conclude that nonnative infaunal invertebrates are absent from or even rare in Drakes Estero because of the limited spatial and temporal sampling and low degree of taxonomic resolution—of the taxa collected, fewer than 30% were identified to the species level.

Little research has been conducted within Drakes Estero on nonnative organisms, whether introduced as a result of importations of the Pacific oyster, or by some other mechanism. For example, although several studies surveyed California embayments for presence of the Japanese oyster drill, *Ocinebrellus inornatus*, the published literature does not include Drakes Estero among the sampling sites. Thus, there are no published reports indicating presence of the Japanese oyster drill in Drakes Estero (e.g., Carlton, 1992). The owners of DBOC, Kevin and Nancy Lunny, also indicated that they and their workers have not seen oyster drills in the estero (Kevin and Nancy Lunny, committee tour of DBOC on 9.5.2008). Additionally, all importations to Drakes Estero of *C. gigas* on cultch were examined for the Japanese oyster drill by the California Department of Fish and Game at the point of delivery prior to issuance of a Planting Certificate. In the early 1990s, health examinations were conducted on seed and adult oysters (both with a sample size of 60) from Matsushima Bay, Japan, that were destined for importation into Drakes Estero. Following the observation of a haplosporidian parasite in the oysters, additional samples were collected from Japan and from several areas in Drakes Estero (e.g., Home Bay, Berries Bar). The latter samples were collected for several years (1990–1993) for histological examination and, later, molecular analyses (Friedman et al., 1991; Friedman, 1996; Burreson et al., 2000). In the early 2000s, a single sample of Pacific oyster seed from Drakes Estero was examined for the presence of an oyster herpes virus (see

below). The oyster herpes virus has been observed in many coastal areas globally where Pacific oysters are cultured or native, including Tomales Bay and Drakes Estero, California, which are the only two known locations in the United States where this virus has been documented (Hine et al., 1992; Nicolas et al., 1992; Friedman et al., 2005; Kimberly Reece, unpublished data).

C. WHAT EFFECTS CAN BE DIRECTLY DEMONSTRATED BY RESEARCH CONDUCTED IN DRAKES ESTERO ITSELF?

As noted above, prior owners of the oyster farm (Johnson Oyster Company) imported seed on cultch directly from Japan for many years until the early 1990s. Microscopic and molecular examination of oysters revealed the presence of the pathogen, *Haplosporidium nelsoni*, which may have been introduced into Drakes Estero with Pacific oyster importations from Matsushima Bay, Japan (Friedman et al., 1991; Burreson et al., 2000). Haplosporidian infections were observed in adult and seed Pacific oysters destined for importation into Drakes Estero from Matsushima Bay, Japan, in 1989 and 1990 (Friedman et al., 1991). Although importations from Japan ceased, one to three percent of the Pacific oysters sampled from Drakes Estero between 1990 and 1993 had mild systemic or localized infections with haplosporidia, indicating that the parasite had become established in Drakes Estero (Friedman, 1996). No haplosporidia were observed in oysters from Tomales and Humboldt Bays in California. These protists appear to have been established at very low levels in domestic stocks of Pacific oysters reared in Drakes Estero, California, during the period of study in the early 1990s. A sampling of oysters from Drakes Estero in 2006 suggests that a low level (<1%) of *H. nelsoni* infection persists (J. Moore, CDFG, personal communication 4.6.09). There is currently a Memorandum of Understanding between DBOC and the California of Fish and Game that states that all oysters from Drakes Estero shall go to terminal markets and not be planted in any other waters of the state or be held in tanks that drain into waters of the state (T. Moore, CDFG, personal communication 4.7.09).

Currently, DBOC imports eyed larvae from two U.S. West Coast hatcheries (Whiskey Creek Shellfish Hatchery in Tillamook, Oregon, and Coast Oyster Company in Quilcene, Washington) that participate in a High Health Program (see Appendix E). As directed by the California Department of Fish and Game, all importations require annual health examinations in which at least 60 individuals of both larvae and adults from each facility are examined (Jim Moore, personal communication).

D. WHAT EFFECTS CAN REASONABLY BE INFERRED FROM RESEARCH CONDUCTED IN SIMILAR ECOSYSTEMS?

Oyster Parasites

Introductions are often the primary cause of diseases that drive formerly common species to low levels (Lafferty and Gerber, 2002). For example, the introduction of *Haplosporidium nelsoni*, which may have been introduced with importations of infected Pacific oysters from Matsushima Bay, Japan, where this disease agent is endemic, resulted in catastrophic losses of the native eastern oyster along the mid-Atlantic coast (Friedman et al., 1991; Burreson et al., 2000; Burreson and Ford, 2004). Unlike the eastern oyster, Pacific oysters, which appear to have co-evolved some level of resistance to *H. nelsoni*, do not experience epidemic losses when infected with this parasite.

DBOC currently imports High Health eyed larvae of the Pacific oyster (i.e., from one of two West Coast hatcheries that are tested for diseases and pathogens annually; K. Lunny, personal communication) and sells their products directly to a terminal market. Thus, the potential introduction of disease is limited to those that infect larvae and those that go undetected in annual examinations. A disease agent, the ostreid herpes virus (OsHV), which causes catastrophic losses of both larval and seed oysters (Renault et al., 1995; Burge et al., 2006, 2007), has been observed in Tomales Bay (Burge et al., 2005; Friedman et al., 2005). The presence of OsHV nucleic acid has been detected in Drakes Estero oysters by polymerase chain reaction (PCR) analysis (Burge and Friedman, unpublished). This pathogen was lacking from all other U.S. regions examined, including juvenile oysters produced by the two hatcheries that provide larvae to DBOC (Friedman et al., 2005). Despite the PCR evidence of OsHV in Drakes Estero oysters, no associated oyster losses have been reported, whereas significant losses have occurred in nearby Tomales Bay (Burge et al., 2006, 2007). The origin of this virus is unknown, and there is no evidence of its introduction with regionally imported oysters (Friedman et al., 2005).

Nonnative Invertebrates Affiliated with Oysters

Understanding the threat posed by the invasive tunicate *D. vexillum* requires data on how it reproduces, its capacity to spread spatially and how it interacts with other benthic fauna and flora resident in Drakes Estero. Although it cannot grow on the sandy and muddy unconsolidated sediments that predominate in Drakes Estero, *D. vexillum* has recently been reported colonizing eelgrass blades at presently low lev-

els in Tomales Bay (Susan Williams, personal communication; Benjamin Becker, personal communication). Its rapid growth and competitive overtopping abilities make it an ecological threat to many native and nonnative invertebrate taxa (Osman and Whitlatch, 2007; Mercer et al., 2009), as well as a nuisance potentially interfering with oyster cultivation and production activities. *D. vexillum* can reattach if fragmented (Bullard et al., 2007), thereby expanding asexually the presence and dispersal potential of the species. Commercial cleaning of fouled oysters and associated materials used to grow the shellfish, as now practiced by DBOC, could promote asexual spread of the species. Sexual reproduction in didemnid tunicates produces a dispersing larva spending ". . . a few minutes or several hours. . . ." in the plankton (Strathmann, 1987), a short time that would severely limit larval dispersal. The biological requirements of *D. vexillum* suggest that it could neither flourish nor persist in the absence of the hard surfaces provided by oysters and oyster racks. Carman et al. (2009) found that shellfish and marine plants such as eelgrass were more likely to be colonized by tunicates when in close proximity to hard substrates, such as docks and shellfish aquaculture gear. The recent observations of eelgrass blades colonized by *D. vexillum* in Tomales Bay should drive further detailed research.

In summary, movement of oysters has resulted in the introduction of nonnative species including disease agents with varying impacts. Historical importations on cultch (wild-caught juvenile oysters on large oyster shells) from Japan are associated with the introduction of several nonnative species. Current practices of DBOC, in which they import larvae, minimize the risk for introduction of diseases and eliminate risk of external hitchhikers, like oyster drills, as long as the company continues to import larvae from local hatcheries that participate in a High Health Program. Both Whiskey Creek Shellfish Hatchery and Coast Oyster Company, current sources for DBOC, participate in a High Health Program (R. Elston, personal communication). Given the relatively high level of control, for larvae and young seed, coupled with annual health examinations, the risk of introducing unwanted exotic species is low, although the protections against nonnative introductions currently in place are not mandated.

VII. Birds

A. BACKGROUND

The approximately 9.4 km^2 of water surface area in Drakes Estero and Estero de Limantour, some fraction of which is exposed at low tide, are ecologically significant for wintering shorebirds and waterfowl, with at least 73 species being recorded in a series of mid-winter counts (White, 1999). Dominant species are small ducks and shorebirds, with winter counts of five species, ruddy ducks, bufflehead, dunlin, western sandpiper, and least sandpiper exceeding 1,000 (Page and White, 1999). Drakes Estero is an important staging area for migrating black brant geese (*Branta bernicla nigrans*) (Shuford et al., 1989). This estero is also named a wetland of critical importance in the United States Shorebird Conservation Plan (Hickey et al., 2003).

B. WHAT IS THE BODY OF SCIENTIFIC STUDIES ON THE IMPACT OF THE OYSTER FARM ON DRAKES ESTERO?

Despite the importance of Drakes Estero as habitat for shorebirds, not much is known about the influence of the oyster farm on these populations. Press (2005) reported that green algal mats on the intertidal flats of Drakes Estero affect foraging behavior and success of black-bellied plovers, marbled godwits, and western sandpipers. The black-bellied plovers were attracted to the algal mats and exhibited improved foraging success, probably taking advantage of the increased abundances of gammarid amphipod prey (Press, 2005). Likewise, marbled godwits had higher for-

aging rates in the green algal mats and showed a slight trend of increased use of algal mat areas. Only the western sandpiper avoided algal mats, but those feeding within them exhibited feeding rates similar to those on unvegetated sand flats (Press, 2005). Oyster culture bags placed on intertidal flats in Drakes Estero clearly prevent access by probing shorebirds to the sediments beneath them, thereby removing typical foraging habitat for many species. Bags also, however, act as substrate for attachment and growth of green algae. A testable hypothesis is that shorebirds that can pick surface prey may benefit from enhanced abundances of phytal prey like some amphipods on seasonal green algae associated with oyster bags, whereas pure probers like western sandpipers will not use these phytal invertebrates and suffer displacement by intertidal oyster bags. No test of this hypothesis exists.

C. WHAT EFFECTS CAN BE DIRECTLY DEMONSTRATED BY RESEARCH CONDUCTED IN DRAKES ESTERO ITSELF?

No studies address directly the effect of the oyster farm on bird behavior or abundance. Lengthy time series of wintering bird numbers do exist, courtesy of the Audubon Society's Christmas Bird Counts (Wimpfheimer, 2008). Summary numbers based on a 15-mile "count circle" include both Drakes Estero and Tomales Bay and thus represent a spatially broader perspective. The duration of the time span of these standardized bird counts, 1970–2007, is impressive. Population trends for two species and their potential roles in the ecosystem of Drakes Estero are discussed below.

D. WHAT EFFECTS CAN REASONABLY BE INFERRED FROM RESEARCH CONDUCTED IN SIMILAR ECOSYSTEMS?

Black brant breed in the high arctic and migrate along the Pacific coast. Estuaries provide staging (feeding) areas for flights of up to 5,000 km. Their primary source of energy is the eelgrass *Zostera marina* (Ganter, 2000), the dominant aquatic vegetation in many estuaries, including Drakes Estero. Small flocks of black brant are regular winter residents of Drakes Estero (White, 1999) and thousands may be seen during their migrations. Wimpfheimer (2008) reports an upward trend from 1970 to the present, with a low of 8 individuals and a maximum count of 2,550. The trophic relationship between brant and eelgrass deserves more attention. Brant foraging does disturb *Z. marina* meadows seasonally, and eelgrass provides a critical habitat for salmon smolts, other fishes, and numerous invertebrates. Brant foraging generates eelgrass detritus, and their feces probably represent a nutritional subsidy. The relative balance between these negative and positive influences remains generally

unknown, although eelgrass in Drakes Estero has increased in areal coverage even as black brant abundances have increased.

Peregrine falcons (*Falco peregrinus*) feed predominately on other birds. Some falcons are resident in Drakes Estero; others migrate along the Pacific flyway (Anderson et al., 1988). Winter numbers in the count circle have increased dramatically since 1970 (Wimpfheimer, 2008) from an average of 2.4 birds in the 1970–1974 interval to 18.7 from 2005–2007. Peregrine attacks generally involve flushing their prey. Falcons represent a natural source of disturbance, and along with kayakers and motorboat traffic, all cause roosting or feeding waterbirds and shorebirds to take flight. Studies on "flush distances" in San Francisco Bay for eight species also found in the Drakes Estero suggest an average response distance of 51.5 m (Evans, unpublished). Stillman et al. (2007) have shown for a set of European waterbirds exposed to disturbances that over-winter mortality is increased, implying a connection between the energetic cost of risk avoidance and diminished demographic performance. Whether oyster culture is "a potentially very significant environmental impact" to waterbirds (Dixon, 2007) is undetermined and should be quantified and placed in the same context as other, more natural disturbances. Nevertheless, the activity of culturists, especially their boat traffic, is likely to cause many waterbirds and shorebirds to flush, but population consequences are not known.

Kelly et al. (1996) studied how oyster mariculture in nearby Tomales Bay affected use of tidal flats by wintering shorebirds by comparing 2-hectare low-intertidal plots, some with rows of plastic mesh bags (in a mix of two positions: on the ground and elevated on racks) and others without culture bags. Two of the most abundant shorebirds, dunlin and western sandpipers, demonstrated significant avoidance of mariculture plots. One shorebird, the willet, exhibited significant attraction to mariculture plots, and four others (black-bellied plover, marbled godwit, sanderling, and least sandpiper) did not vary in abundance as a function of the presence of culture bags. The dunlin and western sandpiper, which probe into the sediments for prey, foraged between rows of culture bags when on mariculture plots, while the least sandpiper, which uses a visual search for surface prey, was often found foraging on tops of culture bags. Willets foraged between rows of bags and on tops of bags: this species is known for its diverse feeding methods and diet. The presence and activity of mariculture workers on plots did not affect the distribution of shorebirds analyzed for many species and no movements in or out of culture plots were associated with culturist activity. These results from such a similar system, involving the same species of shorebirds that use Drakes Estero and the same plastic mesh culture bags, albeit not only placed on the ground but also on elevated racks, are probably directly transferrable to

Drakes Estero. Consequently, only the obligate probers are likely to be negatively affected by mariculture on intertidal flats in Drakes Estero, while most species remain unaffected and some that forage visually on surface prey may benefit from invertebrates associated with culture bags and epibiotic growth on the bags and oysters. Feeding shorebirds do not seem prone to being flushed by normal activities of culturists, but insufficient information exists to know how closely culturists can approach the birds without causing retreat by walking or flying.

VIII. Human-Use Values—Economics, Recreation, and Aesthetics

A. BACKGROUND

The environmental resources contained in parks, conservation land, and wilderness areas generate several recognized types of economic value,[1] including those that derive from recreation, economic activity associated with use and maintenance, production of consumption goods, property value enhancement, ecosystem services, and non-use values (NRC, 1994, 2004b). Some of these values can, in principle, be derived from information about market transactions; for example, the change in property values due to nearby environmental amenities can be estimated from market data. Others, such as recreational and non-use values,[2] require the careful application of "contingent valuation" survey techniques (Mitchell and Carson, 1989; Arrow et al., 1993) and travel cost analyses (Loomis and Walsh, 1997).

Recreational value is the non-market value realized by people who use the park or wilderness area for recreation. In most cases, access to recreational amenities of parks and wilderness areas is not purchased directly in a market where prices can be observed (Bateman and Langford,

[1]Economic values are defined here as anthropocentric; that is, they are determined by reference to values received or perceived by human beings. It is possible to take the position that environmental resources also give rise to nonanthropocentric values that emerge from the moral interests or rights of nonhuman species (Foster, 1997; NRC, 2004b). The committee constrains its discussion here to anthropocentric economic values.

[2]Non-use values are also referred to as "passive-use values."

1997; Shechter et al., 1998). As a result, recreational values are often estimated using techniques, such as the travel cost method or contingent valuation (Fredman and Emmelin, 2001; Hanley et al., 2003; Herath and Kennedy, 2004). The same techniques can be applied to valuing cultural heritage features within an area visited for recreation (Navrud and Ready, 2002; Sattout et al., 2007). Estimates of the recreational value generated per person-day in a wilderness area are typically on the order of $50 (Walsh et al., 1992; Loomis et al., 1998; Loomis, 2000).

Economic activity associated with use and maintenance of a park or wilderness area generates economic impacts in surrounding communities through public spending on park and wilderness management and maintenance (e.g., employee salaries) and through private spending by visitors in restaurants, hotels, and shops in the course of travel to the park or wilderness area. Property value enhancement refers to the increase in the market value of private property in the vicinity of park, wilderness, or conservation land. Consumption goods produced within the conservation area may be timber in a multi-use national forest or cattle and oysters in a setting such as the Point Reyes National Seashore.

Ecosystem services provided by aquatic and related terrestrial ecosystems generally include nutrient recycling, habitat for plants and animals, flood control, and water supply (NRC, 2004b). The ecosystem service most closely associated with marine estuaries and seagrass beds is nutrient recycling; others include habitat and refuge, food production, and disturbance (i.e., storm or weather) regulation (Costanza et al., 1997). Although ecosystem services are usually not traded in markets, it is possible to estimate their economic value using shadow prices (Kaiser and Roumasset, 2002). The ecosystem *resources* embodied by Drakes Estero are fairly well understood and are described in the previous chapters (I through VII) of this report. The ecosystem *services* provided by the specific resources in Drakes Estero have not been quantified in either ecological or economic terms.

Non-use values of wilderness were first formally articulated by Weisbrod (1964), who suggested that undeveloped forest areas might give rise to option value, and by Krutilla (1967), who added the categories of existence and bequest values. First efforts to estimate these values systematically for wilderness areas were carried out by Walsh et al. (1984) in a study of Colorado wilderness areas. Option value is the value attributable to the opportunity at some point in the future to make decisions about the disposition or conservation of an asset (Forsyth, 2000; Bulte et al., 2002; Bosetti et al., 2004; Buttle and Rondleau, 2004). Existence value refers to the non-use value derived by people from the knowledge that something exists, irrespective of whether they (or anyone else) ever make use of it or

even see it (Hageman, 1985; McFadden, 1994; Blomquist and Whitehead, 1995; Loomis and White, 1996; Randall and Stoll, 1999). Bequest value is the satisfaction derived from preserving something for future generations (Greenley et al., 1981; Beaumont et al., 2007). All of these values may be lost, to some degree, when an area of wilderness is developed or a species is driven to extinction. Existence and bequest values are typically assessed using contingent valuation techniques (e.g., questionnaires, surveys, interviews) (Keith et al., 1996; McDaniels and Roessler, 1998).

Estimates of non-use values generated by designating a given area as wilderness (as opposed to leaving it open to development or multi-purpose access) are typically on the order of $10 to $100 per household per year or a present value on the order of $100 to $1,000 per acre of wilderness (Walsh et al., 1984; Pope and Jones, 1990; Gilbert et al., 1992).

B. WHAT IS THE BODY OF SCIENTIFIC STUDIES ON THE IMPACT OF THE OYSTER FARM ON DRAKES ESTERO?

No social science research has been carried out to quantify or estimate the effects of oyster farming on the economic values generated by Drakes Estero or the Point Reyes National Seashore. Similarly, the recreation and non-use values generated by, and the importance of aesthetics to, the human uses of Drakes Estero remain unstudied.

Of the more than 2 million annual visitors reported by NPS to visit the Point Reyes National Seashore (Figure 9), it is not known how many

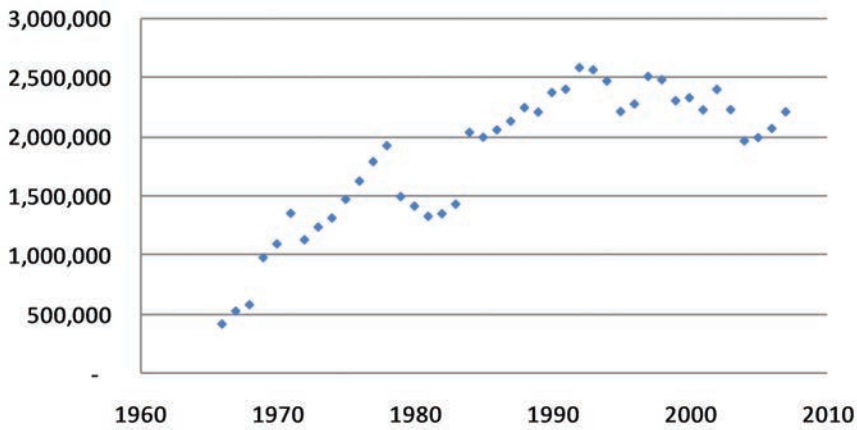

FIGURE 9. Trends in number of annual visitors to Point Reyes National Seashore (Source: National Park Service).

spend time on or at the estero. The only vehicle access to the estero is a road to the oyster farm site on Schooner Bay, which is also the only kayak launching point. Alternatively, the estero may be reached via hiking trails from the Bull Point and Drakes Estero trailheads on Sir Francis Drake Boulevard and via hiking trails from the Muddy Hollow trailhead on Limantour Road.

Baltan (2006) suggests that recreational use of Drakes Estero has increased since the early 1990s, particularly for kayaking and canoeing. Some 460 boaters participated in commercially organized kayak tours of Drakes Estero in 2005 (Baltan, 2006, citing personal communication with Kevin McKay, NPS); other boaters used the estero independently. Ten companies offered kayak tours of the estero under permits granted by NPS in 2005 (Baltan, 2006). These tours are not permitted during the harbor seal pupping season from March 1 to June 30. Unpublished data from the Point Reyes National Seashore visitor surveys carried out by students from Sonoma State University in 1997 and 1998 obtained from the Point Reyes National Seashore suggest that as many as 3% of the visitors surveyed planned to kayak during their visit to the Point Reyes National Seashore, but these surveys were not designed to capture a representative sample of all visitors to the Point Reyes National Seashore. Moreover, they do not provide information specifically about how many of these kayakers used Drakes Estero.

The oyster farming operation employs 30–40 people and produced 436,848 pounds of oyster meats in 2008 (Kevin Lunny, personal communication 5 March 2009 and California Department of Fish and Game) at an estimated value on the order of $2,000,000 based on NOAA's commercial landing statistics and the California Department of Fish and Game aquaculture survey database. Total May 2007 employment of agricultural workers in Marin, San Francisco, and San Mateo Counties was 1,510, with average annual earnings per worker of $26,000 (U.S. Bureau of Labor Statistics, 2009). This suggests that DBOC accounts for 2–3% of agricultural employment in the greater San Francisco-San Mateo-Redwood City metropolitan area and generates an annual payroll of about $1 million.

C. WHAT EFFECTS CAN BE DIRECTLY DEMONSTRATED BY RESEARCH CONDUCTED IN DRAKES ESTERO ITSELF?

No effects of the oyster farming operation can be directly demonstrated from social science research carried out on Drakes Estero because no such research has been done.

D. WHAT EFFECTS CAN REASONABLY BE INFERRED FROM RESEARCH CONDUCTED IN SIMILAR ECOSYSTEMS?

The oyster farming operation in Drakes Estero can be reasonably inferred on the basis of logical deduction to: (1) have a positive effect on total employment, tax revenue, and local food production in Marin County; (2) continue an historical use of the estero for shellfish mariculture, which likely enhances some visitors' experience in the estero and preserves a piece of local and regional culture and history; (3) introduce structures and activities into the estero that may affect negatively the wilderness experience and the aesthetic value of the estero for some visitors, and may detract from the existence value of the estero for those who value wilderness with minimal human structures and activities; (4) probably have no discernible effect on the aggregate recreational value (e.g., hiking, kayaking) of the estero; and (5) probably have a slight negative effect on non-use values associated with the estero.

At approximately 2–2.5 million visitors per year, the Point Reyes National Seashore may be estimated to generate on the order of $100 million per year in recreational value (see section VIII.A). Drakes Estero contributes an unknown fraction of this total. It is not known whether the presence of the oyster farming operation has a significant effect on the number of annual visitors to the Point Reyes National Seashore and Drakes Estero. It seems plausible that the net effect of the oyster farm on the Point Reyes National Seashore/Drakes Estero visitor counts is positive since some visitors are reported to come to Drakes Estero in part to purchase oysters from DBOC, and it seems unlikely that visitors are deterred from coming because of the oyster farm.

The level of economic activity in surrounding communities associated with the operation, maintenance, and use of the Point Reyes National Seashore and Drakes Estero has not been estimated. It is unlikely that the oyster farming operation has a significant effect on this, although there could be a modest positive effect if DBOC is contributing to higher numbers of visitors to the Point Reyes National Seashore (see above).

Property-value enhancement for private lands in the vicinity of the Point Reyes National Seashore from the existence of the national seashore has not been measured, but is likely to be positive. It is unlikely that this property-value enhancement is affected in any significant way by the presence of oyster farming operations in Drakes Estero.

DBOC produced about 467,000 and 437,000 pounds of oyster meats per year in 2007 and 2008 respectively. In the process, oyster culture in the estero generates an estimated $1 million in annual payroll and 2–3% of the roughly 1,500 agricultural jobs in the San Francisco-San Mateo-Redwood City metropolitan area.

In a synthesis of prior studies (i.e., Daily, 1997; Pimm, 1997), Costanza

et al. (1997)[3] estimated the biogeochemical-ecosystem value of marine estuaries at $22,422 per hectare per year and of seagrass and algae beds at $19,004 per hectare per year (in 1994 dollars). These are equivalent to $12,695 per acre per year for estuaries and $10,759 per acre per year for seagrass and algae beds in 2007 dollars. Using the average of these values, and applying it to Drakes Estero (2,270 acres at high tide), suggests that the estero may generate ecosystem services on the order of $26.6 million per year. There is not sufficient quantitative information to assess the effect of oyster farming on ecosystem services provided by the estero, but the net effect could be positive due to the added filtering capacity and nutrient recycling provided by the oysters.

From the non-use values estimated for wilderness areas in other parts of the United States, it may be inferred that Drakes Estero and the Point Reyes National Seashore have significant existence, option, and bequest value as protected environmental resources. Most published estimates of non-use value of protected lands are attached to larger areas (millions of acres) than Drakes Estero or the Point Reyes National Seashore, and they deal with the value of preserving wilderness from development. These estimates do not provide much information that can be readily transferred to a 2,000-acre wilderness within a larger park, where the development in question (oyster culture) has a relatively small physical footprint. It is likely that the presence of oyster farming in Drakes Estero has a marginal negative effect on the non-use values of the estero.

[3]These estimates are for marginal values of ecosystem services. There has been considerable criticism of the Costanza et al. (1997) approach to scaling from marginal values to global values. The committee is not engaged in scaling to global values here; it is looking closely at a particular estuary. In this situation, it is appropriate to apply the marginal value estimates.

Scientific Conclusions That Can Be Drawn

The previous sections present the available information from the on-site investigations of potential impacts of DBOC operations on the Drakes Estero ecosystem. Those studies could be fairly characterized as preliminary results that would require additional focused research to allow definitive conclusions to be reached about the presence, absence, or magnitude of any ecological impacts. Although studies conducted in other systems may help support results from initial studies in Drakes Estero, the comparability is not always sufficient to reach confident conclusions on the most important issues of relevance to management decisions.

Nevertheless, some limited results have sufficient scientific support to reach the following conclusions:

1. The presence and biological activities of cultured oysters in Drakes Estero results in locally enhanced filtration of the water column and deposition of feces and pseudofeces onto the bottom. One study was conducted in which sediment cores were taken in eelgrass as a function of distance away from oyster culture racks in Drakes Estero and also in nearby Estero de Limantour, which lacks oyster culture. No enhancement of sediment organics and no reduction in oxygen content of sediments were detectable near the culture racks or in Drakes Estero as compared to Estero de Limantour, indicating a lack of detectable negative impacts of oyster biodeposition, probably because of relatively low oyster stocking densities and high tidal flushing, which disperses the deposits. Limited water quality sampling did not demonstrate elevated levels of nutrients,

pathogens (fecal coliform bacteria), or hypoxia. Ecologically, oyster culture in Drakes Estero replaces, to an unknown extent, the filtering capacity and biogeochemical processing that was lost in the mid-19th century and subsequent decades with the overharvest and functional elimination of the native Olympia oyster. Although mariculture of the Pacific oyster is not a direct replacement of the native populations of the Olympia oyster, it may be viewed as providing similar biogeochemical functions and ecological resilience. The structural habitat provided by cultured oysters and the racks holding them is elevated off the bottom such that habitat services associated with provision of hard substrates may differ from those provided by native oysters residing on the bottom. Intertidal oyster bags with oysters inside may come closer to matching the habitat provided by native oysters, although periodic flipping of the oyster bags likely disturbs (and is intended to inhibit) the epifaunal fouling community growing on the bags.

2. The absence of eelgrass directly under oyster culture racks represents a small-scale and localized impact on the biogenic habitat. Numerous boat propeller scars in the eelgrass beds, partially affecting a total area of about 50 acres, are also evident and attributable to oyster culturists because they are the only ones allowed to use motorized vessels in the estero. Nevertheless, the total percentage of eelgrass area lost (1%) or partially degraded by propeller scars (7%) and thus attributable to oyster mariculture represents about 8% of all eelgrass habitat in Drakes Estero as of 2007. Eelgrass has approximately doubled in areal cover in Drakes Estero from 1991 to 2007, implying little systemic threat from the existing intensity of oyster culturing activities. Oysters have the potential to benefit eelgrass because their filtering activity improves local water clarity (and hence light penetration) and because they release biodeposits and ammonium (plant nutrients).

3. Definitive conclusions about potential impacts of DBOC activities on fish cannot be reached. The only study done of fishes of Drakes Estero was unable to detect significant differences in fish abundance, species diversity, or community composition between eelgrass fishes of Drakes Estero at varying distances from culture racks or between Drakes Estero and the Estero de Limantour, which has no oyster culture operation. There is some indication that the guild of fishes typically associated with hard substrates may be locally enhanced around culture racks, driven largely by response of one species, the kelp surfperch.

4. The only study of how the benthic invertebrates of Drakes Estero may be affected by the mariculture operation found no significant differences in invertebrate abundance or composition of eelgrass infauna as a function of distance from mariculture racks or between Drakes Estero and Estero de Limantour. Nevertheless, amphipods tended to be enhanced in

the sediments under racks, while a tanaid was depressed. A statistically significant increase in sandiness of sediments was detected under racks, but the magnitude of the change was small.

5. Drakes Estero represents an important site for harbor seals, supporting about 20% of the mainland California population. The design of the program to monitor harbor seal abundances and disturbance events at sub-sites within the estero does not permit explicit tests of the impacts of mariculture. Seal disturbance data have been collected during surveys designed primarily to monitor seal abundance trends, and observations of disturbance are not sufficiently representative to infer the proportionate contribution of mariculture-related disturbance relative to other sources of disturbance to hauled-out seals. In particular, critical information is lacking on potential disturbances from mariculture activities at higher tidal levels, which could inhibit hauling out and other important activities. There is a lack of information on how various sources of disturbance affect seals on an individual basis. Nonetheless, precautionary measures to reduce the likelihood of disturbance of seals are consistent with current management practices in the United States and in other countries.

6. Oyster culturing increases the existing amount of hard substrate in Drakes Estero, thereby sustaining high cover (up to about half of subtidal hard surface) of an introduced tunicate, *Didemnum vexillum*, and smaller populations of at least three other nonnative epifaunal invertebrates. The oyster that is cultured, *Crassostrea gigas*, is itself a nonnative species. Some culturing of the nonnative Manila clam, *V. philippinarum*, also occurs in the estero. There is risk that ongoing culture of *C. gigas* and *V. philippinarum* at Drakes Estero could lead to establishment of self-sustaining naturalized populations. Past importation of nonnative oysters at Drakes Estero is associated with the unintentional introduction of a nonnative haplosporidian oyster disease and a salt marsh snail, *Batillaria attramentaria*, whose introduction has had locally limited detrimental effects on the native marsh snail. However, the current mariculture practice of importing only larvae or seed from hatcheries practicing High Health Programs of inspections carries low risk of future new introductions of exotic species into Drakes Estero. Sustaining high cover of *Didemnum vexillum* elevates risk of its spread to other habitats, especially to eelgrass, and locations within Drakes Estero and Estero de Limantour.

7. No study has been conducted to test the impacts of mariculture on birds of Drakes Estero. Drakes Estero represents an important site for overwintering and seasonally migrating shorebirds- and waterfowl, with special significance as a feeding and staging site for migrating black brant geese. Boat travel by the mariculturists is likely to disturb and flush seaducks, shorebirds, and other waterbirds. Furthermore, the presence of lines of oyster bags on the intertidal flats is likely to diminish the feeding

area for some probing shorebirds, while enhancing food supplies for other shorebirds willing to consume epibiotic amphipods and other invertebrates associated with algal growth on mariculture bags.

8. The effect of oyster farming in Drakes Estero on the aggregate economic values generated by Point Reyes National Seashore is likely to be small relative to recreational value (on the order of $100 million per year) and value of ecological services (on the order of $20 million to $30 million per year).

Accuracy of the Scientific Conclusions Released by NPS to the Public

The Point Reyes National Seashore produced one major document on the science of Drakes Estero, including conclusions about the impacts of DBOC, for public release in four successive versions, all entitled *Drakes Estero: A Sheltered Wilderness Estuary* (2006b; 2007a; 2007b; 2007c). According to the Department of the Interior Inspector General's report (DOI, 2008), *Drakes Estero: A Sheltered Wilderness Estuary* was prepared in part to respond to an article in the Point Reyes Light and other inquiries regarding the effects of the oyster farm on Drakes Estero and the termination of the current lease (RUO) in 2012. This document was released first as a Park News "information piece" (pdf and printed copies) in October 2006 (Box 4) and subsequent versions were posted on the Point Reyes National Seashore website. The committee received four discrete public versions of *Drakes Estero: A Sheltered Wilderness Estuary*. The last version released to the public was available on the Point Reyes National Seashore internet site on May 11, 2007, and was removed from the site on July 23, 2007. In addition, the Point Reyes National Seashore released one related document on July 25, 2007 (Acknowledgement of Corrections [NPS, 2007e]) and another (Clarification of Law, Policy, and Science on Drakes Estero [NPS, 2007d]) on September 18, 2007, to the Marin County Board of Supervisors that also reviewed the science on effects of DBOC on the ecosystem of Drakes Estero, which contained further modifications of NPS scientific conclusions. Whether NPS made appropriate use of available scientific information on potential impacts of the oyster culture operation on the ecosystem of Drakes Estero has been the subject of controversy, only par-

BOX 4
Timeline for Events Related to *Drakes Estero: A Sheltered Wilderness Estuary*
(Dates taken primarily from DOI, 2008)

May 18, 2006	Point Reyes Light article claiming DBOC has little impact on estero based on the Elliot-Fisk et al. (2005) report
October 28, 2006	Superintendent Neubacher gave copies of *Drakes Estero: A Sheltered Wilderness Estuary* (version I; NPS, 2006b) to Gordon Bennett, Sierra Club. Copies were also available to the public at this time.
February 9, 2007	*Drakes Estero: A Sheltered Wilderness Estuary* (version II; NPS, 2007a) first posting on NPS website
May 8, 2007	*Drakes Estero: A Sheltered Wilderness Estuary* (version III; NPS, 2007b) (date downloaded – date of posting unknown)
May 8, 2007	Marin County Board of Supervisors Meeting
May 11, 2007	*Drakes Estero: A Sheltered Wilderness Estuary* (version IV; NPS, 2007c)
May 15, 2007	Letter to NPS from California Department of Fish and Game documenting NPS authority over Drakes Estero (including leased bottom)
July 23, 2007	*Drakes Estero: A Sheltered Wilderness Estuary* removed from NPS website
July 25, 2007	NPS posts "Acknowledgement of Corrections" (NPS, 2007e)
September 18, 2007	NPS issues "Clarification Statement" (NPS, 2007d)
November 2007	California Coastal Commission Consent Order signed by Kevin Lunny, DBOC
April 22, 2008	NPS Special Use Permit signed by Kevin Lunny, DBOC

tially addressed in the Inspector General's report (DOI, 2008). Here, the committee compares its conclusions on potential impacts (the available science) to what NPS reported in their multiple versions of *Drakes Estero: A Sheltered Wilderness Estuary* and the "Corrections" and "Clarification" documents.

While NPS in all versions of *Drakes Estero: A Sheltered Wilderness Estuary* accurately depicted the ecological significance and conservation value of Drakes Estero, in several instances the agency selectively presented,

over-interpreted, or misrepresented the available scientific information on potential impacts of the oyster mariculture operation. Consequently, *Drakes Estero: A Sheltered Wilderness Estuary* did not present a rigorous and balanced synthesis of the mariculture impacts. Overall, the report gave an interpretation of the science that exaggerated the negative and overlooked potentially beneficial effects of the oyster culture operation. NPS has issued two documents correcting and clarifying *Drakes Estero: A Sheltered Wilderness Estuary*—"Acknowledgment of Corrections to Previous Versions of the Park News Document *Drakes Estero: A Sheltered Wilderness Estuary*," posted on July 25, 2007 (NPS, 2007e), and the September 18, 2007 document, "National Park Service Clarification of Law, Policy, and Science on Drakes Estero" (NPS, 2007d). The Clarification document represents the most accurate NPS release of science relating to mariculture impacts, although it does not fully reflect the conclusions of this committee. It appears that hasty responses to local stakeholder concerns by NPS led to the publication of inaccuracies and a subsequent series of retractions and clarifications during this process from 2007–2008, which cast doubt on the agency's credibility and motivation. A lack of coordination among the multiple agencies regulating the mariculture operation also gave mixed messages to stakeholders, fueling the controversy. For example, the extension in 2004 of the DBOC shellfish leases until 2029 by the California Fish and Game Commission sent a message that could be construed as conflicting with the Department of the Interior Office of the Solicitor's interpretation of the congressional mandate for designating Wilderness in the Point Reyes National Seashore, which would prohibit the extension of the lease beyond 2012. The California Fish and Game Commission did, however, stipulate termination of the leases if the RUO was not extended. The committee describes below the major scientific conclusions presented by NPS and how these conclusions change among the various NPS public releases.

- Version I (released in October 2006) of *Drakes Estero: A Sheltered Wilderness Estuary* reports that Anima (1990) "documented substantial sediment inputs of the pseudo-feces from the oysters." All four of the public versions of *Drakes Estero: A Sheltered Wilderness Estuary* make similar statements, with the last (version IV downloaded on May 11, 2007) stating that Anima (1990) "identified pseudo feces of oysters as the primary source of sediment fill." In fact, Anima (1990, 1991) does not report any direct observations of oyster pseudofeces or feces in the sediments. The Acknowledgment of Corrections (July 2007) and Clarification (September 2007) documents admit the error in the characterization of Anima's studies in *Drakes Estero: A Sheltered Wilderness Estuary* and retracts those claims. In the Clarification document, NPS uses scientific literature on effects of

oyster biodeposition into sediments and quotes from independent scientific experts to reach reasonably substantiated conclusions about sedimentation effects that match those reached by this committee. Specifically, NPS concludes that any biodeposits from feeding oysters must necessarily fall to the estuarine bottom and to some undocumented extent become incorporated into the bottom sediments with a potential for inducing sedimentary anoxia under conditions of high shellfish stocking densities. The Clarification notes that the sediment cores taken under the racks in a subsequent study (Harbin-Ireland, 2004; Elliott-Fiske et al., 2005) did not show evidence of hypoxia, but NPS also suggests that these results from 2003 may not be representative of current conditions given the steady and substantial increase in oyster culturing activities from 2000 to 2007 (see Figure 6).

- All versions of *Drakes Estero: A Sheltered Wilderness Estuary* cite Anima (1990) in support of the conclusion that "pseudofeces of oysters are the primary source of sediment fill." In fact, Anima (1990, 1991) does not make any observations on rate of sedimentation from oyster pseudofeces or compare those rates to other sources of sedimentation. Erosion of sediments from grazed pastures and deposition of eelgrass detritus represent potentially important additional sources of sedimentation. The Clarification document correctly states that Anima did not make any measurements of sedimentation rate from oyster biodeposits and further qualifies Anima's (1990, 1991) statement as expert opinion that fine sediments deposited by oysters beneath the racks were likely resistant to erosion because tidal action would be limited in the upper reaches of the estero. In contradiction to Anima's opinion, Harbin-Ireland (2004) demonstrated that sediments underneath oyster culture racks are slightly coarser not finer than those at distance from the racks. This potentially conflicting observation is not presented by NPS in discussing the sedimentation issue in the Clarification document.

- Each version of *Drakes Estero: A Sheltered Wilderness Estuary* cites Harbin-Ireland (2004) and Elliott-Fisk et al. (2005) in support of the claim that "eelgrass growth is severely restricted under active oyster racks." While observations on eelgrass in Drakes Estero do imply some localized reduction in areal cover underneath oyster culture racks, affecting about eight acres in total (1% of eelgrass habitat in 2007), this statement does not place the relatively small effect of the oyster racks on eelgrass coverage in the appropriate context. NPS's Clarification document provides a more balanced assessment, explicitly characterizing the observed pattern of eelgrass distribution around culture racks and placing it into the context of an approximate doubling of eelgrass coverage in Drake Estero from 1991 to 2007. Another inconsistency between all four versions of *Drakes Estero: A Sheltered Wilderness Estuary* and the actual data relates to

results of a study by Applied Marine Sciences (AMS, 2002). NPS wrote: "Eelgrass, for example, in Estero de Limantour where there is no oyster farming, had higher indicators of standing stock, as measured by the numbers of turions and blades, compared to Drakes Estero (AMS 2002)". Actually, AMS (2002) reports just the opposite—that both sites in Drakes Estero exhibited higher counts of eelgrass blades and turions than the one site sampled four times over 18 months in Estero de Limantour. Furthermore, AMS notes that this contrast is unreliable because elevation differences confound the site comparison. NPS also fails to include the demonstration by AMS (2002) that eelgrass disappeared over those 18 months from 5 of 6 plots in Estero de Limantour while persisting at all 6 plots at both sites in Drakes Estero. Later versions of *Drakes Estero: A Sheltered Wilderness Estuary* and the Clarification document appropriately include the observation that approximately 50 acres of eelgrass habitat show propeller scars leading to and from oyster culture racks that can be reasonably attributed to boats associated with oyster operations. A more complete overview of how eelgrass and oyster culturing may functionally interact would also mention the potential for oyster filtration to depress turbidity and thereby locally enhance light penetration and extension of eelgrass habitat into deeper water and would note the potential for oyster biodeposits and ammonium excretion to fertilize eelgrass. Each of these effects has been demonstrated experimentally for modest densities (16 per square meter) of hard clams (*Mercenaria mercenaria*) in a relatively oligotrophic Long Island estuary: the authors argued that positive effects of modest numbers of suspension-feeding bivalves are more likely to benefit eelgrass in relatively oligotrophic water bodies where massive additions of filtering capacity are not required to achieve meaningful enhancement of light reaching the bottom (Carroll et al., 2008). These potential positive contributions of oysters to seagrasses are not mentioned in any of the NPS public releases of information on effects of oyster mariculture in Drakes Estero.

- Based on research of Wechsler (2004), also summarized in Elliott-Fisk et al. (2005), the first version (October 2006) of *Drakes Estero: A Sheltered Wilderness Estuary* maintained that "Schooner Bay . . . supported an entirely different fish community than that in the Estero de Limantour." In fact, the only quantitative study of the fishes in Drakes Estero (Wechsler, 2004), based on limited sampling, failed to demonstrate substantial or statistically significant differences in the fish community composition between these two arms of the estero. There is some suggestion that the guild of fishes associated with hard substrates, a pattern driven by kelp surfperch, has enhanced abundances in close proximity to the oyster racks, but the spatial scope of any such signal is limited and not statistically significant (Wechsler, 2004). The later versions III and IV (May 8 and

May 11, 2007, respectively) of *Drakes Estero: A Sheltered Wilderness Estuary* removed the reference to changes in the fish community associated with the oyster racks. The Clarification document provides a rigorous overview of Wechsler's (2004) fish sampling data, admitting that there is inadequate evidence to reach conclusions about whether oyster culturing in Drakes Estero has any impact, positive or negative, on fishes. This NPS release also correctly identifies the suggestion of elevated abundance or attraction of fish species associated with hard substrates, while noting the lack of any statistical significance of this pattern despite a logical mechanistic basis that could explain it.

- Version I of the *Drakes Estero: A Sheltered Wilderness Estuary* (October 2006) asserted that the "marine invertebrate fouling community could be properly characterized as 'introduced' or 'invasive' due to lack of hard substrata in Drakes Estero," citing Elliott-Fisk et al. (2005) as the source. The dominant occupier of space on the culture racks and oysters hung over them appears to be the nonnative tunicate, *Didemnum vexillum*, and three other nonnative fouling species are documented in Elliott-Fisk et al. (2005). Nevertheless, the assertion that hard substrates are absent in Drakes Estero is false (Bull Point contains some natural rocks), and insufficient sampling data exist to characterize the entire fouling community as nonnative. Furthermore, none of the versions of *Drakes Estero: A Sheltered Wilderness Estuary* acknowledges that hard substrate in the form of the native Olympia oyster shells likely existed in abundance within Drakes Estero in the past. Fouling organisms introduced into the estero would have found suitable hard substrate for attachment had the historical abundance of the Olympia oyster been sustained, assuming that its distribution extended into the subtidal zone as it does in British Columbia and elsewhere on the Pacific coast. The Clarification document provides a more accurate overview of the risks of enhancing populations of the nonnative tunicate, *D. vexillum*, by the provision of hard substrates in the form of oyster racks and oysters. Specifically, NPS identifies the concern that abundant populations of such an invasive species might change the biological environment in ways that lead to promoting successful invasion of other nonnatives—a process known as invasional meltdown (Grosholz, 2005). In addition, the Clarification document correctly identifies the risk that high populations of *D. vexillum* pose to enhancing the potential dispersal to other sites. Consequently, the Clarification document provides a rigorous summary of the issues relating to *D. vexillum* and other invertebrates occupying hard substrates, including oyster culture racks and the oyster shells. The only substantive difference between what NPS reported in the Clarification document and the findings of the committee is the failure of NPS to acknowledge the likely historical presence of common hard substrates in the form of shells of the native Olympia oyster.

• The first version also maintained that the ". . . oyster operation is a source for many invasive species. . . ." Credible arguments support the inference that successful introductions of nonnative species into Drakes Estero are the consequence of historic oyster farming practices in Drakes Estero. Specifically, the introduced salt marsh snail, *Batillaria attramentaria*, has been associated with oyster farming (Byers, 1999) and introduction of a nonnative haplosporidian oyster parasite into Drakes Estero is also associated with importation of Pacific oysters (Burreson et al., 2000). The Pacific oyster now cultured in Drakes Estero, *Crassostrea gigas*, is itself a nonnative species and has potential to escape culture and establish a self-replicating population as does the nonnative Manila clam (*V. philippinarum*). However, historic oyster mariculture practices that involved transport of nonnative oysters in juvenile or partially grown forms on cultch (large shell) have ended. This practice has been replaced by the transport of eyed larvae for remote setting in the nurseries of DBOC in a fashion similar to current practice at other mariculture operations. Consequently, the oyster operation is not now likely to be a source for further introductions of nonnative species. The only types of species that now could conceivably be introduced along with importation of oyster larvae are microbes, including notably oyster herpes viruses. None of the NPS review documents describe this change in mariculture methods and the great reduction in risk of new introductions that is achieved by transferring larvae from hatcheries inspected by High Health criteria (see Appendix E) instead of juvenile oysters on cultch.

• Versions III and IV of *Drakes Estero: A Sheltered Wilderness Estuary* state that oyster culture operations have resulted in an 80% decline in harbor seals "at one area" in Drakes Estero. This description is misleading because it implies that there has been a decline in the seal population at Drakes Estero whereas what has been observed is a reduction in the use of some of the haul-out subsites during the breeding season. In addition, the 80% value represents a selective presentation of subsite use that does not place this information into context with the spatially replicated and longer-term count data throughout the Drakes Estero colony and the Point Reyes region. The paper by Becker et al. (2009) improves on this simplistic description by analyzing the use of three haul-out subsites over a decade and relating it to local mariculture activities and changes in oceanic conditions from the 1998 ENSO climatic event. The conclusions reached by the authors of the paper are generally consistent with the results of the analysis, but the limitations of the analysis and hence tenuous nature of the conclusions may not be obvious to the non-expert. First, it is important to recognize that the analysis showing a relationship between mariculture activities and a decline in the mean seal attendance at two of three haul-out subsites in Drakes Estero does not demonstrate

cause and effect. Second, the use of oyster production level as a proxy for mariculture activities that displace or disturb seals may be confounded by changes in culture methods or management practices. Third, demonstrating changes in mean attendance at seal haul-out subsites is not equivalent to demonstrating a decline in the seal population at Drakes Estero. The entire estero should be considered as one unit for population analyses for comparison to trends at other nearby locations occupied by harbor seals. For these reasons, the Becker et al. (2009) paper has limited value for understanding the long-term trends in seal counts in Drakes Estero. The NPS 2007 Pacific Harbor Seal monitoring annual report recognizes the need to look at these longer-term trends: "Inclusion of all survey years (2000–2007) in the average calculation accounts for the inherent inter-annual variability in the harbor seal population and reproductive output. Declines below one standard deviation from the mean, especially over the course of a few years, may merit further analysis of the data for statistical significance, additional research, or management actions." (Truchinski, et al. 2008). The 2007 annual report shows that although the adult counts for 2007 are within one standard deviation of the 2000–2007 average, pup counts in Marin County colonies as a whole have declined to below one standard deviation for 2006 and 2007, which is a cause of concern that merits more detailed analysis. With regard to disturbance, we note that the 100 yd (91 m) buffer between mariculture activities and seal haul-out locations, while consistent with the National Marine Fisheries Service guidelines under the Marine Mammal Protection Act and Allen et al.'s (1984) observations of threshold disturbance distances for hauled-out seals in Bolinas Lagoon, is not as large as the 500–1,500 m buffers employed at two European locations to protect seals from human disturbance. Interpretation of the disturbance data is limited by the lack of critical information on how individual fitness and population consequences may vary with disturbance type. Hence, the disturbance monitoring conducted by NPS is inadequate for rigorous inferences on the impacts of mariculture on harbor seals.

- Version IV (May 11, 2007) of *Drakes Estero: A Sheltered Wilderness Estuary* highlights a quote from Dr. Janet Thompson of the U.S. Geological Survey, who inferred "a shift in the carbon from the pelagic food web to the benthic food web." Elsewhere, this document reports that ". . . in Drakes Estero, ecological function has been degraded and altered over the past several decades due to activities associated with oyster farming and ranching." Our review of available scientific information fails to demonstrate any empirical evidence of food web shifts in response to oyster farming in Drakes Estero. The scientific literature on the effects of culturing oysters and other suspension-feeding bivalves does not support a broad characterization of degradation of function, especially in physically

well flushed estuaries and where stocking densities are relatively low, as in Drakes Estero. Furthermore, while some shift from pelagic to benthic food webs is a reasonable inference, there is no acknowledgement of the historical baselines of the natural ecosystem in Drakes Estero. Humans caused the depletion of the native Olympia oyster in California's coastal bays and estuaries during the mid 1800s to early 1900s (Barrett, 1963; Baker, 1995; Kirby, 2004). The presence of shells of living, albeit cultured, oysters re-introduces biogenic hard substrates for fouling organisms, although differing in location by including elevated rack and surface plastic mesh culture structures, and the maintenance of feeding cultured oysters represents re-introduction of ecological filtering and biodeposition functions that prevailed before the native oysters were overharvested. Characterizing these changes as a degradation of ecological function ignores the perspective of history by selecting as a baseline for contrast only the recent anthropogenically modified status of the estero, and ignoring the historical baseline conditions (e.g., Jackson, J.B.C. et al., 2001; Lotze et al., 2006). Likewise, the historic presence and ecological roles of Olympia oysters in the estero is not mentioned in the Clarification document, which reports instead: "The presence of a reported nine million oysters and one million clams within an area that would not have these resources naturally is itself enough to demonstrate an alteration of natural conditions." (NPS, 2007d).

The literature on estuarine ecosystems and restoration identifies oysters as a major contributor to maintaining or restoring water quality and as important biogenic habitat for demersal fishes and mobile crustaceans (Lenihan and Peterson, 1998; Newell, 2004; Hosack et al., 2006; Coen et al., 2007; Grabowski and Peterson, 2007). Although there is a dearth of research on the extent to which the cultured Pacific oyster restores the ecological contribution of the native Olympia oyster in Drakes Estero, none of the NPS documents released to the public acknowledges that oysters were part of the historical baseline ecosystem before substantial human intervention and that oysters typically have largely beneficial biogeochemical functions in estuarine and lagoonal ecosystems.

How Scientific Conclusions Affected NPS Decision Making

To address how conclusions based on science affected NPS decision making required the committee to identify decisions made by NPS and infer the role that science may have played in those decisions. The committee identifies the following three explicit decisions:

- the decision to include a new restriction on boat use in the 2008 Special Use Permit for the commercial shellfish mariculture operation in Drakes Estero;
- the decision to release *Drakes Estero: A Sheltered Wilderness Estuary* in its four versions (2006; 2007a; 2007b; 2007c) and subsequent Acknowledgment of Corrections (NPS, 2007e) and Clarification (NPS, 2007d) documents; and
- the decision to discourage DBOC from seeking a new RUO to continue operations beyond 2012 when the current RUO expires.

DECISION TO SIGN THE APRIL 2008 SPECIAL USE PERMIT THROUGH 2012

A Special Use Permit for commercial operations of DBOC within a national park was signed in April 2008. NPS included in the permit a new restriction on boat use by DBOC that directed boat passage away from a more direct deep channel (the "lateral channel") throughout the year, not just during the harbor seal pupping season. This restriction closes the channel running close to one of the haul-out sites and redirects oyster boat traffic to a more circuitous route over shallower eelgrass beds. This new

provision may have been motivated by concluding that motorboats pose a high risk of disturbance to the harbor seal, a species protected under the Marine Mammal Protection Act, and that risk is more serious than the increased damage to eelgrass beds from propeller scars. This decision is consistent with the recommended Resource Protection Measures enumerated in the California Coastal Commission's Consent Order (CCC-07-CD-11, Nov. 29, 2007). By comparison to the year-round closure of the lateral channel to oyster boats, kayak use in Drakes Estero is restricted from March 1 through June 30, "to protect harbor seals from disturbance during the most crucial part of the pupping season," (available at www.nps.gov/pore/planyourvisit/kayak.htm).

DECISION TO WRITE AND RELEASE *DRAKES ESTERO: A SHELTERED WILDERNESS ESTUARY* PLUS THE ACKNOWLEDGMENT OF CORRECTIONS AND CLARIFICATION DOCUMENTS

NPS reported scientific observations and conclusions in all four versions of *Drakes Estero: A Sheltered Wilderness Estuary* that were released to the public. In that sense, this decision involved science. The degree to which the science motivated the decision to release this report is unclear. The scientific conclusions presented in the report included several that did not match what can be rigorously concluded from the limited scientific studies that have been conducted in Drakes Estero or analogous systems (see above). The scientific information on impacts of oyster culturing at Drakes Estero is limited and provides an insufficient basis on which to address some of the most important concerns about impacts. Based on this committee's conclusions, the most important concerns relate mostly to activities of the culturists rather than to presence of and activities of the oysters themselves, which is not reflected in the *Drakes Estero: A Sheltered Wilderness Estuary*. Potential negative effects of activities of the culturists on the harbor seal population represent the most serious concern, which cannot be fully evaluated because these effects have not been directly investigated. The reinterpretations of available science, prompted by stakeholder criticism and aided by solicited and unsolicited expert assessments, and corrections of misstatements of existing information in NPS documents appeared to play roles in motivating NPS to prepare and release the Acknowledgment of Corrections and Clarification documents.

DECISION TO DISCOURAGE DBOC FROM SEEKING A NEW RUO

The crux of the controversy over Drakes Estero is the pending expiration of the RUO in 2012. The actions taken by Point Reyes National

Seashore, including the addition of specific language in the Special Use Permit on termination of the lease, the preparation and release of *Drakes Estero: A Sheltered Wilderness Estuary*, and the denial of a permit for research on whether it would be possible to grow native oysters in the estero, indicate that the NPS decided to discourage DBOC from seeking an extension of the RUO (DOI, 2008). NPS's actions are consistent with the Department of the Interior's interpretation of the Wilderness Act and the Point Reyes Wilderness Act of 1976 (Appendix A). The July 2008 Inspector General's Report of Investigation (DOI, 2008) spoke unambiguously to this issue, noting that the Department of the Interior's Office of the Solicitor advised Point Reyes National Seashore that the Superintendent does not have the authority to extend the RUO because of the congressional mandate designating Drakes Estero as Potential Wilderness (DOI, 2004; see Appendix A). The Solicitor stated that under the Wilderness Act, NPS is mandated to convert Potential Wilderness to Wilderness status as soon as the nonconforming activity can be removed. Consequently, our committee concludes that this decision on extension of the RUO hinges on the legal interpretation of the legislative mandate rather than a scientific analysis of the impacts of DBOC on the Drakes Estero ecosystem. As such, more scientific study of DBOC operations and Drakes Estero would not necessarily affect National Park Service decisions about the future of oyster farming in the estero.

In the past, NPS had incorporated oyster farming into the General Management Plan (National Park Service, 1980; cited in Wechsler, 2004) under the Point Reyes National Seashore objective to preserve aspects of cultural significance. If DBOC is successful in having the RUO extended beyond 2012, a collaborative interpretative center could be established between DBOC and NPS, as had been proposed by the previous owner (Tom Moore, personal communication). Results of scientific research on the role of cultured oysters in the Drakes Estero ecosystem would then be valuable contributions to the center. Collaboration on an interpretive center would be consistent with the purposes of the original RUO "for the purpose of processing and selling wholesale and retail oysters, seafood, and complimentary food items, the interpretation of oyster cultivation to the visiting public, and residential purposes reasonably incidental thereto. . . ." (DOI, 2004; see Appendix A). Under this scenario, science would be needed to set and adaptively modify permit conditions under the new RUO and to develop exhibits for the interpretative center on the ecological role of oysters as an ecosystem engineer or foundation species in estuarine ecosystems, the history of overexploitation, the challenges of nonnative species, conservation problems, the issue of how changing ecological baselines influences wildlife preservation and habitat restoration, the relationships between mankind and oysters, and the challenges of environmental and cultural sustainability. Activities of oyster culturists

necessarily have some impact on the ecosystem of Drakes Estero, subject to regulation by multiple management authorities to minimize serious impacts, while perpetuating a cultural history of oyster farming that goes back to the 1930s (Anima, 1990, 1991). Cattle ranching and dairy farming persist within the Point Reyes National Seashore as part of the cultural history of the lands, continuing the historical uses of the land that date back to the time of European colonization of this region of California. Oyster farming as currently practiced has a similar, although shorter, cultural history and heritage with modest impacts (positive and negative) on the ecosystem. The ecological impacts of the oysters themselves replace in part an ecological function that was lost when the native oyster became functionally extinct during the mid 1800s to early 1900s as a consequence of unregulated human exploitation (Kirby, 2004). In addition, efforts to restore a self-sustaining population of native oysters in Drakes Estero could be promoted and supported. Science would play an important role in that restoration planning and implementation. Drakes Estero has been recognized as one of the few locations on the U.S. west coast still environmentally suitable for re-establishment of the native Olympia oyster (Shaw, 1997).

RESEARCH NEEDS

Although Drakes Estero represents an ideal setting for addressing many scientific questions of basic and applied value, the committee restricts its suggestions for key research problems to those issues that could improve management of valuable natural resources within Drakes Estero. Results of research conducted to address these questions would have importance that stretches far beyond their application to management of Drakes Estero because the questions include important aspects of fundamental science. Research to answer such questions is critically needed in the Point Reyes National Seashore as in all National Parks. The lack of sufficient resources in NPS to support the research required to harmonize the facilitation of public use and enjoyment of the parks with the preservation of environmental and cultural assets is a national problem. The availability of sufficient resources to assess environmental impacts of management alternatives and to fund rigorous scientific review of NPS documents prior to release could have provided sufficient information to avoid over-interpretations and misstatements of science, such as those that appeared in the NPS depictions of oyster farm impacts in the Drakes Estero case.

The following research topics are not prioritized, but they address important unanswered questions about the various potential impacts of shellfish mariculture examined by the committee:

- **Carrying capacity for suspension-feeding bivalves.** An interdisciplinary oceanographic field and modeling study, coupled with empirical field monitoring validation on a recurring basis to account for climatic and other environmental change, is needed to determine how the physical flushing conditions in the estero determine the maximal carrying capacity for oyster biomass so as to avoid over-exploitation of phytoplankton resources shared with other suspension feeders and avoid organic deposition of biodeposits high enough to induce sedimentary anoxia.
- **Eelgrass, benthic invertebrates, and fishes.** A more detailed sampling or preferably experimental study is required to test how shellfish mariculture influences benthic invertebrates (including the native oyster), eelgrass, and fishes in Drakes Estero. Population-level research on how eelgrass responds to mariculture and why it is expanding in this estuary and not in many other systems would be useful. Also, more work is needed to understand how eelgrass, open sediment, native shellfish beds, and mariculture operations function as habitats for fish and benthic invertebrates at a landscape scale in the estero and other similar systems.
- **Control of *Didemnum vexillum*.** Further understanding of how to control abundances and reduce the risk of spread of the invasive *Didemnum vexillum* is urgently needed, not just in Drakes Estero but also worldwide. For Drakes Estero, methods need to be developed for how to dispose of *Didemnum* after scraping it off racks and oyster shells to prevent it from spreading by fragmentation. The current practice of disposing of scraped-off fragments into the estero increases the risk of spread, perhaps even to eelgrass given recent reports of the colonization of eelgrass blades elsewhere.
- **Disease and parasite research for bivalve mariculture.** Further research into controlling diseases potentially spread with transport of shellfish larvae, such as oyster herpes viruses, is important to the mariculture industry broadly and to protecting wild stocks of shellfish in recipient water basins.
- **Oceanographic processes leading to poor shellfish larval survival.** Major West Coast shellfish hatcheries are currently suffering catastrophic failures in rearing shellfish larvae that appear to be similar to failures in the survival of native bivalve larvae. Larval survival appears to be affected by major changes over the past 2–3 years in coastal ocean upwelling, which involves lowering the pH (Feeley et al., 2008), or changing the abundance of pathogenic microorganisms. This problem is urgent and will require interdisciplinary studies of natural- and human-induced processes because of its unusual nature and its threat to both wild and cultured shellfish populations over wide areas of the West Coast.
- **Pinniped monitoring program.** The coordinated pinniped monitoring program across the San Francisco parks network now provides an important resource providing as yet untapped potential for assessing

trends in the abundance of harbor seals in Drakes Estero in relation to wider regional trends. However, harbor seal haul-out surveys such as this have limited power to detect trends in abundance. The committee, therefore, recommends that NPS continue this program to provide an adequate time series to assess both colony-specific and regional trends.

- **Targeted, spatially-explicit study of activities of mariculturists and their boats in Drakes Estero.** Efforts to explain the changes in abundance and behavior of wildlife populations in relation to natural events and anthropogenic activities also require more robust data on patterns of change. Future assessments of the potential impact of mariculture disturbance in this area would greatly benefit from more detailed data on spatial and temporal changes in the distribution of activities by the oyster farm boats and culturists working around oyster bags and racks. This information could be used to construct a more ecologically realistic footprint of the mariculture activity, including potential interactions at sea and on land. GPS loggers or transmitting systems would allow these data to be collected remotely and the resulting footprint modeled using standard techniques. Results could be used in adaptive management to minimize any demonstrated impacts of mariculture activities.
- **Individual seal and bird behavior and fitness studies.** If needed to manage future shellfish mariculture operations in Drakes Estero or in other systems, any assessments of direct impacts to harbor seals and birds would require a more detailed individual-based study using animal tracking devices that will allow an assessment of responses to known disturbances of different origin. However, the conservation benefits of such a study must be carefully balanced against any potential adverse effects resulting from more intrusive research techniques.
- **Alternative oyster culture techniques.** In the event of an extension of the RUO for DBOC, research would be needed on oyster culture techniques that form an economically viable alternative to placing culture bags near seal haul-out areas. The goal would be to find methods less disruptive to seals and birds. In addition, research on the viability of establishing a self-sustaining population of Olympia oysters would contribute to the potential restoration of the historic baseline ecosystem in Drakes Estero prior to over-exploitation of native oysters.
- **Socioeconomic impacts of oyster mariculture on visitors to the Point Reyes National Seashore.** It would be worthwhile to the development of NPS policy to assess the effects of oyster farming on the recreational, cultural, and aesthetic experiences of visitors to the Point Reyes National Seashore and to the economic value realized by these visitors. A study of this nature could also assess, for example, the potential educational value of constructing an interpretive center around the oyster culturing operations.

THE ROLE OF SCIENCE IN DECISION MAKING

Two lines of argument against continued shellfish mariculture in Drakes Estero have been raised: (1) shellfish mariculture is incompatible with Wilderness status as defined in the U.S. Wilderness Act (P.L. 88-577, Sep. 3, 1964; see Appendix A) and (2) shellfish mariculture should not take place in Drakes Estero because of the risk of adverse ecological effects. Science has more to say about the latter than the former.

In 2004, prior to the sale of the Johnson Oyster Company to the current owners, the Department of the Interior's Office of the Solicitor reviewed the "potential wilderness" status of Drakes Estero and concluded that "the Park Service is mandated by the Wilderness Act, the Point Reyes Wilderness Act and its management policies, to convert Potential Wilderness, i.e. the Johnson Oyster Company tract and adjoining Estero, to Wilderness status as soon as the non-conforming use can be eliminated." (DOI, 2004; see Appendix A) This congressional mandate provides a legal basis for not extending the RUO to DBOC beyond 2012, as cited in the report of the Department of the Interior's Office of Inspector General in finding that the Superintendent of Point Reyes National Seashore does not have the authority to extend the RUO beyond 2012 (DOI, 2008).

With regard to addressing the risk of ecological effects, NPS's Management Policies prioritize the protection of natural resources, including circumstances where the available scientific information contains substantial uncertainty: "In cases of uncertainty as to the impacts of activities on park natural resources, the protection of natural resources will predominate" (NPS, 2006c). This policy could be applied to permitting decisions before 2012 as well as providing an environmental rationale for not extending the 40-year term of the RUO that was granted upon the Johnson's sale of the property to NPS in 1972.

After evaluating the limited scientific literature on Drakes Estero and the relevant research from other areas, the committee concludes that there is a lack of strong scientific evidence that shellfish farming has major adverse ecological effects on Drakes Estero at the current (2008–2009) levels of production and under current (2008–2009) operational practices, including compliance with restrictions to protect eelgrass, seals, waterbirds, and other natural resources. Adaptive management could help address effects, if any, that emerge with additional scientific research and monitoring to more fully understand the Drakes Estero ecosystem and the effects of shellfish farming. Importantly from a management perspective, lack of evidence of major adverse effects is not the same as proof of no adverse effects nor is it a guarantee that such effects will not manifest in the future. A more definitive understanding of the adverse or beneficial effects cannot be readily or inexpensively obtained; the complexity of marine ecosystems and responses to ongoing environmental change

(both natural and anthropogenic) requires substantial time and effort to understand. This situation is not unique to Drakes Estero—uncertainty about effects of human activities on ecosystems is a common feature of most decisions about actions that affect natural resources.

The ultimate decision to permit or prohibit a particular activity, such as shellfish farming, in a particular location, such as Drakes Estero, necessarily requires value judgments and tradeoffs that can be informed, but not resolved, by science. Science describes the effects (differences in outcomes) that can be expected with and without shellfish farming in Drakes Estero, the level of uncertainty given current knowledge about these effects, and approaches to assess and balance potential risks and benefits. Because stakeholders may reasonably assign different levels of priority or importance to these effects and outcomes, there is no scientific answer to the question of whether to extend the RUO for shellfish farming. Like other zoning and land use questions, this issue will be resolved by policymakers charged with weighing the conflicting views and priorities of society as part of the decision-making process.

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Appendixes

Appendix A

Wilderness Status

The National Park Service position that it cannot authorize continued operations beyond the expiration of the Reservation of Use and Occupancy in 2012 is primarily based upon the 1976 Point Reyes National Seashore legislation. National Park Service Reservations of Use and Occupancy (RUOs) are created as part of the real property transaction when the United States purchases the underlying land, and the National Park Service does not renew or extend expired RUOs. After the expiration of a National Park Service RUO, continued use and occupancy of the land is possible if a new authorizing instrument can be issued under applicable laws. The National Park Service and the Department of the Interior Solicitor's Office read the 1976 legislation designating Drakes Estero as Potential Wilderness and strengthening the enabling act for Point Reyes National Seashore [P.L. 94-544 (Oct. 18, 1976) and P.L. 94-567 (Oct. 20, 1976), 16 U.S.C. § 1132 note] as eliminating the discretion of the NPS to authorize continued operations through a new authorizing instrument beyond the expiration of the RUO in 2012. In addition to the 1976 legislation, other legal requirements that the NPS has identified that would impact authorization of operations beyond 2012 include the National Environmental Policy Act, the National Park Service Organic Act, the Marine Mammal Protection Act, the Endangered Species Act, and the National Park Service regulations as set forth in Title 36 of the Code of Federal Regulations.

In this legal context, the decision on a renewal of the Reservation of Use and Occupancy for Drakes Bay Oyster Company to continue to oper-

ate in Point Reyes National Seashore is subject to the U.S. Wilderness Act (P.L. 88-577, Sep. 3, 1964), which defines Wilderness as follows:

> A wilderness, in contrast with those areas where man and his own works dominate the landscape, is hereby recognized as an area where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain. An area of wilderness is further defined to mean in this Act an area of undeveloped Federal land retaining its primeval character and influence, without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions and which (1) generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) has at least five thousand acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition; and (4) may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value.
>
> (16 U.S.C. 1131-1136, section 2©)

Regarding prohibited and permitted uses of Wilderness areas, the Wilderness Act states:

> Except as specifically provided for in this Act, and subject to existing private rights, there shall be no commercial enterprise and no permanent road within any wilderness area designated by this Act and, except as necessary to meet minimum requirements for the administration of the area for the purpose of this Act (including measures required in emergencies involving the health and safety of persons within the area), there shall be no temporary road, no use of motor vehicles, motorized equipment or motorboats, no landing of aircraft, no other form of mechanical transport, and no structure or installation within any such area.
>
> (16 U.S.C. 1131-1136, section 4©)

The Wilderness Act goes on to make special provisions regarding use: "the use of aircraft or motorboats, where these uses have already become established, may be permitted to continue subject to such restrictions as the Secretary of Agriculture deems desirable" (16 U.S.C. 1131-1136, section 4(d)(1)) and "[c]ommercial services may be performed within the wilderness areas designated by this Act to the extent necessary for activities which are proper for realizing the recreational or other wilderness purposes of the areas" (16 U.S.C. 1131-1136, section 4(d)(6)).

The Wilderness Act was amended as follows in the Point Reyes Wilderness Act of 1976 (PL 94-544, Oct. 18, 1976):

> SEC. 3. The area designated by this Act as wilderness shall be administered by the Secretary of the Interior in accordance with the applicable provisions of the Wilderness Act governing areas designated by that Act as wilderness areas, except that any reference in such provisions to the effective date of this Act, and, where appropriate, any reference to the Secretary of Agriculture, shall be deemed to be a reference to the Secretary of the Interior.
>
> SEC.4 (a) Amend the Act of September 13,1962 (76 Stat. 538), as amended (16 U.S.C. 459c-6a), as follows: In section 6(a) insert immediately after the words "shall be administered by the Secretary," the words "without impairment of its natural values, in a manner which provides for such recreational, educational, historic preservation, interpretation, and scientific research opportunities as are consistent with, based upon, and supportive of the maximum protection, restoration, and preservation of the natural environment within the area."
>
> (PL 94-544, Oct. 18, 1976)

At the request of the superintendent of the Point Reyes National Seashore and the regional administrator of NPS, the Office of the Solicitor, San Francisco Field Office, in the Department of the Interior prepared memoranda on the status of Johnson Oyster Company (now DBOC) under the terms of sale of the property to NPS and the subsequent Potential Wilderness designation of Drakes Estero under the Point Reyes Wilderness Act of 1976 (PL 94-544, Oct. 18, 1976). The memoranda are reproduced in their entirety on the following pages.

United States Department of the Interior

OFFICE OF THE SOLICITOR
San Francisco Field Office
1111 Jackson Street, Suite 735
Oakland, California 94607

IN REPLY REFER TO:

February 26, 2004

To: Superintendent
Point Reyes National Seashore

From: Field Solicitor
San Francisco Field Office

Re: Point Reyes Wilderness Act

As requested, this memorandum opinion reviews the Point Reyes wilderness situation as it related to the Johnson Oyster Company 40-year Reservation of Use and Occupancy which expires in 2011, or might be terminated sooner for cause or other processes. The Wilderness Act of 1964, and the Point Reyes Wilderness Act of 1976, provide the guidance for implementation of wilderness within the Seashore and are the basis for NPS's obligations to manage the subject land and waters toward conversion of the potential wilderness areas to wilderness status.

In conjunction with the Seashore authorization Act of 1962, the State of California, by 1965 legislation (copy attached), conveyed to the United States all of the right, title and interest of the State in lands one-quarter mile seaward of the mean high tide. More precisely the State granted "all the tide and submerged lands or other lands beneath navigable waters situated within the boundaries of the Point Reyes National Seashore . . . " to the United States. Excepted from this grant and reserved to the State were the "right to fish upon, and all oil, gas and other hydrocarbons in the lands ... together with the right to explore or prospect . . . " within the tidal and submerged lands. However, these reserved rights were not to be "exercised in such manner as to cause ... unnecessary pollution of the coastal waters", and no "well or drilling operations of any kind shall be conducted upon the surface of such lands."

On October 18, 1976, the Point Reyes Wilderness Act designated 25,370 acres as wilderness, and 8003 acres as potential wilderness. Public Law 94-544, Oct. 18, 1976. The area designated as potential wilderness (2811 acres) for area 2 of three areas

included the waters of the Drakes Estero and the adjoining inter-tidal land and upon which Johnson Oyster Farm operates a commercial oyster business.[1] (map attached)

This Congressional designation of the wilderness and potential wilderness (see the House and Senate discussions of the legislation in the Congressional Record -copy attached) was made notwithstanding a September 8, 1976 letter written by John Kyl, Assistant Secretary of the Interior, to James A. Haley, Chairman of the Committee on Interior and Insular Affairs wherein he stated the Department's position on the Point Reyes Wilderness Act. While DOI was largely supportive of the Act, Mr. Kyl's letter said that the Department did not recommend the inclusion of the tidelands extending one-quarter mile offshore within the boundaries of Point Reyes, as granted by the State of California as potential wilderness. According to the Kyl's letter, the State's retention of mineral and fishing rights rendered this area "inconsistent with wilderness." This letter is the only record in the legislative history that raises this point in the area's wilderness and potential wilderness designation. After review of the 1965 State Act, the Wilderness Act, Point Reyes Wilderness Act, case law and present day NPS Directors' orders and Management Policies, it is the view of this office that the remarks in the Kyl letter are not only inaccurate but overridden by the Congressional action, as explained below.

The 1965 State Act is very limited in its two reservations of rights, i.e., public right to fish and severely restricted mineral exploration access, i.e., no surface disturbance of any kind. Both reservations would not conflict with the Secretary converting the potential water area and shore land wilderness acres into designated wilderness. Further, notwithstanding the Departments' letter, the Congress ultimately designated 25,370 wilderness and 8000 potential wilderness acres which exceeded the acreage recommended by the Administration. This reflects that Congress did not heed Mr. Kyl's recommendation and conclusions and enacted its preferred wilderness act.

Addressing the potential wilderness lands and water, the House Report 94-1680, accompanying the eventually enacted Bill (HR 8002) states that it was its intent that there be "efforts to steadily continue to remove all obstacles to the eventual conversion of these lands and waters to wilderness status." (copy attached) The designations are implemented by the Park Service's 2001 Management Policies on wilderness which state that "[I]n the process of determining suitability, lands will not be excluded solely because of existing rights or privileges (e.g., mineral exploration and development, *commercial*

1. It is noted that the State continues to issue to Johnson Oyster Company commercial allotments in Drakes Estero which seem to be in conflict with the 1965 State legislative grant and 1976 Congressional mandate to convert the bays of the Estero into wilderness status. On the other hand, the continued public fishing in the Estero is consistent with the State legislative grant and the conversion to wilderness status.

Further, since the United States owns the tide and submerged lands in Drakes Estero, it clearly follows that permission of NPS is appropriate for commercial activities taking place on those granted lands.

operations...")[2] Further, the Park Service's Management Policies clearly state that the Park Service must make decisions regarding the management of potential wilderness even though some activities may temporarily detract from its wilderness character. The Park Service is to manage potential wilderness as wilderness to the extent that existing non-conforming conditions allow. The Park Service is also required to actively seek to remove from potential wilderness the temporary, non-conforming conditions that preclude wilderness designation. 6.3.1. Wilderness Resource Management, General Policy. (selected excerpts attached)

Hence, the Park Service is mandated by the Wilderness Act, the Point Reyes Wilderness Act and its Management Policies to convert potential wilderness, i.e., the Johnson Oyster Company tract and the adjoining Estero, to wilderness status as soon as the non conforming use can be eliminated. [3]

Ralph G. Mihan

2. See the District Court ruling that past commercial activities, in this case timber harvesting, do not preclude an area's wilderness designation. Minnesota Public Interest Research Group v. Butz, 401 F. Supp. 1276, 1329 (1975)

3. The status of the Johnson Oyster Company will be addressed in a separate document.

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DEC-20-2007 16:33 POINT REYES NATL SEASHORE 415 663 8132 P.02

United States Department of the Interior

OFFICE OF THE SOLICITOR
San Francisco Field Office
1111 Jackson Street, Suite 735
Oakland, California 94607

IN REPLY REFER TO

RECEIVED
Point Reyes
National Seashore
MAR '04

MEMORANDUM

To: Superintendent
Point Reyes National Seashore

February 27, 2004

From: Field Solicitor
San Francisco Field Office

Re: Johnson Oyster Company Property Status

As requested, this office has reviewed the case file pertaining to the long standing non compliance by the Johnson Oyster Company (JOC) with the terms and conditions of its Reservation of Use and Occupancy. ("Reservation")

The Johnson Oyster Company is operating on National Park Service fee land in Point Reyes National Seashore under a 1972 Reservation in which Tom Johnson, as a condition of his sale to the Park Service, reserved the right to operate an oyster farm for 40 years until 2012[1]. For the last many years, the JOC has operated in violation of the agreed upon conditions contained in the Reservation. Some of this property and the adjoining Drakes Estero where the oysters are farmed are currently within designated "potential wilderness" Area 2 and will become "wilderness" upon cessation of JOC's operations. As soon as the property and waters are vacated, NPS would proceed with its conversion to wilderness preservation, as required by the Wilderness Act (16 U.S.C. 1131-1136), and more specifically the Point Reyes Wilderness Act of 1976. (PL 94-544, Oct.18, 1976)

"Potential wilderness" is an area which contains "lands that are surrounded by or adjacent to lands with the wilderness designation but that do not themselves qualify for immediate designation due to temporary, non-conforming, or incompatible conditions." National Park Service Management Policies 2001, Section 6.2.2.1. This designation imposes land management obligations on NPS in that the NPS's 2001 Management Policies direct that the Park seek to remove the non-conforming conditions that preclude wilderness designation.

The October 12, 1972, Charles W. Johnson (Tom Johnson's father) sold his five acres of property for $79,200.00 to the National Park Service. The Reservation

[1] In addition, the National Park Service has issued various special use permits to Mr. Johnson over the years.

retained for the "Vendor, its successors and assigns, a terminable right to use and occupy the ... property ... together with the improvements situated thereon, for a period of 40 years for the purpose of processing and selling wholesale and retail oysters, seafood and complimentary food items, the interpretation of oyster cultivation to the visiting public, and residential purposes reasonably incidental thereto...."

The right to engage in these activities, however, was made contingent upon the satisfaction of various conditions including maintaining the property in a "safe, sanitary, and sightly condition, open to reasonable inspection by the National Park Service, and meeting all Federal, State, and County health, sanitation, and safety standards applicable to operation of and residence within areas engaged in the processing and retail sale of oysters." In addition, the JOC was made responsible for utility services, including sanitation, not committing waste, and complying with all National Park Service rules and regulations. It also precluded constructing any temporary or permanent structures without the approval of the Park Service.

On December 5, 1995, the Superintendent, wrote JOC a letter describing a variety of violations of the conditions of the Reservation, i.e., operating a septic system, water system and buildings in violation of Marin County health and safety codes (Condition 1 of the Reservation); maintaining numerous buildings and trailers that were not authorized by NPS or permitted by Marin County (Condition 5); and erecting structures that were not authorized by NPS or permitted by Marin County (Condition 7).[2] Six months later, on April 10, 1996, the Superintendent sent JOC another letter explaining his noncompliance with the mobile home conditions imposed on JOC in the Reservation. [3]

To date JOC continues to violate the terms of the Reservation. In his most recent communication with Mr. Johnson on September 17, 2003, the Superintendent wrote a letter detailing JOC's continuous violations of the Reservation. The letter notes that required permits have not been obtained, a sewage system was not installed, and design and environmental compliance reviews have expired. The letter also describes other violations found during a recent inspection including water draining into the Estero from JOC's shucking room; the presence of overflowing oil and gas drums; inadequately contained above-ground fuel storage tanks; the careless presence of fuel containers, engines, refrigerators, and other items; operation of essentially a junkyard; and other health and safety violations.

Because JOC operates with major violations of the terms of the Reservation, well documented noncompliance JOC is clearly in breach of contract, which relieves the National Park Service of its obligation to permit JOC to remain on the property until

[2] The letter also described a variety of violations of the conditions of JOC's special use permits for the use of a water-well drilled on Seashore land, and also for parking facilities.

[3] Despite Mr. Johnson's continuous violation of both the terms of his agreements with the National Park Service and Marin County's regulations, the County sought to find a friendly solution that would avoid forcing Mr. Johnson off the property on which he operated JOC. Thus, on January 9, 1997, Marin County and Mr. Johnson entered into a Stipulated Agreement Between the Parties and Order ("Stipulated Agreement") detailing Mr. Johnson's maintenance obligations and specifying the consequences of noncompliance. Marin County Superior Court #165361.

2012.[4] Given the requirements of the Reservation and JOC's failure to satisfy them, the Park Service clearly has the authority to terminate the Reservation and to direct JOC to vacate the property on which it operates.

Removal of JOC from the Point Reyes National Seashore property and its oyster farming from the Estero, would allow the Service to begin the conversion of the area to wilderness status, which directive Congress charged the Park Service to accomplish.

Ralph G. Mihan

[4] In contrast to the Reservation , the Marin County Court approved Stipulated Agreement does specify consequences for failure to comply with its conditions. These consequences are cessation and removal of the offending activity.

Appendix B

Full Statement of Task

STATEMENT OF TASK

An ad hoc committee will be formed to produce two reports on shellfish mariculture in coastal areas. In the first report, the committee will assess the scientific basis for the National Park Service (NPS) presentations and the report (including revisions), "Drake's Estero: A Sheltered Wilderness Estuary," on the ecological effects of the Drake's Bay Oyster Company operations on Drake's Estero, Pt. Reyes National Seashore in California. In carrying out its task, the committee will address the following questions:

- What is the body of scientific studies on the impact of the oyster farm on Drake's Estero, and what have they shown?
- What effects can be directly demonstrated by research conducted in Drake's Estero itself?
- What effects can reasonably be inferred from research conducted in similar ecosystems?
- What conclusions can be drawn from the body of scientific studies, and how do they compare with what the NPS presented to the public? Have these conclusions affected NPS decision making?
- What are the most important subjects for future research to better understand the ecological consequences of anthropogenic influences on the Estero, so as to inform NPS decision making?

For the second report, the committee will develop recommendations for best practices for shellfish mariculture to maintain ecosystem integrity. To this end, the committee will address the following questions:

- What are the ecological effects of mariculture, and how do they vary in magnitude by duration, operation size, harvest intensity, species cultivated, habitat type, and geographic location (e.g., effects on carrying capacity, water clarity, physical disturbance, species shifts, diseases, benthic deposition)?
- What are the uncertainties surrounding these ecological effects?
- How do the ecological effects of mariculture compare with the harvest of wild populations?
- Does shellfish mariculture reduce the harvest pressure on wild populations?
- What are the risks for the spread of nonnative species, and how could these risks be reduced?
- What socioeconomic factors influence the size and location of shellfish mariculture activities (e.g., "not in my backyard" [NIMBY] issues, economic parameters [permitting/leases for seabed, price stability, labor, transportation], local traditions)?
- What are the most important subjects for future research to better understand and manage the ecosystem responses to mariculture operations?

The report will identify best management practices that could be employed to enhance the benefits of shellfish mariculture and minimize any negative ecological effects.

Appendix C

Agenda: Meeting of the Committee on Best Practices for Shellfish Mariculture and the Effects of Commercial Activities in Drakes Estero, Pt. Reyes National Seashore, California

Acqua Hotel
Mill Valley, CA
September 4-5, 2008

Thursday, September 4

10:00 AM	Welcome and introductions—Pete Peterson, chair, and Susan Roberts and Jodi Bostrom, study directors
10:15 AM	Request for NRC study—Jon Jarvis, National Park Service
10:30 AM	Models for harbor seal counts in Drakes Estero—Ben Becker, National Park Service
11:00 AM	Request for NRC study: issues of concern—Corey Goodman, Marshall, CA
11:45 AM	Discussion
12:00 PM	WORKING LUNCH – Discussion of morning presentations
1:00 PM	Potential Effects of Oyster Mariculture on the Natural Resources of Drakes Estero—John Dixon, California Coastal Commission
1:30 PM	Drakes Estero Mariculture, Past and Present, a California Department of Fish and Game Perspective—Tom Moore, California Department of Fish and Game

2:00 PM	Marine Mammal Population Monitoring—Grey Pendleton, Alaska Department of Fish and Game (joining by teleconference)
2:30 PM	The Oceanography of Drakes Estero – Residence Times, Flushing and Fluxes – Towards an Estimate of Carrying Capacity—John Largier, Bodega Bay Marine Laboratory
3:00 PM	BREAK
3:30 PM	Connections among Shellfish Mariculture, Seagrass, and Invasive Species—Susan Williams, Bodega Bay Marine Laboratory
4:00 PM	Experimental Determination of the Ecological Impacts of Commercial Oyster Mariculture on Eelgrass and Invertebrate Communities in Humboldt Bay, CA—Steve Rumrill, South Slough National Estuarine Research Reserve
4:30 PM	Responses to presentations from Ben Becker and Corey Goodman
5:00 PM	Discussion and public comments
6:00 PM	Meeting adjourns for the day

Friday, September 5

Field trip to Pt. Reyes

8:30 AM	Drakes Bay Oyster Company, Pt. Reyes National Seashore
	Boat tour of Drakes Estero and walking tour of Drakes Bay Oyster Company
12:30 PM	Adjourn open session

Appendix D

Tabulated Summary of Reported Values of Harbor Seal Flushing Distances

Disturbance Source	Mean (m)	SD	Range (m)	Habitat Type	Reference
Powerboat	No Data	No Data	<100–300	Small Estuary	Allen et al., 1984
Powerboat	144	No Data	28-260	Island Archipelago	Suryan and Harvey, 1999
Powerboat	80	No Data	No Data	Glacial Fjord	Mathews, 1996
Powerboat	105	105	No Data	Glacial Fjord	Lewis and Mathews, 2000
Stationary Powerboat	191	125	27–371	Island Archipelago	Johnson and Acevedo-Gutierez, 2007
Motor yacht	533	No Data	100–1150	Large Estuary	Brasseur and Reijnders, 1994[a]
Rubber Dinghy	350	No Data	70–650	Large Estuary	Brasseur and Reijnders, 1994[a]
Cruise Ship	200	No Data	<100–850	Glacial Fjord	Nansen et al., 2006[a]
Cruise Ship	123	No Data	No Data	Glacial Fjord	Mathews, 1996
People	No Data	No Data	<100–200	Small Estuary	Allen et al 1984
People	200	No Data	10–400	Large Estuary	Brasseur and Reijnders, 1994[a]
People	142	135	No Data	Glacial Fjord	Lewis and Mathews, 2000

[a]values estimated from figures

Appendix E

Shellfish High Health Program Guideline: A Voluntary Program for Producers of Live Shellfish

Reprinted with permission from Ralph Elston, Ph.D., of the Pacific Shellfish Institute

January 2004
Pacific Coast Shellfish Growers Association
120 State Avenue, N. E. #142
Olympia, Washington 98501-8212
Prepared by
Ralph Elston, PhD
Pacific Shellfish Institute
Olympia, Washington
Under grant NA86FD0262,
High Health Management of Pacific Oysters

from National Marine Fisheries Service
U.S. Department of Commerce
Saltonstall-Kennedy Program.

1.0 Purpose of the Shellfish High Health Program Guidelines

1.1 *These Shellfish High Health program guidelines are provided for producers of live shellfish larvae, seed, brood stocks or other products that are exported and placed in receiving waters.* Implementation of a Shellfish High Health program by an individual producer is voluntary. The purpose of implementing such a program for individual producer/exporters is to facilitate the process of obtaining import permits for live shellfish products from

governments of importing countries or states and to reduce the risk of spreading infectious shellfish diseases.

1.2 We expect that the Pacific Coast Shellfish Growers Association (P.C.S.G.A.) Shellfish High Health Program guidelines to be endorsed by the Animal and Plant Health Inspection Service (A.P.H.I.S.) of the United States Department of Agriculture (U.S.D.A.). The U.S.D.A. is the federal agency responsible for negotiating the terms of bilateral trade agreements with trading partners of the United States in regard to live animal products. Under such agreements, the U.S.D.A. is recognized by foreign governments as the competent authority to provide assurance of health certification for U.S. export products. Such certification ensures that producers will have access to markets in countries or trading blocks that have established trade agreements with the United States. In addition, such certification should facilitate interstate transfer of live shellfish stocks to be placed in receiving waters.

1.3 The High Health Program is based upon regular surveillance of shellfish health, ongoing health documentation and the use of procedures that promote shellfish health. The framework High Health Program is designed to accomplish are the following:

1.3.1 Prevent the dissemination of certifiable infectious shellfish diseases with exported shellfish products.

1.3.2 Ensure free flow of healthy brood stocks, larvae and seed between health certified production facilities and participating countries by meeting or exceeding shellfish health regulatory requirements for the exportation of live shellfish from producer locations to other states or countries.

1.3.3 Increase and maximize production efficiency by proactive health management.

1.4 The High Health Program guidelines will be reviewed periodically by the Pacific Coast Shellfish Growers Association to ensure that the guidelines meet the Association's goals for high health shellfish.

2.0 Components and Implementation of a Shellfish High Health Program

2.1 ***Participating producers.*** The Pacific Coast Shellfish Growers Association will maintain a list of voluntary participants in its Shellfish High Health program. It will be the responsibility of the individual producers to establish their own Shellfish High Health Program using these guidelines and to establish approval of their program and stocks by the U.S.D.A.

2.2 ***Health certifications, records and documentation.*** Participating shellfish producers will maintain an ongoing historical record of the

health of its shellfish, based on regular health examinations. These records will establish a documented disease free history which is the basis of qualifying as an exporter to many countries and states.

2.3 ***Examination for certifiable shellfish diseases.*** Certifiable or reportable shellfish diseases are specified by state governments in the United States. In addition, recommendations may be provided by federal agencies and made by international advisory bodies such as the Organization Internationale Epizooties (OIE). The required frequency of shellfish health examinations is specified in some states in which members of the P.C.S.G.A. operate. In addition the sampling sensitivity (number of shellfish to need to be sampled and frequency of sampling to establish a disease free certification) may be similarly specified. The ability to export live shellfish to specific foreign countries may be dependent on meeting shellfish health certification requirements negotiated with that country or trading block by the competent authority (A.P.H.I.S. of the U.S.D.A.) of the United States.

2.4 ***Brood Stock Management.*** A key objective of the Shellfish High Health program is the protection of brood stock holding areas to maintain their health status and to prevent the introduction of exotic infectious diseases to these areas. A brood stock health management program must have the following components.

2.4.1 Dedicated areas. Dedicated areas will be used for brood stock maintenance. Each cultured species of shellfish must be held in a defined and localized area clearly demarcated for brood stock and not used for other purposes. Dedicated areas will be selected to minimize any potential means of accidental introduction of infectious shellfish diseases.

2.4.2 Limited entry. Entry of any new cultured animal stocks to brood stock holding areas is very limited and managed very conservatively. Any proposed shellfish introductions to the brood stock holding area or to a location close enough to the brood stock holding area to present a risk of disease transfer into the holding area must have a disease free health history and undergo a certification evaluation, consistent with applicable regulatory requirements and company policy.

2.4.3 Ongoing health surveillance. A program of ongoing health characterization and evaluation is conducted for each brood stock holding area consisting of regular health certification of brood stock in these areas.

2.4.4 Health records. An historical log of health certification and surveillance records is maintained for each brood stock holding area.

3.0 Hatchery and Nursery Operations Protocols

Hatchery and nursery production facilities producing exported shellfish must be managed to exclude certifiable infectious diseases. A program of health management to accomplish this goal will include the following components.

3.1 ***Disease free water sources.*** Hatchery and nursery facilities and brood stock holding areas must be operated in or use waters free of certifiable shellfish diseases. Sea water disinfection systems may be used to accomplish the goal of a disease free water source.

3.2 ***Integrity of brood stocks in the hatchery.*** Brood stocks must be managed in the hatchery so they do not contact brood or offspring from any uncertified areas or from areas certified to a lower standard. Similar isolation requirements apply to larvae and seed offspring.

3.3 ***Operations protocols.*** Facilities, at their option, may use health related protocols for the following operations, if needed to maintain freedom from certifiable diseases, or otherwise enhance the health of shellfish stocks.

3.3.1 Management of primary and expanded algal stocks
3.3.2 Spawning management of brood stock
3.3.4 Larval rearing management
3.3.5 Setting management
3.3.6 Water quality maintenance
3.3.7 Disinfection and sanitation procedures
3.3.8 Infectious disease vector control
3.3.9 Carcass disposal
3.3.10 Employee training
3.3.11 Visitor access

3.4 ***Hatchery records related to health management.*** Records are maintained that document any control point or operation required to exclude infectious diseases from hatchery stocks.

4.0 Response Plan for Infectious Disease Outbreaks

The Shellfish High Health program is designed to exclude the introduction of certifiable infectious diseases to areas where shellfish for export are reared. Since infectious diseases can be introduced by natural means or other means outside of the control of a producer, the following response plan is in place in case of a significant infectious disease outbreak. This plan will be put in place if a certifiable disease is found or a new and significant infectious disease occurs with mortality not attributable to non-infectious causes exceeding a rate set by the pertinent regulatory authority. The response plan will consist of the following actions:

4.1 Confirmation of the infectious disease diagnosis.

4.2 Required notification of the responsible regulatory authorities of the disease outbreak.

4.3 Establishment of a disease containment area including containment and/or disinfection procedures to prevent the movement of infected shell stock, equipment and contaminated materials out of the disease affected area.

4.4 Disinfection of contaminated culture water from any affected hatchery or nursery facilities.

4.5 Adequate disposal of dead shell to prevent dissemination of infectious disease organisms with such stock.

4.6 Destruction of infected stocks, if required to contain the disease, or if required by the regulatory authority.

4.7 Determination of the source of the infectious disease agent, in collaboration with appropriate regulatory agencies, and implementation of a plan to eliminate any continuing source of the disease agent introduction, if needed.

4.8 Establishment of a monitoring and continuing response plan for the infectious disease and determination of needed continuing action, in conjunction with the appropriate regulatory agency.

Appendix F

Committee and Staff Biographies

COMMITTEE

Charles (Pete) Peterson *(Chair)* is an Alumni Distinguished Professor in the Institute of Marine Sciences at the University of North Carolina at Chapel Hill. Dr. Peterson earned a Ph.D. in biology from the University of California, Santa Barbara, in 1972. His research can be characterized as interdisciplinary marine conservation ecology. His specializations involve marine benthic ecology, including the importance and nature of predation and intra- and inter-specific competition in benthic communities and the role of resource limitation in suspension-feeding bivalve populations. He also conducts research in paleoecology, invertebrate fisheries management, estuarine habitat evaluation, and barrier island ecology. Dr. Peterson has served on numerous NRC committees.

Barry Costa-Pierce is the director of the Rhode Island Sea Grant College Program and a joint professor of fisheries, aquaculture and oceanography at the University of Rhode Island. Dr. Costa-Pierce earned a Ph.D. in oceanography from the University of Hawaii. His research focuses on capture-based aquaculture systems; on the environmental impacts and systems ecology of aquaculture ecosystems; and on the development of scientifically credible sustainability indices for mariculture projects worldwide. Dr. Costa-Pierce is on the Board of Directors of the World Aquaculture Society and is also one of the four international editors of *Aquaculture*.

Brett Dumbauld is an ecologist at the Agricultural Research Service of the U.S. Department of Agriculture. Dr. Dumbauld earned a Ph.D. in fisheries from the University of Washington. His research focuses on solving the problem shellfish growers have with burrowing shrimp and investigating the role of shellfish aquaculture in the estuarine environment. He is a member of the National Shellfisheries Association, the Coastal and Estuarine Research Federation, the Pacific Estuarine Research Society, and the Society for Conservation Biology.

Carolyn Friedman is an associate professor in the School of Aquatic and Fishery Sciences at the University of Washington. Dr. Friedman earned a Ph.D. in comparative pathology from the University of California, Davis. Her research focuses on the examination of infectious and non-infectious diseases of wild and cultured marine invertebrates and on the conservation of marine invertebrates, particularly abalone. More specifically, she investigates the mass mortality of the Pacific oyster (*Crassostrea gigas*) on the west coast of the United States and the herpes-like viral infection of Pacific oysters.

Eileen Hofmann is a professor of oceanography in the Center for Coastal Physical Oceanography at Old Dominion University. Dr. Hofmann earned a Ph.D. in marine science and engineering from North Carolina State University. Her research focuses on the analysis and modeling of biological and physical interactions in marine ecosystems and descriptive physical oceanography. She served on the Ocean Studies Board and on numerous NRC committees, including the Committee on Strategic Advice on the U.S. Climate Change Science Program.

Hauke Kite-Powell is a research specialist at the Marine Policy Center of the Woods Hole Oceanographic Institution. Dr. Kite-Powell earned his Ph.D. in ocean systems management from the Massachusetts Institute of Technology. His research focuses on public and private sector management issues for marine resources and the economic activities that depend on them. His current research projects include the policy issues surrounding use of ocean space for non-traditional activities, such as aquaculture and wind power; the potential of shellfish aquaculture to contribute to nutrient level management in coastal water bodies; the economics and management of marine aquaculture operations; and the environmental and ecological implications of long-term growth in marine aquaculture industries. Dr. Kite-Powell served on the NRC Committee on Assessment of Technical Issues in the Automated Nautical Chart System.

Donal Manahan is a professor of biological sciences at the University of Southern California. Dr. Manahan earned a Ph.D. in marine biology from the University of Wales, Bangor. His research focuses on animal environmental physiology; biological adaptations to temperature and food; marine biology of temperate, polar, tropical, and deep-sea species; Antarctic marine biology; hydrothermal vent biology; developmental biology; evolutionary biology; marine invertebrate life history; larval ecology; and aquaculture. Dr. Manahan has served on NRC committees and as the Chair of the Polar Research Board.

Francis O'Beirn is the benthos ecology team leader at the Marine Institute in Galway, Ireland. Dr. O'Beirn earned a Ph.D. in Zoology from the University of Georgia. His research interests focus on benthic ecology and monitoring, bivalve biology, as well as finfish and shellfish mariculture. He sits on a number of advisory committees responsible for licensing of marine activities in Ireland. He is currently the Chair of the International Council for Exploration of the Seas' (ICES) Working Group on Environmental Interactions of Mariculture and is the Irish delegate to the ICES mariculture committee. Dr. O'Beirn also has experience with shellfish mariculture and habitat restoration in the Chesapeake Bay area and the southeastern United States.

Robert Paine is a professor emeritus in the Department of Biology at the University of Washington. Dr. Paine earned a Ph.D. from the University of Michigan in 1961. His research focuses on experimental ecology of organisms on rocky shores, interrelationships between species in an ecosystem, and the organization and structure of marine communities. He has examined the roles of predation and disturbance in promoting coexistence and biodiversity. Dr. Paine is a member of the National Academy of Sciences and was a member of the Ocean Studies Board. He has served on numerous NRC committees, including the Committee on Ecosystem Effects of Fishing.

Paul Thompson has a Personal Chair in Zoology in the University of Aberdeen's School of Biological Sciences, and is Director of the Lighthouse Field Station, Cromarty, Scotland, which he set up in 1989. Dr. Thompson earned a Ph.D. in marine mammal ecology from the University of Aberdeen. He has been researching marine mammal behavior and ecology, including harbor and gray seals, for 20 years. His current research aims to assess how natural and anthropogenic environmental variations influence the behavior, physiology, and dynamics of marine mammal and seabird populations. Topics of particular interest have included interactions between wildlife populations and fisheries, the impact of

disturbance and contaminants on marine mammal biology, seal foraging and breeding strategies, and the effects of changing prey stocks and climate change on the population dynamics of marine top predators. Dr. Thompson is a member of the International Union for the Conservation of Nature's Seal Specialist Group, the Scottish Association of Marine Sciences, among others.

Robert Whitlatch is a professor of Marine Sciences at the University of Connecticut. He earned a B.S. in Zoology, an M.S. in Marine Sciences, and a Ph.D. in Evolutionary Biology from the University of Utah, the University of the Pacific, and the University of Chicago, respectively. Dr. Whitlatch is a benthic ecologist interested in animal–sediment relationships, trophic dynamics of deposit-feeding invertebrates, life history analysis, shellfish ecology, the ecology of invasive species, and community ecology. He has worked extensively on both oyster reef biology and on the ecology of nonnative species in coastal New England. Dr. Whitlatch served on the NRC's Committee on Nonnative Oysters in the Chesapeake Bay.

STAFF

Susan Roberts became the director of the Ocean Studies Board in April 2004. Dr. Roberts received her Ph.D. in marine biology from the Scripps Institution of Oceanography. She worked as a postdoctoral researcher at the University of California, Berkeley and as a senior staff fellow at the National Institutes of Health. Dr. Roberts' past research experience has included fish muscle physiology and biochemistry, marine bacterial symbioses, and developmental cell biology. She has directed a number of studies for the Ocean Studies Board including *Nonnative Oysters in the Chesapeake Bay* (2004); *Decline of the Steller Sea Lion in Alaskan Waters: Untangling Food Webs and Fishing Nets* (2003); *Effects of Trawling & Dredging on Seafloor Habitat* (2002); *Marine Protected Areas: Tools for Sustaining Ocean Ecosystems* (2001); *Under the Weather: Climate, Ecosystems, and Infectious Disease* (2001); *Bridging Boundaries Through Regional Marine Research* (2000); and *From Monsoons to Microbes: Understanding the Ocean's Role in Human Health* (1999). Dr. Roberts specializes in the science and management of living marine resources.

Jodi Bostrom is an associate program officer with the Ocean Studies Board. She earned an M.S. in environmental science from American University in 2006 and a B.S. in zoology from the University of Wisconsin-Madison in 1998. Since starting with the Ocean Studies Board in May 1999, Ms. Bostrom has worked on several studies pertaining to coastal

restoration, fisheries, marine mammals, nutrient over-enrichment, ocean exploration, capacity building, and marine debris.

Heather Chiarello is a senior program assistant with the Ocean Studies Board. She graduated Magna Cum Laude from Central Michigan University in 2007 with a B.S. in political science with a concentration in public administration. Ms. Chiarello joined the National Academies in July 2008.

EXHIBIT

9

Park News

National Park Service
U.S. Department of the Interior

Point Reyes National Seashore

Drakes Estero

Photo © Robert Campbell

A Sheltered Wilderness Estuary

The waters of Drakes Estero were designated by Congress as potential wilderness by the 1976 Point Reyes Wilderness Act (Public Law 94-544). It designated 25,370 acres as wilderness, and 8,002 acres of potential wilderness. This is the only federal marine coastal wilderness from Washington State to the Mexican Border. Only 11 marine wilderness areas exist in the US.

250 seals nursed more than 100 pups two years ago, have around 50 total seals including around 25 pups in 2007, an 80% decline.

Non-native species can have profound effects on ecosystems by changing ecosystem structure, function, species abundance, and community composition. The introduction of non-native, invasive species by oyster operations has been documented for decades in Marin County (Bonnot 1935, Carlton 1992, Cohen and Carlton 1998) and is a major concern (California Department of Fish and Game 2001). Carlton (1992) summarized the introduction of 28 non-native species of mollusk into estuaries in the Pacific by oyster operations. Hard structures used to cultivate oysters provide habitat that would not otherwise exist, supporting non-native invertebrates and fish. Examples of non-native species introduced into Drakes Estero include gem clam, green crab, slipper snail, Japanese oyster drill, Atlantic oyster drill and *Batillaria*.*attramentaria* The non-native *Batillaria*, a gastropod, was introduced with Japanese oysters to California and was documented to displace the native confamillial species in northern California (Byers 1999). This invasive gastropod was found in Drakes Estero (Byers, pers. com.; Press, pers. com.). Elliott-Fisk et al. (2005) noted that "the marine invertebrate fouling community of sessile organisms could be properly characterized as "introduced" and "invasive" due to lack of hard, shallow water substrate in Drakes Estero. This community is present and associated with the oyster farming operation in Schooner Bay, but nearly non-existent in Estero de Limantour."

One, invasive, non-native species found on oyster farming structures in Drakes Estero was the colonial tunicate (*Didemnum spp.*), a highly aggressive, invasive species that could alter Drakes Estero ecology. "In the Northwest Atlantic, a closely related species has covered 50-90% of the George's Bank. Such coverage can smother organisms living on the bottom and in the sediment, and block the settlement of larvae (http://www.sfei.org/). A small infestation of the species was also found on natural sandstone habitat at Bull Point in May of 2007. Removal of oyster racks in Drakes Estero would eliminate habitat for this invasive species.

Harbor seals resting on sand bar. Photo by Jamie Hall.

Synopsis of Drakes Estero

Natural Resource Significance

- Only congressionally designated coastal bay wilderness area in the western United States, south of Alaska.
- Adjacent Estero de Limantour is a recognized as a Marine Reserve by the state of California.
- One of only a few sites with significant eelgrass beds which are specially protected by California and critical for many species, including spawning fish, over wintering Black Brandt, and invertebrates.
- A Western Hemisphere Shorebird Reserve Network, identified as significant for the conservation of shorebirds in the Southern Pacific Shorebird Conservation Plan.
- PRBO identified over 100 species of birds during winter surveys in 1999 and 2000, including several listed species or species of special concern such as Osprey, White Pelican, Brown Pelican, Peregrine Falcon, Black Brant, and Marbled Murrelet.
- The estuary is very important to over-wintering Black Brant that only migrate to a few places along the Pacific Flyway.
- The estero is important to resident and spawning fish where they are associated with eelgrass beds and benthic sediment. The federally listed steelhead trout spawns in the Schooner Bay tributary.
- Harbor seal population is one of the largest in the state of California and the largest in Marin County, with as many as 2,000 breeding/molting individuals and 300-500 pups, annually.

Oyster farming impacts on the ecological communities of Drakes Estero

- A USGS researcher stated that a source for sediment fill in the estero was from oyster feces and from structures trapping sediment.
- Eelgrass beds are found in all suitable habitats within Drakes Estero, except between active oyster racks, where they do not exist due to shading and possibly other effects. In 2003, with 38 active oyster racks, this amounted to at least 1.5 acres of lost eelgrass cover
- Oyster racks and bags provide structural habitat that does not naturally occur in the estero except in limited areas. The equipment and structures change the community composition and abundance of species and provide habitat for invasive, non-native species.
    - Invasive organisms were found on the hard substrates provided by the oyster racks in Schooner Bay. These organisms were limited in Estero de Limantour where no oyster facilities exist.
    - The invasive non-native species, *Didemnum spp.,* is commonly present on oyster racks and is a highly aggressive, invasive species that could alter Drakes Estero ecology.
    - Schooner Bay, where there are many oyster racks, supported a different fish community than Estero de Limantour where no mariculture occurs.
- Clam abundance is reduced under oyster racks, possibly due to changes in bottom sediment composition or increased predation by fish and decapod crustaceans attracted to the oyster racks. In parts of Drakes Estero, clams are found in extremely high densities away from oyster racks - up to 250 per meter squared.
- The oyster operation is a potential source for many invasive species because non-native species hitchhike on oysters and equipment that are brought to the estero.
- Placement of oyster bags and racks in intertidal mudflats and sand bars displace wildlife such as shorebirds and harbor seals because of spatial coverage of racks and disturbance by oyster operations. In 2007, oyster bags and disturbance have reduced one sub colony by 80%

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EXHIBIT

10

Acknowledgment of corrections to previous versions of the Park News document “Drakes Estero – A Sheltered Wilderness Estuary”

Research conducted by Dr. Roberto Anima of the U.S. Geological Survey in Drakes Estero in the late 1980s resulted in a report to the National Park Service (Anima 1990) and a U.S. Geological Survey report (Anima 1991). The NPS incorrectly interpreted the report by Dr. Roberto Anima (1990) stating that he had detected oyster feces and pseudofeces in sediment core samples, that he estimated the amount of fecal matter produced by oyster rafts, and that he considered oyster farming as the primary source of sedimentation in the estero. Instead, Anima (1991; page 92) states that “Because they are filter feeders, the oysters being grown and harvested in the estero play an important role in the deposition of fine grained sediment". Although, Anima did not quantify sedimentation related to the oyster farming, he references another study - "Ito and Imai (1955) calculated that in Japanese waters a raft of oysters 60 m square would annually produce 0.6 to 1.0 metric tons (dry weight) of fecal material."

Fish research in Drakes Estero conducted by Jesse Wechsler, a geography graduate student at UC Davis, resulted in his Master’s thesis (Wechsler 2004) and contributed to a report to the National Park Service (Elliott-Fisk 2005). The NPS incorrectly interpreted that the Estero de Limantour supports a different fish community than Schooner Bay. To clarify, the fish found at sampling sites in Estero de Limantour were most different from sites associated with the oyster racks in Schooner Bay, not the entirety of Schooner Bay. Although not tested for statistical significance, Wechsler reports that “Four of the five indices used to asses the similarity of the fish assemblage showed the greatest compositional divergence was between Estero de Limantour and Schooner Adjacent”.

NPS acknowledges the errors and will periodically update information when corrections and new information are available.

EXHIBIT

11

Shellfish Mariculture in Drakes Estero, Point Reyes National Seashore, California

Committee on Best Practices for Shellfish Mariculture
and the Effects of Commercial Activities in
Drakes Estero, Pt. Reyes National Seashore, California

Ocean Studies Board

Division on Earth and Life Studies

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Accuracy of the Scientific Conclusions Released by NPS to the Public

The Point Reyes National Seashore produced one major document on the science of Drakes Estero, including conclusions about the impacts of DBOC, for public release in four successive versions, all entitled *Drakes Estero: A Sheltered Wilderness Estuary* (2006b; 2007a; 2007b; 2007c). According to the Department of the Interior Inspector General's report (DOI, 2008), *Drakes Estero: A Sheltered Wilderness Estuary* was prepared in part to respond to an article in the Point Reyes Light and other inquiries regarding the effects of the oyster farm on Drakes Estero and the termination of the current lease (RUO) in 2012. This document was released first as a Park News "information piece" (pdf and printed copies) in October 2006 (Box 4) and subsequent versions were posted on the Point Reyes National Seashore website. The committee received four discrete public versions of *Drakes Estero: A Sheltered Wilderness Estuary*. The last version released to the public was available on the Point Reyes National Seashore internet site on May 11, 2007, and was removed from the site on July 23, 2007. In addition, the Point Reyes National Seashore released one related document on July 25, 2007 (Acknowledgement of Corrections [NPS, 2007e]) and another (Clarification of Law, Policy, and Science on Drakes Estero [NPS, 2007d]) on September 18, 2007, to the Marin County Board of Supervisors that also reviewed the science on effects of DBOC on the ecosystem of Drakes Estero, which contained further modifications of NPS scientific conclusions. Whether NPS made appropriate use of available scientific information on potential impacts of the oyster culture operation on the ecosystem of Drakes Estero has been the subject of controversy, only par-

BOX 4
Timeline for Events Related to *Drakes Estero: A Sheltered Wilderness Estuary*
(Dates taken primarily from DOI, 2008)

May 18, 2006	Point Reyes Light article claiming DBOC has little impact on estero based on the Elliot-Fisk et al. (2005) report
October 28, 2006	Superintendent Neubacher gave copies of *Drakes Estero: A Sheltered Wilderness Estuary* (version I; NPS, 2006b) to Gordon Bennett, Sierra Club. Copies were also available to the public at this time.
February 9, 2007	*Drakes Estero: A Sheltered Wilderness Estuary* (version II; NPS, 2007a) first posting on NPS website
May 8, 2007	*Drakes Estero: A Sheltered Wilderness Estuary* (version III; NPS, 2007b) (date downloaded – date of posting unknown)
May 8, 2007	Marin County Board of Supervisors Meeting
May 11, 2007	*Drakes Estero: A Sheltered Wilderness Estuary* (version IV; NPS, 2007c)
May 15, 2007	Letter to NPS from California Department of Fish and Game documenting NPS authority over Drakes Estero (including leased bottom)
July 23, 2007	*Drakes Estero: A Sheltered Wilderness Estuary* removed from NPS website
July 25, 2007	NPS posts "Acknowledgement of Corrections" (NPS, 2007e)
September 18, 2007	NPS issues "Clarification Statement" (NPS, 2007d)
November 2007	California Coastal Commission Consent Order signed by Kevin Lunny, DBOC
April 22, 2008	NPS Special Use Permit signed by Kevin Lunny, DBOC

tially addressed in the Inspector General's report (DOI, 2008). Here, the committee compares its conclusions on potential impacts (the available science) to what NPS reported in their multiple versions of *Drakes Estero: A Sheltered Wilderness Estuary* and the "Corrections" and "Clarification" documents.

While NPS in all versions of *Drakes Estero: A Sheltered Wilderness Estuary* accurately depicted the ecological significance and conservation value of Drakes Estero, in several instances the agency selectively presented,

over-interpreted, or misrepresented the available scientific information on potential impacts of the oyster mariculture operation. Consequently, *Drakes Estero: A Sheltered Wilderness Estuary* did not present a rigorous and balanced synthesis of the mariculture impacts. Overall, the report gave an interpretation of the science that exaggerated the negative and overlooked potentially beneficial effects of the oyster culture operation. NPS has issued two documents correcting and clarifying *Drakes Estero: A Sheltered Wilderness Estuary*—"Acknowledgment of Corrections to Previous Versions of the Park News Document *Drakes Estero: A Sheltered Wilderness Estuary*," posted on July 25, 2007 (NPS, 2007e), and the September 18, 2007 document, "National Park Service Clarification of Law, Policy, and Science on Drakes Estero" (NPS, 2007d). The Clarification document represents the most accurate NPS release of science relating to mariculture impacts, although it does not fully reflect the conclusions of this committee. It appears that hasty responses to local stakeholder concerns by NPS led to the publication of inaccuracies and a subsequent series of retractions and clarifications during this process from 2007–2008, which cast doubt on the agency's credibility and motivation. A lack of coordination among the multiple agencies regulating the mariculture operation also gave mixed messages to stakeholders, fueling the controversy. For example, the extension in 2004 of the DBOC shellfish leases until 2029 by the California Fish and Game Commission sent a message that could be construed as conflicting with the Department of the Interior Office of the Solicitor's interpretation of the congressional mandate for designating Wilderness in the Point Reyes National Seashore, which would prohibit the extension of the lease beyond 2012. The California Fish and Game Commission did, however, stipulate termination of the leases if the RUO was not extended. The committee describes below the major scientific conclusions presented by NPS and how these conclusions change among the various NPS public releases.

- Version I (released in October 2006) of *Drakes Estero: A Sheltered Wilderness Estuary* reports that Anima (1990) "documented substantial sediment inputs of the pseudo-feces from the oysters." All four of the public versions of *Drakes Estero: A Sheltered Wilderness Estuary* make similar statements, with the last (version IV downloaded on May 11, 2007) stating that Anima (1990) "identified pseudo feces of oysters as the primary source of sediment fill." In fact, Anima (1990, 1991) does not report any direct observations of oyster pseudofeces or feces in the sediments. The Acknowledgment of Corrections (July 2007) and Clarification (September 2007) documents admit the error in the characterization of Anima's studies in *Drakes Estero: A Sheltered Wilderness Estuary* and retracts those claims. In the Clarification document, NPS uses scientific literature on effects of

over-interpreted, or misrepresented the available scientific information on potential impacts of the oyster mariculture operation. Consequently, *Drakes Estero: A Sheltered Wilderness Estuary* did not present a rigorous and balanced synthesis of the mariculture impacts. Overall, the report gave an interpretation of the science that exaggerated the negative and overlooked potentially beneficial effects of the oyster culture operation. NPS has issued two documents correcting and clarifying *Drakes Estero: A Sheltered Wilderness Estuary*—"Acknowledgment of Corrections to Previous Versions of the Park News Document *Drakes Estero: A Sheltered Wilderness Estuary*," posted on July 25, 2007 (NPS, 2007e), and the September 18, 2007 document, "National Park Service Clarification of Law, Policy, and Science on Drakes Estero" (NPS, 2007d). The Clarification document represents the most accurate NPS release of science relating to mariculture impacts, although it does not fully reflect the conclusions of this committee. It appears that hasty responses to local stakeholder concerns by NPS led to the publication of inaccuracies and a subsequent series of retractions and clarifications during this process from 2007–2008, which cast doubt on the agency's credibility and motivation. A lack of coordination among the multiple agencies regulating the mariculture operation also gave mixed messages to stakeholders, fueling the controversy. For example, the extension in 2004 of the DBOC shellfish leases until 2029 by the California Fish and Game Commission sent a message that could be construed as conflicting with the Department of the Interior Office of the Solicitor's interpretation of the congressional mandate for designating Wilderness in the Point Reyes National Seashore, which would prohibit the extension of the lease beyond 2012. The California Fish and Game Commission did, however, stipulate termination of the leases if the RUO was not extended. The committee describes below the major scientific conclusions presented by NPS and how these conclusions change among the various NPS public releases.

- Version I (released in October 2006) of *Drakes Estero: A Sheltered Wilderness Estuary* reports that Anima (1990) "documented substantial sediment inputs of the pseudo-feces from the oysters." All four of the public versions of *Drakes Estero: A Sheltered Wilderness Estuary* make similar statements, with the last (version IV downloaded on May 11, 2007) stating that Anima (1990) "identified pseudo feces of oysters as the primary source of sediment fill." In fact, Anima (1990, 1991) does not report any direct observations of oyster pseudofeces or feces in the sediments. The Acknowledgment of Corrections (July 2007) and Clarification (September 2007) documents admit the error in the characterization of Anima's studies in *Drakes Estero: A Sheltered Wilderness Estuary* and retracts those claims. In the Clarification document, NPS uses scientific literature on effects of

oyster biodeposition into sediments and quotes from independent scientific experts to reach reasonably substantiated conclusions about sedimentation effects that match those reached by this committee. Specifically, NPS concludes that any biodeposits from feeding oysters must necessarily fall to the estuarine bottom and to some undocumented extent become incorporated into the bottom sediments with a potential for inducing sedimentary anoxia under conditions of high shellfish stocking densities. The Clarification notes that the sediment cores taken under the racks in a subsequent study (Harbin-Ireland, 2004; Elliott-Fiske et al., 2005) did not show evidence of hypoxia, but NPS also suggests that these results from 2003 may not be representative of current conditions given the steady and substantial increase in oyster culturing activities from 2000 to 2007 (see Figure 6).

- All versions of *Drakes Estero: A Sheltered Wilderness Estuary* cite Anima (1990) in support of the conclusion that "pseudofeces of oysters are the primary source of sediment fill." In fact, Anima (1990, 1991) does not make any observations on rate of sedimentation from oyster pseudofeces or compare those rates to other sources of sedimentation. Erosion of sediments from grazed pastures and deposition of eelgrass detritus represent potentially important additional sources of sedimentation. The Clarification document correctly states that Anima did not make any measurements of sedimentation rate from oyster biodeposits and further qualifies Anima's (1990, 1991) statement as expert opinion that fine sediments deposited by oysters beneath the racks were likely resistant to erosion because tidal action would be limited in the upper reaches of the estero. In contradiction to Anima's opinion, Harbin-Ireland (2004) demonstrated that sediments underneath oyster culture racks are slightly coarser not finer than those at distance from the racks. This potentially conflicting observation is not presented by NPS in discussing the sedimentation issue in the Clarification document.

- Each version of *Drakes Estero: A Sheltered Wilderness Estuary* cites Harbin-Ireland (2004) and Elliott-Fisk et al. (2005) in support of the claim that "eelgrass growth is severely restricted under active oyster racks." While observations on eelgrass in Drakes Estero do imply some localized reduction in areal cover underneath oyster culture racks, affecting about eight acres in total (1% of eelgrass habitat in 2007), this statement does not place the relatively small effect of the oyster racks on eelgrass coverage in the appropriate context. NPS's Clarification document provides a more balanced assessment, explicitly characterizing the observed pattern of eelgrass distribution around culture racks and placing it into the context of an approximate doubling of eelgrass coverage in Drake Estero from 1991 to 2007. Another inconsistency between all four versions of *Drakes Estero: A Sheltered Wilderness Estuary* and the actual data relates to

EXHIBIT

12

Shellfish Mariculture in Drakes Estero, Point Reyes National Seashore, California

Committee on Best Practices for Shellfish Mariculture
and the Effects of Commercial Activities in
Drakes Estero, Pt. Reyes National Seashore, California

Ocean Studies Board

Division on Earth and Life Studies

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Summary

When Drakes Estero, which lies within the Point Reyes National Seashore (PRNS) about 25 miles northwest of San Francisco, California, was designated by Congress in 1976 as Potential Wilderness, it contained a commercial shellfish (nonnative oyster and clam) mariculture operation. Oyster mariculture began in Drakes Estero with the introduction of the nonnative Pacific oyster (*Crassotrea gigas*) in 1932, after the beds of the native Olympia oyster (*Ostrea lurida*) had been depleted throughout the region by overharvest, and has been conducted continuously from that date forward. Hence, the cultural history of oyster farming predates the designation of Point Reyes as a National Seashore in 1962. Nevertheless, with the approach of the 2012 expiration date of the current National Park Service (NPS) Reservation of Use and Occupancy (RUO) and Special Use Permit (SUP) that allows Drakes Bay Oyster Company (DBOC) to operate within the estero,[1] NPS has expressed concern over the scope and intensity of impacts of the shellfish culture operations on the estero's ecosystem. Recent public documents produced by NPS characterizing the impacts of shellfish culturing in Drakes Estero have stimulated public debate over the pending expiration of the RUO and the presentation of scientific information that appeared to justify closing the oyster farm. The increasingly contentious nature of the debate led to the request for this

[1]The term estero is used instead of estuary because Drakes Estero has more in common with coastal lagoons (low freshwater input and high salinity) than in a typical estuary.

study to help clarify the scientific issues raised with regard to the shellfish mariculture activities in Drakes Estero (See Box 1 for Statement of Task).

Oyster mariculture necessarily has ecological consequences in Drakes Estero as in other lagoons and estuaries, the magnitude and significance of which vary with the intensity of the culturing operations. These effects derive from two different sources: the presence of and biological activity of the oysters, and the activities of the culturists. Oysters provide many ecosystem services, so the return of oysters to Drakes Estero through commercial mariculture could enhance the ecosystem by restoring some historic baseline functions. The degree to which the presence and biogeochemical activities of the nonnative Pacific oysters in Drakes Estero reproduce the historic contributions of the original Olympia oysters to the ecological functioning of the estero depends on how closely historic oyster abundances, collective biomass, and thus filtering capacity plus hard-substrate habitat are matched by the cultured nonnative oysters. The hard

BOX 1
Statement of Task—Part 1[a]

An ad hoc committee will be formed to produce two reports on shellfish mariculture in coastal areas. In the first report, the committee will assess the scientific basis for the National Park Service (NPS) presentations and the report (including revisions), "Drakes Estero: A Sheltered Wilderness Estuary," on the ecological effects of the Drakes Bay Oyster Company operations on Drakes Estero, Pt. Reyes National Seashore in California. In carrying out its task, the committee will address the following questions:

- What is the body of scientific studies on the impact of the oyster farm on Drakes Estero, and what have they shown?
- What effects can be directly demonstrated by research conducted in Drakes Estero itself?
- What effects can reasonably be inferred from research conducted in similar ecosystems?
- What conclusions can be drawn from the body of scientific studies, and how do they compare with what the NPS presented to the public? Have these conclusions affected NPS decision making?

What are the most important subjects for future research to better understand the ecological consequences of anthropogenic influences on the estero, so as to inform NPS decision making?

[a]The committee will prepare a second report, published separately, that will address in more general terms the elements of best management practices for application to shellfish mariculture to enhance the benefits and minimize any negative ecological effects (See Appendix B).

substrate habitat provided by oysters, elevated wooden racks, and plastic mesh bags on the bottom does not replicate the exact nature of structural habitat once offered by beds of native oysters on the bottom. Insufficient information is available to know how many oysters and how much biomass existed under historical baseline conditions, but Olympia oysters form extensive reefs covering the lower intertidal zone and extending into the subtidal of some relatively pristine lagoons, bays, and estuaries of British Columbia, a possible analog of the ecosystem in Drakes Estero prior to overharvesting of the native oyster. The activities of the oyster culturists can disturb wildlife such as harbor seals, which are of particular concern because they use the estero for resting, mating, pupping, suckling, molting, foraging, and sheltering from oceanic predators.

NPS has recently released documents to inform the public about the impacts of oyster mariculture on the Drakes Estero ecosystem. Scientific conclusions presented in *Drakes Estero: A Sheltered Wilderness Estuary* change in successive versions from late 2006 through 2007, with some notable deletions of earlier material and a few additions. However, *Drakes Estero: A Sheltered Wilderness Estuary* never achieved a rigorous and balanced synthesis of the mariculture impacts. Overall, the report gave an interpretation of the science that exaggerated the negative and overlooked potentially beneficial effects of the oyster culture operation. Ultimately, the NPS "Acknowledgment of Corrections" (July 2007) and "Clarification of Law, Policy, and Science" (September 2007) retracted several misrepresentations of the Anima (1991) and (Elliot-Fisk, 2005) studies and presented descriptions of ecological impacts of the shellfish culture operations that closely approach the conclusions reached by this committee, with two major exceptions. First, NPS does not acknowledge the changing ecological baseline of Drakes Estero, in which native Olympia oysters probably played an important role in structuring the estuary's ecosystem for millennia until human exploitation eliminated them in the period from the mid 1800s to the early 1900s. Second, NPS selectively presents harbor seal survey data in Drakes Estero and over-interprets the disturbance data which are incomplete and non-representative of the full spectrum of disturbance activities in the estero.

The committee reached the following conclusions about how oyster and clam mariculture affects key aspects and ecological functions of Drakes Estero:

1. Ecological impacts of enhancing benthic/pelagic coupling. Oysters have a prodigious filtering capacity that can provide resilience in the event of an algal bloom or increased sedimentation from stormwater runoff. As a by-product of this filtering activity, oysters deposit large quantities of pseudofeces and feces and thus transfer materials, including

nutrients and organic carbon, from the water column to the sediments on the bottom. Oysters also release ammonium, thereby fertilizing and stimulating growth of phytoplankton, seagrasses, and macro- and microalgae. Limited studies of Drakes Estero show the following: (1) relatively high flushing and exchange with the ocean in the areas where most of the oysters are grown, and thus low likelihood of development of sediment anoxia; (2) no empirical evidence of enhanced organic content or sediment hypoxia in eelgrass beds proximate to oyster culture racks; (3) only small increases in sand content of sediments under racks; (4) little change in benthic macro-invertebrate communities with proximity to racks—only enhanced amphipod abundances and an apparent negative effect on another crustacean, the tanaid (*Leptochelia dubia*), and; (5) relatively low dissolved nutrient concentrations. Based on studies of oysters in other estuaries, cultured oysters in Drakes Estero will contribute to water filtration, the transfer of nutrients and carbon to the sediments, and biogeochemical cycling, although the magnitude of these effects will depend on the stocking density and may be limited by the estero's high rate of flushing through tidal exchange.

2. Effects of the mariculture on eelgrass. Limited observations of eelgrass in Drakes Estero demonstrate absence of eelgrass directly under oyster culture racks and from propeller scar damage attributable to boats operated by the oyster farm. Mariculture activities had an impact on about 8% of the eelgrass habitat in Drakes Estero in 2007: 1% of eelgrass acreage was displaced by oyster racks and 7% was partially scarred by boat transit through the eelgrass beds. Research elsewhere demonstrates that damaged eelgrass blades have rapid regeneration capacity and that eelgrass productivity can be locally enhanced by the cultured oysters through a reduction in turbidity and fertilization via nutrient regeneration. Eelgrass habitat within Drakes Estero has doubled from 1991 to 2007, a trend seen in some other west coast estuaries.

3. Effects of the mariculture on fishes. Only one study of the effects of oyster mariculture on fishes has been conducted in Drakes Estero. No statistically significant differences in species richness, abundance, or community composition of fish were detected among samples taken in eelgrass adjacent to oyster culture racks, 75 m away, or in neighboring Estero de Limantour. The guild of fishes known to associate with hard substrates exhibited a trend of higher abundances adjacent to the racks, driven largely by one species (kelp surfperch, *Brachyistius frenatus*). This observation is consistent with other research showing that fishes are attracted to structured habitat for protection and/or feeding.

4. Effects of the mariculture on harbor seals. Drakes Estero is a significant breeding location for harbor seals, and about 20% of the mainland California population come ashore, or "haul-out", on sandbanks within

the estero during pupping season. Ongoing harbor seal surveys, conducted mainly by volunteers with NPS oversight, were not designed to test the influence of shellfish mariculture on the seal population, but have been used to track trends in the size of seal colonies at the main locations, or sites, in the Point Reyes region where seals come ashore. Within a site, there may be several distinct features, such as a sandbar or rock outcrop, which are monitored as haul-out subsites. Since the restriction of kayakers from the estero during the breeding season (March 1 to June 30), mariculture has become the main anthropogenic activity in the upper estero at that time of year. Statistical analyses of Drakes Estero harbor seal count data during the breeding season suggest a possible relationship between mean counts at two of three subsites where seals haul out on sand bars in the upper estero and the combined signals from the 1998 El Niño and oyster production level. Although these results cannot be used to infer cause and effect for many reasons, as explained in the body of this report, they highlight the need for a more detailed assessment of the extent to which different disturbance sources may impact harbor seals both on land and in the water. In Europe buffers of up to 500–1,500 m have been established around seal haul-outs to protect them from disruption by human activities. No studies have determined whether short-term responses to disturbance have long-term population consequences for harbor seals, but if the disturbance affects behavior during the breeding season, a precautionary approach to management would seek to reduce these types of disturbance to avoid potentially significant population effects.

5. Past, present, and future effects of mariculture on nonnative species. The oysters and clams cultured in Drakes Estero are nonnative species that have some risk of establishing self-sustaining populations. In the past, importations of nonnative oysters were associated with the introduction of a salt marsh snail, *Batillaria attramentaria*, and the oyster pathogenic parasite, *Haplosporidium nelsoni*. Currently, the oyster farm imports oyster larvae and spat that meet certification requirements as specific pathogen free, which greatly reduces the potential for new introductions but does not eliminate the possibility of transmission of all oyster pathogens such as oyster herpes viruses. The invasive clonal tunicate, *Didemnum vexillum*, is considered a pest because it fouls submerged surfaces, including eelgrass to a small degree, and has rapidly overgrown valuable shellfish beds in some other areas. This nonnative tunicate has become established in Drakes Estero, where it covers much of the subtidal hard surfaces provided by oyster shells, racks, and other structures. The cultured oysters together with wooden culture racks and plastic mesh bags increase the availability of hard surface for colonization by tunicates in Drakes Estero, which has few natural hard substrates such as rocky bottom, although shells of native Olympia oysters would have provided

substrate had they not been over-harvested to virtual extinction. The high coverage of tunicates increases the potential for spread of this invasive species within Drakes Estero and Estero de Limantour and possibly beyond through transport of the short-lived larvae and body fragments capable of regeneration.

6. Effects of the mariculture on birds. Drakes Estero is recognized as an ecologically significant overwintering site for shorebirds and waterfowl, especially for overwintering and migrating black brant. The oyster farm likely has some impacts on birds caused by culture bags lying on intertidal sand flats, which limit access to and availability of soft-sediment invertebrate prey. Other shorebirds may benefit from enhanced foraging on small crustaceans and other invertebrates growing on and around intertidal bags and other mariculture structures. Birds can be flushed by the activities of the culturists, particularly while driving boats to and from culture sites, with unknown population consequences.

7. Effects of the mariculture on economics, recreation, and aesthetics. The effect of oyster farming in Drakes Estero on the aggregate economic values generated by PRNS is likely to be small relative to recreational value (on the order of $100 million per year) and value of ecological services (on the order of $20 million to $30 million per year). Recreation is probably not influenced by the mariculture operation except to the degree that the construction and improvement of the road into the land-based oyster farm facilities provides access for launching kayaks and canoes. Visits to DBOC could be considered a form of recreation and the oyster farm represents part of the cultural history of the estero. Conversely, the low-tide appearance of culture racks holding oysters partially covered by the invasive, yellow tunicate and the sight of plastic mesh culture bags lying on some intertidal flats conflict with the aesthetics of the vistas expected in a National Park Wilderness Area.

After evaluating the limited scientific literature on Drakes Estero and the relevant research from other areas, the committee concludes that there is a lack of strong scientific evidence that shellfish farming has major adverse ecological effects on Drakes Estero at the current (2008–2009) levels of production and under current (2008–2009) operational practices, including compliance with restrictions to protect eelgrass, seals, waterbirds, and other natural resources. Adaptive management could help address effects, if any, that emerge with additional scientific research and monitoring to more fully understand the Drakes Estero ecosystem and the effects of shellfish farming.

Based on their own conclusions on how shellfish mariculture affects the Drakes Estero ecosystem, NPS made some documented decisions. NPS and DBOC reached agreement in April 2008 on the Special Use Per-

mit giving the company the right to operate in Drakes Estero until 2012, when the current RUO expires, and specifying conditions of operations. According to the Department of the Interior (DOI), the Superintendent of Point Reyes National Seashore does not have the authority to extend the RUO because of the congressional mandate designating Drakes Estero as a Potential Wilderness. Under this interpretation of the Wilderness Act, NPS has the mandate to convert a Potential Wilderness to Wilderness status as soon as the non-conforming activity can be removed.

Because the likely beneficial functions of oysters in biogeochemical processes were not acknowledged, they did not appear to play a role in NPS decision making. Similarly, NPS did not mention that Olympia oysters were part of the historic ecological baseline condition of Drakes Estero and that, in the past, Olympia oysters could have played a significant role in the biogeochemical processes of the estero.

The ultimate decision to permit or prohibit shellfish farming in Drakes Estero necessarily requires value judgments and tradeoffs that can be informed, but not resolved, by science. This report provides information that may be used by policymakers to reach a decision on the DBOC request to extend the mariculture lease beyond 2012, but statements in the report should not be interpreted as recommendations in support of or in opposition to an extension of the lease. If the legal opinion of the DOI Solicitor's Office stands, then NPS has no authority to offer a new RUO because the mariculture operation is judged as a nonconforming use in a Wilderness area, preventing conversion to full Wilderness status. If a decision were made to extend the lease of DBOC, science would be required to help establish and adjust permit conditions to enhance the benefits (derived largely from the presence and biological activities of oysters) and minimize the risks (derived largely from the activities of the culturists) of the mariculture operation.

The challenges faced by the Point Reyes National Seashore in managing their natural and cultural assets in Drakes Estero represent an example of the NPS dilemma nationwide. NPS receives inadequate financial support to conduct the research necessary to follow its dual mandate of promoting access and enjoyment by the public yet preserving natural processes and values of its public trust assets. Research conducted to meet NPS management needs in Drakes Estero would have broader applicability to local, state, and federal agencies and would contribute to basic scientific understanding. Science could also contribute to educational exhibits if an educational demonstration project were developed to illustrate the beneficial ecological roles of oysters, the challenges of nonnative species, best practices for mariculture, the history of shellfish harvesting reflected in Coast Miwok middens beside the estero, conservation issues, and the biology of oyster propagation. Another possible application for

EXHIBIT

13

Scientific Review of the Draft Environmental Impact Statement

Drakes Bay Oyster Company Special Use Permit

Committee on the Evaluation of the Drakes Bay Oyster Company Special Use Permit DEIS and Peer Review

Ocean Studies Board

Division on Earth and Life Studies

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SUMMARY

In May 2012, the National Park Service (NPS) commissioned the National Research Council to conduct a scientific review of a Draft Environmental Impact Statement (DEIS) prepared to "evaluate the effects of issuing a Special Use Permit for the commercial shellfish operation" in Drakes Estero for a 10-year period.[1] Drakes Bay Oyster Company (DBOC) currently operates the shellfish farm in Drakes Estero, part of Point Reyes National Seashore, under a reservation of use and occupancy that will expire on November 30, 2012 if a new Special Use Permit is not issued. Because the commercial shellfish operation is the single, nonconforming use in this congressionally-designated potential wilderness, closure and removal of the shellfish farm would prompt the conversion of Drakes Estero to full wilderness status. Congress granted the Secretary of the Interior the discretionary authority to issue a new 10-year Special Use Permit in 2009 (Public Law 111-88, Section 124); hence, the Secretary now has the option to proceed with or delay the conversion of Drakes Estero to wilderness. To inform this decision, the NPS drafted an Environmental Impact Statement (EIS) for the DBOC Special Use Permit. Under the National Environmental Policy Act (NEPA), an EIS is prepared to inform the public and agency decision-makers regarding the potential environmental impacts of a proposed federal action and reasonable alternatives. The Department of the Interior commissioned a peer review of the DEIS (Atkins Peer Review) that was released in March 2012.

This report reviews the scientific information presented in the DEIS that is used to determine the potential environmental impacts of a 10-year extension of DBOC operations. In particular, this report responds to the following tasks given to the committee: assess the scientific information, analysis, and conclusions presented in the DEIS for Drakes Bay Oyster Company Special Use Permit, and; evaluate whether the peer review of the DEIS conducted by Atkins, North America for the U.S. Department of the Interior is fundamentally sound and materially sufficient. The committee did not perform an independent evaluation of the environmental impacts of the proposed alternatives, but restricts its findings to the strength of the scientific conclusions reached in the DEIS and to the identification of concerns, if any, not covered in the Atkins peer review.[2] The report focuses on eight of eleven resource categories considered in the DEIS: wetlands, eelgrass, wildlife and wildlife habitat, special-status species, coastal flood zones, soundscapes, water quality, and socioeconomic resources.

Ecological Setting

Drakes Estero is a coastal lagoon located approximately 25 miles northwest of San Francisco, California that extends northward into the Point Reyes peninsula from Drakes Bay. The ecosystem consists of five branching bays (Barries, Creamery, Schooner, Home and Estero de Limantour) with an area of ~2,500 acres and a narrow mouth allowing tidal exchange with coastal ocean waters. Major habitats include intertidal mudflats, sandbars, and subtidal eelgrass beds that support wildlife including native shellfish, finfish, shorebirds, and harbor seals. After trial plantings of the nonnative Pacific oyster (*Crassostrea gigas*) in 1932, farming of this species in Drakes Estero has continued as a commercial enterprise under various owners up through the DBOC which assumed ownership in 2005.

Alternatives Assessed in the DEIS

The DEIS assesses impacts of four alternatives on eleven resource categories, and classifies intensities of impact as beneficial or minor, moderate, or major adverse. The four alternatives (described in more detail in Chapter 1 of the DEIS) are briefly characterized below.

[1] Congress requested the NRC review in the December 2011 conference report.
[2] Study statement of task is provided in Appendix A.

No Action Alternative – Special Use Permit under which DBOC operates expires on November 30, 2012 and is not renewed:

> **Alternative A**: mariculture activities cease and equipment is removed; Drakes Estero potential wilderness is converted to full wilderness.

Action Alternatives – Special Use Permit for shellfish culture is reissued for an additional 10 years under the conditions specified in three alternatives:

> **Alternative B**: Level of use consistent with conditions and operations present in fall 2010; Shellfish production limited to 600,000 lbs/yr.
> **Alternative C**: Level of use consistent with conditions and operations at the time the current Special Use Permit was signed in April, 2008; Shellfish production limited to 500,000 lbs/yr.
> **Alternative D**: Considers an expansion of operations and new or modified onshore facilities as requested by DBOC as part of the EIS process; Shellfish production limited to 850,000 lbs/yr;

Major Conclusions

For the eight resource categories, the committee evaluated conclusions in the DEIS concerning levels of impact of each alternative and the information and interpretations that led to them. The committee also commented on whether alternate, scientifically sound conclusions could be reached based on the available information (in the DEIS and the scientific literature) and the level of uncertainty associated with the conclusions. As noted in the previous NRC report on Drakes Estero (NRC, 2009), there is not an extensive scientific literature on Drakes Estero and research on the potential impacts of shellfish mariculture on the Drakes Estero ecosystem is even sparser. Therefore, the NPS had little primary data on which to base the DEIS and had to rely to a large extent on inference from research conducted in other areas. Although this was the only approach that could be used under the circumstances, it not only made it difficult to differentiate impacts of alternatives B, C, and D, it resulted in a moderate to high level of uncertainty associated with conclusions concerning levels of impact for most of the resource categories reviewed by the committee (Table S.1).

Impacts of the Alternatives

Alternative A can be readily distinguished from alternatives B, C, and D because mariculture activities would cease and all DBOC infrastructure would be removed. However, alternatives B, C, and D are differentiated primarily in terms of production limits for offshore activities (600,000 lbs, 500,000 lbs and 850,000 lbs for B, C, and D, respectively), which do not provide a clear basis for comparison. An overview of the DEIS impact findings shows that the expected impact intensities are the same for each action alternative regardless of resource category (Table S.1). Production limits dictate the maximum level of harvest, but do not directly scale with level of activities or spatial extent of mariculture operations. Additionally, harvest may vary as a function of environmental conditions, shellfish diseases, harmful algal blooms, predation, and market conditions, and therefore does not represent a reliable indicator of potential impact.

Adverse impacts are defined in the DEIS as minor, moderate or major in order to describe impacts based on their intensity or magnitude. It is noteworthy that only one category of beneficial impact is used, eliminating the possibility of distinguishing between effects that may range from minor to major beneficial in parallel with the definitions used for adverse impacts. Also, the definitions do not include a negligible impact, a useful category that is provided as an example in the NPS NEPA guidance, "Summary of Regulations and Policies — Impact Indicators and Criteria," Director's Order 12.[3] For most of the eight resource categories that the committee was asked to review, the committee concluded that the DEIS does not define impact intensity levels that can be clearly related to the magnitude of the effect (spatial or temporal; direct or indirect). This makes it difficult to determine both the comparative impact of

[3] Available at: http://www.nature.nps.gov/protectingrestoring/do12site/tabs/tab22.htm.

the different alternatives and the relative levels of impact across resource categories. For example, both the moderate and major intensity definitions for wildlife and wildlife habitat include the mention of impacts on "individuals." Such a definition implies that the mortality of an individual organism associated with flipping of oyster bags could be interpreted as a moderate impact on the resource, which would be incompatible with the level of ecological impact.

Level of Uncertainty and Alternate Conclusions

An estimate of uncertainty, which reflects the strength of the available scientific information, gives decision makers a better understanding of the range of potential impacts for a given action alternative. Therefore, the committee assessed the data and analysis for each resource category in terms of the level of uncertainty associated with the impact assessment given in the DEIS.[4] Of the eight resource categories, the committee judged that the projected impact levels for seven had moderate to high levels of uncertainty and, for many of these an equally reasonable alternate conclusion of a lower impact intensity could be reached based on the available data and information (see Table S-1). To provide an accurate analysis for the decision maker, it is important for the EIS to include estimates of level of uncertainty as part of the assessment of environmental consequences.

Baselines

The DEIS employs two different baselines in assessing the impacts of the no action and action alternatives. In a typical EIS, the "no action" alternative is considered the current baseline environmental condition against which the impacts of the action alternatives are compared. However, for the DBOC Special Use Permit EIS, the no action alternative (alternative A) refers to a change from the current condition (the Special Use Permit would expire and DBOC would cease operation) and shifts to a new, future condition that is unknown. Impacts associated with action alternatives B, C, and D (10 year extension of the permit for the mariculture operation) are then compared to this projected future "baseline" (alternative A), while impacts of alternative A are compared to the better known existing conditions (i.e., with DBOC facilities and operations as described for alternative B) as the baseline. This introduces an extra level of uncertainty to the evaluation of the action alternatives and creates asymmetry in the assessments conducted for the action alternatives relative to the no action alternative. By invoking two baselines, the DEIS essentially contains two separate impact assessments, one for the no action alternative and another for the action alternatives, such that there is not a common basis for comparing the potential impacts of the no action alternative (A) with the potential impacts of the action alternatives (B, C, and D).

Suggestions for DEIS Revisions[5]

The committee provides the following high priority suggestions for revising the final EIS: (1) use definitions of impact intensities that demonstrably scale with their magnitude (e.g., minor, moderate,

[4] Low uncertainty is assigned when the committee finds that substantial scientific evidence exists to support the conclusions reached, i.e., the evidence demonstrates a strong cause-effect relationship between Drakes Bay Oyster Company (DBOC) actions associated with an alternative and a measurable effect.

Moderate uncertainty is assigned when the committee concludes that, while there is insufficient data and information for Drakes Estero, observations from other comparable ecosystems and current scientific understanding allow logical deductions concerning a possible cause-effect relationship between DBOC actions and a measureable effect.

High uncertainty is assigned when the committee concludes that there is insufficient data and information for Drakes Estero; observations from other comparable ecosystems are not available; and scientific understanding is insufficient or controversial such that conclusions regarding a possible cause-effect between DBOC actions and a measurable effect can be made only by inference.

[5] These suggestions are based on the committee's review of the scientific foundation of the DEIS and should not be interpreted as a conclusion that the DEIS does not meet NEPA requirements.

major), and fully reflect the range of both adverse and beneficial impacts including a category for negligible impacts; (2) provide a discussion of the levels of uncertainty for the impact intensities (e.g., Table S.1); (3) specify all assumptions used in assessing impact and in scaling the intensity of impact; (4) describe potential alternate conclusions as appropriate (e.g., Table S.1); (5) segregate impact assessments for alternative A from alternatives B, C, and D and indicate that the assessments are not comparable due to use of different baselines; (6) use all relevant and available information, especially for soundscapes and water quality (from research in Drakes Estero and in other comparable systems) and; (7) include additional mitigation options as possible permit conditions for the action alternatives to reduce impacts, e.g., an option to discontinue the culture of Manila clams would address some concerns about the establishment of that non-indigenous species in Drakes Estero; impacts of many DBOC practices (i.e., boat use, culture techniques, marine debris, soundscape disturbance) could potentially be reduced by the implementation of appropriate mitigation measures.

TABLE S.1 (opposite page). Summary of impact intensities from the DEIS and the committee's assessment of the analyses and conclusions reached in the DEIS for each resource category. Level of uncertainty for each resource category, as estimated by the committee, is indicated by a white dot (low uncertainty), gray dot (moderate uncertainty) or black dot (high uncertainty); the level of uncertainty applies to conclusions reached in the DEIS and by the committee. For additional details see Chapter 3.

Resource Category[1]		DEIS Impact Levels				Committee's Comments on DEIS Analysis & Conclusions		
		Beneficial	Adverse Level			Comments	Uncertainty (Low ○ / Mod. ◉ / High ●)	Possible Alternate Conclusion
			Minor	Moderate	Major			
Wetlands		A		B,C,D		• Lacks assessment of tidal freshwater wetlands • Benthic disturbance from bag & rack cultures not well differentiated	◉	Impacts could be minor or moderate adverse depending on level of sediment disturbance
Eelgrass		A		B,C,D		• Data not available on turbidity for evaluating impacts of DBOC operations (sediment resuspension & oyster filtration) • Analysis of aerial photographs could be used more extensively to assess changes in extent & fragmentation	◉	Impact may be minor at the population level given the local scale of the DBOC footprint
Wildlife	Benthic fauna	A		B,C,D		• Impacts may differ between analyses of non-indigenous species and analyses of DBOC impacts on native species • Too little differentiation among the individual/population/community impact definitions	◉	Impacts may be minor given rapid recovery of benthic fauna & local scale of the DBOC footprint
Wildlife	Fish	A	B,C,D			• Possibility of indirect effects on prey resources (i.e. benthic infauna)	◉	Impact may be negligible given the small overall footprint of the mariculture activities
Wildlife	Harbor Seals	A		B,C,D		• Insufficient consideration of cumulative impacts under alternative A • Impact definitions not linked to biologically significant criteria	●	Seals may tolerate or habituate to DBOC activities resulting in minor impacts
Wildlife	Birds	A		B,C,D		• Additional data available from species list & survey data that could indicate population trends	◉	Impact may be minor given high abundance & species richness
Special Status	Butterfly	A	B,C,D			• Description of species preferred habitat would inform the impact assessment	○	
Special Status	Frog	A	B,C,D			• Map of potential breeding grounds needed to assess impact of DBOC onshore operations	○	
Special Status	Plover	A	B,C,D			• Need more detailed description of breeding & overwintering grounds	◉	
Special Status	Tern	A	B,C,D			• Time-series of abundance from Christmas birds counts & other publically available surveys could be included	○	
Special Status	Coho	A	B,C,D			• Include critical juvenile habitat (freshwater tidal wetlands) in the project area	◉	
Special Status	Steelhead	A	B,C,D			• Could consider prey resource habitats in the impact assessment	◉	
Coastal Flood Zone		A		B,C,D		• Lacks quantitative assessment of floodplain displacement volume under different alternatives • Effects of sea level rise were not included in assessment	●	Given the small upland footprint of the DBOC operation, impacts may be minor
Water Quality		A	B,C,D			• Lacks data on water quality parameters needed to assess the impacts of DBOC operations • Underestimates the potential of biological processes within DE on water quality	●	Impacts of alternatives B, C, and D may be negligible or beneficial if shellfish filtration provides a beneficial ecosystem service
Soundscape		A			B,C,D	• No data available on underwater soundscape • Additional data available (not used) to assess temporal & spatial variability • Sound levels presented in dBA makes it more difficult to assess impacts on wildlife • Lack of direct measurements of sound levels related to DBOC operations in DE	●	Based on the data presented in the DEIS, impacts could be moderate to minor
Socio-economics		B,C,D	A			Lacks assessment of change: • in producer's plus consumer's surplus for commercial shellfish[2] • in consumer's surplus for recreation • in non-use value	●	

[1] Since Drakes Estero does not contain the habitat required for leatherback turtles, this resource category is not included here.

[2] Surplus refers to the net value of the commodity or service. For a producer, this value would be equivalent to profit (sales minus expenses). For a consumer, this represents the difference between the value of the item (e.g. what the consumer would be willing to pay) and the cost of the item.

EXHIBIT

14

Final Report on Peer Review of the Science Used in the National Park Service's Draft Environmental Impact Statement Drakes Bay Oyster Company Special Use Permit

March 2012

Atkins Project No.: 100025958

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1.0 INTRODUCTION

In 2011 the National Park Service (NPS) prepared a Draft Environmental Impact Statement (DEIS) for the Drakes Bay Oyster Company (DBOC) Special Use Permit (SUP). The commercial shellfish company operates in Drakes Estero, within the Point Reyes National Seashore, and is the only nonconforming use that prevents conversion of the waters of Drakes Estero from congressionally designated potential wilderness to congressionally designated wilderness. Section 124 of Public Law (PL) 111-88, as part of the Department of the Interior (DOI), Environment, and Related Agencies Appropriations Act of 2010, grants the Secretary of the Interior the discretionary authority to issue a new SUP to DBOC that would be valid for a period of ten years. Under existing agreements (i.e., Reservation of Use [RUO] and SUP) the NPS lacks the authority to allow DBOC to operate after November 30, 2012. As part of the National Environmental Policy Act (NEPA) process, the purpose of the DEIS is to engage the public and evaluate the effects of issuing a SUP for the commercial shellfish operation by comparing four alternative scenarios. The final EIS will be used to inform the decision of whether or not to issue a new SUP to DBOC.

1.1 Objectives of Peer Review

The DOI requested an independent peer review of the DEIS (Chapters 3 and 4) to examine the scientific and technical information and scholarly analysis presented in the document and assess whether: (1) appropriate scientific information was used; (2) reasonable conclusions were drawn from the information; (3) significant information was omitted from consideration; and (4) NPS interpretation of the information is reasonable. The peer review was focused on the scientific underpinning of the DEIS and not intended to address other aspects of the NPS planning and decision-making processes or information not directly related to the use of scientific information (e.g., consistency with the park's purpose, quality of visitor experiences, or interpretation and application of policy and law). Ultimately, the purpose of the review was to obtain suggestions from the reviewers on how the DEIS can be improved from a scientific perspective.

The peer review was limited to the scientific information used in the DEIS including: (1) published papers in peer-reviewed journals; (2) technical reports of scientific data or analysis; (3) monitoring or other scientific data used in the DEIS but not published in the literature or as a technical report. Peer reviewers were not tasked with reviewing non-scientific information in the DEIS (e.g., policy or legal information) or offering any legal or policy opinions as those are the province of the NPS. Peer reviewers were also not tasked with reviewing the "intensity definitions" or their conclusions. Finally, reviewers were not asked to make recommendations on whether a particular alternative should be implemented or whether they would have conducted the impact analysis in a similar manner.

The reviewers were asked to conduct their reviews of the DEIS as independent desk reviews and address the following questions in their comments:

1. Are the scientific interpretations and analyses presented in the DEIS reasonable? If no, please identify those that are not and the specifics of each situation.

2. Do the authors of the DEIS draw reasonable and scientifically sound conclusions from the scientific information presented in the DEIS? Are there instances in the DEIS where a different but equally reasonable and scientifically sound scientific conclusion might be drawn that differs from the conclusion drawn by the NPS? If any instances are found where that is the case, please provide the specifics of that situation.

3. Does the DEIS base its interpretations, analyses and conclusions upon the best available science? If any instances are found where the best available science was not used please provide the specifics of each situation.

4. Are there any significant peer-reviewed scientific papers that the DEIS omits from consideration that would enhance the scientific quality of the document? Please identify such papers.

5. Is the scientific foundation of the DEIS reasonable and how can it be strengthened? Please identify any options to strengthen the scientific foundations.

2.0 PEER REVIEW PROCESS

Atkins, North America, hereafter referred to as Atkins, was retained by the DOI to select peer review panel members and facilitate the peer review process. The terms of the contract are set in the contractual document. They include the following:

- Review the DEIS to determine the appropriate expertise required to provide a high quality, independent peer review;
- select and engage reviewers;
- distribute materials to reviewers and coordinate start of review;
- manage reviewers/answer reviewers' questions and complete reviews;
- provide draft report to Contracting Officer's Representative (COR);
- provide final report to COR that addresses DOI comments from internal review; and
- present results of report and respond to questions from agency staff, if necessary.

2.1 Selection of Reviewers

Atkins was directed to select at least four well-qualified, independent reviewers with expertise in the following areas: (1) Marine Estuarine Ecology and Coastal Zone Management; (2) Water Quality; (3) Soundscapes; and (4) Socioeconomics. The DOI required that members of the peer review panel be selected in accordance with the general principles of the National Academy of Sciences (NAS) Policy on Committee Composition and Balance and Conflict of Interest for Committees. The Atkins Team requires that all reviewers comply with NAS conflicts of interest procedures. Several potential reviewers were considered for the review. One of these self-identified as conflicted because of previous interests and statements on the DEIS. Two other reviewers were contacted and were unable to commit the time necessary to carry out the review.

During the interview process the Atkins Team determined that the five reviewers listed below were not conflicted over preparing an impartial review.

Given the length of the marine estuarine ecology and coastal zone management sections, the Atkins Team selected two reviewers with expertise in those fields and one reviewer for each of the other three subject areas. All candidates had advanced expertise (Ph.D. level) and a record of research and publication in their respective fields. The Atkins Team submitted the candidates to DOI representatives for approval. The reviewers are:

- Marine Estuarine Ecology and Coastal Zone Management: Dr. Ted Grosholz, University of California – Davis, and Dr. Dianna Padilla, Stony Brook University
- Water Quality: Dr. Charlie Wisdom, Parametrix
- Soundscapes: Dr. Christopher Clark, Cornell University
- Socioeconomics: Dr. James Wilen, University of California – Davis

The qualifications of each reviewer are included in this document as Appendix A.

2.2 Document Review and Report Development

Reviewers conducted their independent desk reviews of Chapters 3 and 4 of the DEIS (according to their respective areas of expertise) between January 27, 2012 and February 19, 2012. All comments were submitted to Atkins as individual memoranda and are included in this document as Appendix B.

The Atkins Team (Dr. Steven Courtney, Rebecca Burns) prepared a draft report that included: (1) the individual reviewers' comments including responses to the questions above; (2) a summary and analysis of the reviewers' responses; and (3) a recommendation as to whether the scientific information included in the DEIS is the product of appropriate scientific standards and approaches for using, interpreting and applying data and information to draw reasonable conclusions as it relates to the subject of the DEIS.

3.0 RESULTS

Summaries of the individual reviewers' comments on the five questions the reviewers were directed to address are presented below and organized by subject area.

3.1 Question 1: Are the scientific interpretations and analyses presented in the DEIS reasonable? If no, please identify those that are not and the specifics of each situation.

Marine Estuarine Ecology and Coastal Zone Management

Both reviewers agreed that, in general, the interpretations presented in the DEIS are reasonable, given the very limited data available for many of the topics. One reviewer (Grosholz) observed that impacts of oyster aquaculture on birds are speculative and unsupported by peer-reviewed publications, but noted that the report's authors cannot be faulted as there are no published data on these impacts. The other reviewer (Padilla) cautioned that "when there are no data to support or refute the notion that there is an impact, one cannot conclude that there is no impact" and noted that the National Research Council (NRC) report (NAS 2009) cited throughout the DEIS echoes that concept (Appendix B).

Both reviewers cited specific examples of interpretations in the DEIS that are not reasonable based on scientific evidence. Some comments were generally more minor (e.g., the DEIS ignores the potential for upward plant migration in response to sea level rise), whereas others were more significant. For example, the DEIS does not discuss the uncertainty associated with the estimates of eelgrass cover and damage due to boat propellers and does not include a citation for conclusions made about the most recent set of images (2010). Both reviewers commented that interpretation of oyster impacts could be significantly improved. Specifically, the DEIS bases interpretations of environmental impacts of *Crassostrea gigas* on studies conducted on *Crassostrea virginica*; however, the two species have very different biology and ecology. Much research has been published on environmental impacts of *C. gigas* in northern Europe, New Zealand and Australia that should be cited. The reviewers also noted other issues that are not fully discussed such as the risk of *C. gigas* and other cultivated species invasions to nearby areas, as well as several inaccuracies in the characterization of species as native vs. nonnative.

Water Quality

The water quality reviewer (Wisdom) found the analyses and interpretations of environmental impacts of oyster mariculture on marine water quality to be reasonable and appropriate in most aspects. One area of uncertainty was in the potential effects of chemicals leached from pressure-treated wood used by DBOC for docks and oyster cultivation racks. The reviewer cited National Oceanic and Atmospheric Association (NOAA) Fisheries guidelines for determining effects of chromate copper arsenate (CCA) leachate on juvenile coho salmon, which are known to be particularly sensitive to low levels of copper. The reviewer stated that the analysis does not provide sufficient detail to determine potential effects on this species.

Soundscapes

The soundscape reviewer (Clark) found the scientific interpretations and analyses in the DEIS to be reasonable and adherent to standard techniques and metrics. The reviewer noted several aspects that may require further examination, such as whether human noise footprints from DBOC activities have increased since 1995 when one of the two cited data sets was collected, as well as a working assumption related to nighttime versus daytime background sound levels and propagation that does not include supporting information.

Socioeconomics

The socioeconomics reviewer (Wilen) found that the methods used to conduct the economic assessment do not follow accepted economic impact analysis practice and the data required to conduct such an analysis (e.g., measures of value of gross sales, cost of labor and other materials for DBOC) missing from the DEIS. Economic impacts are assessed using qualitative judgments instead of quantitative measurements, leading to "unsubstantiated inferences and interpretations of impacts that are difficult to judge reasonable" (Appendix B).

3.2 Question 2: Do the authors of the DEIS draw reasonable and scientifically sound conclusions from the scientific information presented in the DEIS? Are there instances in the DEIS where a different but equally reasonable and scientifically sound scientific conclusion might be drawn that differs from the conclusion drawn by the NPS? If any instances are found where that is the case, please provide the specifics of that situation.

Marine Estuarine Ecology and Coastal Zone Management

The reviewers noted several exceptions where conclusions were not reasonable and/or scientifically sound, or other conclusions may be drawn. Both reviewers disagreed with the conclusion "Recreational take of clams would not interfere with preservation of wilderness characteristics in Drakes Estero," stating that recreational clamming causes significant disturbance to benthic habitats and eelgrass through digging and/or raking sediment. The reviewers also point out several instances where statements are made or alluded to without sufficient supporting information. For example, Padilla noted that positive effects of oyster culture on eelgrass (*Zostra marina*) are alluded to; however, there are no data to support this idea. She also stated that the DEIS assumes that the expansion of aquaculture activity will increase loss of eelgrass in linear fashion, but there are no data supporting that assumption. Grosholz commented that the DEIS states that the source of several species invasions in Drakes Bay was aquaculture, but this is a likelihood argument as the source of the primary invasion is unknown. Finally, Padilla observed that the relative impact of the two oyster culture methods (off-bottom racks versus on-bottom bags) was not consistently applied when assessing the impacts of the alternatives, affecting the DEIS conclusions.

Water Quality

Wisdom stated that the scientific information used in the analysis is adequate and appropriate for the types of disturbances and impacts under evaluation. He noted that alternate conclusions (direct adverse effect versus no direct adverse effect) could have been drawn with regard to the potential impacts of leachates from CCA-treated lumber on juvenile coho salmon. The flushing rate of Drakes Estero is likely to be high enough to dilute concentrations below fish thresholds; however, the amount of wood to be replaced annually exceeds NOAA Fisheries loading rates for coho salmon.

Soundscapes

Clark found the conclusions presented in the DEIS to be reasonable and supported by available data and scientific concepts.

Socioeconomics

As described in Question 1, Wilen found that the DEIS derives qualitative impact assessments with minimal comparative data and undefined criteria, leading to conclusions that are "vague at best, and misleading at worst" (Appendix B). He further noted that the conclusions seem to insinuate that a "small" impact is equivalent to no impact; however, this is a slippery slope because multiple small impacts could be seen as having no collective impact because they were each evaluated in isolation.

3.3 Question 3: Does the DEIS base its interpretations, analyses and conclusions upon the best available science? If any instances are found where the best available science was not used please provide the specifics of each situation.

Marine Estuarine Ecology and Coastal Zone Management

Both reviewers commented that the DEIS relies too heavily on unpublished theses that have not produced any peer-reviewed publications and are not generally accessible. The reviewers understood that, in some cases, there are no other studies of the project area to cite, but cautioned that conclusions from these studies should be treated as very preliminary. Also, the DEIS cites general references (i.e., textbook chapters) on ecological roles instead of primary literature on the species of concern.

Water Quality

Aside from the NOAA Fisheries guidance discussed under Question 1, Wisdom found that the DEIS includes and applies the best available science on the impacts of shellfish mariculture on water quality.

Soundscapes

Clark noted that the DEIS provides sufficient scientific information on wildlife dependence on natural soundscapes and the effects of disturbance from anthropogenic noise; however, he mentioned that further studies have been conducted since the DEIS was completed, but he does not include these studies in his review.

Socioeconomics

Wilen stated that the DEIS does not embody the best available science on socioeconomic impacts. Specifically, none of the peer-reviewed literature relevant to economic impact analysis methodology is acknowledged or cited in the DEIS. The DEIS does cite a NPS report (NPS 2011) that uses standard impact analyses to evaluate the importance of tourism, but it does not recognize that these same techniques should be used for analyzing the impacts of the different DBOC SUP alternatives.

3.4 Question 4: Are there any significant peer-reviewed papers that the DEIS omits from consideration that would enhance the scientific quality of the document? Please identify such papers.

Marine Estuarine Ecology and Coastal Zone Management

Both reviewers provided several peer-reviewed publications that should be considered by the DEIS. These papers are mostly related to research conducted through the Biogeochemical Reactions in Estuaries (BRIE) project in Tomales Bay and marine bivalve ecology and aquaculture.

Water Quality

The only additional publication suggested for consideration by the DEIS is the NOAA Fisheries guidance described previously.

Soundscapes
Clark does not suggest any additional peer-reviewed papers for consideration by the DEIS.

Socioeconomics
As noted in Question 3, Wilen observed that there are no peer-reviewed scientific publications referenced in the socioeconomic impact analysis section. He listed several professional journals that regularly publish discussions of economic impact methodology and example studies, and noted that specific economic impact analyses for aquaculture and mariculture operations (e.g., oysters in Chesapeake Bay) are available online for download.

3.5 Question 5: Is the scientific foundation of the DEIS reasonable and how can it be strengthened? Please identify any options to strengthen the scientific foundations.

Marine Estuarine Ecology and Coastal Zone Management
The reviewers offered several suggestions for strengthening the scientific foundations. Padilla suggested more attention should be given to the primary literature as described above in Question 3; however, Grosholz stated that given the available data, the DEIS does a reasonably good job discussing both the lessons and the limits of these studies. Grosholz also noted that the DEIS fails to draw conclusions from one cited report (Konzak and Praetzellis 2011) that concludes there is little evidence of the presence of Olympia oysters in early American shell middens. Additionally, Padilla noted the risk of introducing target aquaculture species and facilitating habitat for other unwanted invaders deserve greater attention in the DEIS.

Water Quality
Wisdom concluded that the basic scientific foundation of the DEIS regarding water quality was reasonable and offered three options for strengthening which include the potential for chemicals leaching from CCA-treated lumber to affect juvenile coho salmon, which are presented in Appendix B.

Soundscapes
Clark concluded that the scientific foundation of the DEIS regarding soundscapes is reasonable, but offers a recommendation for strengthening. He suggests that the NPS conduct a "sound source verification" study to document all DBOC noise sources and map their footprints, both individually and cumulatively. Such a study would document changes in the soundscape over time and space within the Point Reyes National Seashore.

Socioeconomics
Based on previous comments regarding the methods used to conduct an economic assessment of the alternatives, Wilen concluded that the scientific foundation of the DEIS does not follow standard practice and as a result it is difficult to determine whether it is reasonable. He presented recommendations to strengthen the economic analysis in Appendix B. He also noted that the relationship and interconnection between visitor days to Point Reyes National Seashore and the DBOC is not analyzed as an economic impact of any of the alternatives and he provides several hypotheses that could be evaluated. Finally, Wilen recommended that the market level impacts of the DBOC component be strengthened by discussing the market and demand elasticities derived from other literature to estimate the quantitative impacts.

4.0 SUMMARY

In general the reviewers found the DEIS to be well-written with adequate analysis and use of available scientific information. However in the socioeconomic analysis, the reviewer regards the analysis as unreflective of best available scientific information and practice.

Throughout their reviews, the reviewers identify data gaps (that require caution when analyzing), and some additional literature that should be included, as well as some factual errors regarding invasive species. The Atkins Team believes that these comments are well-founded, and that the current best available information supports the reviewers' positions. However, these comments are in general minor, relatively easily rectified, and do not affect the overall quality of the review.

Two reviewers comment on the use of non-peer reviewed literature, such as theses. Such information must be used with appropriate caution; however, the legal standard for any government action is "best available science". Under such circumstances, unpublished materials (theses) may be used, but it is usually wise to approach their use with acknowledged caution, and to seek confirmation from other available sources.

Hence the reviewers found some significant issues that may be addressed in any final EIS. The socioeconomic analysis is the most seriously criticized piece of the DEIS, but also general opinion may differ on the appropriate metrics to use for this issue. To the extent that this is an issue of policy, it falls outside of the scope of this review; moreover, given differing scientific opinion, it is plausible that the NPS analyses in the DEIS may be covered by "agency deference" rulings. However, the reviewers' comments are pertinent and should be given careful consideration in any revisions.

Overall, the reviewers found the analyses to be appropriate, and that there is no fundamental flaw with the larger scientific underpinning of the DEIS. The identified scientific misinterpretations, or lack of citation of appropriate literature are for the most part minor, and can be rectified if the NPS so wishes. This may also include making some additional adjustments to interpretation, and explicit acknowledgement of the lack of information on some key issues.

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6.0 APPENDICES

Appendix A: Reviewer Curricula Vitae
Appendix B: Individual Reviewer Memoranda

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APPENDIX A: REVIEWER CURRICULA VITAE

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CURRICULUM VITAE

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EDUCATION:

1990	University of California, Berkeley, Ph.D. (Zoology)
1982	Brown University, A.B. (Biology)

RESEARCH AND TEACHING INTERESTS:

Interactions of fundamental ecological processes and human impacts on coastal ecosystems; consequences of invasive species and vector management on ecosystem function, human economies and biosecurity; effects of global climate change on coastal systems; restoration and management of estuarine habitats

EMPLOYMENT:

2008-	Professor, Department of Environmental Science and Policy, University of California, Davis
2007-	Alexander and Elizabeth Swantz Endowed Specialist in Cooperative Extension, Department of Environmental Science and Policy, University of California, Davis
2006-2007	Specialist in Cooperative Extension, Department of Environmental Science and Policy, University of California, Davis
2002-2006	Associate Specialist in Cooperative Extension, Department of Environmental Science and Policy, University of California, Davis
1998-2001	Assistant Specialist in Cooperative Extension, Department of Environmental Science and Policy, University of California, Davis
1996-1998	Assistant Professor, Department of Zoology, University of New Hampshire, Durham, NH
1993-95	Postdoctoral Fellow, Center for Population Biology, University of California, Davis, CA.
1992	Postdoctoral Fellow, Smithsonian Environmental Research Center, Edgewater, MD.
1991	Postdoctoral Fellow, Friday Harbor Laboratories, University of Washington, Friday Harbor, WA.

PROFESSIONAL MEMBERSHIPS:

American Society of Limnology and Oceanography
Ecological Society of America
Coastal and Estuarine Research Foundation
Western Society of Naturalists

PUBLICATIONS:

Diez, J. M., C. M. D'Antonio, J. S. Dukes, E. D. Grosholz, J. D. Olden, C. J. B. Sorte, D. M. Blumenthal, B. A. Bradley, R. Early, I. Ibáñez, S. Jones, J. Lawler and L. P. Miller. Will extreme climatic events facilitate biological invasions? Frontiers in Ecology and the Environment (*in press*).

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Moore, J. D., C. I. Juhasz, T. T. Robbins, E. D. Grosholz. 2007. The introduced sabellid polychaete *Terebrasabella heterouncinata* in California: transmission, methods of control and survey for presence in native gastropod populations. Journal of Shellfish Research 26: 869-876.

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Grosholz, E. D. 1993. The influence of habitat heterogeneity on host-pathogen population dynamics. Oecologia 96: 347-353.

Grosholz, E. D. 1992. Interactions of intraspecific, interspecific, and apparent competition with host-pathogen population dynamics. Ecology 73: 507-514.

Sousa, W. P. and E. D. Grosholz. 1990. The influence of habitat structure on the transmission of parasites. In: *Habitat Structure: The Physical Arrangement of Objects in Space*, S. S. Bell, E. D. McCoy, and H. R. Mushinsky, editors. Chapman and Hall, London, pp. 300-324.

Grosholz, E. D. 1990. The population dynamics of terrestrial isopods and an iridescent virus. Ph.D. Thesis. University of California, Berkeley.

Ching, H. L. and E. D. Grosholz. 1987. Occurrence of the metacercaria of *Parvatrema obscurum* (Gymnophallidae) in the digestive gland of limpets, *Lottia digitalis*. Proc. Helm. Soc. Wash. 53: 104-105.

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GRANTS AWARDED:

2010-2014 National Science Foundation. $1,495,487 (CNH-1009957) Removal and Restoration: Social, Economic and Ecological Dynamics of Invasive *Spartina* in San Francisco Bay. Co-P.I.s A. Hastings, J. Sanchirico, M. Lubell, C. Feldman.

2011-2012 Maryland Sea Grant. $25,060. Importation of Baitworms and their Live Algal Packing Materials to the Mid-Atlantic: Vector Characterization and Management. Co-PI A.W. Miller.

2011-2012 California Ocean Science Trust. $201,178 Invaders for sale: a vector analysis of commercial aquaculture and the aquarium and aquascape Trades. Co-P.I.s E. Grosholz and S. Williams.

2009 California Department of Fish and Game. $23,000. Examination of sublethal impacts of the 2007 Cosco Busan oil spill on the native oyster *Ostrea lurida* in San Francisco Bay. Nutrients and Benthic Invasion Dynamics. Co-P.I.s E. Grosholz and C. Zabin.

2008-2009 National Oceanic and Atmospheric Administration and Pacific States Marine Fishery Commission. $27,313. Green crab control methods: Expanding

capacity to control European Green crab populations in the northeast Pacific. Co-P.I.s E. Grosholz, C. de Rivera (Portland State), G. Ruiz (Smithsonian), M. Sytsma (Portland State).

2008-2012 US Fish and Wildlife Service. $9,775. Master Gardener's prevent aquatic plant invasions through community education and outreach California Sea Grant College Program. C0-P.I.s E. Grosholz and H. Crosson.

2008-2009 Association of Bay Area Governments. $15,000. Subtidal native oyster restoration. Co-P.I.s E. Grosholz and C. Zabin.

2008 California Department of Fish and Game. $7,500. Train the trainer: Master Gardeners prevent aquatic invasive plant introductions through community education and outreach. C-P.I.s E. Grosholz and H. Crosson.

2007-2010 CALFED and CA Sea Grant. $107,696. Nutrients and benthic invasion dynamics. P.I. E. Grosholz.

2007-2010 California Sea Grant College Program. $219,564. Investigating the limits of native oyster recovery and restoration. P.I. E. Grosholz.

2006-2008 University of California Exotic/Invasive Pests and Disease Research Program. $102,525. Assessment and control of the impact of non-native oyster drills on the restoration of native oysters. P.I. E. Grosholz.

2006-2008 University of California Marine Council. $225,000. Establishing connectivity of invasive populations: a precursor to prioritization and implementation of eradication efforts. Co-P.I. E. Grosholz, S. Williams, S. Morgan, L. Levin, A. Kuris.

2006-2007 National Oceanic and Atmospheric Administration and Pacific States Marine Fishery Commission. $249,375. Green crab control methods: Evaluating factors important for eradication of *Carcinus maenas*. Co-P.I.s E. Grosholz, C. de Rivera (PSU), G. Ruiz (SERC), M. Sytsma (PSU).

2006-2007 California Ocean Protection Council. $149,827. Documenting the status of Native Oysters in San Francisco Bay, CA. P. I. E. Grosholz

2005-2006 Pacific States Marine Fishery Commission. $32,565. Monitoring the European Green Crab Invasion in California. P.I. E. Grosholz.

2004-2005 National Park Service California Cooperative Ecosystem Studies. $57,150. *Restoration of native oysters in Tomales Bay, California.* P.I. E. Grosholz.

2003-2006 University of California Center for Invasive Species Research. $88,387. *Sabellid polychaete detection in native gastropod populations and control at abalone cluture facilities.* P.I.'s E. Grosholz and J. Moore.

2002-2005 University of California Center for Invasive Species Research. $115,656. *Managing the impacts of the introduced European green crab (Carcinus maenas) in coastal estuaries.* P.I., E. Grosholz.

2004-2005 California Sea Grant Program. $9,986. Increasing Graduate Student Participation: Sea Grant Trainee Session at the Western Society of Naturalists (WSN). P.I. E. Grosholz.

2004-2005 California Sea Grant Program. $6,300. International Invasive *Spartina* Conference: Research, Management and Outreach. P.I. E. Grosholz.

2003-2006 National Science Foundation IGERT Program. $2,596,186. Biological invasions: from genes to ecosystems, from science to society. P.I. R.

Grosberg, Co-P.I.s: H. Doremus, K. Rice, S. Strauss, S. Usting, others Collaborators: E. Grosholz and others.

2002-2004 National Oceanic and Atmospheric Administration. $59,998. *Community Based Restoration of Native Oysters in Central California*. E. Grosholz, P.I.

2002-2004 U.S. Fish and Wildlife Service. $97,545**.** *Evaluating nonindigenous aquatic species in the Sacramento-San Joaquin river system*. P.I.'s E. Grosholz and P. Moyle.

2002-2004 California Department of Fish and Game. $40,000. *California aquatic nuisances species management plan.* P.I. E. Grosholz.

2002-2004 Pacific States Marine Fisheries Commission. $29,671. *California green crab monitoring program*. P.I., E. Grosholz.

2002-2004 CALFED Bay/Delta Program. $179,783. Reducing the introduction and damage of aquatic nonindigenous species through outreach and education, Part II. P.I. E. Grosholz.

2002-2005 CALFED Bay/Delta Program. $2,521,236. *The influence of flood regimes, vegetative and geomorphic structures on the links between aquatic and terrestrial systems.* P.I.s J. Quinn, G. Fogg, E. Grosholz, K. T. Paw, M. Schwartz, M. Power (UCB), W. Rainey (UCB), N. Nur (PRBO).

2000-2005 National Science Foundation (DEB-0083583). $3,799,621. *Dynamics of an invasive non-native species and its biological, physical, and human impacts: Spartina alterniflora on the Pacific coast.* P.I.'s A. Hastings, E. Grosholz, D. Layton, D. Strong, S. Ustin, L. Levin (UCSD), A. Cohen (SFEI).

2000-2005 U.S. Environmental Protection Agency EaGLES Program. $4,118,221. *Environmental indicators in the estuarine environment research program.* P.I. S. Anderson, S. Morgan, G. Cherr, R. Nisbet (UCSB), collaborator Edwin Grosholz with others. 3/01/01-2/28/05.

2002 California Department of Fish and Game. $50,002. *Caulerpa taxifolia Outreach*. E. Grosholz, P.I.

2002 United States Fish and Wildlife Service. $10,000. *International Caulerpa taxifolia Conference*. E. Grosholz, P.I.

2002 California Sea Grant College Program. $9,998. *International Caulerpa taxifolia Conference*. E. Grosholz, P.I.

2000-2002 CALFED Bay /Delta Program. $556,000. *McCormack-Williamson Tract restoration planning, design, and monitoring program I.* J. Mount, E. Grosholz, P. Moyle, G. Pasternack, J. Quinn, G. Schladow.

1999-2002 CALFED Bay/Delta Program. $1,946,167. *Linked hydrogeomorphic-ecosystem models to support adaptive management: Cosumnes-Mokelumne paired basin project*. P.I.'s J. Mount, E. Grosholz, P. Moyle, J. Quinn, L. Kavvas, G. Fogg, G. Pasternak, G. Schladow, Randy Dahlgren.

1999-2001 CALFED Bay/Delta Program. $105,463. Reducing the risk of importation and distribution of non-native invasive species through outreach and education. P.I. E. Grosholz.

1999-2001 California Sea Grant. $133,642. *Post-invasion genetic structure of European green crab populations on the US west coast and its implications for the control*. P.I. J. Geller, Co-P.I. E. Grosholz, M. Bagley.

1998-2000 United States Department of Agriculture, Hatch Program. $22,000. *The impact of a recently introduced fouling species on commercial oysters.* P.I. E. Grosholz.

1998-2000 Sea Grant (New Hampshire/Maine)-NOAA Partnership Program. $28,350. *Quantifying the range expansion and ecological impact of the nonindigenous European green crab in western North America.* P.I. E. Grosholz.

1997-1999 Washington State Sea Grant. $154,217. *Potential impacts of a nonindigenous crab on selected west coast commercial invertebrates*. P.I. D. Armstrong, Co-P.I. G. Jensen, E. Grosholz, G. Ruiz, and G. Jamieson.

1996-1997 Smithsonian Institution Biodiversity Programs. Caribbean Coral Reef Ecosystems (CCRE). $1,500. *Climatic and biotic factors influencing the distribution of black band disease at Carrie Bow Cay.* P.I.'s E. Grosholz, G. Ruiz, and A. Hines.

1996-1998 United States Department of Agriculture, Hatch Program (NH00385). $25,000. *Predicting the rate of range expansion of introduced species in the Gulf of Maine.* P.I. E. Grosholz.

1996 National Science Foundation, Research Experience for Undergraduates (REU), Supplement to DEB-9322797, $5,000.

1995 National Science Foundation, Research Experience for Undergraduates (REU) Supplement to DEB-9322797, $5,000.

1994-1996 National Science Foundation, Conservation and Restoration Biology (DEB-9322797). $185,000. *Ecological and evolutionary consequences of the recent introduction of green crabs to the Pacific coast of North America.* P.I. E. Grosholz; Co-P.I.'s, D. Hedgecock and G. Ruiz.

1994-1995 Smithsonian Institution Biodiversity Programs. Caribbean Coral Reef Ecosystems (CCRE), $1,500. *Assessing the distribution of black band disease at Carrie Bow Cay.* P.I.'s E. Grosholz and G. Ruiz.

1993-1994 National Science Foundation, Biological Oceanography, Rapid Response (OCE-9400706), $19,792. *Impact of the recently introduced green crab on invertebrate and shorebird populations in Bodega Harbor.* P.I. E. Grosholz; Co-P.I. G. Ruiz.

1993-1994 California Sea Grant, Rapid Response, $9,999. *Invasion of California estuaries by the non-indigenous green crab Carcinus maenas: Assessment of its impact and geographic spread.* P.I. A. Kuris; Co-P.I.'s K. Lafferty, E. Grosholz, and G. Ruiz.

1992-1994 National Science Foundation, Postdoctoral Fellowship in Environmental Biology (DEB-9203217), $69,600. *The influence of dispersal, predation, and spatial complexity on the population dynamics of a plant-vector-pathogen system.* (Awarded, but declined). P.I. P. Kareiva; Co-P.I. E. Grosholz.

1988-1990 National Science Foundation, Dissertation Improvement Grant (BSR-8800962), $6,000. *The effects of habitat structure on mortality due to virus infection in field populations of the terrestrial isopod Porcellio scaber*. P.I. W. Sousa; Co-P.I. E. Grosholz.

REPORTS AND LIMITED DISTRIBUTION PUBLICATIONS:

Carlton, J. T., G. M Ruiz, J. E. Byers, F. C. Dobbs, E. D. Grosholz, B. Leung, H. MacIsaac, M. J. Wonham. 2011. Assessing the relationship between propagule pressure and invasion risk in ballast water. Committee on Assessing Numeric Limits for Living Organisms in Ballast Water. Water Science and Technology Board, Division on Earth and Life Studies. The National Academies Press, Washington, D.C., 123 pp.

Konzak, M., A. Praetzellis, E. D. Grosholz and C. Zabin. 2011. Archaelogy of *Ostrea lurida* in Drakes Estero, Point Reyes National Seashore. Cooperative Agreement No. H8537070194, Task Agreement No. J8537102387, United States Department of the Interior, National Park Service, Point Reyes National Seashore, Point Reyes Station, CA, 61 pp.

Zabin, C.J., V. Guerra, E.D. Grosholz, K. Lesyna and J. McGowan. 2011. The Asian kelp *Undaria pinnatifida* in San Francisco and Half Moon bays: extent of current population, and update on removal and outreach efforts to date. Final Report to the San Francisco Regional Water Quality Control Board, 32 pp.

Grosholz, E. D. and B. Breen. 2010. Estuarine Habitat. In: J. Largier, B. Cheng and K. Higgason, eds. Climate change impacts – Report of a Joint Working Group of the Gulf of the Farallones and Cordell Bank National Marine Sanctuaries Advisory Councils, 121 pp.

Grosholz, E. D. 2010. Invasive Species. In: J. Largier, B. Cheng and K. Higgason, eds. Climate change impacts – Report of a Joint Working Group of the Gulf of the Farallones and Cordell Bank National Marine Sanctuaries Advisory Councils, 121 pp.

Zabin, C.J., S. Attoe, E.D. Grosholz. 2010. Shellfish Restoration Goals for San Francisco Bay: Final Report for the Subtidal Goals Committee, 107 pp.

Tezak, S., K. Reyna, M. Brown, B. Carmen, B. Brostoff, Bowser, B., G. Bennett, R. Camiccia, J. Collins, R. Ferris, E. Grosholz, G. Heistand, D, Kamieniecki, B. Ketcham, B. Mace, T. Moore, C. Morton, N. Nidzieko, G. Page. 2008. Bolinas Lagoon Restoration Ecosystem Project. Gulf of the Farallones National Marine Sanctuary.

Zabin, C. J., S. Attoe, E. D. Grosholz and C. Coleman-Hulbert. 2009. Shellfish Restoration Goals: Final Report for the Subtidal Goals Committee, 107 pp.

Kimbro, D. L., S. Phillips and E. D. Grosholz. 2007. Proceedings: Workshop on Alternative Ballast Water Exchange Areas: Physical and Biological Oceanographic Considerations. Pacific States Marine Fisheries Commission, 22 pp.

Lovell, S., E. Besedin and E. D. Grosholz. 2007. Modeling economic impacts of European green crabs. Selected paper for presentation at the American Agricultural Economics Association Meetings, Portland, OR.

Grosholz, E. D., H. Crosson and K. Torres. 2006. Chinese (Mandarin) language version of "Introduced Aquatic Plants and Animals Cost Californians Millions! Preventing non-ballast water introduction of aquatic pests in the San Francisco Bay-Delta Region. Wall Poster (www.ridnis.ucdavis.edu).

Grosholz, E. D., H. Crosson and K. Torres. 2006. Chinese language (Cantonese voice, Mandarin subtitles) version The Great Escape: Preventing Aquatic Species Invasions. Video produced by DANR Publications (on DVD) (www.ridnis.ucdavis.edu).

Grosholz, E. D. and H. Crosson. 2005. Workshop recommendations: aquarium industry strategies for consumer awareness and education about introduced aquatic species (www.ridnis.ucdavis.edu).

Crosson, H. and E. D. Grosholz. 2005. Workshop recommendations: aquatic horticulture industry strategies for consumer awareness and education about introduced aquatic species (www.ridnis.ucdavis.edu).

Grosholz, E.D. and H. Crosson. 2005. Invasores de la Bahia. Spanish language printed pamphlet (www.ridnis.ucdavis.edu).

Crosson, H. and E. D. Grosholz. 2005. English language version of "Introduced Aquatic Plants and Animals Cost Californians Millions!" Preventing non-ballast water introduction of aquatic pests in the San Francisco Bay-Delta Region. Wall Poster (www.ridnis.ucdavis.edu).

Harris, L., G. Lambert, W. Fields, D. Cadien, J. Chapman, V. Coelho, E. D. Grosholz, B. Becker. 2005. Estuarine and Marine Invertebrates of Tomales Bay. National Park Service http://www.tomalesbaylife.org/checklists.asp.

Light, T., E. D. Grosholz and P. B. Moyle. 2004. Delta ecological survey (Phase I): nonindigenous aquatic species in the Sacramento-San Joaquin Delta, a Literature Review. Draft final report for agreement # DCN 1113322J011. U.S. Fish and Wildlife Service, Stockton, CA.

Light, T., E. D. Grosholz and P. B. Moyle. 2004. Introduced aquatic species database for the Sacramento-San Joaquin Delta (database on CD).

Crosson, H. and Grosholz, E. D. 2003. California Invasive Species Management Plan. Submitted to California Department Fish and Game.

Mount, J., Kavvas, L., Fogg, G., Florsheim, J. L., Pasternak, G., Dahlgren, R., Moyle, R., Grosholz, E. D. and Quinn, J. 2003. Cosumnes-Mokelumne Paired Basin Project: Linked Hydrogeomorphic-Ecosystem Models to Support Adaptive Management. Published by CALFED Bay-Delta Program (Project #99-N06). (copy included).

Moyle, P. B. and Grosholz, E. D. 2003. Aquatic Resource Program Report. Published by CALFED Bay-Delta Program (Project #99-N06). (copy included).

Grosholz, E. D. and E. Gallo. 2003. Aquatic Resource Survey of the Upper Cosumnes and Mokelumne Rivers: Invertebrates. Published by CALFED Bay-Delta Program (Project #99-N06). (copy included).

Grosholz, E. D. and E. Gallo. 2003. Impact of Seasonal Flooding on Native and Non-Native Species, Cosumnes and Mokelumne Rivers. Published by CALFED Bay-Delta Program (Project #99-N06). (copy included).

Grosholz, E. D. and E. Gallo. 2003. Floodplain Management to Enhance Primary Productivity and Native Invertebrates. Published by CALFED Bay-Delta Program (Project #99-N06).

Grosholz, E. D. 2003. Floodplain Management Alternatives for Reduction in Invasive Aquatic Species. Published by CALFED Bay-Delta Program (Project #99-N06).

Grosholz, E. D. 2003. Long-term Monitoring Recommendations for Aquatic Invertebrates in the Cosumnes and Mokelumne River Basins. Published by CALFED Bay-Delta Program (Project #99-N06).

Grosholz, E. D. and E. Gallo. 2003. Aquatic Resource Survey of the Lower Mokelumne River and McCormack-Williamson Tract. Published by CALFED Bay-Delta Program.

Williams, E. and Grosholz, E. D. 2002. *Caulerpa taxifolia* Watch. Watch card (both laminated waterproof and regular) produced by DANR Publications.

Grosholz, E.D. and E. Williams. 2002. The Great Escape: Preventing Aquatic Species Invasions. Video produced by DANR Publications (on VHS tape).

Grosholz, E.D. and P. Olin. 2001. Reducing Losses of Manila Clams to the European Green Crab. Funded by California Sea Grant.

Grosholz, E.D. and E. Williams. 2001. International *Caulerpa taxifolia* Conference Proceedings. Published by California Sea Grant Program (on CD).

Grosholz, E. D. and G. M. Ruiz. 2000. The impacts of the European green crab *Carcinus maenas* in central California. Dreissena: The Digest of the National Aquatic Nuisance Species Clearing House, Vol. 11(3) pp. 1-6.

Grosholz, E. D. and G. M. Ruiz. 2000. European Green Crab Management Plan. Draft management plan submitted to the federal inter-agency Aquatic Nuisance Species Task Force, Green Crab Steering Committee.

Grosholz, E. D. 1999. The Threat of Nonindigenous Aquatic Species to California Agriculture. Supplemental report to the UC Agricultural Issues Center, Exotic Pests and Diseases: Biology, Economics, Public Policy.

Estelle, R. and E. D. Grosholz. 1999. The effects of introduced marine predators on shorebirds. Contribution to the 1999. National Shorebird Conservation Plan, Manomet Bird Observatory.

FELLOWSHIPS AND AWARDS:

2007 Alex and Elizabeth Swantz Endowed Chair in Cooperative Extension, University of California, Davis.
1993 Postdoctoral Fellowship, Center for Population Biology, University of California, Davis.
1991 Postdoctoral Fellowship, Smithsonian Environmental Research Center, Edgewater, MD.
1990 Postdoctoral Fellowship, Friday Harbor Laboratories, University of Washington.
1989 Outstanding Student Paper, Pacific Ecology Conference, Oregon Institute of Marine Biology, University of Oregon, Charleston, OR.
1989 Outstanding Student Paper, Ecology Section, American Society of Zoologists, Boston, MA.
1988 Regents Fellowship of the University of California.
1987 Theodore Roosevelt Fund of the American Museum of Natural History.

TEACHING EXPERIENCE:

2010 Introduction to Field and Lab Methods, UC Davis
2009 REACH IGERT Graduate training core course, UC Davis
2007 Marine Conservation Biology, UC Davis
2007 Seminar on Algal Biodiversity, UC Davis
2005 Marine Conservation Biology, UC Davis
2004 Seminar on Diseases in Marine Systems, UC Davis
2002 Seminar on Estuarine Ecology, UC Davis
2001 Current Issues in Marine Ecology, UC Davis
1998 Marine Biology, University of New Hampshire
1997 Marine Biology, University of New Hampshire
1997 Conservation Biology, University of New Hampshire
1996 Marine Biology, University of New Hampshire
1996 Marine Ecology, University of New Hampshire
1990 Coastal and Marine Field Ecology, University of California, Davis

GRADUATE STUDENTS AND POSTDOCTORAL RESEARCHERS:

Postdoctoral Fellows: Sylvia Yang 2011-present, Chela Zabin 2006-2009 (currently Assistant Project Scientist, UC Davis), Christy Tyler 2002-2006 (currently Assistant Professor, Rochester Institute of Technology), Catherine DeRivera 2002-2005 (currently Associate Professor, Portland State University), Theo Light 2002-2004 (currently Associate Professor, Shippensburg University)

Ph. D. students: Elizabeth Brusati (2004), Anne Randall Hughes (2006), David Kimbro (2008), Andy Chang (2009), Heidi Weiskel (degree expected 2012), Christy Bowles (degree expected 2012), Betsy Wells (degree expected 2012), Brian Cheng (degree expected 2013), Megan Kelso (degree expected 2015)

M.S. students: David Kimbro (2004), Erika Gallo (2006), Anna Deck (2010), Holly Long (degree expected 2012)

INVITED SYMPOSIA AND SEMINARS:

2012 Workshop, NOAA Oyster Restoration Metrics, Silver Spring, MD
2011 NCEAS Working Group, Climate Change & Invasions, Santa Barbara, CA
2011 Symposium, Ecological Society of America, Austin, TX
2011 Biology Department, California State University, Long Beach, CA
2010 Panelist, Oil Spill Induced Trophic Cascades, Mote Marine, Sarasota, FL
2010 Symposium, California and World Oceans, San Francisco, CA
2010 Symposium, Western Society of Naturalists, San Diego, CA
2010 Biology Department, Humboldt State University, Arcata, CA
2009 Keynote Speaker, Maryland Sea Grant Workshop, Annapolis, MD
2009 Pacific AAAS Conference, San Francisco, CA
2008 Invasive Crab Risk Assessment Workshop, Fisheries & Oceans Canada, Montreal
2008 Invasive Green Crab Workshop, Pacific States Marine Fisheries Commission, Vancouver
2008 Department of Biology, University of Maryland, College Park, MD
2008 School of Fisheries and Ocean Sciences, University of Alaska, Fairbanks
2008 School of Fisheries and Ocean Sciences, University of Alaska, Juneau
2008 Keynote Speaker, Northern Pacific Marine Science Organization (PICES), Dalian, China
2008 Romberg Tiburon Center, San Francisco State University
2007 Hadfield Marine Science Center, Oregon State University, Newport, OR
2007 Propagule Pressure Invited Session, Ecological Society of America, San Jose, CA
2007 COMPASS-Communication Partnership for Science and the Sea, Sacramento, CA
2006 Propagule Pressure Workshop, US EPA, Washington, D.C.
2006 Keynote Speaker, VI Jornadas Nacionales de Ciencias del Mar, Puerto Madryn, Argentina
2006 Panelist, Alternative Ballast Water Exchange Area Workshop, Seattle,WA
2005 Keynote Speaker, Associação Brasileira de Oceanografia, Vitoria, Brazil
2005 Department of Biology, University of California, Santa Cruz
2005 Humboldt Bay Symposium, Arcata, CA
2004 Ecological Society of America, Portland, OR
2004 3rd International Invasive Spartina Conference, San Francisco, CA
2004 American Society of Limnology and Oceanography, Honolulu, HI
2004 Pacific Northwest Economic Region Annual Summit, Victoria, BC
2003 National Marine Fisheries Service, Seattle, WA
2003 UC Davis Invasion Biology Colloquium, Davis, CA
2003 Estuarine Research Foundation, Seattle, WA
2003 NERR Invasive Monitoring Workshop, Monterey, CA
2003 The Nature Conservancy Forum on Invasive Species, San Francisco, CA
2003 Gulf of the Farallones Forum on Invasive Species, San Francisco, CA
2002 Scripps Institution of Oceanography, La Jolla, CA
2002 California and World Oceans Conference, Santa Barbara, CA
2002 Ecological Society of America, Tuscon, AZ
2001 State of the River Conference, Davis, CA
2001 NATO Advance Research Workshop on Invasions in the Mediterranean, Black and Caspian Seas, Baku, Azerbaijan (cancelled)
2001 North American Commission for Environmental Cooperation (CEC, US, Canada, Mexico), Montreal, Canada
2001 DANR Statewide Conference, UC Riverside, Riverside, CA
2000 Department of Biology, Colorado State University
2000 Department of Integrative Biology, University of California, Berkeley

2000 Symposium Co-Organizer (with John Maron): Ecological Consequences of Adaptive Evolution Among Invasive Species in Terrestrial and Marine Systems. Ecological Society of America, Snowbird, UT.
2000 Monterey Bay Aquarium Research Institute (MBARI), Monterey, CA.
2000 10th International Invasive Species Conference, Toronto, Canada
2000 State of Tomales Bay Conference, Inverness, CA
2000 CALFED Bay-Delta Science Conference, Sacramento, CA
1999 National Conference on Marine Bioinvasions, Sea Grant/NOAA, Massachusetts Institute of Technology Cambridge, MA
1998 Workshop: Controlling Established Populations of Alien Marine Species. Marine Conservation Biology Institute, Seattle, WA
1998 Symposium: The Multitrophic Level Impacts of the European Green Crab in Central California. Eighth International Zebra Mussel and Aquatic Nuisance Species Conference, Sacramento, CA
1998 Workshop: Exotics of the North Sea, Biologische Anstalt Helgoland, Wattenmeerstation Sylt, List/Sylt, Germany
1998 Symposium: The Range Expansion and Ecological Impacts of the European Green Crab in California. Workshop on the Potential Impacts of Green Crabs in the Pacific Northwest. Washington and Oregon Seagrant Programs, Portland, OR
1998 Department of Biology, Bowdoin College
1998 Department of Biologie, Universitie Laval, Montreal, Canada
1997 Symposium: The European Shore Crab (Carcinus maenas) in Australian waters. Workshop on Impacts and Management Options Commonwealth Scientific and Industrial Research Organization (CSIRO), Hobart, Tasmania
1997 Symposium Organizer: The Impact of Introduced Species in Aquatic, Terrestrial, and Marine Systems. Society for Conservation Biology, Victoria, Canada
1997 Symposium: Effects of Multiple Stressors on Freshwater and Marine Ecosystems. American Society of Limnology and Oceanography, Santa Fe, NM
1997 Symposium: Nonindigenous Species: Invasion Patterns, Ecosystem Impact, and Management. American Society of Limnology and Oceanography, Santa Fe, NM
1997 Symposium: Marine Biological Invasions: Patterns, Processes, and Prospects. American Association for the Advancement of Sciences, Seattle, WA
1996 Symposium: Marine and Coastal Aquatic Nuisance Species, Aquatic Nuisance Species Task Force, National Oceanic and Atmospheric Administration (NOAA) and U. S. Fish and Wildlife Service (FWS), Newark, CA
1996 Symposium: Non-indigenous Species Workshop. NOAA-California Sea Grant Program, Millbrae, CA
1996 Department of Zoology, University of Rhode Island
1996 Department of Ecology and Evolutionary Biology, Brown University
1996 Symposium: Research in Support of Sanctuaries and Reserves. American Association for the Advancement of Sciences, Pacific Division, Monterey, CA
1995 Department of Zoology, University of New Hampshire, Durham
1995 Department of Biology, Northeastern University, Boston
1995 Department of Biology, University of California, Los Angeles
1994 Department of Biology, California State University, Sonoma
1994 Symposium: American Association for the Advancement of Sciences, Pacific Division, San Francisco, CA
1994 USDA Invasion Biology Workshop, University of California, Davis, CA
1994 Department of Zoology, University of Texas, Austin
1993 Department of Ecology and Evolutionary Biology, Brown University, Providence, RI
1992 Department of Biological Sciences, University of Michigan, Ann Arbor
1990 Center for Population Biology, University of California, Davis

1990 Symposium Co-organizer (with Greg Dwyer): Experimental Approaches to Host-Parasite Population Dynamics. Ecological Society of America, Snowbird, UT

CONTRIBUTED PRESENTATIONS:

2011 7th International Marine Bioinvasions Conference, Barcelona, Spain
2011 Dreissenid Mussel Summit, Sacramento, CA
2010 International Conference on Aquatic Invasive Species, San Diego, CA
2009 Ecological Society of America, Albuquerque, NM
2009 6th International Marine Bioinvasions Conference, Portland, OR
2009 California Estuarine Research Society, Bodega Bay, CA
2008 American Geophysical Union, San Francisco, CA
2008 Ecological Society of America, Milwaukee, WI
2008 Western Society of Naturalists, Vancouver, Canada
2007 5th International Marine Bioinvasions Conference, Cambridge, MA
2007 California Estuarine Research Society, Bodega Bay, CA
2007 West Coast Native Oyster Restoration Workshop, Shelton, WA
2006 Western Society of Naturalists, Redmond, WA
2006 National Shellfisheries Association, Monterey, CA
2006 Ecological Society of America, Memphis, TN
2005 4th International Marine Bioinvasions Conference, Wellington, New Zealand
2005 Western Society of Naturalists, Monterey, CA
2005 Ecological Society of America, Montreal, Canada
2004 Western Society of Naturalists, Rohnert Park, CA
2004 CALFED Science Conference, Sacramento, CA
2003 3rd International Marine Bioinvasions Conference, La Jolla, CA
2003 Ecological Society of America, Savannah, GA
2003 Western Society of Naturalists, Long Beach, CA
2003 American Geophysical Union, San Francisco, CA
2003 CALFED Science Conference, Sacramento, CA
2002 Western Society of Naturalists, Monterey, CA
2002 Bodega Marine Laboratory, Bodega Bay, CA
2002 11th International Conference on Aquatic Invasive Species, Alexandria, VA
2001 Western Society of Naturalists, Ventura, CA
2001 2nd International Marine Bioinvasions Conference, New Orleans, LA
2000 CALFED Bay-Delta Science Conference, Sacramento, CA
1999 1st International Marine Bioinvasions Conference, MIT, Cambridge, MA
1999 Society for Integrative and Comparative Biology, Denver, MA
1997 Society for Integrative and Comparative Biology, Boston, MA0
1996 Ecological Society of America, Providence, RI.
1996 8th International Coral Reef Symposium, Smithsonian Tropical Research Institute, Panama City, Panama
1996 Benthic Ecology Society, Columbia, SC
1995 Society for Conservation Biology, Ft. Collins, CO
1994 Ecological Society of America, Knoxville, TN
1993 Ecological Society of America, Madison, WI
1993 Society for the Study of Evolution and American Society of Naturalists, Salt Lake City, UT

1992 Society for the Study of Evolution and American Society of Naturalists, Berkeley, CA
1992 Benthic Ecology Society, Newport, RI
1991 Western Society of Naturalists, University of California, Santa Barbara, CA
1991 Society for the Study of Evolution and the American Society of Naturalists, University of Hawaii, Hilo, HI
1991 Ecological Society of America, San Antonio, TX
1989 Ecological Society of America, Toronto, Ontario, Canada
1989 American Society of Zoologists, Boston, MA
1989 Pacific Ecology Conference, O.I.M.B., University of Oregon, Charleston, OR
1988 American Society of Zoologists, San Francisco, CA
1988 Ecological Society of America, UC Davis, Davis, CA
1987 Southwest Population Biology Conference, UC California James Reserve, Mt. San Jacinto, CA

EDITORIAL SERVICE:

Associate Editor: Frontiers in Ecology and the Environment (2005-present)
Associate Editor: Ecology (2007-present)
Reviewer for: American Naturalist, Austral Ecology, Biological Conservation, Biological Invasions, Bioscience, Conservation Biology, Ecology, Ecology Letters, Ecological Applications, Frontiers in Ecology and the Environment, Invasion Biology, Journal of Experimental Marine Biology and Ecology, Estuaries, Journal of the Marine Biological Association of the U. K., Journal of Shellfish Research, Marine and Freshwater Research, Limnology and Oceanography, Marine Biology, Marine Ecology-Progress Series, National Science Foundation, National Environment Research Council (UK), Oecologia, Oikos, Proceedings of the National Academy of Sciences, Science, Trends in Ecology and Evolution, National Research Council (NAS), National Sciences and Engineering Research Council (Canada), various state Sea Grant programs

UNIVERSITY AND PROFESSIONAL SERVICE:

2011 San Francisco Bay Marine Life Protection Act Working Group
2010-2011 Member, Endemic/Invasive Pest & Disease SI Panel, UCD/SR
2009-2011 Member, San Francisco Bay Native Oyster Working Group
2009-2011 Chair of Admissions, Graduate Group in Ecology, UC Davis
2009-2011 Member, Graduate Group in Ecology Executive Committee, UCD
2009-2011 Member, SF Bay Subtidal Goals Working Group
2009-2011 Member, Merton Love Awards Committee, UC Davis
2009-2010 Committee Member, National Academy of Sciences, Committee On Assessing Numeric Limits for Living Organisms in Ballast
2009 Review Committee Member, NSERC Network on Aquatic Invasive Species
2008-2009 REACH IGERT Graduate Admissions Committee, UCD
2008-2009 Member, Bodega Marine Lab Nonindigenous Species Committee
2006-2012 Member, Pacific Rim Research Program Faculty Committee
2007-2010 Member, CAES Executive Committee, UC Davis

2007-2009	Co-Chair, San Francisco Bay Native Oyster Working Group
2007-2009	Member, NOAA San Francisco Bay Subtidal Goals Committees
2007-2008	Bolinas Lagoon Restoration Working Group
2007	Member, Search Committee, Global Change Informatics
2006-2007	Member, West Coast Native Oyster Restoration Conference Committee
2006	Member, Search Committee, Biogeochemical Modeler
2006-2007	Co-Chair, UC Office of the President Marine Invasive Species Council
2006-2008	Member, Grant Panel Review Committee, UC Pacific Rim Foundation
2004-2007	Member, Grant Review Committee, UC Center for Invasive Species
2003-2007	Member, Steering Committee, UC Davis IGERT Graduate Training Grant
2003	University of California External Review Committee for California Sea Grant Program
2003	Member, Search Committee for faculty position in Marine Ecology
2002-2006	Co-Chair, Coastal Committee of the Western Regional Panel of the Federal Aquatic Nuisance Species Task Force
2000-2007	Member, Green Crab Control Committee of the Federal Aquatic Nuisance Species Task Force (ANSTF)
2000-2005	Member, Southern California Caulerpa Action Team (SCCAT)
2000-2007	Co-Chair, Coastal and Marine Resources Workgroup, Division of Agriculture and Natural Resources, UC Davis
2002-2006	Advisor, Marine Ecology Area of Emphasis, Graduate Group in Ecology, UC Davis
2000-2001	Chair, Marine Ecology Area of Emphasis, Graduate Group in Ecology, UC Davis
2000-2001	Member, Joint NSF-NIH Grant Panel: Ecology of Infectious Diseases
2000-2001	Member, Non-native Invasive Species Strategic Planning and Implementation Committee, CALFED Bay-Delta Program
2000-2001	Member, Mitten Crab Project Work Team, San Francisco Bay Inter-Agency Ecological Program
2000	Committee Member, Search for Business Office Staff, Department of Environmental Science and Policy, UC Davis
1999-2000	Co-Chair, Public Affairs Committee, Division of Ecology and Evolution Division, Society for Integrative and Comparative Biology, (formerly ASZ)
1998-99	Co-Chair, Public Affairs Committee, Division of Ecology and Evolution Division, Society for Integrative and Comparative Biology, (formerly ASZ)
1997-98	Committee Member, Diving Control Board, University of New Hampshire
1997-99	Committee Member, Computer Advisory Committee, College of Life Sciences and Agriculture, University of New Hampshire
1997-98	Committee Member, Hubbard Marine Program Endowment Education Committee, University of New Hampshire
1997	Chair, Graduate Admissions Committee, Department of Zoology, University of New Hampshire
1996	Volunteer Grant Consultant, Kreesge Foundation Project, Audubon Society of New Hampshire, Concord, NH

1996	Committee Member, Search for Associate Director of the Shoals Marine Laboratory, Cornell University and Department of Zoology, University of New Hampshire
1996	Committee Member, Zoology Department, Planning Committee for Hubbard Chair and Future Positions, University of New Hampshire
1996	Committee Member, Hubbard Marine Program Endowment Review Panel, University of New Hampshire
1995-97	Public Affairs Committee Representative, Division of Ecology and Evolution, Society for Integrative and Comparative Biology, (formerly ASZ)

REFERENCES:

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CURRICULUM VITAE

Dianna K. Padilla
Department of Ecology and Evolution
State University of New York at Stony Brook
Stony Brook, NY 11794-5245

PRESENT POSITION

Professor, Department of Ecology and Evolution, State University of New York at Stony Brook, 2006 - Present, Associate Professor 1998 - 2006

Joint Professor, Marine Sciences Research Center, State University of New York at Stony Brook, 2006 - Present, Adjunct Associate Professor 1999 - 2006

PREVIOUS POSITIONS

Associate Professor, Department of Zoology University of Wisconsin-Madison, 1996-1998

Assistant Professor, Department of Zoology, University of Wisconsin-Madison, September 1989-1996.

Member Oceanography and Limnology Graduate Program, University of Wisconsin-Madison, 1989-1998.

Program Director, Integrative Organismal Systems, Biology, National Science Foundation, 2006–2007.

EDUCATION

Postdoctoral 1987-89, Cornell University, Ithaca, NY

PhD Zoology 1987, The University of Alberta, Edmonton

MS Zoology 1982 Oregon State University, Corvallis

BA Zoology 1978 University of Washington, Seattle

BA Biological Oceanography 1978 University of Washington, Seattle

PUBLICATIONS

Dianna K. Padilla. 1984. The importance of form: differences in competitive ability, resistance to consumers and environmental stress in an assemblage of coralline algae. J. Exp. Mar. Biol. Ecol. 79: 105-127.

Dianna K. Padilla. 1985. Structural resistance of algae to herbivores. A biomechanical approach. Marine Biology 90: 103-109.

John F. Addicott, J. M. Aho, Michael Antolin, Dianna K. Padilla, John S. Richardson, and Daniel A. Soluk. 1987. Ecological neighborhoods: scaling environmental patterns. Oikos 49: 340-346.

Dianna K. Padilla. 1989. Algal structural defenses: form and calcification in resistance to tropical limpets. Ecology 70: 835-842.

C. Drew Harvell and Dianna K. Padilla. 1990. Inducible morphology, heterochrony and size hierarchies in a colonial invertebrate monoculture. Proc. Natl. Acad. Sci. U.S.A. 87: 508-512.

Charles W. Ramcharan, Dianna K. Padilla, and Stanley I. Dodson. 1992. A multivariate model for predicting population fluctuations of *Dreissena polymorpha* in North American lakes. Can. J. Fish. Aquat. Sci. 49(1): 150-158.

Charles W. Ramcharan, Dianna K. Padilla, and Stanley I. Dodson. 1992. Models to predict potential occurrence and density of the zebra mussel, *Dreissena polymorpha*. Can. J. Fish. Aquat. Sci. 49(12): 2611-2620.

Dianna K. Padilla. 1993. Rip stop in marine algae: minimizing the consequences of herbivore damage. Evolutionary Ecology 7: 634-644.

Michael A. Koutnik and Dianna K. Padilla. 1994. Predicting the spatial distribution of *Dreissena polymorpha* (zebra mussel) among inland lakes of Wisconsin: modeling with a GIS. Can. J. Fish. Aquat. Sci. 51:1189-1196.

Dianna K. Padilla, Stephen C. Adolph, Kathryn L. Cottingham, and Daniel W. Schneider. 1996. Predicting the consequences of dreissenid mussels on a pelagic food web. Ecological Modelling 85:129-144.

Dianna K. Padilla and Stephen C. Adolph. 1996. Plastic inducible morphologies are not always adaptive: the importance of time delays in a stochastic environment. Evolutionary Ecology 10:105-117.

Dianna K. Padilla, C. Drew Harvell, Jessica Marks, and Brian Helmuth. 1996. Inducible aggression and intraspecific competition for space in a marine bryozoan, *Membranipora membranacea*. Limnology and Oceanography 41:505-512.

Dianna K. Padilla, Dawn E. Dittman, Jeffery Franz and Rebecca Sladek. 1996. Radular production rates in two species of *Lacuna* Turton (Gastropoda:Littorinidae). Journal of Molluscan Studies 62: 275-280.

Ladd E. Johnson and Dianna K. Padilla. 1996. Geographic spread of exotic species: ecological lessons and opportunities from the invasion of the zebra mussel, *Dreissena polymorpha*. Biological Conservation 78:23-33.

Brenda Young, Dianna K. Padilla, Daniel Schneider, and Steve Hewett. 1996. The importance of size-frequency relationships for predicting ecological impact of zebra mussel populations. Hydrobiologia 332:151-158.

Dianna K. Padilla, M. A. Chotkowski and Lucy A. J. Buchan. 1996. Predicting the spread of zebra mussels (*Dreissena polymorpha*) to inland waters using boater movement patterns. Global Ecology and Biogeography Letters 5:353-359.

Alexander Y. Karatayev, Lyubov E. Burlakova, and Dianna K. Padilla. 1997. The effects of *Dreissena polymorpha* (Pallas) invasion on aquatic communities in eastern Europe. Journal of Shellfish Research 16: 187-203.

Dianna K. Padilla. 1998. Inducible phenotypic plasticity of the radula in *Lacuna* (Gastropoda: Littorinidae). The Veliger 41:201-204.

Alexander Y. Karatayev, Lyubov E. Burlakova, and Dianna K. Padilla 1998. Physical factors that limit the distribution and abundance of *Dreissena polymorpha* (Pall.). Journal of Shellfish Research 17:1219-1235.

Curt L. Elderkin, Daniel W. Schneider, James A. Stoeckel, and Dianna K. Padilla. 1998. A method for measuring in situ oxygen consumption rates of freshwater gastropods. Journal of the North American Benthological Society, 17: (3) 338-347.

Lucy A. J. Buchan and Dianna K. Padilla. 1999 Estimating the probability of long-distance overland dispersal of invading aquatic species. Ecological Applications 9:254-265.

Dianna K. Padilla and Bengt J. Allen. 2000. Paradigm lost: Reconsidering functional form and group hypotheses in marine ecology. Journal of Experimental Marine Biology and Ecology. 250:207-221.

Lucy A. J. Buchan and Dianna K. Padilla. 2000. Predicting the likelihood of Eurasian

watermilfoil presence in lakes, macrophyte monitoring tool. Ecological Applications. 10: 1442-1455.

Tara Reed-Anderson, Steven Carpenter, Dianna K. Padilla, and Richard Lathrop. 2000. Predicted impact of zebra mussel (*Dreissena polymorpha*) invasion on water clarity in Lake Mendota. Canadian Journal of Fisheries and Aquatic Science. 58:1617-1628.

Lyubov E. Burlakova, Alexander Y. Karatayev, and Dianna K. Padilla. 2000. The impact of *Dreissena polymorpha* (Pallas) invasion on unionid bivalves. International Journal of Hydrobiology. 85:529-541.

Dianna K. Padilla. 2001. Food and environmental cues trigger an inducible offense. Evolutionary Ecology Research. 3:15-25.

Dawn E. Dittman, Susan E. Ford and Dianna K. Padilla. 2001 Effects of *Perkinsus marinus* on Reproduction and Condition of the Eastern Oyster, *Crassostrea virginica*, depend on timing. Journal of Shellfish Research 20 (3):1025-1034.

Clifford E. Kraft, Patrick J. Sullivan, Alexander Y. Karatayev, Lyubov E. Burlakova, Jeffrey C. Nekola, Ladd E. Johnson, and Dianna K. Padilla. 2002. Landscape patterns of an aquatic invader: assessing dispersal extent from spatial distributions. Ecological Applications 12:749-759.

Alexander Y. Karatayev, Lyubov E. Burlakova, Dianna K. Padilla. 2002. The impact of zebra mussels on aquatic communities and their role as ecosystem engineers. IN: Invasive aquatic species of Europe: distributions, impacts and management. Eds: Erkki Leppäkoski (Finland), Sergej Olenin (Lithuania) and Stephan Gollasch (Germany), Kluwer Scientific Publishers.

Daniel W. Schneider, James A. Stoeckel, Chris R. Rehmann, K. Douglas Blodgett, Richard E. Sparks, Dianna K. Padilla. 2003. A developmental bottleneck in dispersing larvae: implications for spatial population dynamics Ecology Letters 6: 352-360.

Alexander Y. Karatayev, Lyubov E. Burlakova, Dianna K. Padilla, and Ladd E. Johnson. 2003. Patterns of spread of the zebra mussel (*Dreissena polymorpha* (Pallas)): the continuing invasion of Belarussian lakes. Biological Invasions. 5:213-221.

Alexander Y. Karatayev, Lyubov E. Burlakova, Thomas Kesterson, and Dianna K. Padilla. 2003. Dominance of the asiatic clam, Corbicula fluminea (Müller), in the benthic community of a reservoir. Journal of Shellfish Research. 22:487-493.

Dianna K. Padilla and Susan L. Williams. 2004. Beyond ballast water: aquarium and ornamental trades as sources of invasive species in aquatic ecosystems. Frontiers in Ecology and the Environment. 2:131-138.

Dianna K. Padilla 2004. Form and function of radular teeth of herbivorous molluscs: Focus on the future. American Malacological Bulletin 18: 163-168.

Shirley M. Baker, Dianna K. Padilla. 2004. New Frontiers in the functional morphology of molluscs - A tribute to Drs. Vera Fretter and Ruth Turner. American Malacological Bulletin18: 121-127.

J.A. Stoeckel, C.R. Rehmann, D.W. Schnieder, D.K. Padilla. 2004. Retention and supply of zebra mussel larvae in a large river system: importance of an upstream lake. Freshwater Biology 49:919-930.

Jessica Gurevitch and Dianna K. Padilla. 2004 Are invasions a major cause of extinctions? Trends in Ecology and Evolution. 19:470-474.

Jessica Gurevitch and Dianna K. Padilla. 2004 Response to Ricciardi. Assessing species invasions as a cause of extinction. Trends in Ecology and Evolution. 19:620.

M.L. Carr, C.R. Rehmann, J.A. Stoeckel, D.K. Padilla, and D.W. Schneider. 2004. Measurements and consequences of retention in a side embayment in a tidal river. J. Marine Systems 49: 41-53.

James A. Stoeckel, Dianna K. Padilla, Daniel W. Schnieder, Christopher R. Rehmann. 2004. Laboratory culture of *Dreissena polymorpha* (Pallas, 1771) larvae: spawning success, adult fecundity, and larval mortality patterns. Canadian Journal of Zoology 82: 1436-1443.

Dianna K. Padilla. 2005. The potential of zebra mussels as a model for invasion ecology. American Malacological Bulletin. 20: 123-131.

Alexander Y. Karatayev, Lyubov E. Burlakova, and D. K. Padilla. 2005. Contrasting distribution and impacts of two freshwater exotic suspension feeders, *Dreissena polymorpha* and *Corbicula fluminea*. In: R. Dame and S. Olenin (eds.) The Comparative Roles of Suspension Feeders in Ecosystems. NATO Science Series: IV - Earth and Environmental Sciences. Springer, pp 239-262.

Burlakova, L. E., A.Y. Karatayev, and D. K. Padilla. 2005. Functional changes in benthic freshwater communities after *Dreissena polymorpha* (Pallas) invasion and consequences for filtration. In: R. Dame and S. Olenin (eds.) The Comparative Roles of Suspension Feeders in Ecosystems. NATO Science Series: IV - Earth and Environmental Sciences. Springer, pp 263-275.

Miner BG, Sultan SE, Morgan SG, Padilla DK, Relyea RA. 2005 Ecological consequences of phenotypic plasticity. Trends in Ecology & Evolution 20: 685-692.

Burlakova, L. E., D. K. Padilla, A.Y. Karatayev, and D. Minchin. 2006. Prevalence of *Dreissena polymorpha* endosymbionts in the Shannon River, Ireland. Journal of Molluscan Studies. 72: 207-210.

Alexander Y. Karatayev, Lyubov E. Burlakova, and D. K. Padilla. 2006. Growth rate and longevity of *Dreissena polymorpha* (Pallas): a review and recommendations for future study. Journal of Shellfish Research. 25(1): 23-32.

Terrie Klinger, Dianna K. Padilla and Kevin Britton-Simmons. .2006.. Two invaders achieve higher densities in marine reserves. Aquatic Conservation - Marine and Freshwater Ecosystems 16 (3): 301-311.

Dianna K. Padilla and Benjamin G. Miner. 2006 Legacies in life histories. Integrative and Comparative Biology 46: 217-223.

Padilla, D. K. 2006. Zebra Mussel, *Dreissena polymorpha*. In: Invasive Species in the Pacific Northwest. Edited by PD Boersma, SE Reichard and AN Van Buren, University of Washington Press, 285 pp.

Dianna K. Padilla, Michael H. Doall, Christopher J. Gobler, Amanda Hartson and Kim O'Boyle. 2006. Brown tide alga, *Aureococcus anophagefferens*, can affect growth but not survivorship of *Mercenaria mercenaria* larvae. Harmful Algae 5: 736-748.

Lyubov E. Burlakova, Alexander Y. Karatayev, and Dianna K. Padilla. 2006. Changes in the distribution and abundance of *Dreissena polymorpha* within lakes through time. Hydrobiologia. 571:133-146.

Alexander Y. Karatayev, Dianna K. Padilla, Dan Minchin, Demetry Boltovskoy, and Lyubov E. Burlakova. 2007. Changes in global economies and trade: the potential spread of exotic freshwater bivalves. Biological Invasions. 9:161-180.

Alexander Y. Karatayev, Demitri Botolvskoy, Dianna K. Padilla, and Lyubov E. Burlakova. 2007 The invasive bivalves *Dreissena polymorpha* and *Limnoperna fortunei*: parallels, contrasts, potential spread and invasion impacts. Journal of Shellfish Research. 26: 205-213.

Michael H. Doall, Dianna K. Padilla, Carl P. Lobue, Christopher Clapp, Anna R. Webb and Jesse Hornstein. 2008. Evaluating northern quahog (hard clam, *Mercenaria mercenaria* L.) restoration: are transplanted clams spawning and reconditioning? Journal of Shellfish Research 27:1069-1080.

Laurie L. Perino, Dianna K. Padilla and Michael H. Doall. 2008. Testing the accuracy of morphological identification of northern quahog larvae. Journal of Shellfish Research 27:1081-1085.

Rachel Przeslawski, Paul E. Bourdeau, Michael H. Doall,, Jironimo Pan, Laurie Perino and Dianna K. Padilla. 2008. The effects of a harmful alga on bivalve larval lipid stores. Harmful Algae 7:802-807.

Alexander Y. Karatayev, Lyubov E. Burlakova, Vadim A. Karatayev and Dianna K. Padilla. 2009. Introduction, distribution, spread, and impacts of exotic freshwater gastropods in Texas. Hydrobiologia 619:181-194.

Lyubov E. Burlakova, Alexander Y. Karatayev, Dianna K. Padilla, Leah D. Cartwright and David N. Hollas. 2009. Wetland restoration and invasive species: apple snail (*Pomacea insularum*) feeding on native and invasive aquatic plants. Restoration Ecology 17: 433-440.

Alexander Y. Karatayev, Lyubov E. Burlakova and Dianna K. Padilla. 2010. *Dreissena polymorpha* in Belarus: history of spread, population biology, and ecosystem impacts. In: The Zebra Mussels in Europe (G. van der Velde, S. Rajagopal and A. bij de Vaate, eds.). Margraf Publishers, Netherlands.

Kurt Schwenk, Dianna K. Padilla, George S. Bakken and Robert J. Full (shared first authorship). 2009. Grand challenges in organismal biology. Integrative and Comparative Biology. 49:7-14.

Alexander Y. Karatayev, Lyubov E. Burlakova, Dianna K. Padilla, Sergey E Mastitsky and Sergej Olenin. 2009. Invaders are not a random selection of species. Biological Invasions 11 SI: 2009-2019.

Michael H. Doall, Dianna K. Padilla, and Carl P. Lobue. 2009. Factors impacting condition and spawning of the northern quahog (*Mercenaria mercenaria*): implications for restoration. Journal of Shellfish Research 28:693-693 (2nd most downloaded paper in 2009).

Lyubov E. Burlakova, Dianna K. Padilla, Alexander Y. Karatayev, David N. Hollas, Leah D. Cartwright and Kevin D. Nichol. 2010. Differences in population dynamics and potential impacts of a freshwater invader driven by temporal habitat stability. Biological Invasions 12: 927-941.

Dianna K. Padilla. 2010. Context-dependent impacts of a non-native ecosystem engineer, the Pacific oyster *Crassostrea gigas.* Integrative and Comparative Biology 50: 213-225.

Gene Robinson*, Jody Banks*, Dianna K Padilla* (*shared first author), Warren W. Burggren, C. Sarah Cohen, Charles F Delwiche, Vicki Funk, Hopi E Hoekstra, Erich D Jarvis, Loretta Johnson, Mark Q Martindale, Carlos Martinez del Rio CM (del Rio, Monica, David E Salt, Saurabh Sinha, Chelsea Specht, Kevin Strange, Joan E Strassmann, Billie J Swalla, Lars Tomanek. 2010. Empowering 21st Century Biology. Bioscience 60: 923-930.

Brian Tsukimura, Hanna V Carey, Dianna K Padilla. 2010. Workshop on the Implementation of the Grand Challenges. Integrative And Comparative Biology 50: 945-947.

Jonathon H. Stillman, Mark Denny, Dianna K. Padilla, Marvalee H. Wake, Sheila Patek and Brian Tsukimura. 2011. Grand Opportunities: Strategies for addressing grand challenges in organismal animal biology. Integrative and Comparative Biology 51:7-13.

Alexander Y. Karatayev, Sergey E.Mastitsky, Dianna K.Padilla, Lyubov E.Burlakova and

Marissa M. Hajduk. 2011. Differences in growth and survivorship of zebra and quagga mussels: size matters. Hydrobiologia 668:183-194.

Alexander Y. Karatayev, Lyubov E.Burlakova, Sergey E.Mastitsky, Dianna K.Padilla and Edward L Mills 2011. Contrasting rates of spread of two congeners, *Dreissena polymorpha* and *Dreissena rostriformis bugensis*, at different spatial scales. Journal Of Shellfish Research 30:923-931.

Dianna K Padilla, Michael J McCann, Sandra E Shumway. 2011. Marine invaders and bivalve aquaculture: sources, impacts and consequences. In: Shellfish Aquaculture and the Environment, SE Shumway, editor. Wiley Blackwell.

Alexander Y. Karatayev, Lyubov E. Burlakova and Dianna K. Padilla. 2012. General overview of zebra and quagga mussels: what we know and do not know. In T. F. Nalepa and D. W. Schloesser [eds] Quagga and Zebra Mussels: Biology, Impacts, and Control. 2nd Edition. CRC Press, Boca Raton, FL. (accepted).

Islay D. Marsden, Sandra E. Shumway and Dianna K. Padilla. 2012. Does size matter? The effects of body size and declining oxygen tension on oxygen uptake in gastropods. Journal of the Marine Biological Association of the United Kingdom doi:10.1017/S0025315411001512.

GRANTS

University of Wisconsin Graduate School Research Award, July 1990 - June 1991, ($21,625) "Evolutionary consequences of radular variability in an herbivorous snail."

NOAA Sea Grant Institute 1990 ($10,918) "Monitoring and Disseminating Information on the Spread of Zebra Mussels in the Upper Great Lakes -- Northern Lake Michigan Sites". To A. Miller, D.K. Padilla and S.I. Dodson.

NOAA Sea Grant Institute 1990-1991 ($38,724) "Monitoring and Disseminating Information on the Spread of Zebra Mussels in the Upper Great Lakes -- Northern Lake Michigan Sites". To A. Miller, D.K. Padilla and S.I. Dodson.

NSF September 1990- September 1992; BSR-9009070 ($12,000) "RPG: Radular Variability in the Herbivorous Gastropod Lacuna".

University of Wisconsin Graduate School Research Award, July 1991 - June 1992, ($18,888) "Ecological and evolutionary consequences of variable radular morphology in the herbivorous snail Lacuna".

NSF 1991 (June 1991 - September 1992; REU Supplement to BSR-9009070, $10,000) "Ecological and evolutionary consequences of radular variability".

NOAA 1991 - 94 ($196,530; NA16RG0531-01) "Exotic species invasions: population dynamics and community consequences of the zebra mussel, Dreissena polymorpha".

University of Wisconsin Graduate School Research Award, July 1992 - June 1993 ($17,865) "Radular variability and functional morphology in the herbivorous gastropod Lacuna: a phylogenetic approach."

University of Wisconsin Graduate School Research Award, July 1993 - June 1994 ($18,000) "Radular variability and functional morphology in the herbivorous gastropod Lacuna: a phylogenetic approach."

University of Wisconsin Graduate School Research Award, July 1994 - June 1995 ($17,000) "Exotic species invasions: Ecological consequences and spread of aquatic Invaders across a landscape."

NSF 1994 - 1997 ($210,000; IBN-9317293) "Functional and evolutionary analysis of an

inducible, phenotypically plastic feeding morphology."

NOAA 1994 - 97 ($169,210; NA46RG0481); "Population and energetic consequences of zebra mussel fouling on native gastropod fauna of Lake Michigan. To: Dianna K. Padilla, J. Ellen Marsden, Daniel Schneider.

NSF 1995 ($5,000; May 1995 - December 1995; REU Supplement to IBN-9317293) "Functional and evolutionary analysis of an inducible, phenotypically plastic feeding morphology."

University of Wisconsin Graduate School Research Award, July 1995 - June 1996 ($17,000) "Exotic species invasions: Ecological consequences and spread of aquatic Invaders across a landscape."

NOAA 1995 - 97 ($108,814; R/LR-65) "Facilitation of exotic species information exchange between North America and the former Soviet Union."

NSERC 1995 - 1998 ($330,000 Collaborative Project Grant); AEvolutionary Ecology of Exotic Species Introductions into the Great Lakes.@ To: E.G. Boulding, P.D.N. Hebert, P. Yodzis, G. Sprules, J. Havel, and D.K. Padilla).

NSF 1999-02 ($210,000; DBI-9977377), AMRI: Acquisition of Instrumentation for Research and Training in Functional Ecology.@, To: D. K. Padilla and M. Lerdau.

NSF 1999-02 ($270,000 + REU supplements $13,100, IBN-994594), AFunctional and Evolutionary Ecology Of A Phenotypically Plastic Feeding Morphology@.

NOAA/SeaGrant 1999-01 ($250,000) AResearch and Outreach to Prevent and Control Aquatic Nuisance Species Invasions: The Role of Larval Growth, Mortality and Transport in Metapopulation Dynamics and Control of the Zebra Mussel in Freshwater and Estuarine Systems. To: D.K. Padilla, D.W. Schneider, R. Sparks, and C. Rehmann.

NOAA/Illinois-Indiana Sea Grant College Program 2000-2002 ($96,371)"Predicting zebra mussel transport in rivers and estuaries" To: C. R. Rehmann, D. K. Padilla, D.W. Schneider.

NSF 2000 ($11,000; IBN-9983235) "WORKSHOP: Increasing Minority Involvement In Integrative and Comparative Biology, to be held at the annual meeting of SICB, Atlanta, Georgia, January 4_8, 2000." To: D.K. Padilla, F. Thomas.

NSF 2000 ($4,500; IBN-9982794) ASICB Symposium: New Approaches to the Study of Marine Plant-Animal Interactions@. To: D.K. Padilla and K.L. VanAlstyne.

NSF 2001 ($5,950, IBN-0090902; Funding split between IBN and IAB) "World Congress of Malacology Symposium: New Frontiers in Functional Morphology of Molluscs." To: D.K. Padilla and S. Baker.

NOAA/SeaGrant 2002-2004 ($300,000) Aquatic Nuisance Species. Metapopulation Dynamics and Control of the Zebra Mussel in Freshwater and Estuarine Systems: The Effects of Hydrodynamics, Larval Supply, and Embayments. To: D.K. Padilla, D.W. Schneider, and C. Rehmann.

NOAA/SeaGrant 2003-2006 ($267,318) Aquatic Nuisance Species Research Program: Biological Invasion of Marine Reserves by Aquatic Nuisance Species. To: Terrie Klinger and Dianna Padilla.

Nature Conservancy 2004-2005 ($67,400) Gonad production, condition index and larval production in hard clam spawners sanctuaries. To: Dianna Padilla and Michael Doall.

NY Sea Grant 2004-2005 ($49,655) The effects of brown tide and plankton quality on hard clam larval growth and survivorship. To: Dianna Padilla and Christopher Gobler.

Army Corp of Engineers ($15,000) Modeling aquatic invaders. To: Dianna K. Padilla.

Nature Conservancy 2005 ($12,385). Larval production in hard clam spawners sanctuaries. To: Dianna K. Padilla.

NSF 2009 - 2012 ($573,096). IOS-0920032 9/11-9/14 Phenotypic Plasticity in Feeding: Ontogenetic Solutions to Scaling Limitations. To: Dianna K. Padilla, Sandra Shumway, J. Evan Ward.

Nature Conservancy 2010 ($2,651). Predation Rates on Hard Clams by Channeled and Knobbed Whelk. To: Dianna K. Padilla.

AWARDS AND FELLOWSHIPS

Elise B. Newell Distinguished Lecture, Florida Sea Grant, U. Florida, 1999

Aldo Leopold Leadership Fellow in Conservation, ESA 2000 – 2002

Elise B. Newell Distinguished Lecture, Florida Sea Grant, Florida State U. 2001

Elise B. Newell Distinguished Lecture, Florida Sea Grant, U. Central Florida. 2002

Bodega Marine Laboratory Distinguished Research Fellow, 2002

Center Fellowship, National Center for Ecological Analysis and Synthesis, 2005

2009 Hispanic Heritage Month Latino Faculty Recognition Award

NATIONAL SERVICE

Panel Member, NSF Minority Postdoc Awards, 1995, 1996, 1997

Panel Member, NSF Ecological and Evolutionary Physiology, 2001

Panel Member, NSF Integrative Organismal Systems, Organism Enviornment Interactions 2010

Panel Member, EPA Star Grants in Biopollution, 2000

Madison Ecology Group (group of all campus faculty in ecology), Executive Board 1996, 1997; Chair Activities Committee Chair 1995, 1996, 1997; Organized campus symposium on Ecology 1996

Sigma Xi Madison Chapter Board Member, 1994-1997; Treasurer 1995-96; President Elect 1996-97

Chair, Ecology and Evolution Division, Society for Comparative and Integrative Biology, Member Executive Committee, 1997 - 1999

Chair, Division of Invertebrate Zoology, Society for Comparative and Integrative Biology, Member Executive Committee, 2009-2012

Member at Large, Executive Committee Society for Integrative and Comparative Biology, 2001-2004

Committee to Increase Diversity in Integrative and Comparative Biology, 2000 - 2004

Editorial Board, (American Zoologist) Integrative and Comparative Biology 2000 - 2012

Vice President, American Malacological Society 2002-2003

President Elect, American Malacological Society 2003-2004

President, American Malacological Society 2004-2005

Executive Council, American Malacological Society 2003 - 2007

Editorial Board American Malacological Bulletin 2004 - present

Friday Harbor Laboratories Academic Advisory Board 2002 - present

CURRICULUM VITAE

Charlie Wisdom, PhD, AICP
Parametrix
Sr. Consultant

Charlie Wisdom is a water quality specialist with 29 years of experience investigating the impacts of chemicals discharged from sewage treatment plants on aquatic life, wildlife, and humans as well as the environmental impacts of stormwater runoff on aquatic habitats and endangered species. During this time, he has provided both public and private client assistance in issues related to water quality, stormwater impacts, NPDES permit compliance, Endangered Species Act Biological Assessments, and NEPA Environmental Assessments and Environmental Impact Statements. His work has also addressed the terrestrial and aquatic toxicity and fate chemistry of metals released as point sources such as sewage treatment plants and from non-point sources of metals to urban stormwater. Charlie has both helped prepare NEPA documents for private proponents and state and federal agencies as well as acting as a reviewer and commenter on NEPA documents for potentially affected parties. He has assisted in the preparation of NEPA EAs and EISs, NEPA natural environment discipline reports (particularly water resources), and has acted as a third-party reviewer for technical documents prepared in support of EIS effect determinations

Selected Project Experience
Aquatic Resources HCP EIS – Washington DNR, USFWS, NMFS, Washington
Charlie worked with a team of Parametrix scientists responsible for the preparation of this NEPA EIS that will also satisfy the requirements of SEPA. The EIS will evaluate the environmental effects of implementing the Washington Department of Natural Resources (DNR) proposed Aquatic Lands HCP. DNR manages approximately 2.4 million acres of state-owned aquatic lands in Washington State. DNR is preparing an HCP for 23 species of fish and wildlife that occur on these lands and might be affected by activities that DNR conducts or authorizes. With the Aquatic Lands HCP, DNR plans to maintain, improve, or provide habitat for covered species of fish and wildlife, including several that are listed as threatened or endangered. Charlie is preparing the water quality evaluation of the aquatic land management activities currently proposed for coverage in the HCP include 1) aquaculture of fin fish and shellfish; 2) overwater structures (docks, boat ramps, boat launches, mooring buoys, nearshore buildings, floating homes, marinas, and shipyards and terminals); and 3) log booming and storage.

Years of Experience: 29

Education
PhD, Chemical Ecology, 1982
BA, Biology, 1977

AA, Biology, 1975

Intertidal Geoduck Farming Assessment – People for Puget Sound, Seattle, Washington
Charlie helped prepare a technical review and analysis of available studies on geoduck intertidal farming to assess the environmental impacts of intertidal geoduck farming in the Puget Sound. The intent of this evaluation was to review and evaluate available scientific information on intertidal geoduck farming to provide the People for Puget Sound for their use in the development of positions on proposed state guidelines/regulations for farming operations and a shoreline owner proposed moratorium on farming until a comprehensive environmental impact assessment is prepared. This review found that there is no available evidence that intertidal geoduck farming has any different impacts from either intertidal oyster or manila clam farming operations and that it does not appear that the current level of intertidal geoduck farming poses a threat of extinction to either listed fish species or to the benthic communities found in Puget Sound's intertidal habitat.

Third Party Review of Risk Assessment for Cortez South Pipeline Environmental Impact Statement – Bureau of Land Management, Nevada
Charlie acted as a third party reviewer in the development of an aquatic life and wildlife risk assessment of a future pit lake associated with the Cortez South Pipeline project for a Bureau of Land Management EIS as a subconsultant to Environmental Management Associates. The EIS was in support of the expansion of the ongoing mining operation for the Pipeline project. Charlie reviewed the completed risk assessment, critiquing the scientific validity of the risk assessment and summarizing the risk assessment for the draft EIS, as well as participating in and responded to public review of the EIS.

Prepared Response to Comments on Goldstrike Mine EIS - Barrick Resources, Nevada
Charlie assisted Barrick Resources with developing responses to comments received on the Barrick Goldstrike EIS, through the preparation of a conceptual site model to describe the specific receptors of concern and their pathways of exposure to constituents that are predicted to be present in the future Pit Lake that will develop at the Goldstrike facility following mine closure. Charlie developed a narrative risk characterization of the conditions of the Goldstrike discharge to the Humboldt River and potential effects on the receiving environment. He also reviewed methods and calculation provided by a third party used to estimate risks from mercury and selenium bioaccumulation in the future pit lake.

SR 520 Bridge Replacement and HOV Project Draft EIS – King County, WA
Charlie prepared water resources and navigation discipline reports for the potential effects of replacing the floating bridge connecting Seattle to the cities on the eastern shoreline of Lake Washington. The major environmental concern in this evaluation was the transport of road and bridge contaminants in stormwater to local environments. Most stormwater generated by SR 520 today is not treated and flows are not controlled before being discharged. The proposed alternatives would increase the amount of land covered by pollutant generating impervious surfaces in the project area. However, by applying stormwater treatment and flow control in their designs, both alternatives would meet state and federal water quality regulations, and both alternatives would provide more treatment than is required for stormwater discharging from the Evergreen Point Bridge. Charlie determined that construction impacts and the permanent operation of the bridge would have negligible effects on aquatic life and humans using groundwater. It was also determined that this would increase pollutant generating impervious

surfaces in the project area; however, this increase would not cause a detectable change to surface water or groundwater quality. Lastly, Charlie evaluated the need for additional mitigation in addition to that included in the overall design of the replacement bridge and roadways.

Puget Sound Region Hatchery Resource Management Plan NEPA EIS, Northwest Indian Fish Commission – Puget Sound, WA

Charlie was the water quality/quantity task leader for a programmatic EIS on two resource management plans (RMPs) submitted by the hatchery co-owners (Washington Department of Fish and Wildlife and Puget Sound Treat Tribes) for approval pursuant to ESA 4(d) Rule Limit 6. The RMPs and associated hatchery genetic management plans (HGMPs) describe 113 hatchery programs and evaluate their effects on salmonid populations protected under the ESA. In this process, Dr. Wisdom assessed the potential programmatic water quality and hydrologic impacts of Puget Sound hatchery programs on ESA listed species in Puget Sound, primarily through compliance with the Clean Water Act criteria.

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CURRICULUM VITAE

Christopher Willes Clark
Cornell Lab of Ornithology
159 Sapsucker Woods Road
Ithaca, NY 14850
Phone: (607) 254-2405 e-mail: cwc2@cornell.edu

(a) PROFESSIONAL PREPARATION

Stony Brook University	Biological Sciences	B.S. 1972
Stony Brook University	Engineering Sciences	B.E. 1972
Stony Brook University	Electrical Engineering	M.S.E.E. 1974
Stony Brook University	Neurobiology & Behavior	Ph.D. 1980
The Rockefeller University	Postdoctoral Scientist	1981-83

(b) APPOINTMENTS

1983 - 1987 Assistant Professor, The Rockefeller University, New York, NY
1987 - present Director Bioacoustics Research Program, The Cornell Lab of Ornithology
1989 - 1994 Senior Research Associate, Department of Neurobiology & Behavior, Cornell University
1994 - present Senior Scientist, Department of Neurobiology & Behavior, Cornell University
1985 - present Member, U. S. delegation to the International Whaling Commission Scientific Committee, since 1985
2005 - 2007 Member, NRC Committee on Environmental Impacts of Wind Energy Projects
2006 - present Graduate member Field of Zoology

(c) SCIENTIFIC PUBLICATIONS

(i)

Clark, C. W., Ellison, W. T., Southall, B. L., Hatch, L., Van Parijs, S., Frankel, A., and Ponirakis. 2009. Acoustic Masking in Marine Ecosystems: Intuitions, Analysis, and Implications. Mar. Ecol. Progr. Ser. 395:201-222.

Clark, C. W., Brown, M. W. and Corkeron, P. 2010. Visual and acoustic surveys for North Atlantic right whales, *Eubalaena glacialis*, in Cape Cod Bay, Massachusetts, 2001-2005: Management implications. Marine Mammal Science 26:837-854.

Ellison, W. T., Southall, B. L., Clark, C. W., and Frankel, A. In press. A new context-based paradigm to assess behavioral responses of marine mammals to sound. Con. Bio.

Hatch, L., Clark, C., Merrick, R., Van Parijs, S., Ponirakis, D., Schwehr, K., Thompson, M., and Wiley, D. 2008. Characterizing the relative contributions of large vessels to total ocean noise fields: a case study using the Gerry E. Studds Stellwagen Bank National Marine Sanctuary. Environ. Management. 42:735-752.

Staaterman E. R., Clark, C. W., Gallagher, A. J., deVries, M. S, Claverie, T. and Patek, S. N. 2011. Rumbling in the benthos: the acoustic ecology of the California mantis shrimp. Aquat. Biol. 13:97-105.

(ii)

Clark, C.W., Gillespie, D., Nowacek, D.P., and Parks, S.E. 2007. Listening to Their World: Acoustics for Monitoring and Protecting Right Whales in an Urbanized Ocean. In: The Urban Whale (Eds. S. Kraus and R. Rolland). Harvard University Press, Cambridge, MA. pp. 333-357.

George, J. C. "Craig", Zeh, J., Suydam, R., and Clark, C. 2004. Abundance and population trend (1978-2001) of the western Arctic bowhead whales surveyed near Barrow, Alaska. Marine Mammal Science 20: 755-773.

Kraus, S., M. W. Brown, H. Caswell, C. W. Clark, M. Fujiwara, P. K. Hamilton, R. D. Kenney, A. R. Knowlton, S. Landry, C. A. Mayo, W. A. McLellan, M. J. Moore, D. P. Nowacek, D. A. Pabst, A. J. Read and R. M. Rolland. 2005. North Atlantic right whales in crisis. *Science* 309:561-562.

Parks, S., Clark, C.W., and Tyack, P.L. 2007. Short and long-term changes in right whale calling behavior: the potential effects of noise on acoustic communication. J. Acoust. Soc. Am., 122:3725-3731.

Van Parijs, S. and C.W. Clark. 2006. Long term mating tactics in an aquatic mating pinniped – the bearded seal, *Erignathus barbatus*. Animal Behavior, 72: 1269-1277.

(d) **SELECTED SYNERGISTIC ACTIVITIES**

1996 – present: Acoustic monitoring of large whale distributions, behaviors, and movements relative to environmental factors and man-made activities in the North Atlantic using Navy IUSS assets.

2000 – present: Elephant Listening Project. Working with Gabonese researchers and conservationists to understand acoustic behavior ecology of African forest elephants and the potential impacts of seismic exploration activities.

2002 - present: Application of passive acoustic methods to quantify the potential influences of environmental factors and man-made activities on endangered whales off New England and in mid-Atlantic waters; NOAA, Northeast Consortium, MA Division of Marine Fisheries.

2007 – 2014: Design, installation and operation of near-real-time auto-detection system for large whale acoustic monitoring and mitigation of Northeast Gateway Deepwater Port. Excelerate Energy and Suez Energy North America.

2008 - 2011: An ocean observing system for large-scale monitoring and mapping of noise throughout the Stellwagen Bank National Marine Sanctuary; NOAA-SBNMS, NOAA-NESFC.

2011 – 2014: Portable and Persistent Autonomous Real-Time Marine Mammal Acoustic Monitoring. NSF: OCE - Ocean Tech & Interdisc. Coordin.

2011 – 2014: DCL System Using Deep Learning Approaches for Land-based or Ship-based Real-time Recognition and Localization of Marine Mammals. ONR.

Cornell: Please feel free to treat all Cornell faculty and extension staff as collaborators.

Non-Cornell Collaborators: I. Boyd (SMRU, St. Andrews, Scotland), L. Hatch (SBNMS, NOAA), S. V. Parijs (NOAA-NEFSC), L. Garrison (NOAA-SEFSC), D. Moretti (NUWC), P. Tyack (WHOI), A. Turkalo (WCS, Gabon, CAR).

Graduate and postdoctoral Advisors: Dr. Charles Walcott (SBU), Dr. Peter Marler (Rockefeller Univ.).

Postdocs: Adam Frankel, Dave Mellinger, Sofie V. Parijs, Ildar Urazghildiiev.

Ph.D. Thesis advisees (Cornell only) John Bower, Bernard Brennan**,** Renata deSousa Lima Mobley, Danielle Cholewiak**,** Mya Thompson.

Ph.D. Minor advisees (Cornell only) Ingrid Biedron, Dan Pendleton, Lynn Fletcher, Yianna Samuel, Damian Elias, Andrew Farnsworth, Leila Hatch, Karen Fisher, Hamilton Farris, Matt Weeg, Paul Faure, David Haskell, Jessica McKibben, Andrea Lee, Beth Weisburn, Stacey Benton David Haskell, Adam Frankel.

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CURRICULUM VITAE

James E. Wilen
36925 Russell Blvd.
Davis, CA 95616

Telephone: (530) 752-6093
(530) 753-2493

Date and Place of Birth: June 23, 1947, Petaluma, California

Education

Ph.D., 1973, University of California, Riverside. Specialty fields: Natural Resource Economics, Environmental Economics, Economic Theory.
B.A., 1970, California State University, Sonoma. Concentration in Urban Economics, Regional Economics, Economic Development, and Mathematics.

Honors and Awards

Distinguished Fellow, American Agricultural Economics Association, 2001
Fellow, Beijer Institute of Ecological Economics, 2007
Distinguished Graduate Mentoring Award, 2004: University of California, Davis
Publication of Enduring Quality, 2010; Association of Environmental/Resource Economists
Quality of Research Discovery Award, 2009: American Applied Economics Association
Quality of Research Discovery Award, 2004: American Agricultural Economics Association
Quality of Research Discovery Award, 2000: American Agricultural Economics Association
Quality of Research Discovery Award, 1998: American Agricultural Economics Association
Outstanding Published Research Award, 1998: Western Agricultural Economics Association
Distinguished Graduate Teaching Award, 1998: American Agricultural Economics Association
Supervisor, Outstanding Ph.D. Dissertation, American Agricultural Economics Assn. (6 times)
Supervisor, Gordon King Dissertation Award, UC Davis, Ag & Res. Econ. Dept. (6 times)
Supervisor, Institute for Transportation Studies Outstanding Ph.D. Dissertation, 2006, UCD
Distinguished Conservation Scholar, Duke University Marine Lab, August 2005
Resources for the Future, Inc. Doctoral Dissertation Fellowship, UCR, 1972-73
National Science Foundation Fellowship, UCR, 1970-72
B.A. with Honors and with Distinction in Economics, CSUS, 1970

Research Interests

Bioeconomic modeling; dynamics of open access exploitation; micro foundations of entry-exit decisions; factor distortion in regulated common property industries; energy economics; recreation economics; transferable quotas; economics of search; economics of aquaculture; natural resource damage analysis; agricultural pollution; fisheries input/output markets; technical change and productivity in resource industries; economics of cooperation; economic development/natural resources; spatial-dynamic models of resource use

Teaching Experience

Natural Resource Economics - 37 years: Undergraduate and Graduate level
Dynamic Analysis
Environmental Economics
Introductory and Intermediate Micro Theory
Energy Economics
Environmental Policy Analysis
Fisheries Economics
Applied Research Methodology

Work Experience

Research Assistant, California State University, Sonoma, Economics Department, Summers of 1968 and 1969.

Teaching Assistant, California State University, Sonoma, Economics Department, February 1970-June 1970.

Consultant, Department of Interior, Climatic Impact Assessment Program--economic impact of SST flights in the upper atmosphere, September 1973-December 1974.

Consultant, Mathematica, Inc.--analysis of costs and effectiveness of Clean Air Act of 1972 on air pollution in the United States, May 1974-August 1974.

Consultant, National Commission on Water Quality--conceptual foundations of benefit measurement, August 1975.

Assistant Professor of Economics, University of British Columbia, January 1974-June 1978.

Assistant Professor of Economics and of Environmental Studies, University of Washington, July 1978-June 1979.

Associate Professor of Agricultural Economics and of Environmental Studies, University of California, Davis, July 1979-June 1986.

Professor of Agricultural Economics and of Environmental Studies, University of California, Davis, July 1986-June 1996.

Professor of Agricultural and Resource Economics, University of California, Davis, July 1996 to present.

Director, Center for Natural Resource Policy Analysis., University of California, Davis, July 2002 to present.

Selected Publications and Completed Research

"A Model of Economic System-Ecosystem Interaction," Environment and Planning, Vol. 5, 1973, pp. 409-420.

"Depletion and Diplomacy: The North Pacific Seal Hunt, 1880-1910," in Paul Uselding (ed.), Research in Economic History, 1977, (with D. G. Patterson).

"The Impact of Canada's Pacific Fleet Salmon Control Program," The Journal of the Fisheries Research Board of Canada, Vol. 36, No. 7, 1979 (with P. H. Pearse).

"Regulatory Implications of Alternative Models of Fishermen Behavior," The Journal of the Fisheries Research Board of Canada, Vol. 36, No. 7, 1979.

The Public Regulation of Commercial Fisheries, Vol. I (with A. D. Scott, J. A. Crutchfield, P. H. Pearse, G. R. Munro, M. Tugwell), Economic Council of Canada, Queens Printer Ottawa, Canada, June 1981.

"Regulation of the British Columbia Herring Industry," in: The Public Regulation of Commercial Fisheries, Vol. II (A. D. Scott et al.).

"Cyclic Covariation in the California King Salmon, Silver Salmon, and Dungeness Crab Fisheries," Fishery Bulletin, Vol. 80, No. 4, 1982, (with Louis Botsford and Richard Methot)," Natural Resources Journal, Vol. 23, April 1983, (with R. Davis and R. Jergovic).

"Towards a Theory of the Regulated Fishery," Journal of Marine Resource Economics, Vol. I, No. 4, 1985.

"Biological Models with Applications in Natural Resource Economics," in A. V. Kneese and J. L. Sweeney (eds.), Handbook of Natural Resource and Energy Economics, North-Holland Publishing Co., 1985.

"Commercial Fisheries vs. Aquaculture: Conflicts in the Northwest Salmon Fishery," in Richard Johnston (ed.), Fisheries Economics and Trade: Proceedings of the Second Conference, University of Oregon, July 1985, (with James L. Anderson).

"Estimating the Population Dynamics of Coho Salmon Using Pooled Time-Series and Cross Section Data," in Canadian Journal of Fisheries and Aquatic Science, Vol. 42, No. 3, 1985, (with James L. Anderson).

"Modeling Fishermen and Regulator Behavior in Schooling and Search Fisheries," in A. D. Scott et al. (eds.), Progress in Natural Resource Economics, Oxford University Press, 1986.

"An Examination of Fishing Location Choice in the Pink Shrimp Fishery," Journal of Marine Resource Economics, Vol. 2, No. 4, 1986, (with James Eales).

"Optimal Recovery Paths for Perturbations of Trophic Level Bioeconomic Systems," Journal of Environmental Economics and Management, Vol. 13, 1986, (with Gardner Brown).

"Implications of Private Salmon Aquaculture Development on Prices, Production, and Management of Salmon Resources," American Journal of Agricultural Economics, Vol. 68, No. 4, 1986, (with James Anderson).

"Angler Response to Success in the California Salmon Sportfishery: Evidence and Management Implications," Journal of Marine Resource Economics, Vol. 5, No. 2, 1988, (with E. J. Andrews).

"Limited Entry Licensing: A Retrospective Assessment," Journal of Marine Resource Economics, Vol. 5, No. 4, 1988.

"Rent Generation in Limited Entry Fisheries," in P.A. Neher, R. Arnason and N. Mollett (eds.), Rights-Based Fishing, Kluwer Academic Publishers, The Netherlands, 1989.

"Fishermen and Labor Markets: Participation, Earnings, and Alternatives in Pacific Coast Fisheries," National Marine Fisheries Service, Southwest Fisheries Center Report, (with Tzy-Ning Chen and Frances Homans), August 1991.

"License Values in Restricted Access Fisheries," (with S. Stefanou), Bulletin of Mathematical Biology. Vol. 54, No. 2/3, 1992.

"Economic Analysis of Japanese Household Demand for Salmon" (with Cathy Wessells), Journal of the World Aquaculture Society, vol. 24, No. 3, Sept. 1993.

"Inventory Dissipation in the Japanese Wholesale Salmon Market," (with Cathy Wessells), Journal of Marine Resource Economics, vol. 8, 1993, pp. 1-16.

"Enhancing Economic Analysis in Fishery Management: Discussion," American Journal of Agricultural Economics, vol. 75, December 1993, pp. 1198-1199.

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"Correlated Risk Preferences and Behavior of Commercial Fishermen: The Perfect Storm Dilemma", Journal of Risk and Uncertainty, 31(1): 53-71 2005, (with Marty Smith).

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"Designing ITQ Programs for Commercial Recreational Fishing" Marine Policy 33: 766-774 2009 (with Josh Abbott and Vishwanie Marahaj).

"Analysis of Alternative Incentive Plans for Reducing Salmon Bycatch in the Pollock Fishery", submission prepared for the North Pacific Fisheries Management Council, March 2009.

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"Optimal Spatial Control of Biological Invasions", forthcoming 2012, Journal of Environmental Economics and Management, (with Becky Epanchin-Niell).

"Regulated Open Access and Regulated Restricted Access Fisheries" forthcoming 2012, J. Shogren (ed.) Encyclopedia of Energy, Natural Resource and Environmental Economics, Elsevier, Oxford (with Matt Reimer).

"Economics of TURFs, or Territorial Use Rights Fisheries", forthcoming 2012, Review of Environmental Economics and Policy.

"Fishing Down the Food Chain: Fact or Folly?" revise and resubmit, Ecological Economics (with Christopher Wilen).

APPENDIX B: INDIVIDUAL REVIEWER MEMORANDA

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Review of Draft Environmental Impact Statement
Drakes Bay Oyster Company
Special Use Permit

Edwin Grosholz, University of California, Davis

In the review below, I focus primarily on the following topics "Wetlands" and "Birds" with occasional references to "Eelgrass" and "Benthic Fauna" where appropriate. My review is structured to address questions 1-5 with a general summary for these topics as a result of my review of Chapters 3 and 4. For each question, I also refer to more specific discussion below. In addition, I provide very specific comments on a several issues in Chapters 2-4. Finally, I provide a discussion of "Water Quality" issues that relate specifically to the impacts of oyster filter feeding on water column properties.

1. **Are the scientific interpretations and analyses presented in the DEIS reasonable? If no, please identify those that are not and the specifics of each situation.**

Yes, the broad conclusions regarding of the Draft Environmental Impact Statement (DEIS) are reasonable and generally well supported given the very limited data available for many of the topics. However, some topics and interpretations were either lacking support or fundamentally incorrect.

Wetlands. The discussion is reasonably comprehensive and involves substantial description of communities from intertidal 100 feet landward of the "high tide line". A systematic error is noted with the listing of the genus name *Salicornia*, which has been *Sarcoconia* for several years. The discussion of sea level rise (SLR) on wetlands seems to ignore the potential for plants to migrate upward in tidal elevation to avoid inundation associated with SLR. Distinctions should be made between unarmored areas where wetlands can migrate landward versus armored areas bordered by roads, levees, and railways.

Birds. The impacts of oyster aquaculture on birds include some aspects that may reflect general shorebird behavior, but are also speculative based on a few observations without support from peer-reviewed publications. The report's authors again cannot be faulted for this as there simply are no published data bearing on these impacts. The survey studies cited and the authors of those studies (e.g., Page, Stenzel, and Kelly) do represent the best studies to date for this poorly studied estuary and, thus, do capture the diversity of birds and the importance of this estuary for waterbirds and shorebirds. The report accurately reports the presence of oyster bags lying directly on the sediment in the outer bay as a de facto loss of foraging habitat for shorebirds, so this is likely to be among the most direct effect of aquaculture. The report reasonably describes disturbances due to noise and presence of small boats. The authors highlight the connection of Drakes Estero to the larger network of sites and its proximity to San Francisco Bay is also important. However, the numbers of wintering birds listed for San Francisco Bay is more like one million rather than 500 thousand (Pt. Reyes Bird Observatory, unpubl. data). Also see specific comments below (p. 266) about tunicate impacts on foraging Brandt.

Other topics. A related topic is the failure of the report to discuss the substantial uncertainty regarding estimates of eelgrass cover and damage due to boat propellers in Drakes Estero. These estimates are based on data from California Department of Fish and Game (CDFG) and are very rough and subject to significant mistakes in interpretation. Colleagues who have independently examined the CDFG images from 2007 have found that accurate estimates of either eelgrass cover or area damaged by propellers cannot be reasonably based on these images (S. Williams, UCD Bodega Marine Laboratory, pers. comm.). The authors repeatedly refer to these images, which have been criticized by the National Academy of Sciences (NAS). The authors refer to a more recent set of images that are apparently higher resolution and more reliable. However, conclusions regarding these images from 2010 are made entirely without citation. Nothing is currently known about the quality of these images and whether they are any more reliable that the set from 2007. See specific commnents below (p. 261 and p. 262).

Among the interpretations that should have received more discussion is the assumption that cultivation of the European flat oyster would have no more impact than Pacific oysters. It is important to state clearly that unlike Pacific oysters, there are no "naturalized" or established populations of European flat oysters anywhere in California (Smithsonian Environmental Research Center, NEMESIS database). Although these are listed on the Drakes Bay Oyster Company (DBOC) permit, introducing *Ostrea edulis* for aquaculture in sites like Drakes Estero where it is currently not established would require a significant review process outside the scope of this DEIS. The potential for unwanted ecological impacts following the establishment and spread of European flat oysters could be considerable. The discussion of "remant populations" on the DBOC begs for immediate investigation of the status of European oysters.

2. **Do the authors of the DEIS draw reasonable and scientifically sound conclusions from the scientific information presented in the DEIS? Are there instances in the DEIS where a different but equally reasonable and scientifically sound scientific conclusion might be drawn that differs from the conclusion drawn by the NPS? If any instances are found where that is the case, please provide the specifics of that situation.**

One important exception to the overall conclusions regarding birds (as well as invertebrates, and fishes) is the allowance of "recreational take of clams" under the MLPA guidelines. It should be stated firmly that recreational clamming results in extensive and very long-term disturbance to benthic habitats, which will influence the abundance of benthic invertebrates and consequently shorebird foraging. Clamming results in the digging and turnover of many feet of sediment over significant areas dependent on the number of clam diggers. The fact that they will not be using boats does little to reduce their potential impacts. It is hard to understand how the authors of the report can conclude "Recreational take of clams would not interfere with preservation of wilderness characteristics in Drakes Estero."

Regarding additional indirect impacts of aquaculture on birds, in one passage (see specific comments below p. 266) the authors conclude that invasive invertebrates such as the tunicate *Didemnum* (presumably *D. vexillum*) would foul eelgrass blades rendering these unpalatable for migratory Brant. This is stated without support and I personally am unaware of any published studies supporting this point.

Furthermore, it is also stated rather unequivocally that the source of the *Didemnum* invasion in Drakes Bay was aquaculture. Aquaculture is also blamed for the introduction of the mud snail *Batillaria attramentaria* (see specific comments below). It is important to state that these are likelihood arguments and except for few introduced species do we really know the source of the primary invasion. While secondary invasions within and among bays are more likely facilitated by movement of aquaculture activities, hull fouling must also be considered as a likely vector for primary and secondary introduction and spread of invasive tunicates.

3. **Does the DEIS base its interpretations, analyses and conclusions upon the best available science? If any instances are found where the best available science was not used please provide the specifics of each situation.**

In general the report does a good job of identifying the appropriate literature and the best available science. Unfortunately, there are several cases where there are little if any defensible scientific data from peer-reviewed sources and conclusions are necessarily circumspect.

It should be noted that data from studies specific to Drakes Estero for birds and other taxa including invertebrates, fishes are cited from three unpublished theses by Harbin-Ireland, Press, and Wechsler. These theses have not produced a single peer-reviewed publication. Therefore, the conclusions from these studies should be viewed as very preliminary and with caution. The report relies too much on these studies, perhaps understandably, since there are really no other studies available.

4. **Are there any significant peer-reviewed scientific papers that the DEIS omits from consideration that would enhance the scientific quality of the document? Please identify such papers.**

In general, there were only a few areas where the report missed important peer-reviewed papers that would have improved the conclusions of the study.

In their discussion of the impacts of oysters on water column productivity, the authors apparently overlooked or were unaware of nearly a decade of work from the Biogeochemical Reactions in Estuaries (BRIE) project funded by the Land-Margin Ecosystem Research Program at the National Science Foundation (NSF). This produced extensive data and studies from Tomales Bay, which is a much more similar to Drakes Estero than the San Francisco Bay studies cited in the DEIS. This work would more accurately represent the biomass of phytoplankton and the relative importance of benthic primary production (eelgrass and macroalgae) versus water column primary production (phytoplankton) and hence the impacts of oyster filter feeding. Unfortunately, only one study from this work (Largier et al. 1997) is cited in the DEIS. See Water Quality discussion below and comments on p. 161. There are also better studies of phytoplankton dynamics in San Francisco Bay than what is cited (e.g. Wilkerson et al. 2006).

Fourqurean, J. W., K. L. Webb, J. T. Hollibaugh, and S. V. Smith. 1997. Contributions of the plankton community to ecosystem respiration, Tomales Bay, California. Estuarine Coastal and Shelf Science 44:493-505.

Hearn, C. J., and J. L. Largier. 1997. The summer buoyancy dynamics of a shallow

Mediterranean estuary and some effects of changing bathymetry: Tomales bay, California. Estuarine Coastal and Shelf Science 45:497-506.

Hickey, B. M., and N. S. Banas. 2003. Oceanography of the US Pacific Northwest Coastal Ocean and estuaries with application to coastal ecology. Estuaries 26:1010-1031.

Largier, J. L., C. A. Lawrence, M. Roughan, D. M. Kaplan, E. P. Dever, C. E. Dorman, R. M. Kudela, S. M. Bollens, F. P. Wilkerson, R. C. Dugdale, L. W. Botsford, N. Garfieldg, B. K. Cervantes, and D. Koracin. 2006. WEST : A northern California study of the role of wind-driven transport in the productivity of coastal plankton communities. Deep-Sea Research Part Ii-Topical Studies in Oceanography 53:2833-2849.

Smith, S. V., and J. T. Hollibaugh. 1989. Carbon-Controlled Nitrogen Cycling in a Marine Macrocosm - an Ecosystem-Scale Model for Managing Cultural Eutrophication. Marine Ecology-Progress Series 52:103-109.

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Smith, S. V., J. T. Hollibaugh, and S. Vink. 1989. Tomales Bay, California - a Case for Carbon-Controlled Nitrogen Cycling. Limnology and Oceanography 34:37-52.

Wilkerson, F. P., R. C. Dugdale, V. E. Hogue et al. 2006. Phytoplankton blooms and nitrogen productivity in San Francisco Bay. Estuaries and Coasts 29: 401-416.

5. Is the scientific foundation of the DEIS reasonable; and how can it be strengthened? Please identify any options to strengthen the scientific foundations.

Yes, if general, the scientific foundations are sound. I think the DEIS draws the reasonable conclusion that there are insufficient data on which to base estimates of impact. Given the data that are in hand, the DEIS does a reasonably good job of discussion both the lessons and limits presented by these data.

In addition to the areas of literature identified above under the previous questions, a newly available report would substantially strengthen one of the overall conclusions of the DESI report and would clarify conclusions in the National Academy of Sciences (NAS) report that were poorly supported. The conjecture that whatever impacts of oyster aquaculture might have on water column processes somehow mimics or is a replacement for similar impacts caused by historic populations of native Olympia oysters is premised on there being significant populations of these native oysters in Drakes Estero. The DEIS refers to the NAS report, which did not in fact address this topic comprehensively. The new report by Konzak and Praetzellis (2011) provides a fairly definitive evaluation of this topic and concludes that there is little evidence of the presence (and hence use) of Olympia oysters in early American middens. They conclude it is unlikely that Olympia oysters were ever abundant in Drakes Estero unlike nearby Tomales Bay and San Francisco Bay. The authors of the DEIS cite this study, but draw no conclusions from it and simply state the NAS report failed to address this. In fact, the archeologists conclude that

there was little presence historically of native oysters, and, thus, impacts of oyster mariculture have no historical analogue. See specific comments below p. 236.

Consequences of Bivalve Filter Feeding on "Water Quality"

To begin with, there are no studies of the impacts of Pacific oysters on water column properties in California. The extent of our knowledge is based on extrapolations from studies in Washington that address filter feeding consequences. The authors of the DEIS state that the filtering capacity of bivalves including oysters has been documented elsewhere and is likely to have some effect in Drakes Estero. They note that available studies (Dumbauld et al. 2009) suggest the effects will be limited. In fact there are really no data at all from this system and it remains an open question entirely whether oyster filter feeding has any effect positive or negative on eelgrass. The phytoplankton productivity and the residence time of water in Drakes Estero remain entirely unquantified. Certainly first principles would suggest that since oysters filter the water and consume phytoplankton that they could potentially influence phytoplankton biomass in the water column. But whether this impact is important or trivial is absolutely not known.

The overall understanding of the relative importance of water column primary production in comparison with eelgrass in Drake Estero also merits discussion. The impacts of oyster aquaculture on eelgrass and primary production generally including water column primary production (phytoplankton) is based on comparisons with San Francisco Bay (Chapter 3), which is probably less similar to Drakes Estero than any other bay in the region. The authors apparently overlook or are unaware of a nearly a decade of work from the BRIE project funded by the Land-Margin Ecosystem Research Program at NSF. This produced extensive data and studies from Tomales Bay, which is much more similar to Drakes Estero than San Francisco Bay. Only one study from this work is available (Largier et al. 1997). See specific comments below (p. 161). Studies from San Francisco Bay (e.g. Carr et al. 2010) provide little insight into similar processes in Drakes Estero. The Master's thesis by Press (2005) has produced no peer-reviewed publications and the results should be viewed as very preliminary.

Additional Specific Comments
Chapter 3

Page 161
"Given that water quality in Drakes Estero is relatively high (NAS 2009), it is likely that phytoplankton productivity is also high relative to other embayments within the region. However, epiphytes are expected to represent a minor component of the overall primary productivity in this region, as Carr, Boyer, and Brooks (2010) have noted for San Francisco Bay. This reemphasizes the dominant role that eelgrass, and to a lesser extent, phytoplankton, play in the overall primary productivity within Drakes Estero."

San Francisco Bay is probably the least similar bay in the region to Drakes Estero and a poor choice for comparison. San Francisco Bay has enormous riverine inputs relative to most bays in the region and is extremely turbid with very limited light penetration and limited eelgrass production. The authors are probably correct to say that phytoplankton productivity is high in

Drakes Estero than in San Francisco Bay, but certainly not "relative to other embayments within the region". There are extensive data and studies from Tomales Bay that are a much better example and there was a decade of excellent studies funded by the NSF funded LMER program. The fact that none of this work is cited in the context of this DEIS is a remarkable oversight. Among notably relevant studies is Smith and Hollibaugh 1997, which completed a mass balance study of net ecosystem productivity. They conclude:

> "Despite being hydrographically simple, the biotic composition of the system is typical of relatively undisturbed coastal embayments along central and northern California, Oregon, and Washington. Primary production is dominated by phytoplankton, although seagrass (Zostera marina) is visually conspicuous (Spratt 1989)."

Studies by Harbin-Ireland, Press and Wechsler are all unpublished theses at University of California, Davis that have not produced a single peer-reviewed publication. I was on the thesis committee for both Press and Harbin-Ireland, so I know these studies well. Although these studies are cited throughout the DEIS, their conclusions should be viewed as extremely preliminary and interpreted cautiously.

Page 173
No source is cited regarding the new higher resolution geographic information system (GIS) based imagery to look at impacts on eelgrass. The 2007 images were deemed by many including NAS inconclusive due to poor resolution.

> "In an effort to provide a more detailed and current assessment of propeller damage to eelgrass, recent (2010) high-resolution aerial photography of Drakes Estero was evaluated using GIS technology."

No reference to these new images, so hard to say much about new findings regarding propeller damage.

Page 176
There is no such thing as "aquaculture reefs created for oyster fisheries." There are no Pacific oyster reefs, just bags and sticks on racks.

Also the following is suggested as a reason for failure of Olympia oysters: (3) preference to colonize Pacific oyster habitat, thereby being subjected to competition from the successful Pacific oyster. There is no Pacific oyster habitat. Pacific oysters are not naturalized in Drakes Estero. The study cited Trimble et al. 2009 applies only to Washington, not California. Other significant factors include introduced oysters drills (Kimbro et al. 2009).

Page 185-190
Special status species. I am wondering if tidewater gobies (federally endangered) have ever been collected from Drakes Estero. I do not think anyone has looked carefully. Drakes Estero seems at least as likely to be potential habitat for tidewater gobies as it does for leatherback turtles.

Chapter 4

Page 236
"It should also be noted that archeological and historical sources that pertain directly to the presence or absence of oysters in Drakes Estero prior to the establishment of an oyster operation in the 1930s were not considered in the NAS study."

However, there is a final report now from the Sonoma State University archaelogists concluding:

> "Sites in Drakes Estero that contain oysters include the site closest to Tomales Bay (CA-MRN-296) and the largest site in the vicinity of the Estero (CA-MRN-242). While small populations of Olympia oyster may have existed in the Estero and been utilized by the Coast Miwok, the relative abundance of oyster remains in Tomales Bay and their absence at all but two archaeological sites in Drakes Estero make it more likely that the oysters were brought in from Tomales Bay." (Konzak and Praeztellis p. 26.)

Page 240

> "…indicating that increased monitoring and management of *Didemnum* and Manila clam may be necessary to protect native eelgrass habitat and benthic populations within Drakes Estero."

It is important to point out that European oysters would need to be monitored outside of cultured areas to determine if they are becoming naturalizing and spreading.

Page 244, Table 1
There is no current "monitoring/management of invasive species" in Drakes Estero. Monitoring has been very limited and there is certainly no management.

Page 261

> "To assess the impact of propeller damage on eelgrass in Drakes Estero, recent high-resolution aerial photography was reviewed, and propeller damage lines were digitized using GIS technology. The source for the aerial photographs used in this analysis was California Department of Fish and Game (CDFG) imagery taken in 2010."

Quotes about new analysis of aerial imagery with no reference to who or what this was. In an earlier study, CDFG conducted a substandard analysis of low resolution images and drew unwarranted conclusions. Need to be better support for this new analysis.

Page 262

> "Eelgrass habitat within Drakes Estero has doubled from 1991 to 2007 a trend seen in some other west coast estuaries. (NAS 2009)"

NAS relied on faulty CDFG analysis of low resolution images. This trend is not reliable.

> "Research elsewhere demonstrates that damaged eelgrass blades have rapid regeneration capacity and that eelgrass productivity can be locally enhanced by the cultured oysters through a reduction in turbidity and fertilization via nutrient regeneration."

Also NAS concludes that research done elsewhere indicates a positive effect of oyster culture on eelgrass. There are no studies (as they note) showing this to be the case with Pacific oysters and *Zostera marina*. While re-growth after damage is likely general, there is no reason to expect the positive effects of oysters on eelgrass, or if so, what scale that might occur. This very well could be the case, but it has yet to be demonstrated.

Page 263

> "However, to the extent that localized beneficial effects from DBOC bivalves influence eelgrass productivity near DBOC beds and racks (see discussion under alternative B), the removal of DBOC cultured bivalves under alternative A would result in adverse impacts on eelgrass at these sites."

Given the lack of demonstration of positive effects, the inferred negative effects of the loss of oyster aquaculture on eelgrass is equally speculative.

Page 266

> "Tunicates also render eelgrass blades inedible to foraging species such as the black brant."

I am not familiar with a study showing Brandt shy away from eelgrass with tunicates and none are cited.

Page 267

> "…algae (termed "epiphytic" algae) can become established on the eelgrass blades and thereby reduce the photosynthetic surface of the eelgrass blades, which can lead to a reduction in primary productivity as noted above (Hauxwell et al. 2001; Dumbauld, Ruesink, and Rumrill 2009; NAS 2010)."

Although possibly true, this has also not been demonstrated for these species in this region.

> "Clarity and productivity characteristics are also due in part to the relatively small watersheds that feed into coastal lagoon systems like Drakes Estero, because small watersheds do not tend to contribute large volumes of suspended sediments and organic detritus."

Water column clarity and productivity are in large part also due to the very seasonal nature of the watershed inputs in Mediterranean climates. There is a five month drought, but the "outflow" season is even shorter (typically January to April/May) so there is very little watershed input in most California estuaries regardless of the size of the watershed (no rain, no input).

Page 269

> "The cumulative impact would be long-term moderate adverse, and alternative B would contribute an appreciable adverse increment to the overall cumulative impact."

The conclusion seems reasonably well supported.

Page 274

> "Examples of other fouling organisms include barnacles, sponges, and goblet worms (Light, Grosholz, Moyle 2005)"

This reference is to a freshwater database for the Sacramento-San Joaquin Delta. There are no invasive goblet worms (*entoprocts*) in Drakes and these are not a problem taxa generally. Bad call, many better references.

Page 279

> "Because shellfish mariculture is the most likely mode of introduction for invasive tunicates on the west coast (Herborg, O'Hara, and Therriault 2009)"

Evidence that shellfish mariculture may be an important secondary vector, but the primary invasion may be due to hull fouling.

> "In addition, Byers (1999) studied the invasion of a nonnative mud snail (Batillaria attramentaria), making specific reference to its introduction by JOC, the previous oyster operator in Drakes Estero."

Again, no certainty that JOC is the source of the invasion. It was introduced into nearby Tomales Bay long before JOC was in operation.

Page 339

> "Therefore, while ceasing mariculture operations would end the ability of the oysters to filter water within Drakes Estero, any appreciable differences in water quality may be restricted to areas immediately adjacent to structures (Dumbauld, Ruesink, and Rumrill 2009)."

Again, same issue. Not clear to what degree oysters have any significant impact on the water column.

Page 370

> "NPS would continue to monitor and manage invasive species, including *Didemnum*, Manila clams, and *Spartina* marshgrass."

Under Alternatives B-D, they would need to manage European flat oysters as well.

Page 371

> "Recreational take of clams would not interfere with preservation of wilderness characteristics in Drakes Estero."

Why is an extractive fishery consistent with wilderness characteristics and designation? Clamming is quite a disturbance and fairly destructive. This needs to be identified.

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Review of Draft Environmental Impact Statement
Drakes Bay Oyster Company
Special Use Permit

Dianna K.Padilla, State University of New York at Stony Brook
February 17, 2012

Impacts of the aquaculture of* Crassostrea gigas*, the Pacific oyster and other bivalves.

1. Are the scientific interpretations and analyses presented in the DEIS reasonable? If no, please identify those that are not and the specifics of each situation.

In many cases, the interpretation of information presented is reasonable. In general, however, throughout this report there are many questions regarding the impact of different activities on different aspects of the system. In many cases, there is no scientific information regarding factors of interest. However, when there are no data to support or refute the notion that there is an impact, one cannot conclude that there is no impact. Lack of evidence is not the same as evidence that there is no effect. In fact, the National Research Council (NRC) Report that is cited heavily in this document states, "Importantly from a management perspective, lack of evidence of major adverse effects is not the same as proof of no adverse effects nor is it a guarantee that such effects will not manifest in the future".

Overall, it is prudent to not assume that no evidence means no harm, and caution should be used when managing resources. Evidence from other systems can be used, but correct comparisons should be made. In most cases, the interpretations of the environmental impacts of farming *Crassostrea gigas* are based on studies of a different species with very different biology that grows in different physical environments, the eastern oyster, *Crassostrea virginica*. For example, *C. virginica* is a reef builder, and lives in freshwater influenced estuaries on the Atlantic and Gulf coasts of North America - very different environment than the Pacific coast of North America, which has bays and estuaries with extremely high flushing rates, very large tidal excursions, and high nutrients. When given other hare substrates for settlement, *C. gigas* will not generally settle on conspecifics, and prefers rocky habitat if available. There has been a great deal of research on environmental impacts of *C. gigas* in northern Europe (reviewed in Padilla 2010, Lejart and Hily 2011 and references therein) and New Zealand and Australia (Forrest et al. 2009). One general finding across the studies is that the impact of *C. gigas* differs among habitats - habitat specific impacts are the rule, rather than the exception (Padilla 2010), making predictions of impacts among habitats difficult. It should not be assumed that the environmental effects or impacts of *C. gigas* are the same as those of *C. virginica*.

Little data exist regarding the impacts of *C. gigas* culture in Drakes Estero. What data are cited are generally unpublished MS Theses (which are not generally available, and I could not access), and many personal communications and emails, none of which are available to evaluate. Therefore, it is challenging in many parts to determine how solid the basis is for conclusions made. In other cases, we can draw general conclusions from other situations. More information should be drawn from European experiences with *C. gigas* than what is known about *C. virginica*.

One important issue that is not discussed, but is of growing concern is the potential impacts of continuing to cultivate *C. gigas* in high densities and the likelihood that it will escape cultivation and invade nearby shores, and the risk of introduction of the target aquaculture species for each scenario. *C. gigas* is considered one of the 100 worst invaders in the world. At present, it has escaped cultivation and established feral populations and is impacting shores in over 30 countries (Padilla 2010, Padilla, McCann, Shumway 2011). Because this species is long-lived and has dispersal larvae, impacts are readily seen in environments where they do not breed, but rather are seeded by distant areas where they can reproduce (generally when there is warm water). This has been seen in Germany, France, The Netherlands, and in Northern Washington State (reviewed in Padilla 2010). In the San Juan Archipelago in Washington State the waters are too cold for local reproduction of oysters. However, *C. gigas* has invaded the shores by larval transport from elsewhere (likely Canada), and is more abundant in marine reserves than non-reserve areas (Klinger, Padilla, Britton-Simmons 2006). In these rocky shore communities, where it is dense, there is a large decrease in local biodiversity (Padilla and Gray in prep). With increased frequency of El Nino Southern Oscillation (ENSO) events and general warming, it is likely *C. gigas* will reproduce and have the potential to invade nearby rocky shores.

Similarly, there is no consideration of the risk of introduction associated with culture of *Venerupis (Ruditapes) philippinarum* (manila clam) or the flat oyster, (*Ostrea edulis*), both of which have escaped aquaculture where introduced (McKindsey et al. 2007, Padilla et al. 2011). One important finding, which is true for all species introductions, the lag time between first introduction and escape or spread cannot be predicted. For *C. gigas* invasions due to aquaculture thus far, that lag time has been as short as one year or as long as 100 years (Padilla 2010). The longer a species is grown in an area, the greater the probability that it will escape.

2. Do the authors of the DEIS draw reasonable and scientifically sound conclusions from the scientific information presented in the DEIS? Are there instances in the DEIS where a different but equally reasonable and scientifically sound scientific conclusion might be drawn that differs from the conclusion drawn by the NPS? If any instances are found where that is the case, please provide the specifics of that situation.

The effects of different culture methods differ. Off-bottom racks have a different impact than on-bottom bags. Although this is initially mentioned, the relative amount of impact of the two culture methods is not followed through when assessing impacts of different alternatives. Above sediment methods tend to have lower impacts on soft bottom epibenthic and infaunal species, but also create novel habitat for fishes, crabs and other demersal species, altering species distributions, behaviors and densities, and facilitate invasion by non-native species that inhibit hard substrata, especially nonnative ascidians - which include more than just the one species considered here, *Didemnum viexillum* (Anon 2005).

Although positive effects of oyster culture on eelgrass (*Zostra marina*) are alluded to, to date there are no direct studies that show a positive effect of *C. gigas* culture on eelgrass. Other work in Willipa Bay has correlations between aquacuture and changes in overall seagrass abundance, they do not separate the abundance of *Zostra marina* and the invasive *Zostra japonica.* Although *Zostra japonica* is in the same genus, it does not serve the same ecological role as *Zostra marina*, and should not be considered an ecological equivalent or substitute. Thus, there are no data to

support a notion that in this systems aquaculture improves water quality or habitat quality for eelgrass.

3. Does the DEIS base its interpretations, analyses and conclusions upon the best available science? If any instances are found where the best available science was not used please provide the specifics of each situation.

Most of the data on the ecological roles and effects of taxa is based on very general references (mostly chapters from the text book on Marine Community Ecology, edited by Bertness, Gaines and Hay [2000], rather than primary literature that has directly studied the questions and species under concern. As stated above, there are many studies on the impacts of *C. gigas* in Europe and New Zealand, as well as the risk that aquaculture species in general, and the species cultured and proposed to be cultured (under the different scenarios). When impacts have not been quantified locally in the Estero, impacts would be best predicted from studies of C. *gigas* (rather than *C. virginica*). In some cases, it would not change interpretations, while in others, it may. In general, peer-reviewed literature should be preferred sources of such information.

4. Are there any significant peer-reviewed scientific papers that the DEIS omits from consideration that would enhance the scientific quality of the document? Please identify such papers.

Full citations are given at the end of this report.
Anon 2005
Baker 1995
Brandt et al. 2008
Dame 1996
Diana 2009
Diedrich et al. 2005
Diedrich 2006
Forrest et al 2009
Hégaret et al. 2008
Klinger, Padilla, Britton-Simmons 2006
Lejart and Hily 2011 and references therein
McKindsey et al. 2007, 2009
Padilla et al. 2011 and references therein
Padilla 2010 and references therein
Smaal et al. 2005
Shatkin et al. 1997
Shumway (Editor) 2011 (many chapters in this book are relevant)
Whitely and Bendell-Young 2007

5. Is the scientific foundation of the DEIS reasonable and how can it be strengthened? Please identify any options to strengthen the scientific foundations.

Greater attention should be paid to the primary literature, especially peer-reviewed publications. This report relies heavily on unpublished work, and private conversations and emails and a text book on Marine Community Ecology that was published in 2000, 12 years ago.

Attention should be paid to the risk of introduction of the target aquaculture species for each scenario. The problem of species introductions - one major issue not considered is that the introduced species themselves are important potential invaders. In addition, the potential for non-target species introductions remains, and is not necessarily remedied by current aquaculture practices. Because adult animals are no longer transported, many avenues of species introduction have been removed that were important in the past. There should be continued concern, even with transport of spat, and attention paid to the transport of disease causing agents, including protozoans, bacteria and viruses, as well as harmful algae, which can cause blooms causing wide-spread environmental harm (e.g., Hégaret et al. 2008)

Facilitating habitat for other unwanted invaders, increasing their abundance, and increasing the likelihood of long term effects should be addressed more. One tunicate, *Didemnum* is mentioned, however there are many species of introduced tunicates, all of which can be facilitated and whose densities can be greatly enhanced with oyster culture facilities.

Eelgrass

1. Are the scientific interpretations and analyses presented in the DEIS reasonable? If no, please identify those that are not and the specifics of each situation.

In general, there is no evidence to support the notion that in this system aquaculture will enhance eelgrass, or in similar systems on the west coast where *C. gigas* in cultured (Everett et al 1995, Kelly and Volpe 2007). There is evidence of negative impacts of motor boat activity and aquaculture activities in this bay, which has been documented elsewhere (Balaguer et al. 2011). It is assumed that expansion of the aquaculture activity will increase loss of eelgrass in a linear fashion, but there are no data to support that.

Curiously, the nonnative mussel *Musculista senhousia* is listed with the native bivalves in the community. It is an important invader, and extensive work has been done on the ecological impacts of *Musculista senhousia* (e.g., Reusch and Williams 1998, Williams et al. 2005, Williams 2007) on eelgrass communities, but this is not addressed, nor is it indicated if this invader is associated with the bivalve farming areas. If it is not - it is still an important invader that needs to be controlled in the reserve, and some assessment should be made as to whether any future expansion of bivalve farming would be affected. If, however, there is an association between aquaculture and this invader, this would be a concern that would need to be addressed.

2. Do the authors of the DEIS draw reasonable and scientifically sound conclusions from the scientific information presented in the DEIS? Are there instances in the DEIS where a different but equally reasonable and scientifically sound scientific conclusion might be drawn that differs from the conclusion drawn by the NPS? If any instances are found where that is the case, please provide the specifics of that situation.

Of the experimental studies that have been done in similar environment, none have shown a positive impact of the culture of *C. gigas* on nearby eelgrass (Kelly and Volpe 2007). Also see comments in the above section about shellfish culture in general.

Another important consideration that is not addressed is the sports harvesting of clams (Cabaco et al. 2005, Van Alstyne et al. 2011). Part of the plan appears to be to allow sports harvesting, but the impacts of this activity has not been addressed. Sports harvesting (recreational or for food) does have impacts on eelgrass where it is raked or when clams are dug (see section on benthos below).

3. Does the DEIS base its interpretations, analyses and conclusions upon the best available science? If any instances are found where the best available science was not used please provide the specifics of each situation.

More reliance on experimental work done to examine the impacts of *Crassostrea gigas* per se would be important, as well as other factors in similar bays that affect eelgrass, including clamming.

4. Are there any significant peer-reviewed scientific papers that the DEIS omits from consideration that would enhance the scientific quality of the document? Please identify such papers.

Balaguer et al. 2011
Cabaco et al. 2005
Crooks 1998
Everett et al. 1995
Kelly and Volpe 2007
Reusch and Williams 1998
Van Alstyne et al. 2011
Williams 2007
Williams et al. 2005

5. Is the scientific foundation of the DEIS reasonable and how can it be strengthened? Please identify any options to strengthen the scientific foundations.

Greater reliance on published scientific studies would be helpful, especially studies that directly address the species involved or comparable systems.

Benthos

1. Are the scientific interpretations and analyses presented in the DEIS reasonable? If no, please identify those that are not and the specifics of each situation.

Surprisingly little data are provided regarding the species in the benthos, functional diversity, overall species diversity or biomass of major taxa in the bay away from, in proximity to, and under aquaculture facilities. Such data may not exist, but if that is the case, it needs to be stated explicitly. It is well known that different aquaculture gear has different impacts, but the partitioning of different gears and growth methods and consideration of those differential impacts are not given full consideration here.

Cautiously, two non-native bivalves are listed as part of the native community - *Gemma gemma,* and *Musculista senhousia.* Although to date no one has examined any possible effects of the introduction of *Gemma gemma*, extensive work has been done on the ecological impacts of *Musculista senhousia* (see section on eelgrass and Crooks 1998). If this invader is associated with the aquaculture activity, it needs to be considered.

2. Do the authors of the DEIS draw reasonable and scientifically sound conclusions from the scientific information presented in the DEIS? Are there instances in the DEIS where a different but equally reasonable and scientifically sound scientific conclusion might be drawn that differs from the conclusion drawn by the NPS? If any instances are found where that is the case, please provide the specifics of that situation.

Again, as is mentioned above in the section on aquaculture, the impacts of *C. gigas* culture will differ from those seen by growth of *C. virginica* (the references used here), and has been shown to be different in different contexts and habitat types. They impact both the infauna and epifauna, and depending on the environment, may increase diversity or decrease the diversity of each. Studies have shown that the benthic community in eelgrass beds is affected by *C. gigas* culture in west coast bays (Kelly et al. 2008).

Surprisingly, no consideration is given to the impact of sports (recreational or for food) harvesting of bivalves. This activity is incredibly destructive in many environments McLaughlin et al. 2007). Rake harvesting in general has a lower impact than digging, but both are harmful through direct disruption of the benthic fauna, but also through changes in biogeochemical interactions and sediment characteristics, and are likely to have long term impacts.

3. Does the DEIS base its interpretations, analyses and conclusions upon the best available science? If any instances are found where the best available science was not used please provide the specifics of each situation.

More studies of the impacts of aquacutlure on the benthos, particularly of *C. gigas* culture, should be used.

Again, few data on impacts should not be interpreted as there being no impacts.

4. Are there any significant peer-reviewed scientific papers that the DEIS omits from consideration that would enhance the scientific quality of the document? Please identify such papers.

Balaguer et al. 2011
Cabaco et al. 2005
Crooks 1998
Everett et al. 1995
Kelly and Volpe 2007
Kelly et al. 2008
Reusch and Williams 1998
Van Alstyne et al. 2011
Williams 2007
Williams et al. 2005
Whiteley, J; Bendell-Young, L 2007

5. Is the scientific foundation of the DEIS reasonable and how can it be strengthened? Please identify any options to strengthen the scientific foundations.

Greater reliance on published scientific studies would be helpful, especially studies that directly address the species involved or comparable systems would strengthen this report.

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General Note:

More care should have been taken in proof reading this report. There are many repeated misspellings, etc. For example, desiccation is spelled with 2 c's, not 2 s's.

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Review of Draft Environmental Impact Statement
Drakes Bay Oyster Company
Special Use Permit

Charlie Wisdom, Parametrix

The following review addresses the completeness, the scientific soundness, and the reasonableness of the conclusions presented in the water quality sections of Chapters 3 and 4 of the Drake's Bay Oyster Company (DBOC) Special Use Permit (SUP) Draft Environmental Impact Statement (DEIS). An area of potential uncertainty concerning the evaluation of water quality effects on threatened juvenile coho salmon is identified, and options for strengthening the scientific foundations are presented.

1) Are the scientific interpretations and analyses presented in the DEIS reasonable? If no, please identify those that are not and the specifics of each situation.

Overall, the water quality analysis presented in Chapter 3 of the DBOC SUP DEIS suitably describes:

a. The types and sources of potential contaminants that could be generated by the actions associated with each alternative and could affect estuary water quality
b. The site-specific condition of Drake's Estero for the transport of contaminants from sources to aquatic habitats. Of particular importance in determining water quality effects is the understanding of the well-flushed, strongly tidally influenced nature of this West Coast estuary that can significantly dilute the point and non-point source discharges from the surrounding landscape, onshore facilities, and offshore facilities to the estuary
c. The aquatic resources – habitat and species – that could be affected by these discharges

The analyses and scientific interpretations presented in Chapter 4 are, in most aspects, reasonable and appropriate and in accord with the reviewed scientific findings for the general environmental impacts of oyster mariculture on marine water quality. This is particularly true due to the site-specific conditions of Drake's Estero: strong, twice-daily tidal flushing, which diminishes the sediment disturbances associated with oyster cultivation and dilutes and transports dissolved and particulate pollutants out of the estuary.

The one area of uncertainty in the scientific interpretations presented concerns the potential effect of chemicals leached from chromate copper arsenate (CCA) treated wood. The review presented and conclusions reached are reasonable and appropriate for typical marine waters of the United States. Several studies have established that, for areas of high tidal flushing, concentrations of metals leached from woods treated with preservatives such as CCA do not reach levels that detectably impact benthic communities or fish. However, National Oceanic and Atmospheric Agency (NOAA) Fisheries has found that juvenile coho salmon are particularly sensitive to very low levels of copper that can leach from CCA-treated wood used in docks and oyster cultivation racks (NOAA Fisheries – Southwest Region, 2009), and the agency has established

analytical procedures for determining effects on this threatened species. While a review of the NOAA Fisheries guidance document does suggest the possibility that the conditions in Drake's Estero could prevent concentrations from reaching effect thresholds, the analysis presented in Chapter 4 does not provide sufficient detail to determine whether CCA leachate would adversely affect juvenile coho salmon.

Reference: NOAA Fisheries – Southwest Region. 2009. The use of treated wood products in aquatic environments: Guidelines to West Coast NOAA Fisheries staff for Endangered Species Act and Essential Fish Habitat Consultations in the Alaska, Northwest, and Southwest Regions. Prepared on October 12, 2009. http://swr.nmfs.noaa.gov/pdf/Treated%20Wood%20Guidelines-FINALClean_2010.pdf. Accessed February 7, 2012.

2) Do the authors of the DEIS draw reasonable and scientifically sound conclusions from the scientific information presented in the DEIS? Are there instances in the DEIS where a different but equally reasonable and scientifically sound scientific conclusion might be drawn that differs from the conclusion drawn by the NPS? If any instances are found where that is the case, please provide the specifics of that situation.

The DEIS authors reach reasonable and scientifically sound conclusions for most of the analysis presented in Chapter 4 – Environmental Consequences. The scientific information used in the analysis is adequate and appropriate for evaluating the sediment disturbances associated with oyster cultivation (e.g., workers walking across intertidal sediments and propeller wash from boat traffic to and from cultivation racks) and the discharge of point and non-point sources from onshore facilities (e.g., oyster processing, shell storage, vehicle traffic, and on-site sewage treatment). The positive effect of bivalve filtration on water quality is appropriately described, and the high tidal flushing of Drake's Estero likely prevents the buildup of contaminants discharged from onshore and offshore facilities to thresholds that would adversely affect the benthic communities or most fish species.

The one instance where two different but equally reasonable sound scientific conclusions could be drawn concerns the potential impact of leachates from CCA-treated lumber on juvenile coho salmon. Based on the type and amount of information presented in the DEIS, it is possible to support either a conclusion of direct adverse effect or no direct adverse effect on this endangered species from exposure to CCA leachate. While the flushing rate necessary to dilute metals concentrations below the coho effects thresholds (NOAA Fisheries – Southwest Region, 2009) is likely exceeded in Drake's Estero, the amount of treated wood to be replaced annually also substantially exceeds the loading rates established by NOAA Fisheries to "not likely to adversely effect" coho salmon. Both NOAA Fisheries and the Western Wood Preservers Institute recommend site-specific evaluation when more than 100 pilings are proposed for a project. How this compares with "*DBOC would repair or replace approximately 5 percent of rack structures annually, resulting in up to 1,285 feet of rack and 8,900 feet of new lumber installed per year*" is unclear. Lastly, the NOAA Fisheries guidance document (2009) suggests that timing of treated wood replacement could offset any potential effects, but

since this level of operational detail is not included in the DEIS, it is not possible to use this in making an effects determination.

3) Does the DEIS base its interpretations, analyses and conclusions upon the best available science? If any instances are found where the best available science was not used please provide the specifics of each situation.

As noted above, the DEIS has done a generally good job in identifying and applying best available science concerning the environmental impacts of oyster and clam mariculture on water quality. The one area of best available science to be expanded upon is the sensitivity of juvenile coho salmon to copper leached from CCA-treated lumber. Several scientific reports summarizing this effect, along with a spreadsheet developed by NOAA Fisheries for estimating the potential for effects based on current velocity and piling number and density are identified in NOAA Fisheries – Southwest Region (2009).

4) Are there any significant peer-reviewed scientific papers that the DEIS omits from consideration that would enhance the scientific quality of the document? Please identify such papers.

Several peer-reviewed scientific papers are cited in the guidance document published by NOAA Fisheries for Endangered Species Act (ESA) and Essential Fish Habitat (EFH) consultations that should be considered in evaluating the water quality effects of using CCA-treated lumber for dock and rack structure replacement on juvenile coho salmon (NOAA Fisheries – Southwest Region 2009).

5) Is the scientific foundation of the DEIS reasonable and how can it be strengthened? Please identify any options to strengthen the scientific foundations.

For the points made above, the basic scientific foundation of the DEIS treatment of water quality is reasonable, and it addresses the actions that could adversely affect water quality. Concerning the potential for CCA-treated lumber to adversely affect juvenile coho salmon, there are at least three options that could be considered to strengthen the scientific foundation:

- Option 1: Use the information and analytical procedures developed by NOAA Fisheries to determine the potential for adverse effects on juvenile coho salmon.
- Option 2: Review and propose the Best Management Procedures (BMPs) presented in NOAA Fisheries – Southwest Region (2009) to offset and mitigate any adverse effects identified in the analysis conducted in Option 1.
- Option 3: Review the scientific studies in NOAA Fisheries – Southwest Region (2009) to develop the same level of analytical detail presented for other water quality impacts in the DEIS. Conduct the detailed analytical approach in the ESA and EFH consultation efforts that are reported as underway for the DEIS and will be required for the U.S. Army Corps of Engineers (USACE) permitting process as noted in the DEIS.

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Review of Draft Environmental Impact Statement
Drakes Bay Oyster Company
Special Use Permit

Christopher W. Clark, Cornell University
February 23, 2012

I was asked to review Chapters 3 and 4 of the Draft Environmental Impact Statement (DEIS) (excluding visitor experience/recreation and National Park Service [NPS] operations), according to my area of expertise. My area of expertise is acoustics and bioacoustics, particularly as these pertain to the quantification and scientific interpretation of anthropogenic acoustic "footprints" on the natural acoustic habitats (i.e., wilderness) of free-ranging animals. Here, I do not comment on grammatical items or style that need correction (e.g., on page 213, 5th line up from the bottom, "When asked to identify ***the*** why a national park is important, the…"; or on page 365, 2nd paragraph, 3rd line, "30 November 2010 would allow…"). Rather, I concentrate on the DEIS sections of my expertise relative to the five following (5) questions.

1. Are the scientific interpretations and analyses presented in the DEIS reasonable? If no, please identify those that are not and the specifics of each situation.
2. Do the authors of the DEIS draw reasonable and scientifically sound conclusions from the scientific information presented in the DEIS? Are there instances in the DEIS where a different but equally reasonable and scientifically sound scientific conclusion might be drawn that differs from the conclusion drawn by the NPS? If any instances are found where that is the case, please provide the specifics of that situation.
3. Does the DEIS base its interpretations, analyses and conclusions upon the best available science? If any instances are found where the best available science was not used please provide the specifics of each situation.
4. Are there any significant peer-reviewed scientific papers that the DEIS omits from consideration that would enhance the scientific quality of the document? Please identify such papers.
5. Is the scientific foundation of the DEIS reasonable and how can it be strengthened? Please identify any options to strengthen the scientific foundations.

Given the five tasks, I read and relied on:

1) Chapter 3, Affected Environment, Impact topic: Wildlife and Wildlife Habitat, pp. 173 – 184.
2) Chapter 3, Affected Environment, Impact topic: Soundscapes, pp. 201 – 207.
3) Chapter 3, Affected Environment, Impact topic: Wilderness, pp. 207-212.
4) Chapter 3, Affected Environment, Impact topic: Visitor Experience and Recreation, p. 213
5) Chapter 4, Environmental Consequences, Impacts on Soundscapes, pp. 349-364. This evaluation is a function of the four alternatives (A, B, C, and D) and is enhanced by table 2-5 in Chapter 2.

a) Alternative A (No-action) – expiration of the existing RUO and SUP.
b) Alternative B - another 10 years under 2010 conditions. Not clear if this is a one-time action, or might be open to extension for another 10-year period.
c) Alternative C - another 10 years under 2008 conditions, unpermitted facilities removed. Not clear if this is a one-time action, or might be open to extension for another 10-year period.
d) Alternative D – expansion of DBOC etc.

6) Chapter 4, Environmental Consequences, Impacts on Wilderness, pp. 364-378. The texts in parentheses are my abbreviated summations of that action.
   a) Alternative A (No-action) – expiration of the existing RUO and SUP.
   b) Alternative B - another 10 years under 2010 conditions. Not clear if this is a one-time action, or might be open to extension for another 10-year period.
   c) Alternative C - another 10 years under 2008 conditions, unpermitted facilities removed. Not clear if this is a one-time action, or might be open to extension for another 10-year period.
   d) Alternative D – expansion of DBOC etc.

Given these five tasks and the importance I placed on summarizing my evaluation of the DEIS document, I begin here with my summaries of the Chapter 3 Soundscape and Wilderness sections and the Chapter 4 Soundscape and Wilderness sections. Overall the document was very well organized, coherent and very readable.

Summary of Chapter 3 Soundscape and Wilderness Sections

Overall, I found that the Soundscape section provided compelling support for its conclusion that "low-frequency, high-amplitude, nearly omnipresent sound produced by roads, vehicles, airports, and mechanical equipment" can, degrade the acoustic habitat in a way that is similar to the physical degradation of the physical habitat caused by development or other human activities.

The data and synthesis presented in both sections support the conclusion that noise producing DBOC activities not only impact human experiences in the Drakes Estero but also have the potential to negatively effect wildlife in the Point Reyes National Seashore.

I conclude that there is ample acoustic scientific evidence by which the DEIS can determine that DBOC noise-generating activities have negative impacts on both the human visitor experience and the seashore's wildlife.

In addition, I can readily envision that further scientific study would substantiate the DEIS conclusions regarding the various acoustic impacts and influences of DBOC noise generating activities on the area's acoustic space and wildlife.

Summary of Chapter 4 Soundscape and Wilderness Sections

The data and synthesis presented in Chapter 3 and often reworked in Chapter 4, support the conclusion that present DBOC activities adversely impact human experiences in the Drakes Estero and have the potential to negatively effect wildlife in the Point Reyes National Seashore.

The scientific evidence presented leads me to conclude that this DEIS is robust, and that its recommendation for Alternative A is substantial and justifiable.

In addition, I can easily envision that a scientific study would actually document the relationship between removal of all DBOC structures and resulting changes in the natural wilderness acoustic soundscape and the experiences of visitors to the Point Reyes National Seashore.

My more specific comments for the sections in Chapter 3 are as follows:

1. Chapter 3, Affected Environment, Impact topic: Wildlife and Wildlife Habitat, pp. 173 – 184.

   Although this section does not specifically discuss acoustics, it underscores the value of Drakes Estero for wildlife, the impacts of human disturbance on habitat and wildlife, and in particular the critical importance of Drakes Estero for wildlife as maintained in its natural state. This is an important component in support of the document's following Soundscapes section.

2. Chapter 3, Affected Environment, Impact topic: Soundscapes, pp. 201 – 207. This section addresses one of the document's core issues referred to as Soundscapes, especially as it relates to the NPS *Management policies 2006* document and the *Director's Order 47: Soundscape Preservation and Noise Management* section regarding the maintenance and restoration of natural soundscapes in national parks.

   This Chapter 3 Soundscape section:

   a. Provides a well-written presentation of basic acoustic metrics and concepts (e.g., decibels, L_{50}, soundscape, community noise).

   b. Provides some sound level data for Drakes Estero using standard techniques and metrics. Two sets of data are presented. Data (considered "best available and reasonable measurement") were collected in 2009 (Volpe 2011) from a site two miles from the onshore DBOC operations. They use A-weighted L_{50} values, in dBA units, as the acoustic metric. As stated in the report: "These measured levels included noise from DBOC operations and other human activities, and they included natural sound energy from portions of the audio spectrum well above the noise energy generated by DBOC." Table 3-3 shows noise level values within close proximity to specific DBOC noise sources. According to this table these data were collected by Noise Unlimited, Inc. (1995) and represent two types of relatively small motorboat engines (20 horse power [HP] and 40 HP), a diesel forklift, pneumatic drills and an

oyster tumbler. Noise level values in dBA are given relative to 50 feet from each of these sources. The document concludes that these measures are reasonable representations of the existing acoustic environment by which to make comparisons. It could be argued that the human noise footprints from DBOC activities could have increased since 1995, but this is never discussed.

c. Articulates the notional concepts of a "value" that humans place on such things as "undeveloped character" and solitude. Visitors to national parks expect and place high value on wildlife experiences that are naturally authentic and unblemished by anthropogenic acoustic intrusions. The document's conclusions and synthesis on this topic are based on NPS survey results and apply especially to human acoustic experiences.

d. Presents scientifically based evidence that wildlife species and populations depend on natural soundscapes for basic life functions (e.g., foraging, territory defense, sexual communication), and that there are costs to wildlife from the introduction of anthropogenic noise into the wilderness (i.e., acoustic disturbance.). References for disturbance are given to support the working assumption that the loss of the natural soundscape can have impacts across multiple taxonomic vertebrate groups (birds and mammals). I should mention that in the time since this document was completed further evidence has been accumulated to further support this conclusion of impact on wildlife from loss of acoustic habitat.

e. Concludes that: "The noise from DBOC operations can detract from these values. The sounds serve as evidence of man's imprint on the natural landscape and can disrupt opportunities for solitude. Similarly, visitors wishing to enjoy a natural experience within the congressionally designated potential wilderness of Drakes Estero may not welcome these disturbances; noise may reduce visitor enjoyment of recreational use of the project area."

3. Chapter 3, Affected Environment, Impact topic: Wilderness, pp. 207-212.
   My concluding comments for the above "Soundscape" section readily apply to this "Wilderness" section. Thus, for example, the document's statement on page 211 that the combination of DBOC activities "results in an intrusion upon the solitude that is otherwise experienced by recreational visitors to Drakes Estero" is applicable here.

4. Chapter 3, Affected Environment, Impact topic: Visitor Experience and Recreation, p. 213.
   This section of the DEIS states that the area of the Point Reyes National Seashore offers visitors "an outstanding opportunity for solitude while enjoying primitive and unconfined recreation. This is a hallmark quality of a designated wilderness area." Again, my concluding comments for the above "Soundscape" section readily apply to this "Visitor Experience and Recreation" section. The survey data presented in this section regarding local public attitudes are rather compelling regarding the conclusions as to peoples' values of the park as a unique recreational and experiential wilderness, where this experience includes quiet solitude and natural acoustic experience.

My more specific comments for the sections in Chapter 4 are as follows:

5. Chapter 4, Environmental Consequences, Impacts on Soundscapes, pp. 349-364. The texts in parentheses are my abbreviated summations of that action.
   a. Alternative A (No-action and expiration of the existing RUO and SUP.) This section summarizes the acoustic metrics caused by what are assumed to be typical daily DBOC activities. This section was well written. The conclusion that "Alternative A would contribute an appreciable beneficial increment to the cumulative impact," is totally reasonable and was supported by available data and scientific concepts. I could not find any support for the section's working assumption that "background sound levels and sound propagation conditions do not vary substantially between day and night." Furthermore, aside from human sounds, human caused noise by kayakers would also include noises produced by kayaking (e.g., a paddle hitting against the side of the kayak.). Although trivial acoustically, this was not mentioned.

      Overall, this is a section for which it would have been beneficial for DEIS to present noise maps showing the spatial-temporal dynamics of DBOC noise on human communication space as well as wildlife acoustic space, especially given that NPS scientists are now pioneering the analytical mechanisms for and the interpretations of the results from such an acoustic mapping process. The document does provide some simple plots for noise footprints for Alternatives B.

   b. Alternative B (another 10 years under 2010 conditions.) This section is also well written and summarizes the acoustic impacts caused by what are assumed to be typical daily DBOC activities, including day and night considerations. The figures showing the spatial scales of noise impact are particularly useful for visualizing the extent of a typical DBOC acoustic activity. These definitely reinforce the DEIS conclusion that DBOC noise-making activities do and would continue to have major impacts on the human wilderness experience and likely wildlife, and that cessation of DBOC activities under Alternative A would be most beneficial to human experiences in the park and wildlife conservation.

   c. Alternative C (another 10 years under 2008 conditions, unpermitted facilities removed.). The document's conclusion is that impacts from this alternative would be similar to those from Alternative B, and I agree with this conclusion. Furthermore, with specific regard to soundscapes, Alternative C would certainly not further the goals of NPS soundscape management.

   d. Alternative D (expansion of DBOC etc.). The document concludes that impacts from this alternative would be greater than those as given under Alternative B or Alternative C. I agree with this conclusion that Alternative D would result in long-term, major adverse impacts on human experiences and wildlife in the Point Reyes National Seashore.

6. Chapter 4, Environmental Consequences, Impacts on Wilderness, pp. 364-378. The texts in parentheses are my abbreviated summations of that action.

   a. Alternative A (No-action and expiration of the existing RUO and SUP.). As in the section on Impacts on Soundscapes, this section considers and summarizes the wilderness impacts from typical daily DBOC activities and the benefits to the natural ecosystem that would result from the removal of those activities. This section refers to text and arguments laid out in Chapter 3. It is succinct and well written. The conclusion that "removal of DBOC facilities would result in a readily apparent, widespread enhancement of wilderness characteristics and would allow for the conversion of the approximately 1,363 acres of congressionally designated potential wilderness to congressionally designated wilderness," is reasonable and supported by available data and scientific concepts.

      My comment above under Chapter 4, Environmental Consequences, Impacts on Soundscapes, pp. 349-364, Alternative A, 2nd paragraph also pertain here. Furthermore, I agree with the conclusions in this section and find the arguments in support of Alternative A as the preferred action valid and substantial.

   b. Alternative B (another 10 years under 2010 conditions.). This section summarizes the adverse impacts on "wilderness character" that would persist under this action as a result of the continuation of typical daily DBOC activities. For example, continuation would allow the operation of motorboats in the Drake Estero six days per week, for approximately eight hours per day throughout the next ten years, resulting in the loss of such fundamental NPS values as solitude, primitive and unconfined recreation, and a natural acoustic habitat. Furthermore, the document states that acceptance of the Alternative B action would "prevent conversion of the 1,363 acres of congressionally designated potential wilderness within Drakes Estero to congressionally designated wilderness" and "would contribute an appreciable adverse increment to the cumulative impact." I agree with this conclusion and find the arguments in support of this conclusion valid and substantial.

   c. Alternative C (another 10 years under 2008 conditions, unpermitted facilities removed.). The document's conclusions are that impacts from this alternative would be similar to those from Alternative B. With specific regard to soundscapes, Alternative C would not further the goals of NPS soundscape management. I agree with these conclusions and find the supporting documentation in other portions of the DEIS scientifically robust, rational and compelling.

   d. Alternative D (expansion of DBOC etc.). The document concludes that impacts from this alternative would be even greater than those given under Alternative B or Alternative C. I agree with the DEIS conclusion that Alternative D would result in long-term, major adverse impacts on human experiences and wildlife in the Point Reyes National Seashore.

Review of Draft Environmental Impact Statement Peer Review
Drakes Bay Oyster Company
Special Use Permit

James E. Wilen, PhD., University of California, Davis

Socio-Economic Impacts

1. Are the scientific interpretations and analysis presented in the DEIS reasonable? If no, please identify those that are not and the specifics of each situation.

As I interpret my task, it is to assess the quality of the science used to assess socio-economic impacts of the various policy options assessed in the Draft Environmental Impact Statement (DEIS) for the Drakes Bay Oyster Company (DBOC). The policy options in question span a range from immediate closure of the DBOC (option A), to an extended lease of existing resources for ten years, at different scales relative to the current scale (options B,C and D).

For reasons outlined and elaborated below, it is my opinion that the methods used to conduct an economic assessment of policy options do not follow accepted economic impact analysis practice. The basic issue appears to be that the data required to conduct an economic impact analysis has not been gathered. That basic data would include, at minimum, measures of the value of gross sales and of the costs of labor and other materials for DBOC. As a result of data deficiencies, the analysis is not able to quantitatively scale the direct first round economic impacts of the DBOC operations in a manner that is meaningful for judging overall economic impacts. An adequately conducted economic impact study would contain, at minimum, a quantitative estimate of value-added associated with existing operations. In addition, there would be some attempt to measure the multiplier effects of direct impacts, by estimating the degree to which first round DBOC expenditures are spent and contained within the region and stimulate additional economic activity. A proper impact analysis would then estimate and report measures of quantitative impacts associated with changes from the status quo or baseline option (Option B).

Since this study does not quantitatively measure economic impacts, the authors are forced to summarize and assess impacts using qualitative judgments. These summary judgments are difficult to reconcile since there are no criteria set to judge whether an impact should be thought of as "minor" or "significant." As elaborated below, this leads to unsubstantiated inferences and interpretations of impacts that are difficult to judge reasonable.

2. Do the authors of the DEIS draw reasonable and scientifically sound conclusions from the scientific information presented in the DEIS? Are there instances in the DEIS where a different but equally reasonable scientifically sound scientific conclusions might be drawn that differs from the conclusion drawn by the NPS? If any instances are found where that is the case, please provide the specifics of that situation.

The terms of reference admonish me to avoid discussing "intensity definitions" or conclusions regarding intensity definitions since those are "derived from relative standards" that are therefore

"within the sole province of the National Park Service (NPS)." It is thus not absolutely clear to me how to assess "*conclusions* from the scientific information presented in the DEIS" (italics added). That said, this report attempts to derive summary qualitative assessments of impacts without using much comparative data, or without defining terms associated with qualitative summary judgments. This leads to conclusions that are vague at best, and misleading at worst. Consider, for example, the summary conclusions about options A and B. Option B continues the status quo, and Option A removes the DBOC and all of its associated economic impacts. The report concludes that "alternative A would result in long-term, *minor, adverse impacts* on regional socio-economic resources" (italics added; page 393). In its assessment of Alternative B, the report concludes that B "would result in a long-term *beneficial cumulative impact* on regional socioeconomic resources." (italics added; page 397). But while A and B are symmetrical---B is the absence of A and vice versa—the choice of imprecise language makes option A appear more acceptable since the impact is deemed "minor." This is the difficulty with analysis that fails to quantify important critical impact variables. Without quantification, one is reduced to descriptors that are meaningless at best, and misleading at worst.

The conclusions in this report seem to adopt the notion that if an impact is "small" then it is equivalent to no impact. For example, the analysis on page 393 concludes that closing down DBOC (option A) would cause impacts that "would be detectable but would not affect the overall regional economy." This conclusion is derived by asserting that DBOC is not a big part of the overall regional economy and that its absence would therefore not be missed. This is a slippery slope. If various policies that incrementally have small impacts are examined in isolation, one might be led to conclude that they collectively have no impact. Imagine, for example, that we analyze a number of policies that each have small but negative impacts on the provision of park environmental services. Most would not be willing to conclude that, while each has a "detectable" impact, there is no affect on the overall park system.

If the analysis had followed standard impact analysis methodology, the report would have at least summarized the quantitative scale of impacts in a meaningful way. Quantification of impacts would be useful in informing the choice of sensible policy options since the options would be comparable. If this report had utilized standard methods, it would have an executive summary that would read something like the following (with hypothetical numbers).

> "Option B, the status quo, continues current DBOC operations for another decade. This would result in a yearly direct impact to the nearby region of five million dollars in gross sales, and three million in value added, together with 31 full time jobs. In addition, each dollar of direct value added would result in a local multiplier effect of 1.6 for both second and subsequent round expenditures and employment due to the spending of owner profits, labor income, rents, etc. Thus the total yearly economic impact for Option B is 7.8 million dollars and 80.6 jobs per year. Over a ten-year period, the present value (at a discount rate of 3%) of the economic impact of Option B is 66.55 million dollars, and 806 person-year jobs.
>
> Option A, which removes DBOC, would result in a loss of economic impact of 66.55 million present value dollars and 80.6 person-year jobs for each of ten years from the region."

Without meaningful numerical impacts, one is reduced to the questionable procedure of summarizing important consequences with vague and arbitrary adjectives ("detectable…but no impact," "beneficial" if DBOC is maintained, but "no impact" if it is eliminated") rather than meaningful and comparable numerical evidence that can be used in rational decision-making.

3. Does the DEIS base its interpretations, analysis, and conclusions upon the best available science? If any instances are found where the best available science was not used please provide the specifics of that situation.

My summary assessment is that the socio-economic impact assessment part of the DEIS does not embody the best available science. There is a well-developed methodology in the literature to conduct so-called economic impact analysis. That methodology draws from economic theory and utilizes data in ways that would be readily recognized by economists and other impact analysis practitioners. None of the relevant literature is acknowledged in this report; there is no scientific peer reviewed literature in the body of the report that describes the methodology used here, and there is no literature listed in the report on standard socio-economic impact analysis. Moreover, as outlined above, the standard procedures that are widely used in practice are not utilized here.

Economic impact analyses attempt to quantitatively assess how a region will be affected by a project or policy change. The guiding principle is the so-called "with and without" principle, namely that analysis should describe the use of all of a region's resources and the values they generate with and without the particular policy under examination. The analyst chooses a base or status quo setting, and assesses policy options vis-a-vis that base. For example, in this case, the baseline might be to assume that option B is in place, a continuation of the current DBOC operations at their recent scale. Then an impact analysis would ask: how would the adoption of any of the other options influence the contribution of the DBOC to the economy of the region relative to the baseline case? In this case, one would answer this question for all three other options including immediate elimination of DBOC (option A), as well as alternative increases in scale of activity (options C and D).

Economic impact analysis typically measures impacts by tracing the income flow throughout an economy, including sales from a facility, jobs, income levels and payroll from employment, expenditures for materials and other inputs, and other flows such as taxes. Analysis typically distinguishes between direct impacts that are "first-round" impacts in the sector in question, from indirect impacts, which are second round and/or induced impacts associated with the change in direct impacts. This implies that an impact analysis must begin with a reasonably accurate representation of the baseline or status quo role direct first-round impacts of the DBOC. One would want to begin the baseline analysis with, at minimum, a measure of the market value of sales or revenues from DBOC. Gross sales value would be a first focus since it is the basis for computing direct, first round impacts, sometimes also called value added. Value added would subtract from total revenues the expenditures for inputs purchased from outside the region in order to isolate income flows beneficial to the region in question. From gross sales value, an estimate of non-labor costs for materials and other input costs purchased outside the reference region is subtracted, and the net amount is the direct impact of DBOC. If option A were adopted, the direct or first round impact would be the loss of this net value added. If options C

or D were adopted, the direct impact would be any increases in the net value added associated with increased scale and operations diversifications.

Once direct impacts are computed, analysts then turn to indirect and induced impacts. Indirect impacts are the net values added by the flow of first round expenditures through the reference region in subsequent rounds of spending. For example, employees and owners of DBOC spend wages to purchase groceries, gasoline, etc., and owners of these businesses also contribute net value added by further spending. To compute the indirect impacts accurately, analysts often rely on models of regional economies, input/output analysis, and other impact assessment tools that trace income flows through an economy. Absent specific models calibrated to particular regions, analysts use multipliers to gauge the manner in which direct first round impact are multiplied by subsequent rounds of purchases and expenditures by industries that serve the focus of the study.

The existing economic impact analysis in this report does not even quantify the first round or direct monetary flow of value added from DBOC. Instead, the report focuses on physical quantities such as gallons of product, percent of total market, numbers of jobs, and housing. This is despite the fact that the report cites (pages 217-8) economic impact analyses of the park by the NPS in terms of value added and other common methods used in the economic impact literature. There appears to be little recognition that the NPS report uses standard impact analyses to evaluate the importance of tourism, and that these same techniques of analysis should be adopted for analyzing the impact of policy options associated with DBOC.

4. Are there any significant peer-reviewed scientific papers that the DEIS omits from consideration that would enhance the scientific quality of the document? Please identify such papers.

This question is relatively easy to answer because there are **no** peer-reviewed scientific papers referenced to support the socio-economic impact analysis. The report sections that describe the methods used contain no literature describing procedures used in this study or procedures commonly utilized to carry out socio-economic impact analysis. Furthermore, out of the 37 pages of references listed in the bibliography, there is not a single methodological reference on economics, economic analysis, or socio-economic impact assessment. To be certain, the report does reference the National Academy of Sciences (NAS) report and hence (implicitly) all of the references associated with the socio-economic analysis there. But the NAS report acknowledged at its publication that there had been no economic impact analysis done of DBOC options. Since this report does not contain new analysis, there is still no economic impact analysis of DBOC policy options.

There are a number of professional journals that regularly publish discussions of economic impact methodology as well as examples of specific studies. Some examples are the Journal of Regional Science, Journal of Travel Research, Annals of Tourism Research, Land Economics, Ecological Economics, Journal of Environmental Management, and Transportation Research Record. There are also numerous analyses of the economic impacts of fisheries, both recreational, commercial and aquaculture. Google searches reveal dozens if not hundreds of papers that report economic impacts of changes in policies that affect fisheries in professional journals, books, and gray literature and government reports. Finally, there are specific economic

impact analyses reported for aquaculture and mariculture operations such as oysters in the Chesapeake region. Many of these are readily available for downloading and they report methods and techniques used to project economic impacts and results of particular applications of impact methodology.

5. Is the scientific foundation of the DEIS reasonable and how can it be strengthened? Please identify any options to strengthen the scientific foundations.

In my opinion, the scientific foundation of the DEIS as it pertains to socioeconomic impacts does not follow standard practice and hence it is hard to conclude that it is "reasonable." At minimum, economic impacts need to be assessed in terms of regional economic aggregates that are typically used in impact analysis and that attempt to at least scale the direct first round effects in terms of dollars. This study does not report even the first-round impacts of DBOC, let alone estimates of indirect impacts. On the positive side, it does report jobs associated with the policy options, but jobs per se are not as meaningful as the payroll associated with those jobs. For reasons that are not clear to me, the report addresses housing used by current employees and housing conditions elsewhere in the region. Housing is not a part of accepted impact analysis as far as I am aware, and the attempts to say something about impacts of policies on housing are not coherent.

In addition to the foundations that are inadequate in this report, a key issue that is not satisfactorily addressed is the relationship and interconnection between visitor days to the seashore and the DBOC. There are various hypotheses that could be entertained, including: 1) having DBOC on site reduces park visitors; 2) having DBOC in operation has no impact of park visits; 3) having DBOC in operation draws more people to the park than would otherwise visit; 4) having DBOC does not affect the number of park visitors, but it changes the value of a visitor day (increases or decreases). Since many tourists chain together multiple destinations and experiences in a given trip, it is likely that there is some interaction among at least some fraction of park visitors. This has not been analyzed as an economic impact of any of the proposed policies except to conclude that it is not important relative to park visitor impacts. DBOC reports a significant number of tourist visits, on the order of 50,000 per year. If we take an extreme assumption that these visits are only associated with DBOC and not tied to park visits, then clearly there are additional impacts of the DBOC on the region. If 50,000 visitors spend $100 per day, then there are additional dollars of annual economic impacts that have been ignored by this study together with associated multiplier effects. It may be, of course, that all of these visitors are traveling to the region to visit the park and that the visit to the DBOC is part of a trip. If this is the case, we would need to apportion expenditures across two destination targets, and this would reduce direct and indirect benefits.

Regardless of whether DBOC visits are independent from or associated with park visits, the expenditures associated with current DBOC tourist visits have been essentially ignored here. This is despite the likelihood that they measure at least as large or larger than the direct operational impacts of DBOC. Once again, the justification for ignoring them is to assert that, in relationship to the aggregate value of park visits, DBOC visits are relatively insignificant. This assertion of insignificance is supported by the assumption that park visits create values on the order of 100 million dollar per year, a figure borrowed from the NAS study. Unfortunately, the

100 million dollar estimate is not a sound comparison for gauging the relative economic impact of DBOC. The number appears to be derived from work by Loomis, who summarizes research on the value of wilderness experiences. But the value referenced by Loomis is the net *consumer surplus* (averaging $40 per day hence the estimate for 2.5 million seashore visitors of 100 million dollars). Unfortunately, net consumer surplus values are not used in economic impact analyses. Instead, economic impact analyses use net value added from expenditures by tourists on locally purchased items such as hotels, food, and recreational supplies. It is not clear what these expenditures are for seashore park visitors, or how they compare with the (incorrectly utilized) figure of $40 per day of consumer surplus. In any case, a valid impact analysis would report the manner in which policy options are likely to quantitatively alter the values associated with visits to DBOC. Since this report has no basic data to compute these values, it simply asserts them to be small and hence for all intents and purposes zero. In this setting, the valued added associated with the actual expenditures for DBOC visits are likely to be significant, and of the order equivalent or more than the primary shellfish production value added. The correct procedure for conducting economic impact analysis would compute these impacts quantitatively, and add those to the primary impacts associated with DBOC production.

Another important component of the economic assessment that could be strengthened is the market level impacts of the DBOC. Because there has been only cursory assembly of economic data, the report resorts to vague and imprecise assessments of these market level impacts. In the end, the report concludes that adopting option A would have "long-term major adverse" impacts to California's shellfish markets because of the relatively large share contributed by DBOC. This is elaborated more by characterizing those impacts as "highly noticeable, "which would "substantially influence" California shellfish production, and would contribute a "substantial adverse …impact." I am not certain what these terms mean, how to judge them, and how to compare them to (for example) the employment effects which, if DBOC were eliminated, would allegedly have "minor adverse" regional impacts. What is needed here is some simple discussion of the market, together with demand elasticities that might be derived from other literature, so that quantitative estimates of impacts could be estimated. Will the removal of DBOC have an impact on consumer prices? Will it cause changes in supplies to the California market, and if so, what kinds of impacts will these generate? These issues are often ignored in other impact analyses for which the industry in question is too small to have a market impact. In this case, the DBOC is large enough to impact the overall market and prices, and this impact should be included in an economic impact analysis.

EXHIBIT

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ATKINS

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May 7, 2012

Dr. Ralph Morgenweck
Department of the Interior
Scientific Integrity Officer
134 Union Blvd.
Lakewood, CO 80228

Subject: Response to letter from R. Morgenweck to T. St Clair dated April 19, 2012

Dear Ralph:

Attached is a letter of clarification from Dr. Chris Clark of Cornell University, documenting his current opinions regarding the Draft Environmental Impact Statement (DEIS) at Point Reyes National Seashore and the Drakes Bay Oyster Company (DBOC) operation. The gist of his response is that the new data made available by DBOC and ENVIRON during the DEIS comment period provide additional value to the impact assessment process and could usefully be included in the National Park Service's Final EIS. However Dr. Clark does mention that a full evaluation of these new data (and indeed the situation at Drakes Bay in general) would require new measurements and analysis over an extended period of time. As it stands, Dr. Clark's original opinion regarding the conclusions he drew of the current DEIS is unchanged.

In Atkins' opinion, the 'currently best available scientific information' has now been fully aired, and Dr. Clark's opinion is unchanged. If there were to be a much longer decision period, then a more detailed and comprehensive analysis could be designed and carried out. However, absent such a prolonged and potentially open-ended process, the currently available information is clear. It is also by no means certain that new research and analysis would lead to new conclusions. Hence we feel that the currently available scientific information provides a framework for decision-making.

Sincerely,

Tom St Clair
Program Manager

Letter from Ralph Morgenweck (DOI, Scientific Integrity Officer) to Dr. St. Clair on 19 April 2012: This letter listed three questions addressed to me in order to "clarify his (*my*) views on the DEIS acoustic chapter so that the National Parks Service (NPS) clearly understands his (*my*) suggestions for improving it. The three questions were:

1. Please review the data provided by ENVIRON and provide your opinion as to whether the ENVIRON measurements provide sound and reasonable information regarding the acoustic environment at Drakes Bay including whether the information was collected using appropriate techniques and whether any additional information would benefit NPS in addressing the ENVIRON data in the Final EIS (e.g. measurement protocols, weather conditions, operating condition of equipment).
2. Based solely on your interpretation of the scientific information related to acoustics are there different values and/or references for acoustic measurements (other than those in the DEIS) that appear credible and should be addressed in the final EIS?
3. Does new attention on the sources of the data in Table 3.3, the ENVIRONS data, or any additional or different values of references for measurements identified in response to question 2 alter your view of the DEIS chapter on acoustics? If so, what is your current assessment of the discussion of soundscapes in the DEIS?

I therefore carefully reviewed the DEIS, my comments on the DEIS, and the materials I received on 19 April, 2012. After this review I answered the three questions from Ralph Morgenweck's 19 April 2012 letter. I have tried to make my answers strictly based on science and not include anything but my professional scientific opinions. The following are my answers to the three questions.

Question 1.

Please review the data provided by ENVIRON and provide your opinion as to whether the ENVIRON measurements provide sound and reasonable information regarding the acoustic environment at Drakes Bay including whether the information was collected using appropriate techniques and whether any additional information would benefit NPS in addressing the ENVIRON data in the Final EIS (e.g. measurement protocols, weather conditions, operating condition of equipment).

The Environ document (ED) provides some additional synthesis of measurements. Section H provided critical review of the DEIS but did not provide any data, while Appendix B provided additional noise data in the form of charts based on sound level measurements collected on 22 November 2011 using a certified B&K 2250 Type 1 SL meter.

My simple answer to this question is that the ED information does provide some "reasonable information regarding the acoustic environment at Drakes Bay," that the data seem to have been collected "using appropriate techniques," and that both the DEIS and this ED could benefit from additional acoustic data as well as data interpretation. These additional ED noise level (in dBA) charts provide calibrated measurements of specific DBOC events relative to a distance of 50 feet. The ED data charts represent measurements of very short snapshots of specific DBOC acoustic activity events. One could go through a litany of issues related to the physical conditions under which those measurements were taken (e.g., humidity, ground reflection) and the need for a wider variety of data analyses to better address acoustic issues of spatial and temporal and spectral variability, but relative to the tolerances under discussion here, these are important and useful charts.

Neither the DEIS or ED document provides a full evaluation of the acoustic dynamics in Drakes Bay relative to the noise generating activities of DBOC. The DEIS (Chapter 3, page 202) refers to measurements collected in the Seashore in 2009 on a bluff on the eastern shore of Drakes Estero over the course of 30 days in July/August of 2009, " at a site "located approximately 2 miles from the onshore DBOC operations." These measurements were used to calculated L_{50} values for that site and time period. The context of these NPS measurements and those in the ED are very different, and cannot be effectively compared.

The photographs in the appendix provided very useful visualizations of the DBOC operational contexts.

Question 2

Based solely on your interpretation of the scientific information related to acoustics are there different values and/or references for acoustic measurements (other than those in the DEIS) that appear credible and should be addressed in the final EIS?

There are some additional DBOC noise level data that have become available since submission of the DEIS. These data were collected by ENVIRON International Corp and made available to me in their 9 December 2011 "Comments on the Drakes Bay Oyster Company Special Use Permit Environmental Impact Statement" document. These are credible data relative to the received noise levels of specific DBOC noise-generating activities at relatively close ranges. As such, they revise the noise level values as presented in the DEIS Chapter 3, Table 3.3. These are the only additional data that I am aware of, which could inform the DEIS relative to the potential influence of DBOC generated noises on the Drakes Estero soundscape.

If there were additional time and resources, the NPS and/or others could carry out additional analyses on existing data and/or conduct additional acoustic studies. Although such efforts to collect more data and conduct more analyses would likely take several more years to complete, they would provide a quantitative mechanism by which to more fully assess the acoustic influences of DBOC operations on the Drakes Estero soundscape.

Question 3

Does new attention on the sources of the data in Table 3.3, the ENVIRONS data, or any additional or different values of references for measurements identified in response to question 2 alter your view of the DEIS chapter on acoustics? If so, what is your current assessment of the discussion of soundscapes in the DEIS?

The additional ENVIRONS' data is appropriate and helpful in that it provides some actual noise level measurement data for specific DBOC noise-generating activities at close range. Some of those activity level values in the DEIS Table 3.3 were not representative of actual DBOC noise-generating activities.

As mentioned in my responses to question-2, above, the DEIS would benefit from a richer set of data and acoustic metrics by which to evaluate the contributions of DBOC acoustic activities on the Park's physical soundscape. This will involve the application of a sound transmission model as a function of environmental conditions, terrain, and distance between the source and a potential visitor or wildlife. The dynamics of sound transmission are complex and site specific, and significantly influence the level and quality of sound received by a listener. As discussed in the DEIS, the subjective perception of sound by humans and wildlife is highly contextual and cannot be predicted simply by an estimate or measure of receive sound level, and there are numerous scientific publications attesting to the this subject. Therefore, relying on a richer set of empirically derived measurement data and sound transmission model is not by itself going to address the issue of a person's subjective experience in the Park.

In conclusion, I still find the DEIS discussion regarding potential future impacts from human-caused noise-generating activities (Chapter 4) reasonable and appropriate.

EXHIBIT

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August 7, 2012

VIA E-MAIL AND FEDERAL EXPRESS

Doris Lowery
NPS Washington Administrative Program Center
Attn: Correspondence Control Unit (CCU)
National Park Service
1201 Eye Street, NW
Washington, DC 20005
doris_lowery@nps.gov

RE: COMPLAINT ABOUT INFORMATION QUALITY

Dear Ms. Lowery:

Kevin and Nancy Lunny ("the Lunnys") and Dr. Corey Goodman ("Dr. Goodman") respectfully submit this joint Complaint About Information Quality (Complaint) requesting expedited correction of information disseminated by the National Park Service (NPS) in the following publications: *National Park Service, Draft Environmental Impact Statement: Drakes Bay Oyster Company Special Use Permit* (Sept. 2011) (hereinafter "DEIS")[1] and *Atkins North America, Final Report on Peer Review of the Science Used in the National Park Service's Draft Environmental Impact Statement: Drakes Bay Oyster Company Special Use Permit* (Mar. 2012) (hereinafter "Atkins Peer Review Report").[2]

The information NPS has publicly disseminated via the DEIS and Atkins Peer Review Report is subject to the requirements of the Data Quality Act (DQA), 44 U.S.C. § 3516 Note, which prescribes standards for the dissemination of information by federal agencies; the Office of Management and Budget (OMB) Guidelines for Ensuring and Maximizing the Quality, Objectivity, Utility, and Integrity of Information Disseminated by Federal Agencies (hereinafter "OMB Guidelines"); Department of Interior (DOI) Information Quality Guidelines Pursuant to

[1] Available at http://parkplanning.nps.gov/document.cfm?parkID=333&projectID=33043&documentID=43390.
[2] Atkins Project No. 10002598 (Mar. 2012), available at http://www.doi.gov/news/pressreleases/loader.cfm?csModule=security/getfile&pageid=284844.

Section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001 (hereinafter "DOI Guidelines"); Director's Order #11B: Ensuring Quality of Information Disseminated by the National Park Service (hereinafter "Director's Order #11B"); and other applicable statutes, regulations, Executive Orders, manuals, orders, policy statements, instructions, directives, and guidelines establishing binding information-quality standards.

Information disseminated by NPS in the DEIS and Atkins Peer Review Report fails to conform to minimum information-quality standards established by the OMB Guidelines, DOI Guidelines, and Director's Order #11B. This inaccurate, nontransparent, and deliberately misleading information is reasonably likely to cause severe harm to the Lunnys—who may be forced to close their family business, Drakes Bay Oyster Company (hereinafter "DBOC")—and Dr. Goodman, who is a user of the information provided in these publications and adversely affected by the scientifically invalid data and methods used therein.[3]

After substantial inaccuracies were identified in the DEIS and Atkins Peer Review Report and the National Academy of Sciences (NAS) (of which Dr. Goodman is an elected member) initiated a review of the DEIS, the Lunnys and Dr. Goodman retained Cause of Action for the purposes of drafting and submitting this Complaint.[4] Cause of Action is a nonprofit, nonpartisan organization that uses public advocacy and legal reform strategies to ensure greater transparency in government and protect taxpayer interests and economic freedom and provides its services on a pro bono basis. Expedited correction of the manifold errors in the DEIS and Atkins Peer Review Report is especially important given the limited term of the permit that allows operation of DBOC, which provides livelihoods for not just the Lunnys but their employees.

Pursuant to Director's Order #11B, which establishes NPS-specific information-quality standards, the DEIS and Atkins Peer Review Report must be withdrawn from the public domain and timely corrected as described below. Specifically, corrections must be included in the Final Environmental Impact Statement: Drakes Bay Oyster Company Special Use Permit (hereinafter "Final EIS") and the Atkins Peer Review Report must be withdrawn, corrected, and reissued.

[3] This is not the first time that NPS has published scientifically flawed information regarding DBOC's alleged impact on the environment under circumstances suggesting a lack of scientific objectivity. *See* DOI OFFICE OF INSPECTOR GENERAL, REPORT OF INVESTIGATION—POINT REYES NATIONAL SEASHORE, Case No. OI-CA-07-0297-I, at 2 (July 21, 2008) (concluding that NPS employees "misrepresented research" in initial versions of a 2007 report regarding DBOC's oyster farm) (Exhibit 1). Even other federal agencies, such as the National Marine Fisheries Service (NMFS), have "recommend[ed] that NPS [revise the DEIS to] … [p]rovide a more balanced consideration of … the positive impacts of shellfish aquaculture [i.e., DBOC's oyster farm] on habitat and water quality…." Letter from Rodney R. McInnis, Regional Administrator, National Marine Fisheries Service, to Cicely Muldoon, Superintendent, Point Reyes National Seashore, p. 2 (Nov. 17, 2011) (Exhibit 2).

[4] As explained in greater detail below, because NPS took great pains to conceal the inaccuracies and deliberate misrepresentations in the DEIS, Dr. Goodman did not discover the extent to which the conclusions in the DEIS were supported by false and deliberately misleading information until well after the initial public comment period had closed. (The DEIS was made publicly available on September 21, 2011; the public comment period closed on December 9, 2011.)

1. Individuals Submitting this Complaint About Information Quality

This Complaint is submitted on behalf of the following individuals:

Kevin & Nancy Lunny	Dr. Corey S. Goodman
Drakes Bay Oyster Company	P.O. Box 803
17171 Sir Francis Drake Blvd.	Marshall, CA 94940
Inverness, CA 94937	Phone: (415) 663-9495
(415) 669-1149	E-mail: corey.goodman@me.com

All communications regarding this Complaint should be directed to the Lunnys' and Dr. Goodman's attorney in this matter, Amber D. Abbasi, Chief Counsel for Regulatory Affairs, Cause of Action, 2100 M Street, N.W., Suite 170-247, Washington, D.C. 20037, Phone: (202) 507.5880, Fax: (202) 507.5881, E-mail: amber.abbasi@causeofaction.org.

2. Background

DBOC, a family-owned, environmentally conscious, sustainable oyster farm, is located in Drakes Estero, California, which is part of the Point Reyes National Sea Shore. The Lunnys, who own DBOC, hold a Reservation of Use and Occupancy (RUO) and renewable Special Use Permit (SUP) that allow them to farm oysters in the Point Reyes National Sea Shore.[5] DBOC's RUO and SUP will expire on November 30, 2012.[6] However, DBOC will be able to continue operating if the Secretary of the Interior, Ken Salazar, grants the Lunnys an additional 10-year SUP.[7] The publications that are the subject of this Complaint, the DEIS and Atkins Peer Review Report, were produced for the specific purpose of enabling the Secretary to make an informed, reasoned decision on whether to grant the Lunnys and DBOC another 10-year SUP.[8]

The DEIS outlines four "alternatives." Under "Alternative A," the Lunnys will not be issued a 10-year SUP and will be forced to close DBOC and remove its buildings and structures in late 2012.[9] The DEIS concludes that Alternative A is the "environmentally preferred alternative" based upon the agency's claims that continued DBOC operations will have long-term "major" and "moderate" adverse impacts on the environment in Drakes Estero. These claims are derived from the data, factual assertions, and analysis at issue in this Complaint, which NPS has used to

[5] *See* NATIONAL PARK SERVICE, DRAFT ENVIRONMENTAL IMPACT STATEMENT: DRAKES BAY OYSTER COMPANY SPECIAL USE PERMIT, Appx. A-2-A-3 (Sept. 2011), *available at* http://parkplanning.nps.gov/document.cfm?parkID=333&projectID=33043&documentID=43390 (last visited August 1, 2012) [hereinafter DEIS]. NPS granted DBOC a SUP in April 2008; DBOC purchased the RUO in 2005. *See id.*

[6] *See id.* at iii.

[7] *See* Department of Interior, Environment, and Related Agencies Appropriations Act of 2010, Pub. L. No. 111-88, § 124 (2010).

[8] *See* DEIS, *supra* note 5, at iii ("The purpose of this document is to use the NEPA process to engage the public and evaluate the effects of issuing a SUP . . . [to DBOC]. The results of the NEPA process [i.e., the Final EIS] will be used to inform the decision of whether a new SUP should be issued to DBOC for a period of 10 years.").

[9] See *id.* at 120.

support the *only* findings of "major" adverse impacts allegedly caused by DBOC *and* three findings of "moderate" adverse impacts in the DEIS.[10]

3. Summary of Complaint

To comply with applicable minimum information-quality standards, all scientific information that NPS disseminates in publications such as the DEIS and Atkins Peer Review Report must be, among other things, accurate and timely; based on the best available science and supporting studies and the most current information available; highly transparent; supported by reliable data, including on-site data when required by law; consistent with sound and accepted scientific practices and policies; evidence-based; reproducible by qualified third parties; and objective and unbiased in terms of both presentation and substance.[11]

NPS can only claim that Alternative A is the "environmentally preferred alternative" because it flagrantly and repeatedly failed to comply with these minimum information-quality standards. Conclusions in the DEIS that DBOC causes "major" long-term adverse impacts on Drakes Estero's "soundscape" and "wilderness" are based on inaccurate, nontransparent, false, and misleading data and analysis that violates NPS's information-quality guidelines, as are claims that DBOC causes "moderate" long-term adverse impacts on Drakes Estero's "harbor seals," "birds and bird habitat," and "visitor and recreation experience."[12] If the DEIS is corrected to meet basic minimum information-quality standards, it becomes clear that DBOC's operations do not have long-term adverse impacts on Drakes Estero's environment.

3.1. DBOC Does Not Cause A "Major Impact" to Soundscape.

The conclusion that DBOC causes "major" adverse impacts on "soundscape" is supported solely by inaccurate soundscape data and analysis that does not meet minimum information-quality standards. The DEIS's conclusion that DBOC has a long-term "major" adverse impact on Drake's Estero's "soundscape" was generated using data and analysis that substantially exaggerated the amount of noise generated by DBOC's oyster boats and equipment; materially understated the ambient, or natural, sound level for Drakes Estero; and dramatically overstated the distance at which noise from DBOC's boats and equipment could be detected.

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[10] *See infra* Section 7.1.

[11] *See* Director's Order #11B; DOI Guidelines; 40 C.F.R. pt. 1502 (prescribing requirements for environmental impact statements); U.S. Dep't of Interior, Departmental Manual, 305 DM 3 (January 2011) (effective date: January 28, 2011) [hereinafter DOI Departmental Manual]; National Park Service, Director's Order #12: Conservation Planning and Environmental Impact Analysis, and Decision-Making (2001); National Park Service, DO-12 Handbook, *available at* http://www.nps.gov/policy/DOrders/RM12.pdf (last visited July 16, 2012) [hereinafter DO-12 Handbook]; National Park Service, Director's Order #47: Soundscape Preservation and Noise Management (2000) [hereinafter Director's Order #47]; National Park Service, Management Policies 2006, *available at* http://www.nps.gov/policy/MP2006.pdf (last visited August 1, 2012) [hereinafter Management Policies 2006].

[12] These findings are inconsistent with NPS's 1998 Environmental Assessment (EA) analyzing the environmental impacts of oyster production in Drakes Estero. *See* NATIONAL PARK SERVICE, ENVIRONMENTAL ASSESSMENT: JOHNSON OYSTER COMPANY, MARIN COUNTY, POINT REYES NATIONAL SEA SHORE (May 1998) [hereinafter EA] (Exhibit 3). The 1998 EA evaluated "Impacts on Noise" and characterized the "noise" from mariculture-related activities in Drakes Estero as "limited." *See id.* at 12. The EA resulted in a Finding of No Significant Impact (FONSI). *See* NATIONAL PARK SERVICE, FINDING OF NO SIGNIFICANT IMPACT (FONSI): JOHNSON OYSTER COMPANY REPLACEMENT AND REHABILITATION OF FACILITIES POINT REYES NATIONAL SEASHORE (August 11, 1998) [hereinafter FONSI] (Exhibit 4).

Even though doing so is inexpensive, simple, and can be accomplished in less than a few hours, NPS did not actually take on-site measurements of noise generated by DBOC's equipment, including a 20 horsepower (HP) and a 40 HP oyster boat; a 1/4 HP, 12 volt electric oyster tumbler; two handheld oyster drills; and a small forklift. Instead, the DEIS used data from an obscure study measuring sound generated by loud, fast high-horsepower racing and police patrol boats and 70 HP-plus jet skis operating at full throttle off of the New Jersey coast in 1995[13] as "representative" of noise generated by DBOC's 20 and 40 HP oyster skiffs in 2012. Further, the DEIS inappropriately relies on data from a 2006 study measuring sound generated by heavy highway construction equipment (e.g., jackhammers, concrete mixers, and drill rig trucks)[14] as "representative" of noise generated by DBOC's 1/4 HP, 12 volt oyster tumbler, two handheld drills, and small 60 HP forklift.

The DEIS's Soundscape impact conclusions are demonstrably false for at least two reasons: (1) actual on-site measurements of sound generated by DBOC boats and equipment taken by ENVIRON International, an independent consulting firm, reveal that the DEIS's conclusions concerning the noise caused by DBOC are substantially exaggerated;[15] and (2) 2009 recordings of DBOC's oyster boats captured by a sophisticated government microphone can be matched with GPS data from DBOC's oyster boats and NPS's own photographs of DBOC's oyster boats to independently confirm the accuracy of the ENVIRON data.

Moreover, the peer reviewer responsible for assessing the adequacy of the Soundscape section of the DEIS has accepted the ENVIRON data, stating in a "Re-Review" completed at the behest of a DOI Scientific Integrity Officer that the ENVIRON International data "revise the noise levels" for DBOC boats and equipment "as presented in the DEIS," which were "not representative of actual DBOC noise-generating activities."[16] (Because the version of the DEIS that was publicly released used nontransparent, misleading short form citations to the aforementioned sources of "representative" sound levels, the peer reviewer was under the misimpression that the DEIS used on-site sound level data for DBOC's boats and equipment, rather than data from New Jersey and Massachusetts, when he drafted the Soundscape section of the Atkins Peer Review Report.)

The DEIS also used an inappropriate baseline for the ambient noise in Drakes Estero, thus overstating the relative amount of noise added to the environment by DBOC. The DEIS concludes that the "median ambient sound level from the lowest daily ambient level meas-

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[13] NOISE UNLIMITED, INC., BOAT NOISE TESTS USING STATIC AND FULL-THROTTLE METHODS (1995) [hereinafter NOISE UNLIMITED STUDY] (Exhibit 5). The 1995 Noise Unlimited study was available when the EA and FONSI for Drakes Estero were prepared in 1998.

[14] FEDERAL HIGHWAY ADMINISTRATION, ROADWAY CONSTRUCTION NOISE MODEL USER'S GUIDE (2006) [hereinafter FHWA STUDY] (Exhibit 6).

[15] *See* ENVIRON INTERNATIONAL, INC., COMMENTS ON DRAKES BAY OYSTER COMPANY SPECIAL USE PERMIT ENVIRONMENTAL IMPACT STATEMENT: POINT REYES NATIONAL SEA SHORE, pt. H, pp. 33-37 (Dec. 9, 2011) [hereinafter ENVIRON REPORT] (Exhibit 7).

[16] Letter from Tom St. Clair to Dr. Ralph Morgenweck, "Response to letter from R. Morgenweck to T. St. Clair dated April 19, 2012," p. 4 (May 7, 2012) (including a "letter of clarification" from Dr. Chris Clark, the peer reviewer of the Soundscape and Wilderness sections of the DEIS, in which he reevaluates statements he made in the Atkins Peer Review Report regarding the adequacy and accuracy of the DEIS in light of new information) [hereinafter Re-Review] (Exhibit 8).

ured"—a nonstandard metric for measuring sound that is not scientifically accepted—for Drakes Estero is 24 dBA and uses this data point to calculate the distance at which noise from DBOC boats and equipment can be detected.[17] The DEIS cites a 2011 report, entitled "Baseline Ambient Sound Levels in Point Reyes National Seashore,"[18] to support this conclusion. However, that report did not measure the ambient sound level using that nonstandard metric and did not conclude that the ambient sound level for Drakes Estero is 24 dBA. The 24 dBA figure appears to be arbitrary and without any valid scientific basis.

The DEIS uses the foregoing inaccurate, misrepresented ambient sound level data and inappropriate and overstated "representative" sound levels for DBOC's boats and equipment to dramatically overstate the distance at which sound from DBOC's boats and equipment can be detected. (For example, the DEIS concludes that DBOC's 1/4 HP, 12 volt oyster tumbler can be heard from 12,672 feet, or 2.4 miles, away, when the ENVIRON measurements on site reveal that it cannot be heard more than about 140 feet away.)[19]

The Final EIS must be corrected to accurately reflect the amount of noise generated by DBOC boats and equipment, the actual ambient sound level for Drakes Estero, and actual distances at which DBOC's boats and equipment can be heard by visitors and wildlife. The Final EIS should use ENVIRON International's on-site measurements of sound generated by DBOC boats and equipment and a scientifically accepted ambient sound level measurement for Drakes Estero to calculate the sound-dissipation distances for DBOC's boats and equipment. The Final EIS should reflect that DBOC boats and equipment make far less noise than stated in the DEIS, the ambient sound level for Drakes Estero is much higher than the DEIS concludes, and noise from DBOC's boats and equipment can only be heard at distances far shorter than those claimed in the DEIS. The Atkins Peer Review Report's discussion of the DEIS's analysis of noise generated by DBOC operations should be permanently withdrawn from the public domain.

3.2. DBOC Does Not Cause a "Major Impact" to Wilderness.

The conclusion that DBOC causes "major" adverse impacts on Drakes Estero's "wilderness" is driven not only by inaccurate soundscape data in the DEIS, but also by on the use of vague, subjective, unbounded "Impact Intensity" definitions—allegedly used to scientifically measure DBOC's impact on Drakes Estero's "wilderness"—which are identical to or indistinguishable from those that federal courts have repeatedly rejected on the basis that they are arbitrary and capricious.

All analysis and conclusions in the DEIS regarding DBOC's alleged impact on Drakes Estero's "wilderness" that are based on or refer to these unscientific, opinion-based "Impact Intensity" definitions should be deleted from the DEIS. The section of the Atkins Peer Review Report evaluating the adequacy of the DEIS's "wilderness" analysis should be withdrawn from the public domain.

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[17] *See* DEIS, *supra* note 5, at 349-64 & Tables 4-2, 4-3, 4-4.

[18] FEDERAL AVIATION ADMINISTRATION (FAA) & JOHN A. VOLPE NATIONAL TRANSPORTATION SYSTEMS CENTER (VOLPE CENTER), BASELINE AMBIENT SOUND LEVELS IN POINT REYES NATIONAL SEASHORE (2011) [hereinafter VOLPE REPORT] (Exhibit 9).

[19] *See infra* Section 7.1.6.1.

3.3. DBOC Does Not Cause An "Adverse Impact" to Harbor Seals, Birds and Bird Habitat, or Visitor Experience and Recreation.

NPS's conclusions regarding DBOC's impact on Drakes Estero's harbor seals, birds and bird habitat, and visitor experience and recreation suffer from similar information-quality defects. For example, as other government agencies and panel scientists have suggested, NPS does not have sufficient evidence to scientifically evaluate DBOC's impact on harbor seals and would need to conduct additional studies to make that determination. NPS has not done so. Moreover, NPS has chosen to ignore the relevant harbor seal data it does have, such as more than 281,000 time- and date-stamped photographs taken by NPS's own high-resolution cameras over a three-year period, none of which indicate that DBOC has an impact on Drakes Estero's harbor seal colony.[20] Even though NPS has access to and is aware of highly probative, credible data—including on-site sound recordings captured by a sophisticated government microphone; NPS photographs, video recordings, and detailed logs; and GPS data—contradicting factual statements, data, and analysis in the DEIS, NPS does not discuss or meaningfully acknowledge the existence of this data in the DEIS.

The Final EIS should be corrected to comply with NPS's minimum information-quality standards and accurately reflect DBOC's de minimis, indeed positive, impact on Drakes Estero's soundscape, wilderness, harbor seal colony, birds and bird habitat, and visitor and recreation experience. Atkins Peer Review Report should be withdrawn from the public record and should not be relied upon or used in any agency decision-making process.

4. Authority for Complaint Submittal

4.1 The Lunnys and Dr. Goodman are Affected Persons Entitled to Petition NPS for Correction of Information Contained in the DEIS and Atkins Peer Review Report.

The Lunnys and Dr. Goodman are "affected persons" who are entitled to petition NPS for correction of inaccurate, deliberately misleading, and false information disseminated in the DEIS and Atkins Peer Review Report. Director's Order #11B incorporates by reference the OMB

[20] NPS's improper treatment of those photographs was the subject of an investigation that resulted in a finding of "administrative misconduct." *See* DOI OFFICE OF THE SOLICITOR, PUBLIC REPORT ON ALLEGATIONS OF SCIENTIFIC MISCONDUCT AT POINT REYES NATIONAL SEASHORE, CALIFORNIA (March 22, 2011) [hereinafter FROST REPORT] (Exhibit 10). Most of those photographs have now been made publicly available and can be accessed on NPS's website, which also contains links to highly detailed logs and video recordings and other relevant harbor-seal related data that NPS excluded from the DEIS. To view NPS's then-covertly-taken high-resolution photographs of Drakes Estero's harbor seal colony and DBOC oyster boats, video recordings of Drakes Estero's harbor seals, and detailed logs documenting DBOC's interaction with Drakes Estero's harbor seals, visit National Park Service, Reading Room: Photographs and Videos, *at* http://www.nps.gov/pore/parkmgmt/planning_reading_room_photographs_videos.htm (last visited August 1, 2012) (for links to NPS's 280,000-plus time- and date-stamped photographs(Exhibit 11); National Park Service, Reading Room: Videos: Drakes Estero Wildlife Monitoring Cameras—2008, *at* http://www.nps.gov/pore/parkmgmt/planning_reading_room_videos_wmc_de_2008.htm (last visited August 1, 2012) (for links to video recordings of Drakes Estero's harbor seal colony and detailed logs, some of which are referred to as "Oyster Activity Sheets," that are omitted from the DEIS) (Exhibit 12). To access links to other harbor seal-related data that NPS omitted or did not meaningfully discuss in the DEIS, visit National Park Service, Reading Room: Other Documents of Interest, *at* http://www.nps.gov/pore/parkmgmt/planning_reading_room_other_freq_req_docs.htm (last visited August 1, 2012) (Exhibit 13).

Guidelines.[21] The preamble to the Final OMB Guidelines makes clear that "'affected persons' are people who may benefit or be harmed by the disseminated information. This includes persons who are seeking to address information about themselves as well as persons who use information."[22] As explained below, the Lunnys and Dr. Goodman are "affected persons" who are, and will continue to be, harmed by the information disseminated in the DEIS and Atkins Peer Review Report and at issue in this Complaint.

The Lunnys, as owners of DBOC, are "affected persons" in this matter. The DEIS and Atkins Peer Review Report used flawed data and methods to assess the environmental impacts of issuing DBOC a new 10-year SUP allowing them to continue operating their family business. The Lunnys are harmed by "information" at issue in this Complaint because NPS has used it to conclude that the DEIS's Alternative A is the "environmentally preferred alternative," which, if adopted, will force DBOC to cease operations by November 30, 2012, when its current SUP and RUO expire.[23] The stated purpose of the DEIS is to provide the Secretary with information upon which to base his decision about whether to grant DBOC a 10-year SUP; indeed, the Final EIS's *raison d'être* is to enable the Secretary to make a reasoned, informed decision. Unless the false and misleading information disseminated in the DEIS and Atkins Peer Review Report is corrected prior to the release of the Final EIS, the Secretary may erroneously rely on that information to deny the Lunnys a SUP, which would force them to close their oyster farm. The Lunnys are therefore "affected persons" who are entitled to petition NPS for correction of inaccurate, false, and deliberately misleading information in the DEIS and Atkins Peer Review Report.

Likewise, Dr. Goodman is an "affected person" who uses the information in the DEIS and Atkins Peer Review Report.[24] He is an elected member of NAS, which has been charged with evaluating information disseminated in the DEIS and Atkins Peer Review Report and is currently drafting a report assessing the adequacy of those publications.[25] Dr. Goodman has actively

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[21] *See* Director's Order #11B, pt. III.C.

[22] Office of Management and Budget, Guidelines for Ensuring and Maximizing the Quality, Objectivity, Utility, and Integrity of Information Disseminated by Federal Agencies, Final Guidelines, With Request for Public Comment, 66 Fed. Reg. 49,718, 49,721 (Sept. 28, 2001).

[23] *See* DEIS, *supra* note 5, at 5.

[24] Dr. Goodman is a renowned scientist, entrepreneur, educator, CEO, and corporate executive. He is currently Managing Partner and Co-founder of venBio LLC, a biotech venture capital firm. He was formerly President of Pfizer's Biotherapeutics and Bioinnovation Center, and a member of Pfizer's Executive Leadership Team. Dr. Goodman was a co-founder of Exelixis, Renovis, Second Genome, and Ossianix, and CEO of Renovis until its acquisition by Evotec. He is a former professor at Stanford University and UC Berkeley, co-founder of Berkeley's Wills Neuroscience Institute, an Investigator with the Howard Hughes Medical Institute, and currently an Adjunct Professor at UC San Francisco. During his 25-year academic career, he published over 200 scientific papers. Dr. Goodman is an elected member of the U.S. National Academy of Sciences, the American Academy of Arts and Sciences, and the American Philosophical Society. His honors include, amongst others, the Alan T. Waterman Award from the National Science Board, Canada Gairdner Biomedical Award, March-of-Dimes Prize in Developmental Biology, Reeve-Irvine Research Medal, and Trinity College Dublin Dawson Prize in Genetics. He is on the Board of the California Council on Science and Technology, the Pacific Institute, and former chair of the National Academy of Sciences' Board on Life Sciences. He is an advisor to several university innovation centers and disease foundations. He is Chair of the Board of several companies, including Oligasis, Ossianix, and Second Genome, and a member of the Board of several others, including NeuroTherapeutics and Mirna.

[25] NAS is conducting a limited review of the DEIS due to widespread concern that it is the product of scientific misconduct. *See* Letter from Dianne Feinstein, U.S. Senator (D-Calif), to Daniel W. Richards, President, California Fish and Game Commission (May 22, 2012), *available at* http://www.feinstein.senate.gov/public/index.cfm/2012/5/feinstein-letter-to-california-fish-and-game-commission-

participated in that process and has provided data and analysis to fellow NAS members to aid them in their review.[26] Additionally, Dr. Goodman's interest in this matter is not merely a general interest in scientific integrity and furthering NAS's mission of furthering science and technology and their use for the public good.[27] His analysis of the DEIS and Atkins Peer Review Report has also been the subject of substantial public criticism in some quarters, thereby causing substantial harm to his reputation.[28] Correction of the DEIS and Atkins Peer Review Report would remedy this undeserved reputational harm. He has extensively used and analyzed information disseminated in the DEIS and Atkins Peer Review Report[29] and submitted formal scien-

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on-drakes-bay-oyster-company (last visited July 22, 2012) ("Given the repeated allegations of scientific misconduct, Congress included, at my request, report language in its Fiscal Year 2012 appropriations omnibus that directed the National Academy of Sciences to conduct another review of the Park Service's work on the draft EIS [for DBOC] which was released in September 2011.")(Exhibit 14); *see also* Letter from Darrell Issa, Chairman of House Committee on Oversight and Government Reform, to Kenneth L. Salazar, Secretary of the Interior, 3 (Oct. 20, 2011), *available at* http://www.alsamarin.org/pdfs/Issa%20to%20Salazar.10_20_11.pdf (last visited August 2, 2012) (noting that "the alleged [NPS] misconduct is serious, and it could result in the loss of the Lunny family's business, which employs a number of local residents") (Exhibit 15). The House of Representative's Conference Report on H.R. 2055, Consolidated Appropriations Act, 2012, put it thus: "Because of concerns relating to the validity of the science underlying the DEIS, the conferees direct the National Academy of Sciences to assess the data, analysis, and conclusions in the DEIS in order to ensure there is a solid scientific foundation for the Final Environmental Impact Statement." H.R. 112-118, 157 Cong. Rec. H9593 (Dec. 15, 2011).

[26] *See* Letter from Dr. Corey S. Goodman to National Academy of Science, NRC Panel Reviewing NPS DEIS for DBOC and ATKINS Peer Review (July 3, 2012) (Exhibit 16).

[27] Dr. Goodman's involvement in this matter stems from a request by the President of the Marin County Board of Supervisors, Steve Kinsey. On April 5, 2007, NPS PRNS Superintendent Don Neubacher met with Supervisor Kinsey. Superintendent Neubacher indicated to Mr. Kinsey that he believed that DBOC was harming Drakes Estero's environment and its harbor seal colony. On April 28, 2007, Supervisor Kinsey contacted Dr. Goodman based upon his scientific credentials, as he was aware that Dr. Goodman is an elected member of the National Academy of Sciences, tenured biology professor at U.C. Berkeley, and has historically been involved with science-based public-policy issues. (For example, Dr. Goodman chaired the National Academy of Sciences' Board on Life Sciences from 2001 to 2006.) Supervisor Kinsey, who questioned the veracity of the NPS's scientific claims, asked Dr. Goodman to review the NPS claims and NPS-sponsored scientific studies and to testify at the Marin County hearing regarding DBOC that was held on May 8, 2007—as an independent, neutral scientist—as to whether the NPS data supported the agency's claims. When he testified at the May 8, 2007 Marin County hearing, Dr. Goodman had not met Kevin Lunny, owner of DBOC (in fact, several years prior to that hearing he publicly disagreed with the Tomales Bay Oyster Company concerning a scientific issue). He was later invited by Senator Dianne Feinstein to attend the July 21, 2007 Olema meeting regarding DBOC. He does not have a pecuniary interest in this matter.

[28] *See, e.g.*, Letter from Amy Trainer, Executive Director, Environmental Action Committee of West Marin, to Ken Salazar, Secretary of the Interior, "Re: Concerns Regarding Scientific Advice Received from Dr. Corey Goodman" (March 27, 2012), *available at* http://www.peer.org/docs/nps/4_3_12_Source_Goodman_.pdf (last visited August 6, 2012); Letter from Dr. Timothy Ragen, Executive Director, Marine Mammal Commission, to Dr. Corey Goodman (undated), *available at* http://dels.nas.edu/resources/static-assets/osb/miscellaneous/desai.pdf (last visited August 6, 2012).

[29] *See* Dr. Corey S. Goodman, Power Point Presentation, "NPS Misrepresented and Concealed Acoustic Data and Deceived the Public and Peer Reviewers of the Draft Environmental Impact Statement (DEIS) on DBOC" (July 2, 2012) [hereinafter Goodman Power Point] (Exhibit 17) (Dr. Goodman initially prepared this Power Point on April 24, 2012, and attached it to a letter he sent to DOI's Acting Inspector General); Letter from Dr. Corey S. Goodman to Mary Kendall, Acting Inspector General, Department of Interior (April 24, 2012) (Exhibit 18); Dr. Corey S. Goodman, "Re: Dr. Chris Clark's re-review of the NPS DEIS: the data completely changed, but his conclusions did not, suggesting this is policy and politics, not science" (June 18, 2012) (Exhibit 19); Letter from Dr. Corey Goodman to Dr. Ralph Morgenweck, Scientific Integrity Officer, Department of the Interior, "Re: Dr. Chris Clark's re-review of the DEIS" (June 25, 2012) (Exhibit 20). Moreover, Dr. Goodman has submitted numerous Freedom of Information Act (FOIA) requests to both NPS and the Marine Mammal Commission (MMC) in connection with his analysis and use of information in the DEIS and Atkins Peer Review Report.

tific misconduct complaints to Secretary of the Interior Ken Salazar and others regarding materially inaccurate information disseminated in the DEIS.[30] Dr. Goodman is thus an affected person who has a right to petition NPS for correction of the DEIS and Atkins Peer Review Report.

4.2 The DEIS and Atkins Peer Review Report are Subject to Information-Quality Standards Mandated by the Data Quality Act, OMB and DOI Guidelines, and Director's Order #11B.

Because the DEIS and Atkins Peer Review Report constitute "information" that was "disseminated" by NPS, those documents must comply with the information-quality standards established by the DQA, OMB and DOI Guidelines, Director's Order #11B, and other binding minimum information-quality standards.[31] The DQA and OMB Guidelines published pursuant to the DQA require federal agencies to promulgate guidelines establishing binding minimum information-quality standards for "information" that they make publicly available or use in agency decision-making processes.[32] As required by the DQA and OMB Guidelines, in 2002 NPS published its statutorily required information-quality standards in Director's Order #11B.[33] Notably, NPS chose to hold itself to particularly high information-quality standards, incorporating by reference not only DOI's robust information-quality standards but all other statutes and regulations establishing information-quality standards and all binding NPS policies and procedures.[34]

The DEIS constitutes "information" because NPS generated it,[35] and it makes factual and data-based assertions in the form of textual, numerical, graphic, and narrative statements that are represented as NPS's views.[36] Because NPS relied on and disseminated the data, factual assertions, conclusions, and other technical and scientific information in the Atkins Peer Review

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[30] *See* Letter from Dr. Corey S. Goodman to Mary Kendall, Acting Inspector General, Department of Interior, 1 (April 24, 2012).

[31] *See* Director's Order #11B, pt. III. *See infra* Sections 5-6.

[32] The DQA, 44 U.S.C. § 3516 note(a), provides that the Director of the Office of Management and Budget (OMB) shall, "with public and Federal agency involvement,' issue guidelines by the end of September 2001 that: provide policy and procedural guidance to Federal agencies for ensuring and maximizing the quality, objectivity, utility, and integrity of information (including statistical information)." The DQA obligates federal agencies to promulgate "guidelines ensuring and maximizing the quality, objectivity, utility, and integrity of information (including statistical information) disseminated by the agency" and further requires those agencies to "establish administrative mechanisms allowing affected persons to seek and obtain correction of information maintained and disseminated by the agency that does not comply with" the agency's information-quality standards. 44 U.S.C. § 3516 note(a). OMB has issued guidelines implementing the DQA. The OMB Guidelines obligate federal agencies to not only establish "a basic standard of quality (including objectivity, utility, and integrity)" but also adopt "specific standards of [information] quality that are appropriate for the" types of information those agencies disseminate." OMB Guidelines, pt. III.1.

[33] *See* Director's Order #11B.

[34] *See id.*, pt. III.C ("All information will comply with current NPS and Departmental policies and guidelines.... The information will also comply with the requirements of applicable public laws ... and implementing rules, regulations, directives and instructions issued under the authority of such laws.... In addition to these standards, the information quality standards as described by OMB's final guidelines and the Department of the Interior's guidelines are incorporated by reference as NPS policy and standards.").

[35] An NPS contractor, Vanasse Hangen Brustlin, Inc. (VHB), assisted NPS with production of the DEIS. This does not alter the analysis. *See id.*, pt. IV.E-F.

[36] *See id.*, pt. IV.E.

Report, it also constitutes "information,"[37] which is subject to the same information-quality standards as the DEIS.[38]

The information in both publications has been "disseminated" by NPS.[39] NPS initiated or sponsored distribution of the DEIS and Atkins Peer Review Report to the public, making both documents publicly available on official government websites.[40] During the comment period on the DEIS, NPS received scores of public comments on that document.[41] And NPS and DOI have publicly endorsed information in the Atkins Peer Review Report on an official government website.[42]

4.3 The DEIS and Atkins Peer Review Report Disseminate "Influential Scientific Information" and are Therefore Subject to Heightened Information-Quality Standards.

In addition to complying with NPS's base information-quality standards, publications that disseminate "influential scientific information"[43] must also comply with heightened, more rigorous information-quality standards, including those set forth in Part II.4 of DOI Guidelines, and must be "highly transparent"[44] and based on the "best available" science, technical data, methods, and supporting studies.[45]

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[37] *See id.*

[38] *See id.*, pts. III.D, IV.E. Pursuant to Part III.D of Director's Order #11B, because NPS relied upon technical and scientific information in and disseminated the Atkins Peer Review Report, it is subject to "appropriate standards of objectivity and utility" and must comply with NPS, DOI, OMB and other applicable information-quality standards to the same extent as the DEIS.

[39] *Id.*, pt. VI.F.

[40] *See supra* notes 1-2.

[41] In fact, NPS received 52,473 public comments on the DEIS. *See* National Park Service, "More than 52,000 comment letters on the future of Drakes Estero posted to Point Reyes National Seashore website," March 1, 2012, *at* http://www.nps.gov/pore/parknews/newsreleases_20120301_dboc_sup_deis_comments_posted.htm (last visited July 31, 2012). According to NPS, "[l]etters were submitted from every state, all of the United States commonwealths and territories, as well as 40 countries. Thirty-seven percent of the correspondence came from California." *Id.*

[42] *See* ATKINS NORTH AMERICA, FINAL REPORT ON PEER REVIEW OF THE SCIENCE USED IN THE NATIONAL PARK SERVICE'S DRAFT ENVIRONMENTAL IMPACT STATEMENT: DRAKES BAY OYSTER COMPANY SPECIAL USE PERMIT, Atkins Project No. 10002598 (Mar. 2012), *available at* http://www.doi.gov/news/pressreleases/loader.cfm?csModule=security/getfile&pageid=284844 (last visited June 5, 2012) [hereinafter ATKINS PEER REVIEW REPORT]; *see also* U.S. Dep't. of Interior, Press Release, "Peer Review of Scientific Findings in Draft EIS on Drakes Bay Oyster Company Now Available" (March 19, 2012), *at* http://www.doi.gov/news/pressreleases/Peer-Review-of-Scientific-Findings-in-Draft-EIS-on-Drakes-Bay-Oyster-Company-Now-Available.cfm (last visited July 16, 2012) ("'The peer-review accomplished exactly what we were seeking—that is, specific recommendations on how to improve the final environmental impact statement to make it a better science product,' stated Dr. Ralph Morgenweck, Interior's Scientific Integrity Officer."). For the DEIS's url, see *supra* note 1.

[43] *See* DOI Guidelines, pt. VII.9.

[44] *See* Director's Order #11B, pt. III.A ("Influential information will be produced with a high degree of transparency about data and methods.").

[45] *See* DOI Guidelines, pt. II.4(a)-(b) ("Influential scientific information" must, *inter alia*, "[u]se the best available science and supporting studies conducted in accordance with sound and objective scientific practices" and "[u]se data collected by standard and accepted methods or best available methods").

The DEIS and Atkins Peer Review constitute "influential scientific information," as defined by DOI Guidelines, because they disseminate data and analysis concerning alleged risks to the environment that will have a "clear and substantial impact" on both public policy and important private-sector decisions.[46] Those publications will have a substantial, if not dispositive, impact on the Secretary's decision whether to issue a new SUP to DBOC. Accordingly, inaccurate information in those publications poses an existential threat to DBOC's—and its employees'[47]—future.

Further, the information at issue in this Complaint will be used to shape important public-policy decisions concerning the future of Drakes Estero and the Point Reyes National Sea Shore, e.g., the extent to which it will be converted into wilderness. Therefore, information in those publications must comply with particularly stringent information-quality standards that apply to "influential scientific information."

5. Because this Complaint Concerns Analysis Conducted Under the National Environmental Policy Act (NEPA), A Response to this Complaint Must be Included in the Final EIS.

The merits of this Complaint must be considered and responded to in the Final EIS because the Lunnys will likely suffer severe, irreparable actual harm if a response to this Complaint is not included in the Final EIS, and an expedited response will not unduly delay issuance of the Final EIS.

Director's Order #11B makes clear that where, as here, NPS has disseminated information "prior to the final agency action or information product," information-quality complaints regarding that information should be given expedited consideration if "the complainant has shown a reasonable likelihood of suffering actual harm from the agency's dissemination if the agency does not resolve the complain[t] prior to the final agency action or information product" and early consideration will not "unduly delay issuance of the agency action or information...."[48]

NPS disseminated the DEIS in September 2011 and the Atkins Peer Review Report in March 2012, months before the anticipated release of the relevant final information product, i.e., the Final EIS, and more months before the final agency action, i.e., the Secretary's decision whether to issue DBOC a 10-year SUP on or before November 30, 2012.

If this Complaint is not considered before the Final EIS is made publicly available, the Lunnys will, in all likelihood, be forced to close their family business and their employees will

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[46] *See id.*, pt. VII.9; National Park Service, Interim Guidance Document Governing Code of Conduct, Peer Review, and Information Quality Correction for National Park Service Cultural and Natural Resource Disciplines, pt. VIII (January 31, 2008) (defining "influential scientific information" as information that is *either* "influential in determining important policies or decisions if the same decision would be difficult to reach in the absence of the information" *or* "serves as the principal basis for a decision that affects significant numbers of private sector entities outside parks or not associated with NPS assistance activities"); *see also* Director's Order #11B, pt. III.C (incorporating by reference DOI Guidelines as additional information-quality standards that NPS must adhere to).

[47] DBOC jobs directly support about thirty local families, not to mention the ancillary economic benefits derived by Marin County businesses from the many thousands of annual visitors to DBOC.

[48] Director's Order #11B, pt. IV.E.

lose their jobs. This makes the Lunnys reasonably likely to suffer actual harm if the information at issue in this Complaint is not timely corrected in the Final EIS.

Expedited consideration of this Complaint will neither delay release of the Final EIS nor delay the Secretary's decision whether to issue DBOC a 10-year SUP. The Final EIS will not be released until NAS completes its review of the DEIS and Atkins Peer Review Report (currently anticipated in early September), and the NPS considers and incorporates any recommendations and conclusions made in the NAS review. As a result, NPS will already be engaged in revising the Final EIS. Moreover, this Complaint was submitted on August 7, 2012, over three months before expiration of DBOC's SUP and RUO on November 30, 2012—more than ample time to integrate necessary corrections into the Final EIS and withdraw and reissue the Atkins Peer Review Report. Therefore, this Complaint should be given expedited consideration.

NPS should also evaluate the merits of this Complaint before the Final EIS is publicly released for a second reason.[49] Under NPS's information-quality guidelines, information-quality complaints concerning data and analysis in draft documents prepared in connection with structured reviews "involv[ing] a[n] … opportunity for review and [public] comment" should be "treated as a comment on the draft document and the response … [must] be included in the final document."[50] Such structured reviews include "analyses conducted under the National Environmental Policy Act (NEPA),"[51] which prescribes detailed procedural requirements for environmental-impact analysis and requires that NEPA documents, such as the DEIS, must be subject to public comments.[52] The DEIS and Atkins Peer Review Report were prepared in the course of a structured review process analyzing DBOC's interaction with and impact on Drakes Estero's environment that was conducted pursuant to NEPA, and the DEIS was the subject of numerous public comments.[53] In accordance with Director's Order #11B, NPS must treat this Complaint as a comment on the DEIS and respond to it in the Final EIS.

Further, until this matter is resolved, the information that is the subject of this Complaint should be withdrawn, to the extent practicable, from the public domain. The DEIS and Atkins Peer Review Report should not be used in any agency decision-making process until those publications are corrected to comply with applicable information-quality standards.

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[49] *See id.* (With respect to "analyses conducted under the National Environmental Policy Act (NEPA)," complaints about information quality should "be treated as a comment on the draft document and the response will be included in the final document.").

[50] *Id.*

[51] *Id.*

[52] NEPA, codified at 42 U.S.C. § 4331 *et seq.*, prescribes detailed procedural requirements that apply to all aspects of the NEPA process and establishes information quality-based standards that apply to publications such as the DEIS.

[53] NPS received 52,473 public comments on the DEIS. *See supra* note 41.

6. The DEIS and Atkins Peer Review Report Must Be Accurate and Timely; Objective; Highly Transparent About Data, Sources, and Methods; Reproducible; Based on Reliable Data and Sound and Accepted Practices For Data Collection and Analysis; and Use the Best Available Science.

"Information"[54] in the DEIS and Atkins Peer Review Report is subject to basic, common-sense minimum information-quality standards set forth in Director's Order #11B, which requires that "[a]ll information disseminated by the NPS must … [be presented to the public in a manner that] maximizes … objectivity, utility, and integrity"[55] and prescribes specific, judicially manageable standards and criteria for determining compliance. Further, such "information" must also comply with information-quality standards set forth in OMB and DOI Guidelines,[56] all *other* NPS and DOI policies and guidelines that govern information quality and dissemination of information to the public,[57] and other relevant laws, including but not limited to NEPA.[58]

To comply with minimum information-quality standards, information in the DEIS and Atkins Peer Review Report must be:

- accurate;[59]
- timely and based on the most current information available;[60]
- objective and unbiased in terms of both presentation and substance;[61]

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[54] "Information" is defined as "representation[s] of knowledge such as fact or data, in any medium or form, including textual, numerical, graphic, cartographic, narrative, or audiovisual forms." Director's Order #11B, pt. VI.E.

[55] *Id.*, pt. III.

[56] *See id.*, pt. III.C ("In addition to … [NPS's information-quality] standards, the information quality standards as described by OMB's final guidelines and the Department of the Interior's [information-quality] guidelines are incorporated by reference as NPS policy and standards.").

[57] *See id.* ("All information will comply with current NPS and Departmental policies and guidelines that govern information dissemination to the public."). NPS policies are binding on NPS personnel. 43 C.F.R. § 20.502 unequivocally requires NPS personnel "to carry out the announced policies and programs of the Department." As a result, the DEIS and Atkins Peer Review must comply with information-quality-related standards established by NPS's 2006 Management Policies, Director's Order #47, and the DOI Departmental Manual. *See supra* note 34.

[58] *See* Director's Order #11B, pt. 3.C ("Information" disseminated by NPS must "also comply with the requirements of applicable public laws … , regulations, directives and instructions issued under the authority of such laws."). Under 43 C.F.R. § 20.501, NPS personnel have a duty to comply with all "Federal statutes, Executive Orders, Office of Government Ethics and Office of Personnel Management regulations, and Departmental regulations." As a result, the DEIS and Atkins Peer Review Report must comply with information-quality-related standards established by NEPA, 42 U.S.C. § 4331 *et seq.*, 40 C.F.R. pt. 1502, Director's Order #12, and the DO-12 Handbook.

[59] *See* Director's Order #11B, pt. III.B ("All information will be accurate…."). Where, as here, a NEPA document, such as the DEIS, is based on "incomplete or unavailable information," it must be "ma[d]e clear that such information is lacking." 40 C.F.R. § 1502.22.

[60] *See* Director's Order #11B, pt. III.B ("All information will be … timely, and reflect the most current available information.").

[61] *See id.*, pts. III, VI.C. Information in those publications must be "presented in … [a] clear, complete, and unbiased manner" and "within a proper context." *Id.*, pt.VI.C. And where, as here, scientific information is involved, NPS has an affirmative obligation to ensure that the substantive content itself (e.g., data, factual assertions, tables, figures) is "unbiased." *See id.*. Moreover, because the DEIS was prepared pursuant to NEPA, it is subject to 40 C.F.R. pt. 1502, which, *inter alia*, prescribes information-quality-related standards for environmental impact statements. The DEIS

- highly transparent about data, sources, and methods;[62]
- reproducible by qualified third parties;[63]
- generated using site-specific data and on-site measurements, where required by NEPA, binding NPS policy, and other applicable law;[64]
- based on reliable data and sound and well-accepted scientific practices for data collection and analysis;[65] and
- based on the best available science and supporting studies.[66]

Specific conclusions reached in the DEIS and Atkins Peer Review Report fail to meet these minimum information quality standards. Section 7 below identifies and explains the flaws in the scientific evidence presented in the DEIS and Atkins Peer Review Report, and provides the corrections necessary.

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must therefore "provide full and fair discussion of [claimed] significant environmental impacts," 40 C.F.R. § 1502.1, and "[r]igorously explore and *objectively evaluate* all reasonable alternatives," 40 C.F.R. § 1502.14(a) (emphasis added).

[62] *See* Director's Order #11B, pt. III.A ("[I]nformation will be made transparent, to the maximum extent practicable....Influential information will be produced with a high degree of transparency about data and methods."); *id.*, pt. III.B ("All information sources will be documented."); *id.*, pt. III.A (NPS must use "accurate documentation"); *see also* DOI Guidelines, pt. VII.3(b)(ii) (with respect to "influential scientific information," such as the DEIS and Atkins Peer Review, "a high degree of ***transparency*** about data and methods" is required "to facilitate the ***reproducibility*** of such information by qualified third parties" (emphasis in original)).

[63] *See* Director's Order #11B, pt. III.A (Information must "be reproducible to the extent possible.").

[64] Where information (e.g., site-specific sound measurements of DBOC boats and equipment) is "essential to a reasoned choice among alternatives" and "relevant" to evaluation of environmental impacts, NPS is required to obtain that information (e.g., by actually measuring sound generated by DBOC boats and equipment), so long as "the overall costs of obtaining it are not exorbitant" (measured in both time and money). *See* 40 C.F.R. § 1502.22(a); *see also* DO-12 Handbook, § 4.5.G.3 (discussing NPS's obligations under 40 C.F.R. § 1502.22(a)). Director's Order #47 prescribes additional information-quality standards that apply to soundscape analysis. *See* Director's Order #47, pt. C ("NPS will apply the following requirements to its soundscape and noise management activities."). It establishes that where, as here, human-made sound allegedly causes a "noise issue," human-made "sounds and sound levels ... need to be measured and evaluated in the park planning processes...."[64] *Id.*, pt. D.5. Cf. DO-12 Handbook, § 1.6 (a "decision-maker," such as the Secretary, must have access to "site-specific information"). Further, Director's Order #47 requires NPS to develop a Soundscape Preservation and Noise Management Plan that "identif[ies] the sound level, nature and origin of internal and external noise sources" when doing so is necessary to address a "complex[] ... noise issue." Director's Order #47, pt. C.3. NPS did not develop a Soundscape Preservation and Noise Management Plan in connection with the DEIS.

[65] *See* DOI Guidelines, pt. II.4(b) (publications that disseminate "influential scientific information" must solely "[u]se data collected by standard and accepted methods or best available methods" and "[u]se the *best available ... supporting studies* conducted in accordance with sound and objective scientific practices" (emphasis added)); Director's Order #11B, III.A ("Information will be developed only from reliable data sources based on accepted practices and policies using accepted methods for information collection and verification."); *id.*, pt. VI.C (Information "*shall be developed*[] using sound statistical and research methods" (emphasis added)).

[66] *See* DOI Guidelines, pt. II.4(b) (publications that disseminate "influential scientific information" must solely "[u]se the *best available science and supporting studies* conducted in accordance with sound and objective scientific practices" (emphasis added)); *accord* Management Policies 2006, § 2.1.2 (NPS must solely "use the best available scientific analysis and technical information and scholarly analysis.").

7. Description of Inaccurate, False, or Deliberately Misleading "Information" Disseminated in the DEIS and Atkins Peer Review Report that Fails to Comply With Applicable Information-Quality Standards and Must Be Immediately Corrected.

7.1 Draft Environmental Impact Statement: Drakes Bay Oyster Company Special Use Permit (Sept. 2011).[67]

The specific "information" to be immediately corrected within the DEIS includes false representations of key acoustic data in Chapter 3 and Chapter 4 and incorrect findings of "major" and "moderate" impacts in Chapter 2 and Chapter 4. The statements in the DEIS that are the subject of this Complaint include, but are not limited to, the following:

7.1.1 DEIS References to Alternative A Using "Expected Future Conditions" as a Baseline for Assessing Environmental Impact.

Statements to be Corrected:

- All statements referring to or based on the hypothetical environmental impact of adopting Alternative A: No New Special Use Permit—Conversion to Wilderness (No-Action) in Table 2-6 and Chapters 2, 3, and 4 of the DEIS.

  - **Recommended Correction:** All such statements should be deleted.

7.1.1.1 Environmental-Impact Analysis in the DEIS that Uses "Expected Future Conditions" as the Baseline, Instead of Current Conditions, is Not Based on the Best Available Science and Sound and Objective Scientific Practices.

The no-action alternative in the DEIS, Alternative A, uses an "expected future conditions" baseline for environmental-impact analysis that is not based on the best available science and is inconsistent with sound and objective scientific practices,[68] which require that Alternative A be compared with the status quo: *current* conditions at Drakes Estero. According to the DO-12 Handbook, a no-action alternative provides "important context information in determining the relative magnitude and intensity of [environmental] impacts" by "set[ting] a baseline of *existing impact continued into the future* against which to compare impacts of action alternatives."[69] A

[67] *Available at* http://parkplanning.nps.gov/document.cfm?parkID=333&projectID=33043&documentID=43390.

[68] *See* DOI Guidelines, pt. II.4(a); Management Policies 2006, § 2.1.2; DOI Departmental Manual, 305 DM 3, § 3.7.A(1); *see also* Director's Order #11B, pt. III.A ("Information will be developed only from reliable data sources based on accepted practices and policies utilizing accepted methods for information collection and verification.").

[69] DO-12 Handbook, § 2.7.C (emphasis added). As the DO-12 Handbook makes clear, "[a]ccurately and completely describing the impacts of existing sources—that is, of continuing actions—is critical to understanding the context, duration and intensity of new impacts." *Id.*, § 2.7.C.3. Consequently, "a full analysis of no action is required in all NPS EISs and EAs." *Id.* NPS personnel are required to adhere to the procedures set forth in the DO-12 Handbook. *See id.*, § 1.1.B ("The processes described in this handbook are binding on all NPS personnel.").

"no-action" alternative is clearly defined as "continuing as is,"[70] measuring "the impacts of *existing activities or conditions (man-made* or natural) projected into the future."[71]

Here, in violation of binding agency policy, Alternative A sets as a baseline for environmental-impact analysis in the DEIS a hypothetical future at Drakes Estero without DBOC, measuring environmental impacts based on "*expected future conditions*"[72]—i.e., based on sheer speculation. Unlike existing conditions at Drakes Estero, which can be measured in accordance with sound and objective scientific practices, "expected future conditions" cannot be measured, as they are merely hypothetical possibilities.[73] This failure to use the best available science materially deviates from sound and objective scientific practices in violation of NPS's information-quality guidelines.

7.1.2 Table 3-3. Noise Generators at DBOC.[74]

Statements to be Corrected:

- Statement that the "Representative Sound Level at 50 Feet (dBA)" for a small DBOC "Motorboat" (a skiff with a 20 HP, 4-cycle engine attached) is 71 dBA.

  - **Source of data:** NOISE UNLIMITED, INC., BOAT NOISE TESTS USING STATIC AND FULL-THROTTLE METHODS (1995) (tests conducted off the coast of New Jersey at request of the New Jersey State Police).

  - **Conclusion:** Measurements of sound generated by a Kawasaki 750 cc, 2-stroke, 70 HP jet ski operating at static level off of the New Jersey Coast in 1995 taken *from 2 feet away* are

[70] *Id.*, § 2.7.C.
[71] *Id.*, § 2.7.C.3 (emphasis added); *accord* 43 C.F.R. § 46.415(b)(1) (contemplating that "the effects of the no-action alternative" should be analyzed "by contrasting the current condition and expected future condition"). *Cf. American Rivers v.* FERC, 201 F.3d 320, 328-29 (9th Cir. 2000) (endorsing use of current conditions as appropriate environmental baseline under NEPA); *Town of Cave Creek, Arizona v. FAA*, 325 F.3d 320, 328-29 (D.C. Cir. 2003) (same). *See generally NRDC v. Rodgers*, 381 F. Supp. 2d 1212, 1229 (E.D. Cal. 2005) ("In other words, the environmental baseline is a 'snapshot in time,' which allows agencies to understand existing conditions before they consider the effects of a proposed action on those conditions.").
[72] DEIS, *supra* note 5, at 234 (emphasis added).
[73] The National Marine Fisheries Service (NMFS) has highlighted this information-quality deficiency caused by NPS's failure to use the appropriate, mandatory baseline in a written comment NMFS submitted concerning the DEIS: "[W]e recommend that NPS: Modify the methodology so that all the alternatives are compared to the existing conditions baseline (as described in sections 1502.14, 1502.15, and 1502.16 in the CEQ regulations…)…." Letter from Rodney R. McInnis, Regional Administrator, National Marine Fisheries Service, to Cicely Muldoon, Superintendent, Point Reyes National Seashore, p. 2 (Nov. 17, 2011); *see* National Marine Fisheries Service Comments on the Draft Environmental Impact Statement for Drakes Bay Oyster Company Special Use Permit, 6 (Nov. 17, 2011) ("NMFS questions whether it is appropriate to compare the impacts of one alternative to one baseline, and then compare impacts of other alternatives to a different baseline in the DEIS. NMFS recommends all the alternatives be compared to the existing conditions baseline.") (Exhibit 20).
[74] DEIS, *supra* note 5, at 204.

"representative" of sound generated by an oyster skiff with 360 cc, 4-stroke, 20 HP outboard engine *at 50 feet*.[75]

- **Actual Measurement for DBOC Skiff Powered by 20 HP, 4-Cycle Engine at 50 feet:** 58 dBA (L_{eq}) (taken by ENVIRON International on November 22, 2011, using a B&K 2250 Type 1 sound level meter).[76]

- **Overstated Factor:** 19 (i.e., it would require *19* identical DBOC boats operating in the same location at the same time and emitting a passby L_{eq} of 58 dBA to generate the 71 dBA L_{eq} that the DEIS claims this *1* boat generates).

- **Recommended Correction:** 58 dBA (L_{eq}) (taken by ENVIRON International on November 22, 2011, using a B&K 2250 Type 1 sound level meter).[77]

- Statement that the "Representative Sound Level at 50 Feet (dBA)" for a small DBOC "Motorboat" (a skiff with a 40 HP, 4-cycle engine attached) is 71 dBA.

  - **Source of data:** NOISE UNLIMITED, INC., BOAT NOISE TESTS USING STATIC AND FULL-THROTTLE METHODS (1995) (tests conducted off of the coast of New Jersey at request of the New Jersey State Police).

  - **Conclusion:** Measurements of sound generated by a Kawasaki 750 cc, 2-stroke, 70 HP jet ski operating at static level off of the New Jersey Coast in 1995 taken from *2 feet away* are "representative" of sound generated by an oyster skiff with 40 HP, 4-cycle engine attached at *50 feet*.

  - **Actual Measurement for DBOC Skiff Powered by 40 HP, 4-Cycle Engine at 50 feet:** 60 dBA (L_{eq}) (taken by ENVIRON International on November 22, 2011, using a B&K 2250 Type 1 sound level meter).[78]

  - **Overstated Factor:** 12 (i.e., it would require *12* identical DBOC boats operating in the same location at the same time and emitting a passby L_{eq} of 60 dBA to generate the 71 dBA L_{eq} that the DEIS claims this *1* boat generates).

  - **Recommended Correction:** 60 dBA (L_{eq}) (taken by ENVIRON International on November 22, 2011, using a B&K 2250 Type 1 sound level meter).[79]

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[75] The only place that the 71 dBA figure appears in the 1995 Noise Unlimited study is with respect to a Kawasaki 750 cc, 2-stroke, 70 HP jet ski. However, Amy Trainer, Executive Director of the Environmental Action Committee of West Marin, has proffered an alternate explanation. According to Ms. Trainer, NPS used a "Police Patrol Boat" powered by a 175 HP, 2-stroke, V6 engine and operating at 81 dBA to "represent" DBOC's oyster boats and arbitrarily reduced the figure by a round, even number to 71 dBA. *See* Goodman Power Point, *supra* note 29, pt. 2, Appendix, Slides 1-2. If true, this methodology would also violate applicable information-quality guidelines.

[76] ENVIRON REPORT, *supra* note 15, Table H-1 (DBOC Source Noise Sound Levels Reported in DEIS and Actual (dBA)).

[77] *Id.*

[78] *Id.*

[79] *Id.*

- Statement that the "Representative Sound Level at 50 Feet (dBA)" for DBOC's "Oyster Tumbler," which is powered by a small 1/4 HP, 12 volt "electric motor," is 79 dBA.

  - **Source of data:** FEDERAL HIGHWAY ADMINISTRATION, ROADWAY CONSTRUCTION NOISE MODEL USER'S GUIDE (2006).

  - **Conclusion:** Measurements of sound generated by a "Concrete Mixer Truck," "Drill Rig Truck," "Front End Loader," "Rivet Buster/chipping gun," and "Ventilation Fan" ("Actual Measured Lmax @ 50ft (dBA, slow)") are "representative" of sound generated by DBOC's "Oyster Tumbler," which is powered by a small 1/4 HP, 12 volt "electric motor."

  - **Actual Measurement for DBOC's 1/4 HP, 12 Volt Oyster Tumbler at 50 feet:** 49.8 dBA ($L_{eq)}$ (taken by ENVIRON International on November 22, 2011, using a B&K 2250 Type 1 sound level meter).[80]

  - **Overstated Factor:** 825 (i.e., it would require *825* identical oyster tumblers operating in the same location at the same time and emitting a passby L_{eq} of 49.8 dBA to generate the 79 dBA L_{eq} that the DEIS claims this *1* DBOC oyster tumbler generates).

  - **Recommended Correction:** 49.8 dBA ($L_{eq)}$ (taken by ENVIRON International on November 22, 2011, using a B&K 2250 Type 1 sound level meter).[81]

- Statement that the "Representative Sound Level at 50 Feet (dBA)" for a small DBOC forklift (referred to in the DEIS as a "Front End Loader") powered by a 60 HP diesel engine is 79 dBA.

  - **Source of data:** FEDERAL HIGHWAY ADMINISTRATION, ROADWAY CONSTRUCTION NOISE MODEL USER'S GUIDE (2006).

  - **Conclusion:** Measurements of sound generated by a large "Front End Loader ("Actual Measured Lmax @ 50ft (dBA, slow)") used for heavy roadside construction are "representative" of sound generated by DBOC's forklift, which is powered by a 60 HP diesel engine.

  - **Actual Measurement for Small DBOC Forklift at 50 feet:** 64-65 dBA ($L_{eq)}$ (taken by ENVIRON International on November 22, 2011, using a B&K 2250 Type 1 sound level meter).[82]

  - **Overstated Factor:** 25 (i.e., it would require *25* identical DBOC forklifts operating in the same location at the same time and emitting a passby L_{eq} of 64-65 dBA to generate the 79 dBA L_{eq} that the DEIS claims this *1* forklift generates).

[80] *Id.*
[81] *Id.*
[82] *Id.*

- **Recommended Correction:** 64-65 dBA ($L_{eq)}$ (taken by ENVIRON International on November 22, 2011, using a B&K 2250 Type 1 sound level meter).[83]

- Statement that the Representative Sound Level at 50 Feet (dBA) of DBOC's "[h]andheld hydraulic drills" is 85 dBA.

  - **Source of data:** FEDERAL HIGHWAY ADMINISTRATION, ROADWAY CONSTRUCTION NOISE MODEL USER'S GUIDE (2006).

  - **Claim:** Measurements of sound generated by "Pneumatic Drills" (i.e., jackhammers used in roadside construction projects) are "representative" of sound generated by handheld *hydraulic* drills.[84]

  - **Actual Measurement for DBOC's Handheld Drill at 50 Feet:** 70.4 dBA ($L_{eq)}$ (taken by ENVIRON International on November 22, 2011, using a B&K 2250 Type 1 sound level meter).[85]

  - **Overstated Factor:** 29 (i.e., it would require *29* identical handheld hydraulic drills operating in the same location at the same time and emitting a passby L_{eq} of 70.4 dBA to generate the 85 dBA L_{eq} that the DEIS claims this *1* handheld hydraulic drill generates).

    Recommended Correction: 70.4 dBA ($L_{eq)}$ (taken by ENVIRON International on November 22, 2011, using a B&K 2250 Type 1 sound level meter).[86]

      7.1.2.1 Using Data from 1995 Noise Unlimited Study and 2006 FWHA Study to "Represent" Sound Generated by DBOC Equipment and Boats Violated Information-Quality Standards for Accuracy.

The grossly exaggerated "representative" sound levels for DBOC boats and equipment in the DEIS fail to meet minimum information-quality standards because they are inaccurate[87] and were not derived from on-site measurements.[88] On November 22, 2011, ENVIRON International, an independent consulting firm, took on-site measurements of noise generated by DBOC boats and equipment using a standard, well-accepted scientific technique.[89] Those measurements

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[83] *Id.*
[84] DBOC owns two identical handheld hydraulic drills.
[85] *Id.*
[86] *Id.*
[87] *See* Director's Order #11B, pt. III.B ("All information will be accurate....").
[88] *See* 40 C.F.R. 1502.22(a) ("If the incomplete information relevant to reasonably foreseeable significant adverse impacts is essential to a reasoned choice among alternatives and the overall costs of obtaining it are not exorbitant, the agency shall include the information in the environmental impact statement.");DO-12 Handbook, § 1.6 (directing NPS to obtain site-specific information); Director's Order #47, pt. D.5 (directing NPS to measure human-made sound and sound levels in park planning process). As stated above, the data in Table 3-3 was imported from an obscure 1995 study measuring noise generated by jet skis and racing and police patrol boats off of the New Jersey coast, *see* NOISE UNLIMITED STUDY, *supra* note 13, and a 2006 study measuring sound levels generated by heavy highway construction equipment, *see* FHWA STUDY, *supra* note 14.
[89] *See* ENVIRON REPORT, *supra* note 15, at 33-37 & Table H-1 (DBOC Noise Sound Levels Reported in DEIS and Actual (dBA)).

conclusively demonstrate that DBOC boats and equipment generate substantially less noise than is claimed in Table 3-3.

After he was made aware of the ENVIRON International data, the peer reviewer responsible for assessing the Soundscape section of the DEIS, Dr. Christopher Clark, accepted the new data.[90] He described the ENVIRON data as "credible data" collected "using appropriate techniques" that was "appropriate and helpful in that it provides some actual noise level measurement data for specific DBOC noise-generating activities at close range."[91] Dr. Clark concluded that the ENVIRON International data "revise the noise levels" for DBOC boats and equipment "as presented in the DEIS," which were "not representative of actual DBOC noise-generating activities."[92] In fact, in an e-mail to Dr. Goodman, Dr. Clark explained that the "reality of where the measurements [in Table 3-3] came from or the inappropriate and significantly higher noise level values (from NJ!) [scientifically] change . . . [his] opinion as to the fundamentals of the EIS," insofar as "the acoustic footprints of individual anthropogenic activities would be significantly smaller than assessed from the values in Table 3.3...."[93]

The "representative" sound levels for DBOC boats and equipment are demonstrably false for a second reason. In 2009, in connection with a joint Federal Aviation Administration (FAA)/John A. Volpe National Transportation Systems Center (Volpe Center) study conducted "with the cooperation of the National Park Service,"[94] a sophisticated government microphone (hereinafter "PORE 004 microphone") was intentionally placed in a sound-sensitive area on the shore of Drakes Estero.[95] Although NPS has claimed otherwise,[96] the PORE 004 microphone was placed in an ideal location to record DBOC boats and equipment without any physical obstruction between the microphone and the DBOC boats in Drakes Estero.[97]

In 2009, the Lunnys installed GPS equipment in their 20 and 40 HP oyster boats capable of measuring speed, location, time, and direction of DBOC boat trips. Sound recordings from the PORE 004 microphone, coupled with overlapping GPS data from the Lunnys' boats, prove that the PORE 004 microphone only recorded the boats on the few occasions that those boats passed within a few hundred feet of the microphone (at levels consistent with the ENVIRON International data).[98] Further, the fact that the PORE 004 microphone did not record DBOC boats and equipment when it should have if the "representative" sound levels in Table 3-3 were correct also demonstrates that those sound levels are substantially exaggerated.[99]

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[90] Re-Review, *supra* note 16, at 3.
[91] *Id.* at 4.
[92] *Id.*
[93] E-mail from Dr. Christopher Clark to Dr. Corey Goodman, "Re: time sensitive request" (March 21, 2012, 12:40:06 PM PDT), *in* Letter from Dr. Corey Goodman to Dr. Ralph Morgenweck, Scientific Integrity Officer, Department of the Interior, "Re: Dr. Chris Clark's re-review of the DEIS," pt. 2, Appendix #2, p. 20 (June 25, 2012).
[94] VOLPE REPORT, *supra* note 18, at E-15.
[95] NPS was aware of and had access to this data prior to preparing the DEIS (an NPS employee personally selected the sound-sensitive location where it was placed). *See id.* at v ("We would also like to thank Bill Shook [an NPS employee] at Point Reyes National Seashore for their [sic] expertise and assistance during site selection and deployment.").
[96] *See infra* Section 7.1.9.
[97] *See* Goodman Power Point, *supra* note 29, at pt. 4.
[98] *See id.*
[99] *See id.*

The NPS staff and scientists are aware of these data. Kevin Lunny disclosed the existence of the GPS recordings at the February 2010 Marine Mammal Commission (MMC) panel meeting at Point Reyes, and he offered to make this data available to the MMC panel members and NPS scientists. As far as undersigned counsel is aware, to date, Dr. Goodman is the only scientist to have ever requested and obtained the DBOC GPS data.

In September 2010, Dr. Goodman tested the clock on DBOC's GPS recordings by comparing the GPS recordings to time- and date-stamped photographs from covertly installed, high-resolution NPS cameras (disclosed in summer 2010).[100] He found that the photos and GPS data match precisely in terms of time and location.

In April 2012, Dr. Goodman matched the January-February 2010 GPS recordings from the DBOC oyster boats with the audio recordings from the Volpe (FAA) microphone PORE 004. First, by using Google Earth elevation analysis, he established that the PORE 004 microphone had an unobstructed sound path from the DBOC boats in either the main channel, lateral channel, or west channel near sandbars OB and UEN in Drakes Estero.[101]

He then examined the PORE 004 recordings when the DBOC boats were in the main channel.[102] By matching the GPS data on DBOC boat location and speed, Dr. Goodman was able to determine that the PORE 004 microphone did indeed record the DBOC boats when they were a few hundred feet from the microphone during their weekly trip to the main channel of Drakes Estero to collect samples for California Department of Health Services (CDHS), and that those sound levels were consistent with the ENVIRON recordings.[103]

Dr. Goodman proceeded to examine the PORE 004 recordings when the DBOC boats were at the west end of the lateral channel as they worked on the oyster bags at sandbars UEN and OB. DBOC makes such boat trips several times each week, and often daily. In such cases, the oyster boats are more than 600 yards, and often 750 yards or more, from the harbor seals hauled out at sandbar OB. The PORE 004 microphone did not record any of those DBOC boat trips. He did a similar analysis for the July-August 2009 PORE 004 recordings. Although DBOC did not have GPS data for that period, the NPS had sophisticated high-resolution cameras operating during that summer.[104] Again, photographs of DBOC boats coming and going from the west end of the lateral channel matched with the audio recordings from the PORE 004 microphone. The PORE 004 microphone did not record any of those DBOC boat trips.[105]

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[100] As discussed in greater detail above, NPS's 280,000-plus time- and date-stamped photographs are publicly available on the NPS website at the following web address: http://www.nps.gov/pore/parkmgmt/planning_ reading_room_photographs_videos.htm (last visited July 17, 2012). *See supra* note 20.

[101] Dr. Goodman subsequently obtained photographs taken by FAA scientists showing a clear, unobstructed visual and sound path from the boats to the microphones, confirming the Google Earth elevation analysis. *See* Goodman Power Point, *supra* note 29, at pt. 4.

[102] DBOC is required by the California Department of Health Services (CDHS) to take weekly water and shellfish samples out near the mouth of Drakes Estero to test for red tide. These measurements are usually, but not always, taken on Tuesdays in the main channel of Drakes Estero.

[103] *See* Goodman Power Point, *supra* note 29, at pt. 4, Slides 60-79, 86.

[104] *See supra* note 20.

[105] *See* Goodman Power Point, *supra* note 29, at pt. 4, Slides 59-86.

The PORE 004 microphone was placed about 3,200 feet from the DBOC boats in the west end of the lateral channel. If the data in Tables 3-3 and 4-2 of the DEIS were correct, then the DBOC boats should have been heard for up to 7,062 feet (1.3 miles) and certainly recorded by the PORE 004 microphone at only 3,200 feet.[106] But the DBOC boats were not recorded by the PORE 004 microphone. Moreover, when the DBOC boats were in the main channel during their weekly trip to collect samples for CDHS, the PORE 004 microphone did record the DBOC boats at a distance of several hundred feet, and these recordings were consistent with the ENVIRON Report data. Thus, the recordings from FAA's PORE 004 microphone confirm the ENVIRON data and contradict the NPS data presented in Tables 3-3 and 4-2 concerning the sound levels allegedly generated by DBOC oyster boats.

Third, the sound level data for DBOC boats and equipment in Table 3-3 were proven false by sound meter measurements taken on site by the Lunnys. With a commercially available sound meter, they were able to measure a distance of 50 feet and measure decibel levels of boats and equipment over the course of approximately one hour. These tests confirmed the ENVIRON International measurements.[107]Further, a recording of a conversation between Kevin Lunny (standing 2-4 feet from a running DBOC boat engine) and NPS and VHB employees (standing less than 10 feet from the running engine) independently establishes that DBOC's oyster boats generate far less than the 71 dBA at 50 feet (which would be 85 dBA at 10 feet) claimed in the DEIS.[108]

7.1.2.2 Because the 1995 Noise Unlimited and 2006 Federal Highway Administration Studies Were Not the Most Current Information Available and Were Untimely, Stale, and Dated, Use of Those Studies Violated NPS's Information-Quality Guidelines.

The data in Table 3-3 also does not meet information-quality standards related to timeliness and fails to use the most current information available, as required by Director's Order #11B.[109] The Noise Unlimited study—which was conducted in 1995 (more than fifteen years before the DEIS was prepared)—is stale, dated, untimely, and not the most current information available concerning noise generated by DBOC's oyster boats for three reasons: (1) in 2009, the PORE 004 microphone actually recorded noise generated by DBOC's oyster boats; (2) even if it was appropriate for NPS to compare sound levels generated by DBOC's oyster boats to those generated by jet skis and other random motorized vessels, NPS should have used the noise measurements taken by a contractor *hired by NPS in 2001*—measurements that NPS has used in

[106] As discussed in greater detail below, Table 4-2 (Estimated Motor Boat Sound Dissipation) grossly exaggerates the distance and volume at which DBOC boats can be heard. *See infra* Section 7.1.5.

[107] Such measurements were made and published in an article. *See* John Hulls, "Unsound Advice: NPS and its Drakes Estero DEIS Consultant" (May 16, 2012), *available at* http://russianrivertimes.wordpress.com/ (last visited July 18, 2012) (Exhibit 22).

[108] *See* DEIS, *supra* note 5, at 206, Table 3-4 (vocal communication is difficult at distances of greater than 2 feet over sound at 80 dBA). NPS's Natalie Gates (PRNS Chief of Natural Resources, and a major NPS staffer of the EIS) and VHB's Nancy Barker (Federal Program Manager, and a major VHB staffer of the EIS) were present when this conversation was recorded.

[109] *See* Director's Order #11B, pt. III.B ("All information will be … timely, and reflect the most current information available.").

other EISs;[110] and (3) due to changes in technology, jet skis and other motorized vessels generate far less noise today than they did in 1995.[111]

Likewise, the on-site sound level data collected in 2009 by the PORE 004 microphone render the sound level measurements of heavy highway construction equipment found in the 2006 Federal Highway Administration study untimely and not the most current available information relevant to assessing noise generated by DBOC equipment. NPS's failure to use the on-site 2009 sound recordings by the NPS-placed PORE 004 microphone and GPS data from DBOC oyster boats as sources of data for determining the amount of sound generated by DBOC boats and equipment is inconsistent with its information-quality obligations.

7.1.2.3 Data in Table 3-3 was Not Transparent About Sources and Methods Used, in Violation of Applicable Information-Quality Standards.

Moreover, the data in Table 3-3 does not comply with minimum information-quality standards because it is not transparent,[112] let alone "highly transparent."[113] Indeed, that data was sufficiently nontransparent that the peer reviewer of the Soundscape section of the DEIS, Dr. Christopher Clark, believed that the Noise Unlimited study provided on-site noise level data from DBOC boats and equipment, stating in the Atkins Peer Review Report that the "measured levels included noise from DBOC operations … collected by Noise Unlimited, Inc. …."[114] Dr. Clark's subsequent statements confirm that he was unaware that Table 3-3 did not use on-site sound level measurements: after being informed that the DEIS did not use actual sound-level measurements of DBOC boats and equipment, he had to *ask* Dr. Goodman in an e-mail about the source of "representative" sound levels for DBOC's boats in Table 3-3.[115]

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[110] *See* Personal Watercraft Use at Lake Mead National Recreation Area, Final Rule, 68 Fed. Reg. 17,292, 17,298 (April 9, 2003) (to be codified at 36 C.F.R. pt. 7) ("There is no definitive literature describing scientific measurements of PWC noise.... To address this lack of scientific data, the National Park Service contracted noise measurements of motorized vessels, including PWC, at Glen Canyon in 2001.... At Glen Canyon, sound measurements were made of a number of boats and PWC as they passed by a microphone mounted above the front of an instrumented boat.... [C]ontrolled pass-by measurements of three PWC and one motorboat were conducted at several different speeds. Many boats and PWC were also randomly measured.").

[111] Even the Personal Watercraft Industry Association (as far as undersigned counsel is aware, the *only* organization that makes a copy of the obscure, dated Noise Unlimited study publicly available) qualifies the accuracy of the that study: "Please keep in mind that this test was conducted in 1995, and personal watercraft manufacturers have achieved a 70% reduction in sound levels since 1998." *See* Personal Watercraft Industry Association, Sound Level Comparisons, *at* http://www.pwia.org/sound/level.aspx (last visited July 13, 2012).

[112] *See* Director's Order #11B, pt. III.A (all information NPS disseminates must be "transparent, to the extent practicable").

[113] *See id.* ("Influential information," such as the DEIS, must "be produced with a high degree of transparency about data and methods.").

[114] ATKINS PEER REVIEW REPORT, *supra* note 42, at Appx. B, p. 83 (Review of Draft Environmental Impact Statement: Drakes Bay Oyster Company Special Use Permit, Christopher W. Clark, Cornell University (February 23, 2012)).

[115] *See* E-mail from Dr. Christopher Clark to Dr. Corey Goodman, "Re: time sensitive request" (March 21, 2012, 12:40:06 PM PDT) ("So for the two motorboat sound levels, they too seem to have arrived in the EIS table from the New Jersey shore—correct?"), *in* Letter from Dr. Corey Goodman to Dr. Ralph Morgenweck, Scientific Integrity Officer, Department of the Interior, "Re: Dr. Chris Clark's re-review of the DEIS," pt. 2, Appendix #2, p. 20 (June 25, 2012).

Dr. Clark's initial confusion is understandable. NPS personnel provided full citations to Table 3-3's data sources in the *nonpublic* June 2011 administrative version of the DEIS, but removed these and substituted nontransparent shortened citations in the *publicly released* September 2011 version of the DEIS—the version that was provided to the peer reviewers.

- The *nonpublic* June 2011 administrative version of the DEIS used the following full citations in Table 3-3, entitled "Noise Generators at DBOC":
  - "Noise Unlimited, Inc. Boat Noise Tests Using Static and Full Throttle Measurement Methods for the New Jersey State Police (1995)."[116]
  - "FHWA Construction Noise User's Guide (2006)."[117]
- The *publicly released* version of the DEIS that the peer reviewers had access to uses the following shortened citations:
  - "Noise Unlimited, Inc., 1995."[118]
  - "FHWA 2006."[119]

Similarly, NPS personnel failed in their transparency obligation by omitting material qualifications of data and sources in Table 3-3 from the *publicly released* September DEIS.[120] The nonpublic June 2011 version of the DEIS stated that the 2006 FHWA study and 1995 Noise Unlimited study were simply "Sources for Sound *Estimates*" that provided an "*Estimated* dBA at 50 feet (Hourly Value)."[121] The publicly released September 2011 DEIS misleadingly recharacterized those studies as "Sources" for "*Representative* Sound Level[s] at 50 feet (dBA)."[122] In addition, there is no way to determine what, if any, method and criteria NPS used to select "representative" sound level data from the studies measuring sound generated by loud, fast, old racing and police patrol boats and jet skis and heavy highway construction equipment.[123]

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[116] *See* DRAKES BAY OYSTER COMPANY SPECIAL USE PERMIT: DRAFT ENVIRONMENTAL IMPACT STATEMENT, INTERNAL REVIEW DRAFT, Table 3-3 (June 9, 2011) [hereinafter INTERNAL REVIEW DRAFT DEIS]. To see a visual comparison of the Internal Review Draft DEIS with the publicly released DEIS, see Goodman Power Point, *supra* note 29, pt. 6, Slides 12-20.

[117] *See id*.

[118] *See* DEIS, *supra* note 5, at 204, Table 3-3.

[119] *See id*. Dr. Clark does not mention the FHWA study in the Atkins Peer Review, which suggests that he believed that all of the data in Table 3-3 was derived from the Noise Unlimited study, *supra* note 13.

[120] *See* Director's Order #11B, pt. III.A.

[121] *See* INTERNAL REVIEW DRAFT DEIS, *supra* note 116 (emphasis added). To see a visual comparison of the Internal Review Draft DEIS with the publicly released DEIS, see Goodman Power Point, *supra* note 29, pt. 6, Slides 12-20.

[122] *See* DEIS, *supra* note 5, at 204 (emphasis added).

[123] *See, e.g.*, Director's Order #11B, pt. III.A (mandating a "high degree of transparency"); 40 C.F.R. § 1502.24 (requiring agencies to "identify any methodologies used and … make explicit reference by footnote to the scientific and other sources relied upon" in an EIS). It is unclear what method and criteria, if any, NPS used to conclude that data from those studies was "representative" of sound generated by DBOC boats and equipment. Likewise, it is unclear what specific pieces of heavy highway construction equipment, racing and police patrol boats, and jet skis NPS thought it appropriate to claim as "representative" of DBOC's 20 and 40 HP oyster boats, 1/4 HP, 12 volt oyster tumbler, two handheld drills, and small forklift.

By claiming that data from the Noise Unlimited and FWHA studies is "representative" of sound levels generated by DBOC boats and equipment and obfuscating the sources of its data, NPS has even potentially falsified data—a form of "scientific misconduct" that violates DOI policy.[124]

7.1.2.4 Data in Table 3-3 is Not Reproducible.

Applicable information quality guidelines also require that data be reproducible, but the sound level measurements for DBOC boats and equipment used in Table 3-3 have never been able to be reproduced—probably because they cannot be.[125] ENVIRON International measured actual noise levels of DBOC boats and equipment and could not reproduce the data in Table 3-3. Dr. Goodman analyzed PORE 004 microphone recordings and matched them with GPS data from DBOC's boats, but was also unable to reproduce the data in Table 3-3. The Lunnys' attempts to reproduce data in Table 3-3 were equally unsuccessful.

7.1.2.5 Table 3-3 was Not Based on the Best Available Science and Data Using the Best Available Methods.

The soundscape data concerning noise generated by DBOC boats and equipment was not based on the best available science and data using the best available methods, thereby violating applicable information-quality guidelines for yet another reason.[126] Taking on-site sound level measurements would have been the best available science and generated the best available data using the best available method.[127] ENVIRON International demonstrated the simplicity and efficiency of taking actual on-site measurements of sound levels (in decibels) at 50 feet from DBOC boats and on-shore equipment.[128] Richard Steffel, the acoustics scientist who made those measurements, took actual on-site measurements over the course of a few hours on one afternoon.[129]

The NAS review panel, which is tasked with evaluating the adequacy of certain aspects of the DEIS and Atkins Peer Review Report, called attention to NPS's failure to actually measure sound levels generated by DBOC boats and equipment. Dr. Kurt Fristrup, a member of the Fort Collins Soundscape Group, indicated that he had even recommended that direct underwater

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[124] *See* DOI Departmental Manual, § 3.7.B(2).

[125] *See* Director's Order #11B, pt. III.A.

[126] *See* DOI Guidelines, pt. II.4(a); Management Policies 2006, § 2.1.2; DOI Departmental Manual, 305 DM 3, § 3.7.A(1); Director's Order #11B, pt. III.A. NPS's failure to actually measure sound generated by DBOC noise generators and include that data in the DEIS violated 40 C.F.R. § 1502.22(a) as well.

[127] NPS was independently required to take site-specific sound level measurements of DBOC boats and equipment by both NPS Management Policies 2006 and Director's Order #47. *See* Director's Order #47, pts. C.3, D.5; Management Policies 2006, § 4.9 (NPS "will monitor human activities that generate noise … , including noise caused by mechanical or electronic devices.").

[128] The scientists employed by Vanasse Hangen Brustlin, Inc. (VHB), the outside consultant that assisted NPS in drafting the DEIS, pride themselves in their expertise in soundscape analysis and they have produced first-rate soundscape analysis in previous EIS and EA statements they have helped prepare for various state and federal agencies. Moreover, if for any reason the NPS scientists and staff at PRNS were not up to making these easy measurements, NPS has excellent scientists at Fort Collins in the NPS Natural Sounds and Night Skies Division.

[129] *See* ENVIRON REPORT, *supra* note 15, at pt. H4.

measurements be taken.[130] Above-water measurements would have been drastically less expensive and quicker and easier to obtain. And in July 2010—more than one year before the DEIS was made publicly available—a federal district judge harshly criticized NPS's decision to import old, stale soundscape data involving noise generated by jet skis into another NEPA analysis, concluding that NPS's decision to use that data, rather than NPS's most recent data, was arbitrary and capricious and violated its NEPA obligations.[131]

When this DEIS was prepared, NPS was on notice that importing this sort of data was unacceptable, yet the agency did it anyway—and deliberately obscured its failure to adhere to the best available scientific methods by substituting shortened citations that even confused NPS's designated peer reviewer.

7.1.3 Claims Regarding Frequency and Duration of DBOC Boat Trips

Statements to be Corrected:

- Statement in Table 3-3 that DBOC's 20 HP and 40 HP oyster boats make "[u]p to 12 40-minute trips/day."[132]

  - **Recommended Correction**: Table 3-3 should be corrected to state: "On average, one 40-minute trip/day."

- Statement that DBOC oyster boats "operate for up to 8 hours per day, 6 days per week, year round."[133]

  - **Recommended Correction**: The DEIS should be revised to state: "DBOC boats typically operate for 1-2 hours per day (and often only 30-40 minutes) out near sandbars OB and UEN. Moreover, the work is seasonal."

7.1.3.1 Claims Exaggerating the Frequency and Duration of DBOC Boat Trips are Demonstrably False and Not Based on the Most Current Information Available.

These claims are not accurate and are not based on the most current information available, as required by NPS's information-quality guidelines.[134] GPS data measuring speed, location, time, and direction of DBOC boat trips starting in 2009 irrefutably demonstrate that these

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[130] *See* National Academy of Sciences, NRC Draft Environmental Impact Statement: Drakes Bay Oyster Company Special Use Permit Committee, Drakes Bay Video 01, 1:34:31-1:34:50 (July 10, 2012), *available at* http://practiceproducer.com/20120710_NAS.html (last visited August 5, 2012).

[131] *See Bluewater Network v. Salazar*, 721 F. Supp. 2d 7, 41 (D.D.C. 2010) ("The soundscapes analysis for PIRO is even more problematic than that conducted by Defendants for GUIS. The Pictured Rocks EA, which was produced in 2002, *did not use the most recent data collected by NPS in its 2001 study of PWC noise levels.* As a result, there is little data presented that measures decibel levels at PIRO." (emphasis added)).

[132] DEIS, *supra* note 5, at Table 3-3, p. 204.

[133] *Id.* at 298.

[134] *See* Director's Order #11B, pt. III.B ("All information will be accurate, timely, and reflect the most current information available.").

statements are exaggerated and misleading: neither of DBOC's small oyster skiffs has made twelve (12) 40-minute trips on any one day.[135]

NPS was aware of and had access to three kinds of data regarding DBOC boat trips that pertained directly to the DEIS's analysis: (1) DBOC logs of boat trips; (2) DBOC GPS records of boat trips; and (3) NPS time- and date-stamped photographs and detailed logs of DBOC boat trips.[136] None of those records, which were collected over a several-year period, show "up to 12 40-minute boat trips/day." Instead, with respect to boat trips to tend the oyster bags at sandbars OB and UEN, the DBOC logs, DBOC GPS data, and NPS photographic data show an average of one trip per day (six days per week); at times, two trips in a single day; and, on very rare occasions, as many as three trips in a single day.[137]

7.1.3.2 Ignoring Detailed GPS Data Reflecting Frequency and Duration of DBOC Boat Trips is Not a Sound and Accepted Scientific Practice.

Consciously ignoring detailed, highly reliable, accurate, timely data reflecting frequency and duration of DBOC boat trips is not a sound and accepted scientific practice and is contrary to NPS's obligation to use the best available science and data.[138] Kevin Lunny installed GPS equipment in his two oyster boats at his own expense, made NPS personnel aware of the existence of this data, and offered to provide it to NPS to allow them to accurately determine the frequency and duration of DBOC boat trips. NPS refused to evaluate this data and include it in the DEIS, thereby violating its information-quality guidelines.

7.1.4 Measurements of Ambient Sound Level

Statements to be Corrected:

- "Topography can affect sound transmission through air. Steep topography such as the bluffs around some of Drakes Estero can block sound transmission. Because the 2009 sound measurements used in this EIS were taken on a bluff well above Drakes Estero, the measurements may have recorded limited mariculture-related noises."[139]

[135] Three sources of data—two from DBOC and one from NPS—conclusively show that this claim in the DEIS is highly exaggerated. Disturbingly, NPS knew or should have known that this claim was false: NPS has records from its detailed logs of NPS's own photographs that irrefutably prove that this claim is incorrect and exaggerated. The detailed NPS logs of the photographs from pupping season (March to May) for 2008 and 2009 show conclusively that DBOC boats take one or at most two trips per day to sandbars OB and UEN—certainly not twelve boat trips per day.

[136] For a detailed discussion of NPS's 280,000-plus time- and date-stamped photographs, see *infra* Section 7.1.9.1; *see also* FROST REPORT, *supra* note 20.

[137] DBOC boats typically operate for 1-2 hours per day (and often only 30-40 minutes) out near sandbars OB and UEN. Moreover, the work is seasonal. They are not harvesting during storms, and there are some months in which harvest is less than other months.

[138] *See supra* notes 65-66 and accompanying text.

[139] DEIS, *supra* note 5, at 204.

- **Recommended Corrections:**

  - This section of the DEIS should be revised to make clear that topography did not affect or block sound measurements by the PORE 004 microphone in 2009, which had a straight line of site to the areas in Drakes Estero in which the DBOC oyster boats operate and other DBOC equipment is used.

  - This section of the DEIS should be revised to make clear that the 2009 measurements were taken from a sound-sensitive area, selected by NPS's then-Chief of Natural Resources, Bill Shook, in an ideal location to measure noise generated by DBOC boats and equipment.

  - This section of the DEIS should be corrected to state that the PORE 004 microphone did record DBOC boats when those boats were operating within 400 hundred feet of its location at a dBA level that is consistent with data in the ENVIRON Report but inconsistent with the data in Table 3-3 *and failed to record* those boats at distances where it should have recorded them if the DEIS's soundscape data and factual assertions concerning sound-dissipation distances for DBOC's boats and equipment were accurate.

7.1.4.1 This Claim is Demonstrably False and Thus Not Accurate as Required by Part III.B of Director's Order #11B.

This statement is not true and thus not "accurate," as required by NPS's information-quality guidelines,[140] and NPS knew or should have known this. In fact, it is demonstrably false for two reasons: first, NPS's own time- and date-stamped photographs[141]—and a photograph in the Volpe Report[142]—conclusively establish that the PORE 004 microphone was placed in a location with a clear, unobstructed path to DBOC operations; second, publicly available Google Earth elevation profiles independently confirm that the PORE 004 microphone was placed in an ideal location to record DBOC boats and equipment.

First, photographs taken by the FAA scientists (and provided to Dr. Goodman in response to a FOIA request) conclusively prove that there is a clear, unobstructed visual and sound path from the DBOC boats to the PORE 004 microphone.[143] The FAA scientists took sev-

[140] *See* Director's Order #11B, pt. III.B.

[141] NPS installed covert cameras in Drakes Estero in positions ideally suited to monitoring DBOC's activities in an effort to demonstrate that DBOC operations adversely affected local harbor seals. *See infra* Section 7.1.9. Beginning May 5, 2007, over a period of more than three years, those cameras took about 281,000 time- and date-stamped photographs, none of which indicated that DBOC's mariculture-related activities adversely affected harbor seals. Because one of those cameras was placed near the sound-sensitive location where the PORE 004 microphone was placed, NPS's own photographs show that the PORE 004 microphone was placed in an area with a clear, unobstructed path to DBOC operations—sound transmission was not blocked by the bluffs. (NPS also prepared detailed logs regarding those photographs.) Curiously, NPS did not meaningfully discuss these photographs or otherwise rely on them in the DEIS, even in the section discussing alleged harms to harbor seals. NPS's proffered reason for not including those photographs was that there was no protocol for analyzing those photographs. *See* DEIS, *supra* note 5, at 295.

[142] *See* VOLPE REPORT, *supra* note 18, at Appx. A, p. 67, Figure 53.

[143] *See* Goodman Power Point, *supra* note 29, at pt. 4.

eral photographs pointing directly through the microphone and accompanying equipment, aimed at a DBOC boat in its normal location at the west end of the lateral channel. The same is true for the harbor seals at OB and the main channel. The FAA photographs show an unobstructed view and sound path.

Second, Google Earth elevation profiles (using the GPS coordinates of the FAA microphone PORE 004, as provided in the Volpe Report, coupled with GPS coordinates of the DBOC boats, as provided by DBOC) establish that the sound path from the DBOC boats to the PORE 004 microphone is unobstructed.[144]

In fact, the site where the PORE 004 microphone was placed was selected with the assistance NPS's then-Chief of Natural Resources, Bill Shook, *because it was a particularly sound-sensitive location ideally suited to recording DBOC boats and equipment*.[145] Mr. Shook worked with FAA staff, under the guidance of PRNS Superintendent Don Neubacher, to carefully pick the location of microphone PORE 004 along the east shore of Drakes Estero, close to the location of the NPS secret cameras. Mr. Shook picked the location because it was a sound-sensitive area that was near the DBOC oyster boats and the harbor seals. During the summer of audio recordings, NPS's secret cameras continued to take time- and date-stamped photographs. The visual and audio paths from NPS's cameras and PORE 004 microphone to DBOC's boats and the harbor seals were clear and unobstructed.

7.1.4.2 The DEIS's Conclusory Dismissal of Highly Probative Soundscape Data is Not Based on the Best Available Science and Data Using the Best Available Method and Omits Critical Data from the DEIS.

Because the DEIS's conclusion that the PORE 004 microphone "may have recorded limited mariculture-related noises" is purely speculative, demonstrably false, not grounded in any accepted scientific methodology, and does not use or meaningfully acknowledge the existence of the best available data, it does not meet minimum information-quality standards for a third reason.[146] Indeed, the material, intentional omission of critical data—NPS's own photographic evidence confirming that the PORE 004 microphone was placed in a location well suited to recording DBOC boats and equipment[147]—is independently prohibited by Section 3.6(2) of DOI's Departmental Manual, as it is a form of "falsification" and thus constitutes "scientific misconduct."[148]

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[144] *See* Goodman Power Point, *supra* note 29, at pt. 4.

[145] Mr. Shook accompanied the FAA scientists on July 17, 2009, when they picked the location for the PORE 004 microphone. This is beyond dispute, as there are photographs of him with the FAA scientists while the microphone is being installed. *See* Goodman Power Point, *supra* note 29, at pt. 4.

[146] *See* DOI Guidelines, pt. II.4(a); Management Policies 2006, § 2.1.2. DOI Departmental Manual, 305 DM 3, § 3.7.A(1); *see also* Director's Order #11B, pt. III.A.

[147] The probative value of this evidence is discussed in detail in Section 7.1.9, *infra.*

[148] *See* DOI Departmental Manual, 305 DM 3, § 3.6.B(2).

7.1.5 Claims Regarding Measurements of Ambient Sound Level Using Nonstandard, Unprecedented Metrics in Tables 4-2, 4-3, and 4-4 and accompanying text. pp. 354-58.

Statement to be Corrected:

- Statements in Tables 4-2, 4-3, and 4-4 and accompanying text concerning the "median ambient sound level from the lowest daily ambient level measured" and "lowest daily median ambient sound levels measured" in Drakes Estero.[149]

  - **Source of data:** U.S. DEP'T OF TRANSPORTATION, FEDERAL AVIATION ADMIN., JOHN A. VOLPE NATIONAL TRANSPORTATION SYSTEMS CENTER, BASELINE AMBIENT SOUND LEVELS IN POINT REYES NATIONAL SEASHORE (2011) (hereinafter "Volpe Report").

  - **Conclusion:** According to the Volpe Report, the "median ambient sound level from the lowest daily ambient level measured" (or "lowest daily median ambient sound levels measured") for Drakes Estero is 24 dBA.

  - **Recommended Correction:** All references to "median ambient sound level from the lowest daily ambient level measured" or "lowest daily median ambient sound level measured" for Drakes Estero and all calculations, statements, figures, and tables referring to, based on, or otherwise using that metric should be removed from the DEIS.

7.1.5.1 Claim that the Volpe Report Found that the "Median Ambient Sound Level from the Lowest Daily Ambient Level Measured" for Drakes Estero is 24 dBA is Not Accurate, as Required by Part III.B of Director's Order #11B.

The DEIS's reliance on the Volpe Report for its conclusion that the "median ambient sound level from the lowest daily ambient level measured," or "lowest daily median ambient sound levels measured," for Drakes Estero is 24 dBA is demonstrably false and thus not "accurate"; therefore, this conclusion does not meet NPS's baseline information-quality standards and must be immediately corrected.[150]

The Volpe Report does not measure the ambient sound level of Drakes Estero using either of these nonstandard, unprecedented measurements. Neither the text nor the summary table of the Volpe Report refers to "lowest daily median ambient sound level," as that study did not attempt or purport to measure "lowest daily median ambient sound level." [151] Rather, the Volpe Report only measured the ambient sound level using standard, scientifically accepted L_{Aeq}, L_{50}, and L_{90} metrics,[152] none of which can fairly be characterized as "lowest daily median ambient sound levels." Likewise, the 24 dBA data point for Drakes Estero is not in the Volpe Re-

[149] *See* DEIS, *supra* note 5, at 354-64.
[150] *See* Director's Order #11B, pt. III.B.
[151] *See* VOLPE REPORT, *supra* note 18, at p. 20; ES-23, Table 2; p. 25, § 5.6 (Ambient Descriptors); p. 31, Table 8.
[152] *See id.* at ES-23, Table 2; p. 31, Table 8.

port.[153] In fact, the 24 dBA "lowest daily median ambient sound level" is substantially lower than even the L_{90} (dBA) measurement[154] in the Volpe Report (25.7 dBA).[155]

When NPS used "median ambient sound level from the lowest daily ambient level measured" in Tables 4-2, 4-3, and 4-4, NPS implied that this measurement of ambient noise levels at Drakes Estero, like all of their discussion of ambient noise levels, came from the Volpe Report and PORE 004 microphone. However, it did not. The words "median ambient sound level from the lowest daily ambient level measured" are not found in the Volpe Report.[156] One can search all of the NPS EIS documents over the past decade, as well as all of the EIS and EA documents produced by VHB, and find this metric in none of them: NPS invented it.

NPS used the L_{50} from the Volpe Report in the text of the DEIS[157] as well as for calculations of distance in Figure 4-1.[158] But in Tables 4-2, 4-3, and 4-4, NPS used "median ambient sound level from the lowest daily ambient level measured,"[159] a measurement found in no other document, including the Volpe Report.

For Drakes Estero, the L_{eq} is about 41 dBA and the L_{50} is about 34 dBA.[160] In the DEIS, NPS quotes the "median ambient sound level from the lowest daily ambient level measured" as 24 dBA.[161] The number "24" cannot be located in any table or graph or text in the Volpe Report.

For reference, according to NPS data provided in Table 3-2, the sound level in an empty concert hall (i.e., no people, no noise-generators) is 25 dBA.[162] The sound level of a quiet rural area in the nighttime is 25 dBA.[163] An empty theater or library is 40 dBA.[164] Quiet conversation

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[153] *See id.* The Volpe Report concluded that that "[t]he overall median daytime sound level during the summer season was 33.8 dBA" and "[t]he overall median daytime sound level during the winter season was 35.8 dBA (only 2 dBA lounder than summer)...." *Id.* at Appx. A, p. 67.

[154] Part D.4 of Director's Order #47 explains that this metric can be used to measure background sound levels when "it is not possible to measure the natural ambient sound level with certainty because of high levels of human-made sound." This statistic "represents the sound level that is exceeded 90 percent of time." *Id.* 24 dBA is softer than a whisper.

[155] *See* VOLPE REPORT, *supra* note 18, at p. 20; ES-23, Table 2; p. 25, § 5.6 (Ambient Descriptors); p. 31, Table 8.

[156] Rather, the Volpe Report used two standard measurements: the LA_{eq} (where A represents a certain frequency range) and L_{50}. *See id.* at ES-23, Table 2. These are the two standard measurements in the literature, the two standard measurements used in other EIS and EA reports, and the two standard measurements cited by Skip Ambrose and the other NPS soundscape scientists from the soundscape group at Fort Collins. Skip Ambrose & Shan Burson, *Soundscape Studies in National Parks*, THE GEORGE WRIGHT FORUM, V. 21, No. 1 (2004).

[157] *See, e.g.*, DEIS, *supra* note 5, at 202.

[158] *Id.* at 356, Figure 4-1.

[159] *See id.* at 355, Table 4-2 (Estimated Motor Boat Sound Dissipation); *id.* at 358, Table 4-3 (Estimated Forklift and Oyster Tumbler Sound Dissipation); *id.*, Table 4-4 (Estimated Pneumatic Drill Sound Dissipation).

[160] *See* VOLPE REPORT, *supra* note 18, at ES-23, Table 2. For the "Summer Season," the L_{eq} is 40.3 dBA and the L_{50} is 33.8 dBA; for the "Winter Season," the L_{eq} is 41.6 dBA and the L_{50} is 35.8 dBA. *See id.* The DEIS purports to solely use ambient sound-level data from the Volpe Report.

[161] *See* DEIS, *supra* note 5, at 355, Table 4-2 (Estimated Motor Boat Sound Dissipation); *id.* at 358, Table 4-3 (Estimated Forklift and Oyster Tumbler Sound Dissipation); *id.*, Table 4-4 (Estimated Pneumatic Drill Sound Dissipation).

[162] *Id.* at 203, Table 3-2.

[163] *Id.*

[164] *Id.*

at 1 meter is 55 dBA.[165] Drakes Estero is a very exposed area, with high winds and waves and lots of sounds of birds, insects, and other wildlife, especially during the summer. To claim that 24 dBA represents the ambient sound level of Drakes Estero *during the summer* (inexplicably, the DEIS does not use data generated by PORE 004 during the winter months)[166]—using a number lower than an empty concert hall, according to the DEIS[167]—is absurd.

7.1.5.2 Citing the Volpe Report for Sound Measurements Not Found in that Report and Claiming that the Volpe Report Used a Metric that It Had Not In Fact Used Is Not An Accepted Scientific Practice and Does Not Use Best Available Science and Methods.

It is not an accepted scientific practice to cite a report for data and analysis not found in that report.[168] The DEIS's claim that the Volpe Report used a nonstandard, unprecedented metric and concluded that the "lowest daily median ambient sound level" for Drakes Estero is 24 dBA when the Volpe Report neither uses that metric nor contains the 24 dBA figure constitutes "falsification" and "fabrication" and thus "scientific misconduct," which is prohibited.[169] Further, use of a nonstandard metric for measuring sound that is not found in relevant literature[170] and other EISs is not a sound statistical research method and not based on the best available science.[171] Arbitrarily inventing a data point is not a sufficiently reliable method of collecting data.

EIS and EA reports generally would have used the L_{eq} of 41 dBA—consistent with scientific norms.[172] NPS could justify using the L_{50} of 34 dBA, so long as it was properly defined and the reason why this metric was chosen was adequately justified.[173] But use of the 24 dBA "median ambient sound level from the lowest daily ambient level measured" is inconsistent with NPS's information-quality obligations.

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[165] *Id.*

[166] *Compare* DEIS, *supra* note 5, at 202 (purporting to use PORE 004 measurements taken "over the course of 30 days in July/August of 2009"), *with* VOLPE REPORT, *supra* note 18, at 10 (PORE 004 recorded data for "30 days" in "Summer" and "29 days" in "Winter").

[167] *See* DEIS, *supra* note 5, at 203, Table 3-2.

[168] *See* DOI Guidelines, pt. II.4(a); Management Policies 2006, § 2.1.2; DOI Departmental Manual, 305 DM 3, § 3.7.A(1); *see also* Director's Order #11B, pt. III.A ("Information will be developed only from reliable data sources based on accepted practices and policies utilizing accepted methods for information collection and verification.").

[169] DOI Departmental Manual, 305 DM 3, § 3.6(2).

[170] A 2004 article, "Soundscape Studies in National Parks," explains that, in addition to using A-weighted L_{eq} as a metric for measuring sound, the following supplemental metrics are also useful: "One-third octave band data; Exceedence percentiles ($L_{50,}$ $L_{90,}$ L_x); Sound exposure level; Number of events/time; Time above an appropriate baseline or pre-selected level; Percent time audible; and Noise-free interval." *See* Ambrose & Burson, *supra* note 156, at 34. Conspicuously absent from this laundry list of appropriate, scientifically accepted supplemental metrics is any mention of "lowest daily median ambient sound level."

[171] *See* DOI Guidelines, pt. II.4(a); Management Policies 2006, § 2.1.2. DOI Departmental Manual, 305 DM 3, § 3.7.A(1); *see also* Director's Order #11B, pt. III.A.

[172] *See* Ambrose & Burson, *supra* note 156, at 34 ("Traditionally, acoustical studies and impact assessment in national parks have relied on a single metric, LA_{eq} (A-weighted L_{eq}).

[173] Citing *both* the L_{eq} of 41 dBA and the L_{50} of 34 dBA in the DEIS certainly would satisfy NPS's information-quality obligations with respect to ambient noise level.

7.1.5.3 Citing the Volpe Report for Sound Measurements and Analysis Not Found in that Report and Claiming that the Volpe Report Used a Metric Not Used in that Report is Not Transparent.

The DEIS's use of 24 dBA "lowest daily median ambient sound level" in Tables 4-2, 4-3, and 4-4 is nontransparent, thereby violating NPS's information-quality guidelines for yet another reason. The DEIS fails to disclose where this measurement is found in the Volpe Report; further, it fails to disclose the method used, if any, to generate this data point. Thus, this information was not "made transparent, to the maximum extent practicable, through accurate documentation" and certainly was not "produced with a high degree of transparency about data and methods," as required by NPS's information-quality guidelines.[174]

7.1.6 Claims Regarding Sound-Dissipation Distances for Noise Allegedly Generated by DBOC Boats and Equipment in Tables 4-2, 4-3, and 4-4 and accompanying text.[175]

Statements to be Corrected:

- All sound-dissipation distances in Table 4-2 (Estimated Motorboat Sound Dissipation) and all statements and figures in the DEIS referencing, relying on, or incorporating those distances.

  - **Recommended Corrections:**

    - Statement that the "Sound Energy (dBA)" of DBOC oyster boats is 24 dBA at a distance of 7,062 feet from the motorboat should be deleted.

    - Statement that DBOC's oyster boats generate 71 dBA of sound energy at 50 feet should be changed to reflect correct sound-level measurement of 58.2/60.1 dBA.

    - Table 4-2 should be revised to state that DBOC's oyster boats generate a sound-energy level of 41 dBA (the actual L_{eq} ambient sound level measurement for Drakes Estero found in the Volpe Report) at 400 feet and therefore can only be heard from a distance of less than 400 feet.

    - Distance at which DBOC's oyster boats generate "Sound Energy (dBA)" of 35 dBA should be changed from 2,658 feet to the correct distance of 790 feet, using data from the ENVIRON Report.

    - Distance at which DBOC's oyster boats generate "Sound Energy (dBA)" of 44 dBA should be changed from 1,048 feet to the correct distance of 280 feet, using data from the ENVIRON Report.

[174] *See* Director's Order #11B, pt. III.A.
[175] *See* DEIS, *supra* note 5, at 354-58.

- Distance at which DBOC's oyster boats generate "Sound Energy (dBA)" of 52 dBA should be changed from 435 feet to the correct distance of 110 feet, using data from the ENVIRON Report.

- All sound-dissipation distances in Table 4-3 (Estimated Forklift and Oyster Tumbler Sound Dissipation) and all statements and figures in the DEIS referencing, relying on, or incorporating those distances.

  - **Recommended Corrections:**

    - Statement that the "Sound Energy (dBA)" of DBOC's oyster tumbler is 24 dBA at a distance of 12,450 feet from DBOC's oyster tumbler should be deleted.

    - Table 4-3 should be revised to state that DBOC's oyster tumbler generates a sound-energy level of 41 dBA (the actual L_{eq} ambient sound level measurement for Drakes Estero found in the Volpe Report) at 140 feet and therefore can only be heard from a distance of less than 140 feet.

    - Statement that DBOC's oyster tumbler and small forklift generate 79 dBA of sound energy at 50 feet should be changed to reflect correct sound-level measurements of 50 dBA for DBOC's oyster tumbler.

    - Distance at which DBOC's oyster tumbler generates "Sound Energy (dBA)" of 35 dBA should be changed from 5,529 feet to the correct distance of 270 feet, using data from the ENVIRON Report.

    - Distance at which DBOC's oyster tumbler generates "Sound Energy (dBA)" of 44 dBA should be changed from 2,408 feet to the correct distance of 100 feet, using data from the ENVIRON Report.

    - Distance at which DBOC's oyster tumbler generates "Sound Energy (dBA)" of 52 dBA should be changed from 1,048 feet to the correct distance of 40 feet, using data from the ENVIRON Report.

- All sound-dissipation distances in Table 4-4 (Estimated Pneumatic Drill Sound Dissipation) and all statements and figures in the DEIS referencing, relying on, or incorporating those distances.

  - **Recommended Corrections:**

    - Statement that the "Sound Energy (dBA)" of DBOC's handheld oyster drill is 24 dBA at a distance of 17,650 feet from DBOC's handheld oyster drill should be deleted.

    - Table 4-3 should be revised to state that DBOC's handheld oyster drill generates a sound-energy level of 41 dBA (the actual L_{eq} ambient sound level measurement for

Drakes Estero found in the Volpe Report) at 1,480 feet (.28 miles) and therefore can only be heard from a distance of less than 1,480 feet.

- Statement that DBOC's handheld oyster drill generates 85 dBA of sound energy at 50 feet should be changed to reflect correct sound-level measurements of 70 dBA for DBOC's handheld oyster drill.

- Distance at which DBOC's handheld oyster drill generates "Sound Energy (dBA)" of 35 dBA should be changed from 8,862 feet to the correct distance of 2,940 feet, using data from the ENVIRON Report.

- Distance at which DBOC's oyster tumbler generates "Sound Energy (dBA)" of 44 dBA should be changed from 4,256 feet to the correct distance of 1,040 feet, using data from the ENVIRON Report.

- Distance at which DBOC's oyster tumbler generates "Sound Energy (dBA)" of 52 dBA should be changed from 1,969 feet to the correct distance of 420 feet, using data from the ENVIRON Report.

7.1.6.1 Because the Sound-Dissipation Distances in Tables 4-2, 4-3, and 4-4 and Statements Concerning those Distances were Generated Using Artificially Low Ambient Sound Level Data Without Scientific Basis and Substantially Exaggerated, Demonstrably False "Representative" Sound Levels for DBOC Oyster Skiffs and Equipment, Those Sound-Dissipation Distances Do Not Meet Minimum Information-Quality Standards for Accuracy.

The sound-dissipation distances in Tables 4-2, 4-3, and 4-4 and statements about those distances violate accuracy-related information-quality guidelines.[176]

In Tables 4-2, 4-3, and 4-4, using the noise generator numbers from the loud, fast boats off the New Jersey shore and from the loud highway construction equipment to exaggerate the DBOC boats and equipment, and calculating the distance required for the sounds to dissipate using the equally exaggerated (in the other direction) lowest daily ambient level, NPS derived highly exaggerated sound-dissipation distances—*at times, by between one and two orders of magnitude*. For example, the DEIS claims that it would take 7,062 feet for the sound of the oyster boat to dissipate, but the Environ measurement of 58 dBA, when combined with the L_{eq} of 41 dBA, suggests (correctly) that the sound will dissipate in about 400 feet. Indeed, the most flagrant exaggeration in the DEIS concerns the oyster tumbler. According to the DEIS, DBOC's 1/4 HP, 12 volt oyster tumbler generated 79 dBA at 50 feet.[177] The DEIS claimed that the oyster tumbler can be

[176] *See* Director's Order #11B, pt. III.B ("All information will be accurate, timely, and reflect the most current information available.").

[177] As discussed in Section 7.1.2, the 79 dBA figure was imported from a dated FHWA study measuring sound levels generated by heavy highway construction equipment; the 79 dBA data point NPS imported from that study is the sound-level measurement for a "Concrete Mixer Truck," a "Drill Rig Truck," "Rivit Buster/chipping gun," and a "Front End Loader" at 50 feet, which is louder than the 76 dBA generated by a "Dump Truck" and the 78 dBA generated by a "Slurry Plant." *See* FHWA STUDY, *supra* note 14, at 3, Table 1. Clearly, oyster tumblers are not used in highway construction. The oyster tumbler has a 1/4 HP, 12 volt electric engine. Claiming that it generates sound levels

heard for 2.4 miles, or 12,450 feet. The ENVIRON numbers suggest it can be heard for 140 feet. That is an exaggeration of 89 fold, or nearly two orders of magnitude.

The exaggerated sound-dissipation distances for DBOC's oyster boats and equipment can be conclusively refuted for a second reason. As discussed in detail in Section 6.1.2.1, Dr. Goodman's analysis of the 2009 PORE 004 microphone recordings establishes that those sound-dissipation distances are dramatically overstated. If the sound-dissipation data in Tables 4-3 and 4-4 was accurate, the PORE 004 would have recorded DBOC equipment. It did not. And if the sound-dissipation data in Table 4-2 was accurate, the PORE 004 microphone would have recorded DBOC's oyster boats at distances greater than 400 feet. It did not. Because the PORE 004 microphone did not record DBOC boats and equipment at distances at which it would have recorded them if the sound-dissipation distances in Tables 4-2, 4-3, and 4-4 were accurate, we know that the data in those tables is inaccurate.

For reasons that remain unclear, Tables 4-2, 4-3, and 4-4 in the DEIS actually made calculation errors in incorrectly decreasing sound by 6 dBA with every doubling of distance—the DEIS's own stated rule for calculating sound-dissipation distances.[178] For example, consider the 1/4 HP, 12 volt electric oyster tumbler. If one uses the DEIS's misrepresentation of 79 dBA for the oyster tumbler *and* false representation of 24 dBA for the ambient sound level, then the real distance for sound to dissipate to the ambient noise level (the distance at which it can no longer be heard) for the oyster tumbler would be *28,120 feet, or 5.3 miles*. Compared to *140* feet, that is an over-estimate of *201* fold, or well over two orders of magnitude.

Curiously, the June 2011 nonpublic administrative version of the DEIS contained tables that included sound-dissipation distances that would be accurate if the DEIS's "representative" sound levels for DBOC boats and equipment and ambient sound level measurements were correct. Consider the oyster tumbler. If it did generate 79 dBA at 50 feet, then at 100 feet, it would generate 73 dBA; at 200 feet, 67 dBA; at 400 feet, 61 dBA; at 800 feet, 55 dBA; at 1,600 feet, 49 dBA; at 3,200 feet, 43 dBA; at 6,400 feet, 37 dBA; at 12,800 feet, 31 dBA; and at 25,600 feet, 25 dBA. Those are just the sorts of tables that are found in the June nonpublic version of the DEIS. But in the September public version of the DEIS, NPS miscalculates and lists 24 dBA at 12,450 feet, when, in fact, 24 dBA is not reached until 28,120 feet if NPS had followed its own rule. In other words, had the DEIS made the right calculations using its own stated rule, the distances would have been even more absurd, with the oyster boat being heard (according to the NPS numbers) for 2.1 miles, the oyster tumbler for 5.3 miles, and the handheld drill for 10.6 miles.

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equivalent to those generated by several-hundred-horsepower "Concrete Mixer Trucks" and the like is a gross misrepresentation.

[178] According to the DEIS, there "an approximate 6 dBA reduction for every doubling of distance." DEIS, *supra* note 5, at 204. The grossly exaggerated sound-dissipation distances in Tables 4-2, 4-3, and 4-4 were not even calculated using the DEIS's own stated rule for determining sound dissipation distances. Even assuming that the ambient sound levels and "representative" sound levels for DBOC boats and equipment the DEIS uses to calculate sound-dissipation distances were accurate, the sound-dissipation distances in Tables 4-2, 4-3, and 4-4 are still inaccurate.

7.1.6.2 Sound-Dissipation Data in Tables 4-2, 4-3, and 4-4 and Statements About that Data in Chapter 4 are Not Transparent, in Violation of Applicable Information-Quality Standards.

Because the data points in Tables 4-2, 4-3, and 4-4 were calculated using nontransparent measurements of noise generated by DBOC boats and equipment and the ambient sound level, in violation of applicable transparency-related guidelines *and* without even using NPS's stated method for calculating sound-dissipation distances, data in those tables also violates applicable transparency-based information-quality guidelines.[179] As the National Marine Fisheries Service (NMFS) indicated in its comments on the DEIS, NPS's methodology for calculating sound-dissipation distances is unclear: "NPS should provide additional information describing how the noise generated and the propagation from the sound source was estimated or modeled." [180]

7.1.6.3 Sound-Dissipation Data in Chapter 4 of the DEIS is Not Reproducible.

As explained above, these figures are not reproducible by qualified third parties, such as ENVIRON and Dr. Goodman. Therefore, they violate applicable reproducibility-related information-quality guidelines.

7.1.6.4 Sound-Dissipation Data in Chapter 4 of the DEIS is Not Based on the Best Available Science and Data Using the Best Available Methods.

The sound-dissipation distances in Tables 4-2, 4-3, and 4-4 do not constitute the best available science using the best available data and methods—and thus do not meet minimum information-quality standards—for three reasons: (1) they were not calculated using actual measurements of sound generated by DBOC boats and equipment; (2) they were calculated using a nonstandard, artificially low ambient sound level metric and an invented "24 dBA" figure for that metric; and (3) data in these tables was not even calculated using NPS's own stated rule for determining sound-dissipation distances.

7.1.7 Claim that Granting DBOC a 10-Year SUP Will Cause "Long-Term Major Adverse Impacts on Wilderness."

Statements to be Corrected:

- All statements in the DEIS, including those in Chapters 3 and 4 and Table 2-6, referring to, relying on, based on, or otherwise using the following "Intensity Definitions" for impacts on "wilderness" allegedly caused by DBOC:

> **Minor**: Impacts on qualities of wilderness character would occur, but would be small and, if noticeable, would be highly localized.

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[179] *See* Director's Order #11B, pt. III.A.

[180] National Marine Fisheries Service Comments on the Draft Environmental Impact Statement for Drakes Bay Oyster Company Special Use Permit, 17 (Nov. 17, 2011). With respect to the sound-dissipation calculations concerning DBOC's 20 and 40 HP oyster boats and the DEIS's claim that "[o]n a calm day, it may take over 3,200 feet (0.6 miles) for this sound to dissipate to natural sound levels," the National Marine Fisheries Service stated simply: "NPS should explain how this distance was calculated." *Id.* at 18.

Moderate: Impacts on qualities of wilderness character would occur and would be measurable and readily apparent, but somewhat localized.
Major: Impacts on qualities of wilderness character would occur and would be measurable, readily apparent, and widespread.[181]

- **Recommended Correction:** The foregoing "Intensity Definitions" and all statements referring to, relying on, based on, or otherwise using those definitions should be deleted.

- All statements in the DEIS, including those in Chapters 3 and 4 and Table 2-6, referring to, relying on, based on, or otherwise using the following "four qualities" for evaluating the extent to which DBOC operations affect "wilderness values":

  Untrammeled—Wilderness is essentially unhindered and free from modern human control or manipulation.
  Natural—Wilderness ecological systems are substantially free from the effects of modern civilization.
  Undeveloped—Wilderness retains its primeval character and influence, and is essentially without permanent improvement or modern human occupation.
  Solitude or a primitive and unconfined type of recreation—Wilderness provides outstanding opportunities for solitude or primitive and unconfined recreation.[182]

  - **Recommended Correction:** The foregoing "qualities" of "wilderness values" and all statements referring to, relying on, based on, or otherwise using those qualities of wilderness values should be deleted.

- Statements that Alternative B (Issue New Special Use Permit—Existing Onshore Facilities and Infrastructure and Offshore Operations Would Be Allowed for a Period of 10 Years) would have a "long-term major adverse impacts on wilderness."[183]

  - **Recommended Correction:** These statements should be revised to state that "granting DBOC a 10-year SUP will have no impact on wilderness" or deleted.

- Statements in Table 2-6 and accompanying text in Chapter 2 of the DEIS claiming that DBOC's oyster skiffs and equipment cause a "major" long-term adverse impact on wilderness, as well as all similar statements in Chapter 4 of the DEIS.

  - **Recommended Correction**: Revise Final EIS to state "no impact."

[181] DEIS, *supra* note 5, at 366.
[182] *Id.*
[183] *See, e.g., id.* at 374.

7.1.7.1 These Statements are Not Based on Sound and Objective Scientific Practices and the Best Available Science.

The DEIS's "Impact Intensity" definitions and "qualities" for evaluating "wilderness values" are not based on science—let alone the best available science—and are inconsistent with sound, objective, and accepted scientific practices and thus do not meet minimum information-quality standards.[184] The extent to which DBOC's operations impact the wilderness of Drakes Estero is a scientific question and, therefore, must be evaluated using objective, quantifiable standards and criteria that are consistent with the scientific method. On their face, the foregoing "Impact Intensity" definitions and "qualities" for evaluating "wilderness values" call for standardless, value-laden, highly subjective normative and policy-based judgments. Thus, factual statements in the DEIS that refer to, are based on, rely on, or otherwise use those definitions and qualities, e.g., those to the effect that granting DBOC a 10-year SUP will have "long-term major adverse impacts on wilderness," are grounded in nothing more than the arbitrary and capricious subjective judgments of the DEIS's drafters regarding the relative value of wilderness.

In fact, federal courts, which generally defer to agencies' scientific judgments based on perceived agency expertise, have repeatedly concluded that "unbounded terms" may not be used to measure impacts and set thresholds.[185] More specifically, federal courts have explained that using the following sorts of unbounded, purely subjective qualifying language in definitions and standards used to measure impacts is arbitrary and capricious, as such language is devoid of objective, quantifiable meaning: "frequently throughout the day,"[186] "moderate levels,"[187] "infrequently at higher levels,"[188] "occasionally,"[189] "much faster,"[190] "readily detectable, long-term, and localized,"[191] "substantial consequences on a regional scale for long periods of time,"[192] "severely adverse."[193] As one federal court *again* reminded *NPS* in 2010 in the course of concluding that its NEPA-based environmental-impact analysis was inadequate, arbitrary and capricious, and unlawful: "An unbounded term cannot suffice to support an agency's decision because it provides no objective standard for determining what kind of differential makes one impact more or less

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[184] *See* DOI Guidelines, pt. II.4(a) ("information" must be based on "the best available science and supporting studies conducted in accordance with sound and *objective scientific practices*" (emphasis added)); Management Policies 2006, § 2.1.2; DOI Departmental Manual, 305 DM 3, § 3.7.A(1); Director's Order #11B, pt. III.A. The extent to which DBOC's operations impact the wilderness of Drakes Estero is a scientific question and, therefore, must be evaluated using objective, quantifiable standards and criteria that are consistent with the scientific method.

[185] *See, e.g., Tripoli Rocketry Ass'n v. BATFE*, 437 F.3d 75, 81 (D.C. Cir. 2006) ("AFTE's unbounded relational definition … does not suffice, because it says nothing about what kind of differential makes one burn velocity 'much faster' than another. Ten millimeters per second? A hundred? A thousand?"); *Bluewater Network v. Salazar*, 721 F. Supp. 2d 7, 33, 39-43 (D.D.C. 2010) ("impairment thresholds are not connected to any objective standards that have been announced or evaluated" was arbitrary and capricious and violated NEPA); *Sierra Club v. Mainella*, 459 F. Supp. 2d 76, 108 (D.D.C. 2006) (concluding that NPS's environmental-impact analysis under NEPA was arbitrary and capricious "in particular, [because] of its methodology of describing impacts using conclusory labels and then setting forth a bare conclusion without explanation as to the significance of an impact").

[186] *Bluewater Network*, 721 F. Supp. 2d at 33.

[187] *Id.*

[188] *Id.*

[189] *Id.*

[190] *Tripoli Rocketry Ass'n, Inc.*, 437 F.3d at 81.

[191] *Sierra Club v. Mainella*, 459 F. Supp. 2d at 101.

[192] *Id.*

[193] *Id.*

significant than another."[194] If use of objectively standardless definitions is arbitrary and capricious, scientific environmental analysis utilizing these sorts of terms cannot be based on the best available science and sound and objective scientific practices and thus violates minimum information-quality standards.

The DEIS's "Impact Definitions" use unbounded, intentionally vague, subjective terms that are precisely the same as or indistinguishable from those that federal courts have found to be arbitrary and capricious: "impacts … would occur," "measureable," "readily apparent," "widespread," "small," "noticeable," "highly localized," "somewhat localized."[195] The unbounded terms in the DEIS's "qualities" for evaluating "wilderness values" suffer from the same fatal defect: "essentially unhindered," "substantially free from the effects of modern civilizations," "retains its primeval character and influence," "provides outstanding opportunities for solitude or primitive and unconfined recreation."[196] Because there is no principled, objective, scientific basis for distinguishing between whether an alleged impact is "measurable" or "readily apparent" or "widespread" or "small" or "noticeable," allowing drafters of the DEIS to reach any conclusion they wanted based on policy preferences and subjective beliefs,[197] fact-based assertions and analysis using such unbounded terms cannot be consistent with minimum information-quality standards, let alone scientific norms.

7.1.7.2 These Statements are Not Accurate.

Moreover, these statements do not even accurately reflect the views of park visitors regarding DBOC's impact on Drakes Estero's "wilderness," as required by NPS's own information-quality guidelines.[198] Three kayak companies that "operate at least 85% of the public kayaking tours on Drakes Estero" submitted a joint statement in which they noted that the DEIS "misrepresent[ed] the wilderness experience" in Drakes Estero by claiming that DBOC operations detracted from the wilderness qualities there.[199] As the owners of Drakes Estero's three major kayak companies explained, "the 'soundscape' of the wilderness area has not been impacted by the noise of the farm": "Oyster boats are rarely seen in action and if we do encounter boats, they are always very respectful of our presence, making sure not to disturb us or wildlife in any way."[200] Kayakers at Drakes Estero apparently do not share the DEIS's view that DBOC has a "major" ad-

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[194] *Bluewater Network*, 721 F. Supp. 2d at 33. This is the *second* federal court to do so in less than five years. *See Sierra Club v. Mainella*, 459 F. Supp. 2d at 101-02 (criticizing NPS's "indeterminate and conclusory nature of labels" NPS used to discuss environmental impacts).

[195] DEIS, *supra* note 5, at 366.

[196] *Id.*

[197] The conclusory labels contained in the DEIS's "Impact Definitions" and "qualities" for assessing "wilderness values" gave the drafters of the DEIS unfettered discretion to make opinion-based claims regarding DBOC's alleged impact on the "wilderness qualities" of Drakes Estero.

[198] *See* Director's Order #11B, pt. III.B.

[199] Laurie Manarik, Point Reyes Outdoors, Comment Letter, Correspondence ID 51103, Project 33043, Document 43390 (Dec. 8, 2011) (joint comment letter on DEIS submitted by Drakes Estero's three largest kayak companies: Point Reyes Outdoors, Sea Trek Kayaking, and Blue Waters Kayaking) (Exhibit 23).

[200] *Id.* Tressa Bronner, Point Reyes Outdoors described her experiences with DBOC oyster boats as follows: "I have been guiding on the estero for four years and only once have I encountered a motor boat. And it was on purpose. Kevin Lunny was meeting our group at the oyster beds to discuss the history of aquaculture, and his oyster farming techniques." *Id.*

verse impact on wilderness.[201] In short, rather than detract from Drakes Estero's wilderness qualities, DBOC enhances it—as historical and cultural landmark and an important safety resource for Drakes Estero's visitors.[202]

7.1.8 Claim that DBOC Boats and Equipment Cause "Major Adverse Impact on Soundscapes" in Chapter 4 and Related Claims in Chapter 2 and Table 2-6.

Statements to be Corrected:

- Statement that Alternative B (Issue New Special Use Permit—Existing Onshore Facilities and Infrastructure and Offshore Operations Would Be Allowed for a Period of 10 Years) would have a "long-term major adverse impacts on soundscapes."[203]

  - **Recommended Correction**: Revise Final EIS to state "no impact" and include Dr. Clark's e-mail correspondence with Dr. Goodman explaining that DBOC's noise-generating activities do not biologically affect Drakes Estero's wildlife.[204]

- Statements in Table 2-6 and accompanying text in Chapter 2 of the DEIS claiming that DBOC's oyster skiffs and equipment cause a "major" adverse impact on soundscapes.

  - **Recommended Correction**: Revise Final EIS to state "no impact."

- All other statements in the DEIS to the effect that DBOC has a "long-term major adverse impact" on Drakes Estero's soundscape.

  - **Recommended Correction**: Revise Final EIS to state "no impact."

7.1.8.1 These Statements Do Not Meet Applicable Information-Quality Standards Related to Accuracy.

As explained above, these claims are solely supported by and based on data and analysis that falls below minimum applicable information-quality guidelines and thus, in turn, necessarily violate applicable information-quality guidelines related to accuracy. DBOC boats and equipment simply do not generate noise at a level to satisfy the DEIS's own definition of "major" impact, as discussed above. The DEIS defines a "major" impact on soundscape as follows: "Human-caused noise would be at a level that causes vocal communications to be difficult between peo-

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[201] *See id.* ("We have never heard any complaints from our clients about the noise or distraction of motorboats." Bob Licht/Owner - Sea Trek Kayak and Paddleboard Center).

[202] *See id.* Laurie Manarik, Point Reyes Outdoors – Point Reyes Station put it thus: "Having the DBOC operation means there is an emergency phone and boats within the estero and accessible to us which provides a welcome level of comfort, knowing help is available in an area that is hard for rescue operations to get to quickly. While this is not a component of wilderness, their generous assistance did help us get a client who was having trouble breathing back to shore quickly and without incident." *Id.*

[203] DEIS, *supra* note 5, at 360.

[204] *See* Exhibit 20, pt. 2, Appendix #2, pp. 20-25.

ple separated by less than 16 feet, and the natural soundscape is interfered with more than 10 percent of the time."[205]

Any person or animal that is 400 feet or more from the DBOC boat will not be impacted according to the "major" impact definition. This is because the DBOC oyster boat generates 40 dBA at 400 feet, and the ambient sound level for Drakes Estero is about 40 dBA L_{eq}; thus, at 400 feet the DBOC oyster boat cannot be heard above the natural sound level. No hiking trails or harbor seal hauling areas—indeed, very little of Drakes Estero—falls within this zone.[206] Moreover, the DBOC boats are out for less than 1 hour per day, 6 days per week, or 3% of the time.

The DBOC boats at 800 feet do not create a minor impact given these definitions.[207] The DBOC boat is down to 34 dBA by 800 feet, a distance that does not reach the harbor seals or hiking trails.

The data suggest that the DBOC boats are not having an impact on the harbor seals. The DBOC boats stay over 600 yards (1,800 feet), and often around 750 yards (2,250 feet), from the harbor seals hauled out at sandbar OB, and a sandbar obstructs both the visual and sound path from the boats and workers to the seals. Thus, even using the Volpe L_{50} ambient noise level, the DBOC boats can only be heard for 800 feet, which is far removed from the harbor seals.

Similarly, the DBOC oyster tumbler sound dissipates in 140 feet and cannot even be heard in the parking lot at the DBOC onshore facility. The onshore equipment certainly does not impact any potential wilderness area or experience.

The noise generated by DBOC boats has, at most, a de minimis impact on birds and bird habitat. The boats' general path is in the deeper water of the west channel, away from birds and bird habitats, but even in the main channel, the boats only impact birds within 400 feet, and for around 3% of the time.[208]

Thus, as explained above, the scientific data conclusively proves that harbor seals, birds, and other wildlife and human visitors to Drakes Estero cannot detect sound generated by DBOC boats and equipment at a level consistent with the definitions of "major," "moderate," or "minor" soundscape impact in the DEIS. Because this claim is demonstrably false, as outlined above, it does not meet minimum applicable information-quality standards.

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[205] DEIS, *supra* note 5, at 351.

[206] In fact, *three* of the local kayak companies filed a joint letter in support of DBOC that explicitly states that *none of their clients have ever complained about the DBOC boats*—for any reason, including the alleged "major" impact on soundscape caused by those boats. *See* Exhibit 23.

[207] It is questionable whether the "minor" impact definition applies to Drakes Estero because the normal ambient sound level of wind, waves, and wildlife is 41 dBA (Leq), and at 32 feet, a normal conversation would be disturbed by around 35 dBA of noise.

[208] The NPS time- and date-stamped photos show DBOC boats going along the main channel. Some of the shore birds right along the edge of the water fly away, but within minutes, the birds are back to their normal foraging behavior. There is no evidence that the DBOC boats or equipment are having any effect on the overall structure of any natural community.

7.1.9 Claim that Over 280,000-Plus Photographs of Drakes Estero Taken By Covertly-Installed NPS Cameras Over A Three-Year Period Are Not Probative Evidence of DBOC's Impact on Harbor Seals and Other Wildlife in Drakes Estero.

Statement to be Corrected:

- "Between spring 2007 and 2010 more than 280,000 digital photographs were taken from remotely deployed cameras overlooking harbor seal haul-out areas in Drakes Estero.... Because the collection of these photos was not based on documented protocols and procedures, the body of photographs does not meet the Department's [i.e., DOI's] standards for a scientific product. As a result, the photographs have not been relied upon in this EIS."[209]

  - **Recommended Correction:** This statement should be corrected to make clear that analysis of the digital photographs conclusively demonstrates that DBOC operations have no adverse impacts on wildlife in Drakes Estero, including but not limited to the harbor seals.

7.1.9.1 This Statement Does Not Meet Applicable Information-Quality Standards Related to Accuracy and Objectivity.

This statement is not true and thus not accurate, as required by NPS's information-quality guidelines.[210] These photographs do, in fact, constitute "research," "data," and part of the "research record" under applicable definitions *and* NPS has selectively used and relied on these photographs in other "scientific products" it has disseminated.

By way of background, in 2007, NPS covertly installed remotely deployed cameras in Drakes Estero for the specific purpose of monitoring harbor seals in Drakes Estero; in fact, those cameras were strategically placed in locations ideally suited to record DBOC's interactions with Drakes Estero's population of harbor seals and document any disturbances of harbor seals caused by DBOC.[211] Those cameras recorded more than 280,000 photographs taken at one-minute intervals over a three-year period and captured images documenting DBOC's interactions with Drakes Estero's harbor seal population.[212] The high-resolution photographs were taken with a sophisticated, high-performance Reconyx silent-image camera[213] and are publicly available on NPS's website.[214] During the three-year period when the covert Reconyx game cameras were operational, those cameras captured numerous photographs of harbor seals and DBOC boats, *all of which support the conclusion that DBOC's mariculture activities do not adversely impact the harbor*

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[209] DEIS, *supra* note 5, at 295.

[210] *See* Director's Order #11B, pt. III.B (requiring NPS to only disseminate "accurate" information).

[211] *See* FROST REPORT, *supra* note 20, at 3-4, 35; *see also* National Park Service, Drakes Estero Camera Angles, *available at* http://www.nps.gov/pore/parkmgmt/loader.cfm?csModule=security/getfile&PageID=398425 (last visited July 17, 2012) (NPS map documented camera locations and angles) (Exhibit 24). The Frost Report addressed improprieties related to these covertly obtained photographs.

[212] *See* DEIS, *supra* note 5, at 245.

[213] *See* FROST REPORT, *supra* note 20, at 4.

[214] http://www.nps.gov/pore/parkmgmt/planning_reading_room_photographs_videos.htm (last visited July 17, 2012). *See supra* note 20.

seals in any way.[215] Thus, as explained below, those photographs are highly probative with respect to the question whether DBOC adversely impacts harbor seals, as claimed in the DEIS.[216]

As a March 22, 2011, "Public Report on Allegations of Scientific Misconduct at Point Reyes National Seashore, California" (hereinafter "Frost Report") by DOI's Office of the Solicitor addressing improprieties related to NPS's covertly obtained photographs of Drakes Estero specifically concluded, as a matter of *common-sense, facts, and logic*, these photographs constitute research and data that should have been part of the research record.[217] In fact, those photographs constitute scientific "research" under NPS's own definition of that term.[218] Further, the Frost Report explicitly rejected NPS's claim "that lack of scientific methodology, strict protocols, and scholarly analysis removes the cameras and related materials from the scope of research and data"[219]—in March 2011, more than five months before the DEIS was made publicly available, allowing NPS more than ample time to incorporate data and analysis based on those photos into the DEIS.

Moreover, NPS has analyzed and relied on those photographs to support its scientific analysis and claims in other agency publications. As the Frost Report explained, *NPS has selectively used the covert photographs as a scientific product in other contexts*:

> The rebuttal document [generated by NPS to respond to allegations of scientific misconduct related to the covert photographs], *developed in February 2009*, represents the first time that the NPS scientists had reviewed … the photographs and referenced them in writing. Oddly, the NPS scientists … cited the data outside the context of assessing the health of harbor seal populations.... *NPS scientists, … having repeatedly declined to use the research in a manner consistent with [NPS personnel's] original goal (i.e., installation of cameras to gather the information about harbor seal populations, disturbances, and displacement), now eagerly and actively used the scientific material* to challenge the informant's claim that tidal activity [conclusively refuted allegations of harbor seal disturbances on April 29, 2007].[220]

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[215] *See* FROST REPORT, *supra* note 20; National Marine Fisheries Service Comments on the Draft Environmental Impact Statement for Drakes Bay Oyster Company Special Use Permit (Nov. 17, 2011).

[216] *See infra* notes 217-220 and accompanying text.

[217] *See* FROST REPORT, *supra* note 20, at 28.

[218] *See* National Park Service, Interim Guidance Document Governing Code of Conduct, Peer Review, and Information Quality Correction for National Park Service Cultural and Natural Resource Disciplines, pt. VIII (Jan. 31, 2008) (defining "research" as, *inter alia*, "[i]nvestigation aimed at the discovery and interpretation of facts"). The Frost Report specifically concluded that these NPS photographs constituted "research" and "data" and cited the foregoing definition of "research" in support of that conclusion. *See* FROST REPORT, *supra* note 20, at 27. More recently, the Marine Mammal Commission specifically defined those photographs as "data." *See* MARINE MAMMAL COMMISSION (MMC), MARICULTURE AND HARBOR SEALS IN DRAKES ESTERO, CALIFORNIA, 5-6 (Nov. 22, 2011) (characterizing NPS photographs as a "source[] of data pertaining to potential harbor seal disturbance")(Exhibit 25). Curiously, the DEIS states the Final EIS will use the foregoing MMC report on the exact same page that it dismisses the scientific value of the 281,000-plus NPS photographs. *See* DEIS, *supra* note 5, at 181.

[219] FROST REPORT, *supra* note 20, at 28.

[220] *Id.* at 17 (emphasis added).

NPS's selective use of these photographs in other "scientific products" suggests a lack of objectivity, which independently violates NPS's information-quality guidelines.[221] And NPS's own actions and own definition of "research," as well as an independent DOI investigation of improprieties related to these photographs, belie the DEIS's suggestion that these photographs are not highly probative evidence of DBOC's impact on Drakes Estero's wildlife.

Indeed, because of NPS's omission of this data from the DEIS, the extent and nature of NPS's research regarding DBOC's impact on harbor seals and other wildlife is not accurately represented in the DEIS's research record. Consequently, this glaring omission may rise to the level of "fabrication," a form of "scientific misconduct."[222]

7.1.10 Claims that Granting DBOC a 10-Year SUP Will Cause "Long-Term Moderate Adverse Impacts" on Harbor Seals, Birds and Bird Habitat, and Visitor Experience.

Statements to be Corrected:

- All statements in Chapters 2, 3, and 4 of the DEIS and Table 2-6 referring to, using, based on, or otherwise relying on the following definition of "moderate" impact on harbor seals and birds and bird habitat: "Impacts would be clearly detectable and could appreciably affect individuals or groups of species, communities, or natural processes."[223]

  - **Recommended Correction:** All such statements should be deleted.

- All statements in Chapters 2, 3, and 4 of the DEIS and Table 2-6 referring to, using, based on, or otherwise relying on the following definition of "moderate" impact on visitor experience and recreation: "The impacts would be readily apparent in primary resource areas and would affect many visitors. The impacts would somewhat inhibit visitor enjoyment of resources for which the Seashore was established."[224]

  - **Recommended Correction:** All such statements should be deleted.

- Statement that Alternative B (Issue New Special Use Permit—Existing Onshore Facilities and Infrastructure and Offshore Operations Would Be Allowed for a Period of 10 Years) would have a "long-term moderate adverse impacts on harbor seals."[225]

  - **Recommended Correction:** This statement should be revised to state "no impact."

- Statement that Alternative B "would result in long-term moderate adverse impacts on birds and bird habitat…."[226]

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[221] *See* Director's Order #11B, pts. III, VI.C.
[222] *See* DOI Departmental Manual, 305 DM 3, § 3.5.F ("omitting data or results such that the research is not accurately represented in the research record" constitutes "falsification").
[223] DEIS, *supra* note 5, at 295, 304.
[224] *Id.* at 380.
[225] *Id.* at 298.

- **Recommended Correction:** This statement should be revised to state "no impact."

- Statement that Alternative B "would result in a long-term, moderate adverse, impact on visitor experience and recreation...." [227]

  - **Recommended Correction:** This statement should be revised to state "no impact."

- Statements in Table 2-6 and accompanying text in Chapter 2 of the DEIS claiming that DBOC's oyster skiffs and equipment cause a "moderate" long-term adverse impact on harbor seals, birds, and visitor experience.

  - **Recommended Correction:** These statements should be revised to state "no impact."

7.1.10.1 Because DEIS's Claims Regarding DBOC's Alleged Impact on Wildlife and Visitor Experience Are Based on Subjective, Standardless "Intensity Definitions," Those Claims Are Not Based on the Best Available Science and Sound, Objective, and Accepted Scientific Practices.

The same fatal defects with the DEIS's "Intensity Definitions" for evaluating environmental impacts to Drakes Estero's wilderness inhere to the DEIS's "Impact Definitions," apparently intended as standards to evaluate DBOC's impact on harbor seals, birds and bird habitat, and visitor experience and recreation.

The use of unbounded, standardless criteria that invites arbitrary and capricious, opinion-based, subjective, value-laden normative and policy judgments to measure environmental impacts is inconsistent with NPS's obligation to use the best available science and sound and objective scientific practices.[228] Here, the "Intensity Definitions" used to allegedly measure DBOC's impact on harbor seals, birds and bird habitat, and visitor experience and recreation unquestionably use the precise sort of unbounded criteria that federal courts have repeatedly deemed to be arbitrary and capricious, which, by definition, is not scientific: "clearly detectable," "appreciably affect," "readily apparent in primary resource areas," "affect many visitors," "somewhat inhibit visitor enjoyment of resources." Thus, any information in the DEIS that refers to or in any way uses these definitions is necessarily inconsistent with minimum information-quality standards.

Moreover, statements to the effect that sound generated by DBOC's boats and equipment harms local wildlife are not evidence-based, as required by common-sense information-quality standards for scientific information.[229] Because NPS did not actually study the impact of human-made sound on wildlife in Drakes Estero, as even the peer reviewer of the Soundscape and Wilderness sections of the DEIS explained in the Atkins Peer Review Report, the DEIS re-

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[226] *Id.* at 310.
[227] *Id.* at 383.
[228] *See supra* Section 7.1.7.
[229] *See* DOI Guidelines, pt. II.4(a); Management Policies 2006, § 2.1.2. DOI Departmental Manual, 305 DM 3, § 3.7.A(1); *see also* Director's Order #11B, pt. III.A; DO-12 Handbook, § 1.4.B, 1.4.G.

lies on a "working assumption that the loss of the natural soundscape can have impacts" on animals such as "birds and mammals."[230]

In Appendix F of the 2011 Marine Mammal Commission (MMC) report entitled "Mariculture and Harbor Seals in Drakes Estero, California,"[231] multiple panel scientists described in detail the best available science for evaluating DBOC's impact on wildlife in Drakes Estero and explained that insufficient data existed to allow NPS to make scientific judgments about DBOC's impact on wildlife. As one panel member, Brian Kingzett, explained, in order to adequately evaluate DBOC's impact on harbor seals, NPS would need to "[c]onduct direct studies in partnership with DBOC to observe farm activities in relation to seal behavior," including seals' "response[s] to … sounds etc."[232] He suggested that until NPS conducted rigorous direct studies of DBOC's impact on harbor seals, it did not have sufficient data to make scientific, evidence-based judgments as to DBOC's impact on harbor seals.[233] MMC panel member Michael T. Walsh, DVM, went further, stating that he "fe[lt] very strongly that new observational studies should be performed with a design heavily contributed by third party behaviorists and ethologists… [, which] should include new points of observation much closer to the sites, video documentation of [DBOC's] interactions [with harbor seals] and on the ground cooperation with observers…."[234] The foregoing statements are illustrative, rather than exhaustive, of the type and scope of additional information NPS would have needed to make statements in the DEIS regarding DBOC's impact on wildlife that are consistent with evidence-based, sound, and objective scientific practices and utilize the best available science. NPS did none of those things prior to making speculative claims in the DEIS concerning DBOC's alleged impact on local wildlife.

In fact, NPS knowingly ignored the photographic data it did have (over 280,000 photographs taken over a three-year period), summarily dismissing the probative value of this data in one sentence in the DEIS. NPS's failure to fully analyze the still photographs it generated, was aware of, and had access to when it produced the DEIS suggests that certain NPS employees remain willfully blind to highly probative direct evidence that does not support their "preferred environmental alternative."[235] The Frost Report put it thus:

> Boredom with, or insufficient time for, the labor-intensive analytic review process does not excuse any failure to scrutinize all of the research, which … [NPS personnel] voluntarily initiated to "detect natural and human-induced changes" in the harbor seal populations. *Quite possibly, digital photos from the monitoring cameras definitively prove or disprove that DBOC mariculture operations negatively impact harbor seals*

[230] ATKINS PEER REVIEW REPORT, *supra* note 42, at Appx. B, p. 84.
[231] MARINE MAMMAL COMMISSION (MMC), MARICULTURE AND HARBOR SEALS IN DRAKES ESTERO, CALIFORNIA, Appendix F (Nov. 22, 2011) (Exhibit 26).
[232] *Id.* at F-47 (Comments of Brian Kingzett, Deep Bay Field Station Manager, Vancouver Island University (June 8, 2010)).
[233] *See id.* at F-49. As Kingzett explained, "A questionable data point should be accepted only if a thorough review of the questionable aspects results in an unequivocal modification; otherwise, the data point should be removed." *Id.*
[234] *Id.* at F-58 (Comments of Michael T. Walsh, DVM (July 31, 2010)). Walsh echoed his colleague, suggesting that relevant areas in Drakes Estero "should be visually and sound recorded for further review" and that "[o]bservers should be present to record and characterize movement and sound on the ground." *Id.* at F-65.
[235] The Frost Report noted that prior NPS "mistakes [regarding DBOC's impact on wildlife] stem from the refusal, by some NPS employees, to modify their … statistically and scientifically unproven[] belief that DBOC mariculture activities disturb … harbor seals…." FROST REPORT, *supra* note 20, at 24.

> *at upper Drakes Estero.* As a direct consequence of … [NPS's] failure to process the data completely and speedily, potentially powerful evidence remains unknown. *This misconduct arose from incomplete and biased evaluation and from blurring the line between exploration and advocacy through research.*[236]

Pointedly, the National Marine Fisheries Service (NMFS)—the federal agency tasked with protecting marine mammals—has taken issue with NPS's claims regarding the environmental impact of DBOC operations on harbor seals and other wildlife. According to NMFS, "[p]otential negative effects of mariculture [i.e., DBOC] operations and activities on the harbor seal population represent the most serious concern expressed in the DEIS, *which cannot be fully evaluated because these effects have not been directly investigated.*"[237] (NMFS has also criticized the DEIS for its failure to include analysis of the secret NPS photographs, "recommend[ing] that the EIS provide information on which photographs, if any, were analyzed for impacts to harbor seals.")[238]

As NMFS noted, "[b]ased on the evidence and information that has been made available, the harbor seal population in Drakes Estero appears stable and healthy."[239] NMFS further explained: "We have no documentation of any recent disturbance of harbor seals by the aquaculture operation [i.e., DBOC]. We have no records of violations by DBOC or law enforcement investigations of DBOC…."[240] NMFS went so far as to inform NPS that "[t]here do not appear to be any significant impacts of DBOC operations on Essential Fish Habitat in Drakes Estero overall."[241] In fact, NMFS indicated that the DEIS's analysis of DBOC's impact on wildlife was too one-sided for a scientific publication, "recommend[ing] that NPS … [revise the DEIS to p]rovide a more balanced consideration of the ecosystem services and the positive impacts of shellfish aquaculture [i.e., DBOC] on habit and water quality."[242]

In short, NPS's failure to analyze and include this photographic data and include it in the DEIS does not constitute the best available science and is not in accordance with sound, accepted, and objective scientific practices.

7.2 Atkins North America, Final Report on Peer Review of the Science Used in the National Park Service's Draft Environmental Impact Statement: Drakes Bay Oyster Company Special Use Permit.[243]

The specific "information" to be immediately corrected within the Atkins Peer Review Report includes statements in peer reviewer Dr. Christopher Clark's "Summary of Chapter 3

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[236] *Id.* at 35 (emphasis added).
[237] National Marine Fisheries Service Comments on the Draft Environmental Impact Statement for Drakes Bay Oyster Company Special Use Permit, p. 1 (Nov. 17, 2011) (emphasis added).
[238] *Id.* at 4.
[239] Letter from Rodney R. McInnis, Regional Administrator, National Marine Fisheries Service, to Cicely Muldoon, Superintendent, Point Reyes National Seashore, 1 (Nov. 17, 2011).
[240] *Id.*
[241] *Id.*
[242] *Id.* at 2.
[243] Atkins Project No. 10002598 (Mar. 2012), *available at* http://www.doi.gov/news/pressreleases/loader.cfm?csModule=security/getfile&pageid=284844.

Soundscape and Wilderness Sections" and "Summary of Chapter 4 Soundscape and Wilderness Sections."[244] The specific statements in the Atkins Peer Review Report that are the subject of this Complaint include, but are not limited to, the following:

Statements to be Corrected:

- Statement that "the Soundscape section provided compelling support for its conclusion that 'low-frequency, high-amplitude, nearly omnipresent sound produced by roads, vehicles, airports, and mechanical equipment' can, degrade the acoustic habitat."[245]

  - **Recommended Correction:** This statement must be deleted.

- Statement that "[t]he data and synthesis" in the Soundscape and Wilderness sections "support the conclusion that noise producing DBOC activities not only impact human experiences in the Drakes Estero but also have the potential to negatively effect [*sic*] wildlife in the Point Reyes National Seashore."[246]

  - **Recommended Correction:** This statement must be corrected to make clear that the data and synthesis do not support the conclusion that DBOC activities adversely affect wildlife and human experiences in Drakes Estero.

- Statement that "there is ample acoustic scientific evidence by which the DEIS can determine that DBOC noise-generating activities have negative impacts on both the human visitor experience and the seashore's wildlife."[247]

  - **Recommended Correction:** This statement must be revised to make clear that there is no acoustic scientific evidence in the DEIS supporting the conclusion that DBOC noise-generating activities have negative impacts on human visitor experience and the seashore's wildlife.

- Statement that "[t]he scientific evidence presented leads me to conclude that this DEIS is robust, and that its recommendation for Alternative A is substantial and justifiable."[248]

  - **Recommended Correction:** This statement must be deleted.

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[244] *See* ATKINS PEER REVIEW REPORT, *supra* note 42, at Appx. B, pp. 81-86 (Peer Reviewer Dr. Christopher Clark's review of the Soundscape and Wilderness sections of the DEIS). It should be noted that pursuant to Part III.D of Director's Order #11B, the Atkins Peer Review Report is subject to the same information-quality standards as the DEIS. *See* Director's Order #11B, pt. III.D (The information-quality "standards of these guidelines apply not only to information that NPS generates, but also to information that other parties provide to NPS, if NPS disseminates or relies upon this information.").

[245] ATKINS PEER REVIEW REPORT, *supra* note 42, at Appx. B, p. 82.

[246] *Id.*

[247] *Id.*

[248] *Id.* at Appx. B, p. 83.

- Statement that the "Chapter 3 Soundscape section" in the DEIS "[p]rovides some sound level data for Drakes Estero using standard techniques and metrics."[249]

  - **Recommended Correction:** This statement must be deleted.

- Statement that the DEIS "use[d] A-weighted L_{50} values" from the 2011 Volpe Report as a measure of ambient noise.[250]

  - **Recommended Correction:** This statement must be deleted.

- Statement that "Table 3-3 shows noise level values within close proximity to specific DBOC noise sources."[251]

  - **Recommended Correction:** This statement must be deleted.

- Statement that "DBOC noise-making activities do and would continue to have major impacts on the human wilderness experience and likely wildlife…."[252]

  - **Recommended Correction:** This statement must be deleted.

- Statement that "[i]t could be argued that the human noise footprints from DBOC activities could have increased since 1995, but this is never discussed."[253]

  - **Recommended Correction:** This statement should be corrected to make clear that, if anything, "human noise footprints from DBOC could have *decreased* since 1995," as modern boat engines are much quieter than 1995 boat engines due to technological advances.

7.2.1 These Statements Does Not Meet Applicable Information-Quality Standards Related to Accuracy.

The portion of the Atkins Peer Review Report evaluating the Soundscape and Wilderness sections of the DEIS is not accurate, as numerous statements are demonstrably false, and therefore fails to comply with baseline minimum information-quality standards.[254] Further, this information was not developed solely using reliable data sources and did not even use the most recent available data, violating NPS information-quality guidelines for a second reason.[255]

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[249] *Id.*
[250] *Id.*
[251] *Id.*
[252] *Id.* at Appx. B, p. 85.
[253] *Id.* at Appx. B, p. 84
[254] *See* Director's Order #11B, pt. III.B. Because Dr. Clark's peer review violated applicable information-quality standards, data and analysis in the DEIS cannot be presumed to be of acceptable objectivity merely because it was subject to peer review.
[255] *See id.*

With respect to accuracy, Dr. Clark's claims regarding the ambient sound level data, so-called "representative" sound level data for DBOC boats and equipment, and the sound-dissipation distances for DBOC boats and equipment are not correct, as explained above. For example, Dr. Clark indicated in the Atkins Peer Review Report that he believed that Table 3-3 in the DEIS "[p]rovides some sound level data for Drakes Estero" from "specific DBOC noise sources,"[256] when Table 3-3 had not. Dr. Clark believed that the 1995 Noise Unlimited report had actually measured sound generated by both DBOC boats and equipment, when Noise Unlimited did neither of those things.[257] Dr. Clark believed that Tables 4-2, 4-3, and 4-4 were based on ambient sound level measurements found in the Volpe Report using A-weighted L_{50} values,[258] when those tables used a data and a sound level metric not found in that report, as discussed above.

Due to his initial confusion as to the sources of data used in the Soundscape section of the DEIS—which is understandable in part because, as explained above, the publicly released version of the DEIS used cryptic, ambiguous, nontransparent short citations to the 1995 and 2006 studies measuring noise generated by loud, old, fast racing and police boats and jet skis and heavy highway construction equipment—Dr. Clark incorrectly stated that the DEIS used "standard techniques and metrics."

Presumably at least in part because Dr. Clark was under the misimpression that the soundscape data in the DEIS was accurate and based on standard techniques and metrics, his conclusions about the effects of noise generated by DBOC boats and equipment on the environment are also inaccurate, as he has subsequently admitted in writing to both Dr. Ralph Morgenweck, a DOI Scientific Integrity Officer, and Dr. Goodman. Dr. Clark has effectively retracted his statement that the sound level data for DBOC boats and equipment in "Table 3-3 shows noise levels within close proximity to specific DBOC noise sources"—twice. Dr. Clark explained in a March 21, 2010 e-mail that "the acoustic footprints of individual anthropogenic [i.e., human

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[256] ATKINS PEER REVIEW REPORT, *supra* note 42, at Appx. B, p. 83. Dr. Clark's e-mail correspondence with Dr. Goodman confirms that he was unaware of the true source of data in Table 3-3: "So for the two motorboat sound levels, they too seem to have arrived in the EIS table from the New Jersey shore—correct?" E-mail from Dr. Christopher Clark to Dr. Corey Goodman, "Re: time sensitive request" (March 21, 2012, 12:40:06 PM PDT), *in* Letter from Dr. Corey Goodman to Dr. Ralph Morgenweck, Scientific Integrity Officer, Department of the Interior, "Re: Dr. Chris Clark's re-review of the DEIS," pt. 2, Appendix #2, p. 20 (June 25, 2012).

[257] After being informed by Dr. Goodman of the sources of data in Table 3-3, Dr. Clark stated that he had "assumed" that the data in Table 3-3 was generated by field measurements from Drakes Estero and asked, "Is this a joke?" "Notes from phone call between Dr. Corey Goodman and Dr. Christopher Clark, Cornell University, on Wednesday March 21, 2012, 8:04 am PT (607 254-2405)" (Dr. Goodman's detailed, contemporaneous notes from his March 21, 2012, conversation with Dr. Clark), *in* Letter from Dr. Corey Goodman to Dr. Ralph Morgenweck, Scientific Integrity Officer, Department of the Interior, "Re: Dr. Chris Clark's re-review of the DEIS," pt. 2, Appendix #1, pp. 12-17 (June 25, 2012). Dr. Clark told Dr. Goodman that he believed that he had been "deceived" by the soundscape analysis in the Draft EIS. *Id.* During that conversation, Dr. Clark commented to Dr. Goodman "on his amazement at the New Jersey police boat numbers, and 'front end loader' and other highway equipment." *Id.* Dr. Clark stated that he "was led to believe these tables [i.e., Tables 3-3, 4-2, 4-3, 4-4] were from field activities of DBOC," explaining that he "thought the tables that … [he] was asked to evaluate represented DBOC measurements." *Id.*

[258] *See* ATKINS PEER REVIEW REPORT, *supra* note 42, at Appx. B, p. 83 ("Data (considered 'best available and reasonable measurement') were collected in 2009 (Volpe 2011) from a site two miles from the onshore DBOC operations. *They use A-weighted L_{50} values, in dBA units, as the acoustic metric.*" (emphasis added)).

caused] activities … [is] significantly smaller than assessed from the values in Table 3.3…."[259] Likewise, Dr. Clark explained in his Re-Review—after he was informed about the sources of "representative" measurements of sound generated by DBOC boats and equipment and given the ENVIRON International data—that sound "level values in the DEIS Table 3.3 were not representative of actual DBOC noise-generating activities."[260] Rather, as Dr. Clark indicated in his Re-Review,[261] the (substantially lower) actual on-site measurements of sound levels generated by DBOC boats and equipment using standard and accepted scientific techniques accurately reflect DBOC's noise-generating activities.

As far as his statement in the Atkins Peer Review Report that the Soundscape section of the DEIS used "measures [that] are reasonable representations of the existing acoustic environment" in Drakes Estero,"[262] Dr. Clark has stated in an e-mail that "dBA should not be used when assessing potential effects and influences [of sound] on non-humans: e.g., birds, marine mammals."[263] It appears that Dr. Clark has also reevaluated his statement in the Atkins Peer Review Report to the effect that soundscape analysis in the DEIS is "robust":[264] as he recently explained, "the DEIS … [does not] realistically deal[] with the actual sound fields experienced as a result of exposure to the different sources" of noise in DBOC.[265] Further, Dr. Clark has essentially retracted his claim that the DEIS properly determined that DBOC's "noise-generating activities have negative impacts on" wildlife in Drakes Estero, writing to Dr. Goodman that he "d[oes] not believe that … [DBOC] activities have a biologically significant impact on wildlife" in Drakes Estero."[266]

Aside from accuracy-related problems, Dr. Clark's statements in the Atkins Peer Review Report were not based on timely data and the most recent information available, violating NPS's information-quality guidelines for that reason.[267] Dr. Clark was not provided with and did not rely on either the ENVIRON International data, which was submitted as a comment on the DEIS and available as of December 9, 2011, or the 2009 PORE 004 microphone recordings and 2009 GPS data from DBOC boats.[268] Dr. Clark completed his review of the Soundscape and Wilder-

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[259] E-mail from Dr. Christopher Clark to Dr. Corey Goodman, "Re: time sensitive request" (March 21, 2012, 12:40:06 PM PDT), *in* Letter from Dr. Corey Goodman to Dr. Ralph Morgenweck, Scientific Integrity Officer, Department of the Interior, "Re: Dr. Chris Clark's re-review of the DEIS," pt. 2, Appendix #2, p. 20 (June 25, 2012). Dr. Clark has stated in e-mail correspondence with Dr. Goodman that the "reality of where the measurements [in Table 3-3] came from … [and] the inappropriate and significantly higher noise level values (from NJ!)" change his scientific opinion. *Id.*

[260] Re-Review, *supra* note 16, at 4.

[261] *See id.*

[262] ATKINS PEER REVIEW REPORT, *supra* note 42, at Appx. B, p. 84.

[263] E-mail from Dr. Christopher Clark to Dr. Corey Goodman, "Re: time sensitive request" (March 21, 2012, 2:40:44 PM PDT), *in* Letter from Dr. Corey Goodman to Dr. Ralph Morgenweck, Scientific Integrity Officer, Department of the Interior, "Re: Dr. Chris Clark's re-review of the DEIS," pt. 2, Appendix #2, p. 22 (June 25, 2012).

[264] *See* ATKINS PEER REVIEW REPORT, *supra* note 42, at Appx. B, p. 83.

[265] E-mail from Dr. Christopher Clark to Dr. Corey Goodman, "Re: time sensitive request" (March 21, 2012, 2:40:44 PM PDT), *in* Letter from Dr. Corey Goodman to Dr. Ralph Morgenweck, Scientific Integrity Officer, Department of the Interior, "Re: Dr. Chris Clark's re-review of the DEIS," pt. 2, Appendix #2, p. 22 (June 25, 2012).

[266] E-mail from Dr. Christopher Clark to Dr. Corey Goodman, "Re: time sensitive request" (March 21, 2012, 12:40:06 PM PDT), *in* Letter from Dr. Corey Goodman to Dr. Ralph Morgenweck, Scientific Integrity Officer, Department of the Interior, "Re: Dr. Chris Clark's re-review of the DEIS," pt. 2, Appendix #2, p. 20 (June 25, 2012).

[267] *See* Director's Order #11B, pt. III.B.

[268] *See supra* Sections 7.1.2.1, 7.1.2.3.

ness sections of the DEIS on February 23, 2012.[269] Thus, to comply with minimum information-quality standards, Dr. Clark was required to factor both the ENVIRON International data and the 2009 PORE 004 and GPS data into his conclusions. He did not. Therefore, his statements in the Atkins Peer Review Report do not meet minimum information-quality standards.

7.2.2 These Statements are Not Based on the Best Available Science and Scholarly Analysis and Sound and Objective Scientific Analysis.

Dr. Clark also failed to "verify … the quality of the" sources of data used in the Soundscape and Wilderness sections of the Draft EIS, in violation of NPS's information-quality guidelines.[270] Dr. Clark admittedly only "read and relied on" limited portions of Chapter 3 and Chapter 4 of the DEIS.[271] Dr. Clark did not verify *any* of the sources or check any of the (few) critical footnotes; he did not know where the vast majority of the soundscape data was derived from. In fact, by his own admission, Dr. Clark did not consult Chapter 5 of the DEIS (References, Glossary, Index).[272]

Moreover, the portion of the Atkins Peer Review Report drafted by Dr. Clark contains speculative, opinion-based statements that are not based on evidence. For instance, one of Dr. Clark's few *criticisms* of the DEIS was that it was not sufficiently hypothetical and speculative: "It could be argued that the human noise footprints from DBOC activities could have increased since 1995, but this is never discussed."[273] (Dr. Clark presumably chose 1995 as a reference point because he believed that the Noise Unlimited study used on-site measurements of DBOC boats and equipment. Noise Unlimited did not do either.) This bald assertion is neither based on research nor consistent with the scientific method.[274] The limited scope of Dr. Clark's cursory, superficial peer review is not consistent with requirement that it must be based on the best available science and scholarly analysis and thus it does not meet minimum baseline information-quality standards.[275]

7.2.3 These Statements Do Not Meet Applicable Information-Quality Standards for Objectivity.

To comply with minimum information-quality standards, factual statements and analysis in the Atkins Peer Review Report must be accurate, reliable, and unbiased and must be presented objectively in a scientifically neutral manner.[276] But Dr. Clark has admitted that he does not believe that science, data, and evidence are of dispositive importance to his role as a peer reviewer of scientific information in government publications:

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[269] *See* ATKINS PEER REVIEW REPORT, *supra* note 42, at Appx. B, p. 81.
[270] *See* Director's Order #11B, pt. III.A.
[271] *See* ATKINS PEER REVIEW REPORT, *supra* note 32, at Appx. B, pp. 81-82.
[272] *See id.*
[273] *See id.* at Appx. B, p. 84.
[274] *See supra* note 111 (noting "70% reduction in sound levels" generated by personal watercraft, such as jet skis, "since 1998").
[275] *See* DOI Guidelines, pt. II.4(a); Management Policies 2006, § 2.1.2; DOI Departmental Manual, 305 DM 3, § 3.7.A(1); *see also* Director's Order #11B, pt. III.A ("Information will be developed only from reliable data sources based on accepted practices and policies utilizing accepted methods for information collection and verification.").
[276] *See* Director's Order #11B, pt. VI.C.

> [T]o me *this is really not about the science of absolute or even relative sound fields generated by various machines and things that humans do….* Rather, it's about whether or not and just how much society values wilderness. In this case, it really doesn't matter whether the DEIS incorrectly gives 79 dBA or 65 dBA as the sound value for a "Frontend Loader." *The issue is really about whether we, or whomever, decide that there are places that should be left alone in every way possible….*
>
> So I'm not really sure what all the fuss is about, really. Was this deliberate, or just the result of someone cutting and pasting and not understanding sound, sound levels, dBA etc.?[277]

This bias makes Dr. Clark an inappropriate choice of peer reviewer. The Wilderness and Soundscape sections of the Atkins Peer Review Report are not sufficiently objective and include numerous speculative and opinion-based claims and thus do not meet minimum information-quality standards.

8. Additional Specific Recommendations for Corrective Action

In addition to the specific recommended corrections set forth above, to remedy the clear violations applicable minimum information-quality standards, Complainants request the following relief:

(1) All "information" in the DEIS and Atkins Peer Review Report that refers to, uses, relies on, is linked to or contingent on, or is otherwise based on or supported by the defective information that is within the scope of this complaint, either in whole or in part, must be corrected in the Final EIS and a revised Atkins Peer Review Report.

(2) All other "information" disseminated in the DEIS and Atkins Peer Review Report that fails to conform to applicable information-quality standards must be corrected in the Final EIS and a revised Atkins Peer Review Report to comply with those standards or removed from those publications.

(3) The Final EIS must be supplemented with data from the ENVIRON Report, as well as that collected by the PORE 004 microphone, NPS cameras, and GPS devices installed on DBOC boats.

(4) Dr. Corey Goodman's factual findings and analysis concerning inaccurate, misrepresented, false, concealed, or wrongfully omitted data and analysis in the DEIS must be reflected in the Final EIS.

[277] E-mail from Dr. Christopher Clark to Dr. Corey Goodman, "Re: time sensitive request" (March 21, 2012, 2:40:44 PM PDT) (emphasis added), *in* Letter from Dr. Corey Goodman to Dr. Ralph Morgenweck, Scientific Integrity Officer, Department of the Interior, "Re: Dr. Chris Clark's re-review of the DEIS," pt. 2, Appendix #2, p. 23 (June 25, 2012).

(5) The DEIS and Atkins Peer Review Report must be corrected in the Final EIS and a revised Atkins Peer Review Report so as to accurately reflect DBOC's de minimis impact on the Point Reyes National Sea Shore.[278]

(6) The DEIS and Atkins Peer Review Report must be withdrawn from the public domain, to the extent practicable.

Because of the immediate and significant impact that the DEIS and Atkins Peer Review are having, and will continue to have, on the Lunnys, DBOC, and its employees—which, in turn, impacts the entire oyster industry—and Dr. Goodman, Complainants request that NPS make corrections to the Final EIS and Atkins Peer Review Report necessary to comply with its information-quality obligations in an expeditious and timely manner.

Sincerely,

/s/ Amber Abbasi

_____

Amber D. Abbasi
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Darrell Issa, Chairman, U.S. House of Representatives Committee on Oversight & Government Reform
David Vitter, United States Senator (R-LA)
James Inhofe, United States Senator (R-OK)
Cicely Muldoon, Superintendent, Point Reyes National Seashore
Melanie Gunn, Point Reyes National Seashore Outreach Coordinator
Vincent Haecker, Special Agent, Department of the Interior Office of the Inspector General
Mary Kendall, Acting Inspector General, Department of the Interior Office of the Inspector General
Dr. Gary Machlis, National Park Service Scientific Integrity Officer

[278] *See* 40 C.F.R. § 1503.4(a)(4) (agency can "[m]ake factual corrections" in Final EIS).

EXHIBIT

17

NOISE
UNLIMITED
INC.

312 Old Allentown Road, Annandale, NJ 08801 (908) 713-9300 Fax:-9001

November 1, 1995

NUI Report No. 8077.1

State of New Jersey, Department of Law and Public Safety
Division of State Police, Marine Law Enforcement Bureau
P.O. Box 7068
West Trenton, NJ 08628-0068

Attention: Lt. Edward R. DeVane

Subject: Boat Noise Tests Using Static and Full-Throttle Measurement Methods

Reference: Purchase Order No. 3610126

Pursuant to your request, the Subject tests were conducted on September 26, 1995, and October 3, 1995.

1. MEASUREMENTS

Two measurements were made for each type of boat, as follows:

1.1 Static Measurement

These measurements were made with the engine at idle with the microphone located 4 ft above the water line and 2 ft behind the transom of the boat, in accordance with SAE J2005 Draft, "Stationary Sound Level Measurement Procedure for Pleasure Motorboats," dated 10/16/89.

1.2 Passby Measurement

These measurements were made with the boat operating at full throttle, passing by the microphone at a distance of 50 ft, in accordance with NJAC 7:6-6.3.

2. RESULTS

Nine boats were measured. Their descriptions and the data obtained are presented in Table 1 on the following page.

TABLE 1 - DATA RESULTS

Type of Boat	Static Level dBA	Passby Level dBA
Classic Inboard 1930 Chris Craft, Wooden Boat, Inboard Motor, Exhaust Outlet above the Water Line	86	72
Single Outboard Engine Police Patrol Boat with Single 175 Johnson Outboard Motor	74	81
Twin Outboard Engine Police 23 ft Foul Weather Patrol Boat with Two 155 Evinrude Outboard Motors	85	82
Personal Watercraft No. 1 Kawasaki Jet Ski 750 STS	71	81
Personal Watercraft No. 2 Kawasaki Jet Ski 900, High Performance 3 Cylinder 100 hp	70	76
Inboard/Outboard with Exhaust Below Water Line Advantage 21 ft, 350 ft³ Chevrolet Engine with Outboard Drive	69	85
Inboard/Outboard with Exhaust Above Water Line Wellcraft Nova, 352 ft³ Engine with Outboard Drive	90	90
Racing Boat No. 1 Jersey Speed Skiff Runabout, 283 Chevrolet Engine, Exhaust Below Water Line	95	105 @ 77 mph
Racing Boat No. 2 Five Liter Hydroplane, 305 Chevrolet Engine	99	109 @ 107 mph

3. DISCUSSION

The data indicate that the boats which are acceptable under the 86 dBA passby criteria also comply with the 90 dBA static criteria, with the sole exception of the "Inboard/Outbourd with Exhaust Above the Water Line." Here we are in a "gray area," with the exact wording of the 90 dBA criterion posing a question. If the static criterion reads "...shall not exceed 90 dBA," or words to that effect, then technically a level of exactly 90 dBA would pass. On the other hand, if the wording were "...levels of 90 dBA or greater are unacceptable," then 90 dBA would be a violation.

There is no doubt that the racing boats which fail the passby criteria also fail the static criteria.

Based on the data, it is our opinion that the static criteria will generally single out those boats which would fail the passby criteria. We might want to gather further data on more of the "Inboard/Outboard with Exhaust Above the Water Line" boats, if they have been perceived in the past as potential noise problems.

If you have any questions concerning the material presented, please contact us at your convenience.

Submitted by,

Noise Unlimited, Inc.

Thomas S. Bragg

Thomas S. Bragg
Administrative Engineer

EXHIBIT

18

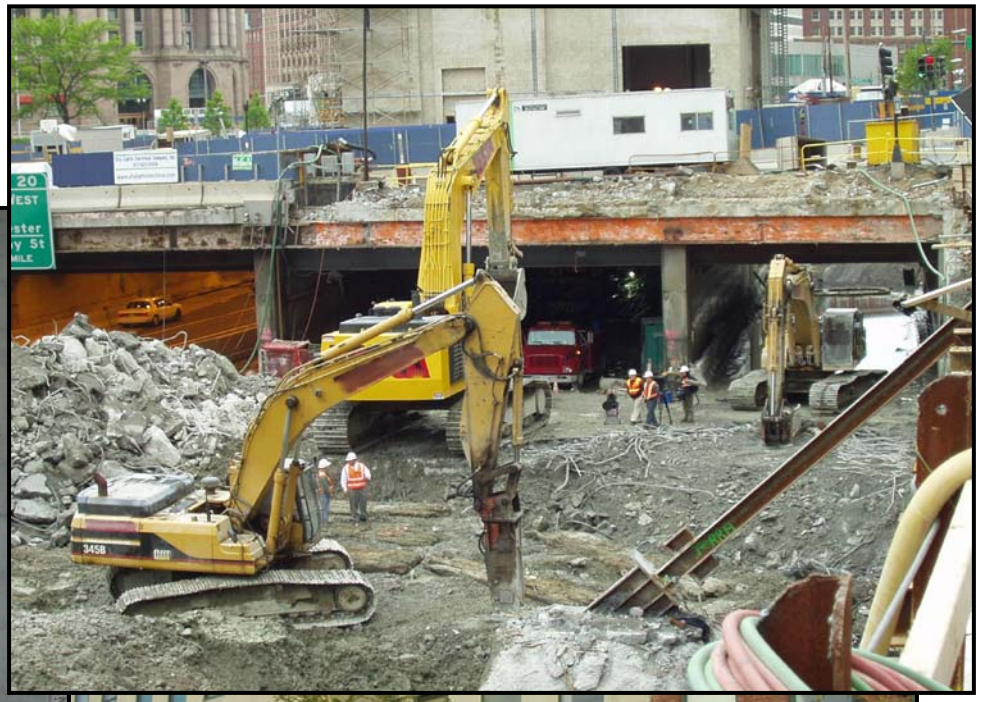
U.S. Department
of Transportation

Federal Highway Administration

FHWA Roadway Construction Noise Model User's Guide

FHWA-HEP-05-054
DOT-VNTSC-FHWA-05-01

Final Report
January 2006



Prepared for
U.S. Department of Transportation
Federal Highway Administration
Office of Natural and Human Environment
Washington, DC 20590

Prepared by
U.S. Department of Transportation
Research and Innovative Technology Administration
John A. Volpe National Transportation Systems Center
Acoustics Facility
Cambridge, MA 02142

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12a. DISTRIBUTION/AVAILABILITY STATEMENT
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12b. DISTRIBUTION CODE

13. ABSTRACT (Maximum 200 words)

The Roadway Construction Noise Model (RCNM) is the Federal Highway Administration's (FHWA) national model for the prediction of construction noise. Due to the fact that construction is often conducted in close proximity to residences and businesses, construction noise must be controlled and monitored to avoid impacts on surrounding communities. In addition to community issues, excessive noise can threaten a construction projects' progress. Each project needs to balance the community's need for peace and quiet with the contractor's need to progress the work.

During the Central Artery/Tunnel (CA/T) project in Boston, Massachusetts, the project's noise control program developed the Construction Noise Control Specification 721.560, the most comprehensive noise specification ever developed in the United States. As part of the CA/T project noise control program, a construction noise prediction spreadsheet was developed. Because the CA/T prediction tool can benefit other state and local governments, the FHWA developed the RCNM, which is based on the noise prediction calculations and equipment database used in the CA/T prediction spreadsheet. The RCNM provides a construction noise screening tool to easily predict construction noise levels and determine compliance with noise limits for a variety of construction noise projects of varying complexity.

14. SUBJECT TERMS
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METRIC/ENGLISH CONVERSION FACTORS

ENGLISH TO METRIC

LENGTH (APPROXIMATE)

1 inch (in) = 2.5 centimeters (cm)
1 foot (ft) = 30 centimeters (cm)
1 yard (yd) = 0.9 meter (m)
1 mile (mi) = 1.6 kilometers (km)

AREA (APPROXIMATE)

1 square inch (sq in, in^2) = 6.5 square centimeters (cm^2)
1 square foot (sq ft, ft^2) = 0.09 square meter (m^2)
1 square yard (sq yd, yd^2) = 0.8 square meter (m^2)
1 square mile (sq mi, mi^2) = 2.6 square kilometers (km^2)
1 acre = 0.4 hectare (he) = 4,000 square meters (m^2)

MASS – WEIGHT (APPROXIMATE)

1 ounce (oz) = 28 grams (gm)
1 pound (lb) = 0.45 kilogram (kg)
1 short ton = 2,000 pounds (lb) = 0.9 tonne (t)

VOLUME (APPROXIMATE)

1 teaspoon (tsp) = 5 milliliters (ml)
1 tablespoon (tbsp) = 15 milliliters (ml)
1 fluid ounce (fl oz) = 30 milliliters (ml)
1 cup © = 0.24 liter (l)
1 pint (pt) = 0.47 liter (l)
1 quart (qt) = 0.96 liter (l)
1 gallon (gal) = 3.8 liters (l)
1 cubic foot (cu ft, ft^3) = 0.03 cubic meter (m^3)
1 cubic yard (cu yd, yd^3) = 0.76 cubic meter (m^3)

TEMPERATURE (EXACT)

[(x-32)(5/9)] °F = y °C

METRIC TO ENGLISH

LENGTH (APPROXIMATE)

1 millimeter (mm) = 0.04 inch (in)
1 centimeter (cm) = 0.4 inch (in)
1 meter (m) = 3.3 feet (ft)
1 meter (m) = 1.1 yards (yd)
1 kilometer (km) = 0.6 mile (mi)

AREA (APPROXIMATE)

1 square centimeter (cm^2) = 0.16 square inch (sq in, in^2)
1 square meter (m^2) = 1.2 square yards (sq yd, yd^2)
1 square kilometer (km^2) = 0.4 square mile (sq mi, mi^2)
10,000 square meters (m^2) = 1 hectare (ha) = 2.5 acres

MASS – WEIGHT (APPROXIMATE)

1 gram (gm) = 0.036 ounce (oz)
1 kilogram (kg) = 2.2 pounds (lb)
1 tonne (t) = 1,000 kilograms (kg) = 1.1 short tons

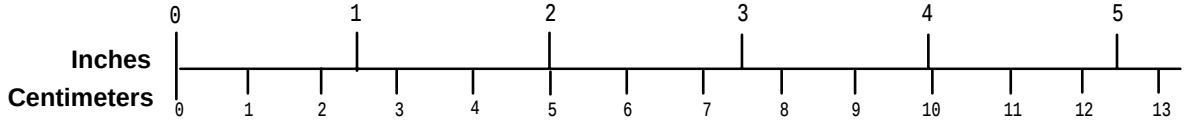
VOLUME (APPROXIMATE)

1 milliliter (ml) = 0.03 fluid ounce (fl oz)
1 liter (l) = 2.1 pints (pt)
1 liter (l) = 1.06 quarts (qt)
1 liter (l) = 0.26 gallon (gal)
1 cubic meter (m^3) = 36 cubic feet (cu ft, ft^3)
1 cubic meter (m^3) = 1.3 cubic yards (cu yd, yd^3)

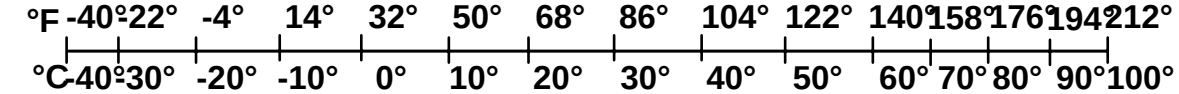
TEMPERATURE (EXACT)

[(9/5) y + 32] °C = x °F

QUICK INCH - CENTIMETER LENGTH CONVERSION



QUICK FAHRENHEIT - CELSIUS TEMPERATURE CONVERSION



For more exact and or other conversion factors, see NIST Miscellaneous Publication 286, Units of Weights and Measures.
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1 Introduction

The Roadway Construction Noise Model (RCNM) is the Federal Highway Administration's (FHWA) national model for the prediction of construction noise. Due to the fact that construction is often conducted in close proximity to residences and businesses, construction noise must be controlled and monitored to avoid impacts on surrounding communities. In addition to community issues, excessive noise can threaten a construction project's progress. Each project needs to balance the community's need for peace and quiet with the contractor's need to progress the work.

The Central Artery/Tunnel (CA/T) project in Boston, Massachusetts, which began in the early 1990s, is the largest urban construction project ever conducted in the United States. Its noise control program developed the Construction Noise Control Specification 721.560, the most comprehensive noise specification ever developed in the United States [1]. As part of the CA/T project noise control program, a construction noise prediction spreadsheet was developed [2]. Because the CA/T prediction tool can benefit other state and local governments, the FHWA developed the RCNM, which is based on the noise prediction calculations and the equipment database used in the CA/T prediction spreadsheet. The RCNM provides a construction noise screening tool to easily predict construction noise levels and to determine compliance with noise limits for a variety of construction noise projects of varying complexity.

2 Background

The RCNM is a national model based on the noise calculations and extensive construction noise data compiled for the CA/T Project. The basis for the national model is a spreadsheet tool developed in support of the CA/T project [2]. The CA/T predictions originated from Environmental Protection Agency (EPA) noise level work [3] and an Empire State Electric Energy Research Corp. Guide [4] which utilizes an "acoustical usage factor" to estimate the fraction of time each piece of construction equipment is operating at full power (i.e., its loudest condition) during a construction operation. Table 1 presents a construction equipment noise database compiled through the CA/T project [2]. This database is used to predict construction noise within the RCNM. The noise levels listed represent the A-weighted maximum sound level (Lmax), measured at a distance of 50 feet from the construction equipment.

Table 1. CA/T equipment noise emissions and acoustical usage factors database.

CA/T Noise Emission Reference Levels and Usage Factors					
filename: EQUIPLST.xls					
revised: 7/26/05		Acoustical	Spec 721.560	Actual Measured	No. of Actual
	Impact	Use Factor	Lmax @ 50ft	Lmax @ 50ft	Data Samples
Equipment Description	Device ?	(%)	(dBA, slow)	(dBA, slow)	(Count)
				(samples averaged)	
All Other Equipment > 5 HP	No	50	85	-- N/A --	0
Auger Drill Rig	No	20	85	84	36
Backhoe	No	40	80	78	372
Bar Bender	No	20	80	-- N/A --	0
Blasting	Yes	-- N/A --	94	-- N/A --	0
Boring Jack Power Unit	No	50	80	83	1
Chain Saw	No	20	85	84	46
Clam Shovel (dropping)	Yes	20	93	87	4
Compactor (ground)	No	20	80	83	57
Compressor (air)	No	40	80	78	18
Concrete Batch Plant	No	15	83	-- N/A --	0
Concrete Mixer Truck	No	40	85	79	40
Concrete Pump Truck	No	20	82	81	30
Concrete Saw	No	20	90	90	55
Crane	No	16	85	81	405
Dozer	No	40	85	82	55
Drill Rig Truck	No	20	84	79	22
Drum Mixer	No	50	80	80	1
Dump Truck	No	40	84	76	31
Excavator	No	40	85	81	170
Flat Bed Truck	No	40	84	74	4
Front End Loader	No	40	80	79	96
Generator	No	50	82	81	19
Generator (<25KVA, VMS signs)	No	50	70	73	74
Gradall	No	40	85	83	70
Grader	No	40	85	-- N/A --	0
Grapple (on backhoe)	No	40	85	87	1
Horizontal Boring Hydr. Jack	No	25	80	82	6
Hydra Break Ram	Yes	10	90	-- N/A --	0
Impact Pile Driver	Yes	20	95	101	11
Jackhammer	Yes	20	85	89	133
Man Lift	No	20	85	75	23
Mounted Impact Hammer (hoe ram)	Yes	20	90	90	212
Pavement Scarafier	No	20	85	90	2
Paver	No	50	85	77	9
Pickup Truck	No	40	55	75	1
Pneumatic Tools	No	50	85	85	90
Pumps	No	50	77	81	17
Refrigerator Unit	No	100	82	73	3
Rivit Buster/chipping gun	Yes	20	85	79	19
Rock Drill	No	20	85	81	3
Roller	No	20	85	80	16
Sand Blasting (Single Nozzle)	No	20	85	96	9
Scraper	No	40	85	84	12
Shears (on backhoe)	No	40	85	96	5
Slurry Plant	No	100	78	78	1
Slurry Trenching Machine	No	50	82	80	75
Soil Mix Drill Rig	No	50	80	-- N/A --	0
Tractor	No	40	84	-- N/A --	0
Vacuum Excavator (Vac-truck)	No	40	85	85	149
Vacuum Street Sweeper	No	10	80	82	19
Ventilation Fan	No	100	85	79	13
Vibrating Hopper	No	50	85	87	1
Vibratory Concrete Mixer	No	20	80	80	1
Vibratory Pile Driver	No	20	95	101	44
Warning Horn	No	5	85	83	12
Welder / Torch	No	40	73	74	5

3 The RCNM

The RCNM is a computer program used to assess construction noise impacts. The computer on which it is installed should be equipped with the Microsoft Windows 98 or newer operating system (OS) and 192 MB or more of random access memory (RAM). The display should be set to 1024 x 768 pixels or greater, and the computer should carry the Adobe Acrobat 4.0 or newer software.

The RCNM allows the estimation of three key metrics of interest: Lmax, Leq, and L10 at receptor locations for a construction operation that can include up to 20 pieces of equipment. RCNM allows for user-defined construction equipment and user-defined noise limit criteria. The two main uses of the RCNM are to allow typical computer users to: 1. easily predict noise emissions from construction equipment, and 2. determine a construction work plan's compliance with noise criteria limits. A variety of construction work scenarios can be created quickly, allowing the user to determine the impact of changing construction equipment and adding/removing the effects of shielding due to noise mitigation devices such as barriers.

3.1 RCNM Main Page

The RCNM consists of one main display page with Input Data and Results sections, shown in Figure 1.

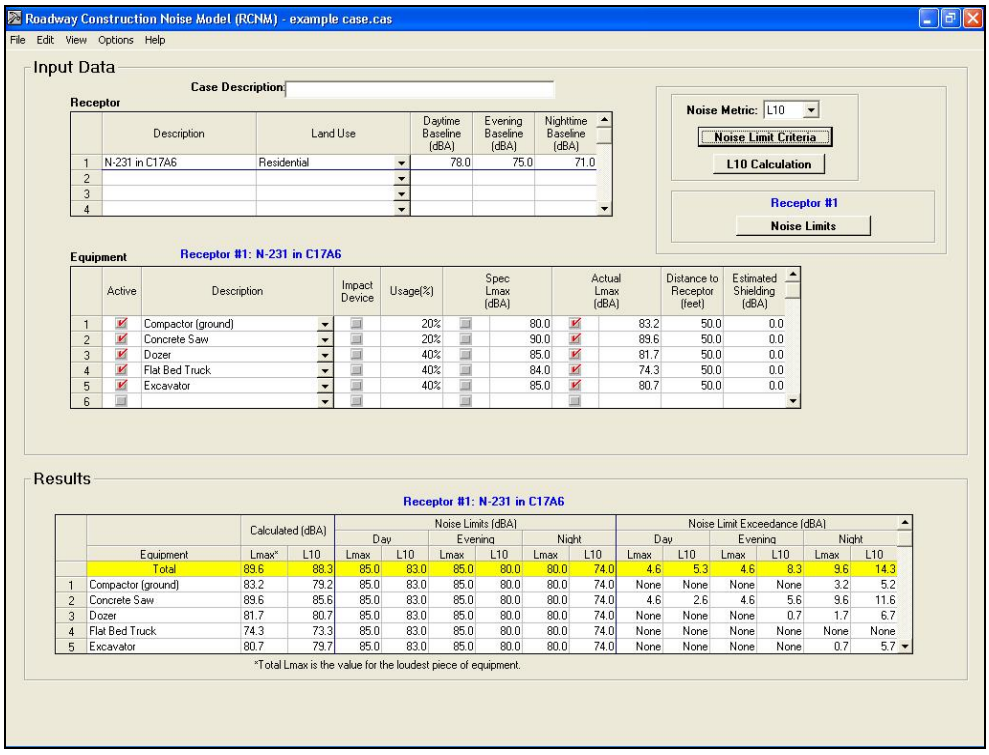

Figure 1. The RCNM main page

Several command buttons and pull-down menus allow the user to modify the input data before results are calculated by the model.

3.1.1 File Menu

The <File> menu, shown in Figure 2, contains items that allow the user to create, open, and save a case, export the results of a case, and exit the program.

Figure 2. <File> Menu

- <New> creates a new case. If a case is currently open, the user is prompted to save it before closing.
- <Open…> allows the user to open an existing case file ([name].cas).
- <Save> saves the case with the current filename. If this is a new case, the user is asked for a new filename ([name].cas).
- <Save As…> The user is asked for a filename for a new case ([name].cas) and saves the case with that filename.
- <Export Results> prompts the user to save the case results for the current or all receptors to a comma separated value (CSV) file with the following naming convention: [name].csv. This type of file is easily read into a spreadsheet program. The user can also save the case results to a text file (TXT), which saves the results to a space-separated text format with the following naming convention: [name].txt.
- <Exit> closes the application. If changes have been made to the open case, the user is asked if he/she would like to save the case.

3.1.2 Edit Menu

The <Edit> menu, shown in Figure 3, allows the user to copy and paste data, delete data, and undo changes.

Figure 3. <Edit> Menu

- <Copy> lets the user copy into a clipboard the contents of a single cell or an entire line from an RCNM dialogue box.
- <Paste> lets the user copy the contents of the clipboard into a single cell or an entire line of an RCNM dialogue box.
- <Delete> lets the user delete from the case a receptor or piece of equipment selected in the receptor or equipment dialogue box.
- <Undo> lets the user revert the RCNM one step to where it was before the latest change was made.

3.1.3 View Menu

The <View> menu, shown in Figure 4, allows the user to focus in <Zoom +> on either the Input Data or Results section of the RCNM's main page. To activate Zoom +, click on Zoom + and guide the spyglass + icon to either Input Data or Results and single-click.

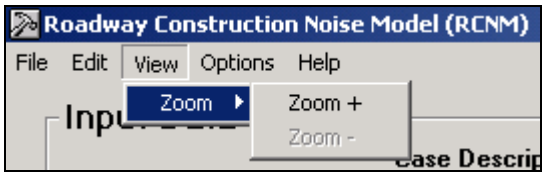

Figure 4. <View> Menu

To deactivate Zoom + and go back to the full RCNM screen, click on Zoom – and guide the spyglass – icon to the Input Data or Results section that has been maximized on the screen.

3.1.4 Options Menu

The <Options> menu, shown in Figure 5, allows the user to modify the equipment list and change the case's units of measure from feet to meters.

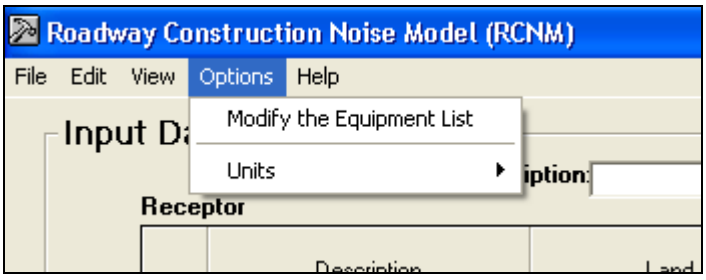

Figure 5. <Options> menu

The <Options> menu allows the user to add new types of equipment to the equipment list. The equipment list modification dialogue box, shown in Figure 6, allows the user to specify a user-defined piece of equipment and add it. The user can specify the following

data: whether the equipment is an impact device, the equipment's usage factor[1], and the equipment's Lmax level (spec and/or actual[2]). The user can also delete equipment that's been added by selecting it and clicking the delete button. The default equipment cannot be modified, but it may be deleted entirely from the case by selecting it and clicking the delete button. Selecting the default button restores the default equipment list (from the CA/T Project) and eliminates any user-defined equipment.

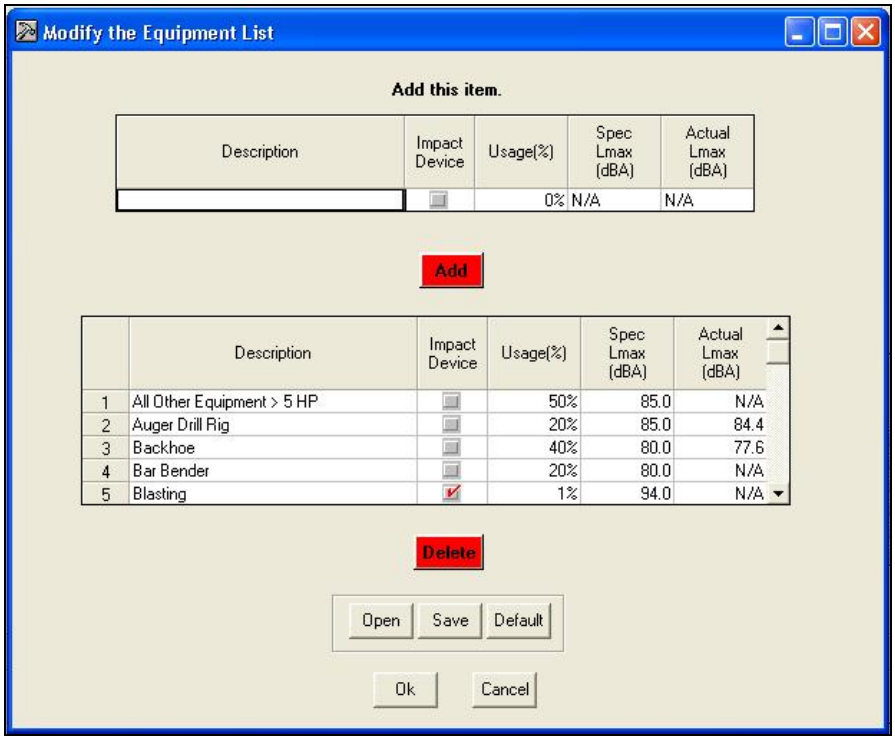

Figure 6. Equipment list modification dialogue box

Data for user-defined pieces of equipment may be saved to an equipment file ([name].equ), along with all other equipment in the current list, including default equipment. This file may be opened in other cases to incorporate these pieces of equipment.

The <Options> menu, as shown in Figure 7, also allows the user to change the case's units of measure from feet to meters or from meters to feet. The only input data affected by this tool are the Distance to Receptor values.

[1] Usage factor is the percentage of time during a construction noise operation that a piece of construction equipment is operating at full power. In the case of construction blasting, the equipment gives a very short duration blast, and can be quantified by using a 1% usage factor in the RCNM to allow for some prediction. Never use a usage factor of zero because the log of zero causes a mathematical impossibility. The usage factor term only affects the computation of Leq and L10. The usage factor does not enter into the equation when calculating the more important term for blasting, that being the Lmax.

[2] "Spec" refers to noise levels stated in noise specifications, and "Actual" refers to Lmax values measured at 50 ft from the equipment.

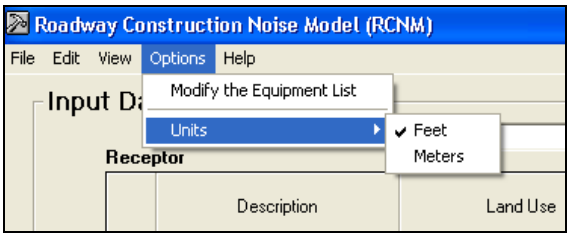

Figure 7. Units modification pull-down menu

3.1.5 Help Menu

The <Help> Menu loads for the user the RCNM User's Guide in Portable Document Format (PDF). This PDF is searchable by key word using the Adobe Acrobat Edit / Find search tool.

3.2 Input Data

The user is required to input receptor data and equipment data before a case can be processed. The user is advised to type in some summary comments about the case in the Case Description dialogue box before inputting data. Also, in order to determine noise limit exceedance values, the user can input noise limit criteria.

3.2.1 Receptors

Multiple receptors may be input for a case, but only one receptor may be processed at a time. The name of the highlighted receptor chosen for processing appears in blue type above the Equipment input dialogue box and the Noise Limits command button (see Figure 1). The user specifies the receptors for a study by entering information into the Receptors input box in the main window of the RCNM. The user is required to enter the receptor name, land use, daytime baseline L10 or Leq, evening baseline L10 or Leq, and nighttime baseline L10 or Leq. The baseline levels indicate the sound level at a receptor before any construction noise contributions. Baseline levels are only necessary if the desired noise criteria limits are based on *relative* increases in noise level. If the desired noise criteria limits are *absolute* noise levels, then the user should insert a placeholder number other than zero.

When entering information for more than one receptor, it may be desirable to copy information already entered. An entire receptor row may be highlighted and copied to another row, where copying multiple rows requires the selection of the same number of rows when pasting (this same functionality also applies to editable cells). Note: Entire rows may be selected by clicking on the row number.

Again, the RCNM will only calculate results for the receptor displayed in blue type in the Input Data portion of the main page. The results for other receptors may be displayed by selecting the desired receptor in the Receptor window; to select a receptor, click in any

cell in the row. Up to 100 receptors may be included in any case. Information for receptors is saved in the case file ([name].cas).

3.2.2 Equipment

Core equipment noise data are stored in the RCNM and are accessible by a pull-down menu in the main page, as in Figure 8.

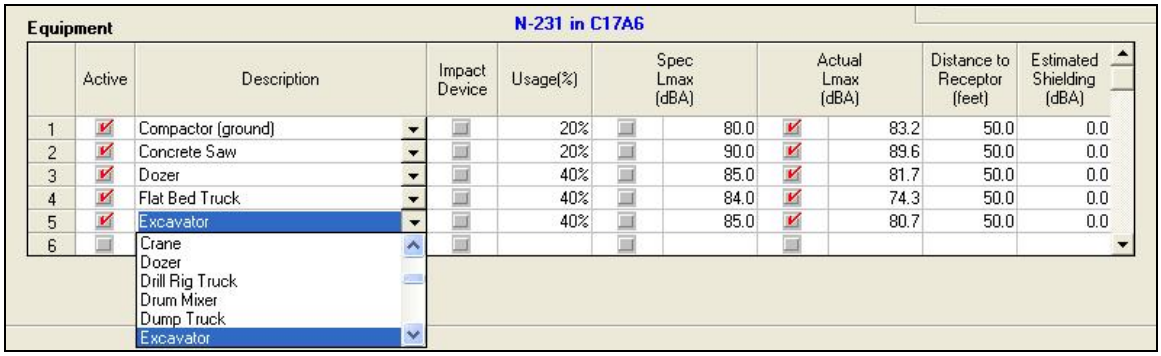

Figure 8. Equipment dialogue box, with pull-down menu shown

As discussed in Section 3.1.4, new pieces of equipment may be added to a case and saved in an equipment file ([name].equ). When the user-defined equipment file is opened through the <Options> / <Modify the Equipment List> menu, user-defined equipment will appear in the equipment pull-down menu. The user activates and inactivates chosen equipment types by ticking and unticking the "Active" checkbox. The user is required to specify:

1. The type of reference emission levels to use ("Spec", if applicable, or "Actual", [the default is "Actual"]);
2. Distance to Receptor – that is, the distance between each type of equipment and the receptor being analyzed (the default distance is 50 feet); and
3. Estimated Shielding (in dBA) associated with each type of equipment (can leave the default value of 0.0 when not considering shielding). **NOTE: A Best Practices document is presented in Appendix A showing how to determine Estimated Shielding using several Rules of Thumb developed from experience at the CA/T project.**

When entering information for more than one piece of equipment, it may be desirable to copy information already entered. An entire equipment row may be highlighted and copied to another row, where copying multiple rows requires the selection of the same number of rows when pasting (this same functionality also applies to editable cells). Note: Entire rows may be selected by clicking on the row number.

The user may analyze up to 20 pieces of equipment at one time, and they may be included in any combination of different or identical equipment types.

3.2.3 Noise Metric and Noise Limit Criteria

While a case is open, the user can choose a noise metric (for baseline levels, noise limits, and calculated results) and enter the noise limit criteria for a local area. The user may edit the Lmax and L10 or Leq day, evening, and night noise limit criteria for a residential, commercial, or industrial area. Daytime, evening, and nighttime may represent any time periods the user wishes, but they are typically defined as 7 AM to 6 PM, 6 PM to 10 PM, and 10 PM to 7 AM, respectively. The criteria, used together with the baseline sound levels, define the noise limits for each receptor. CA/T Noise Limit Criteria are used as a default [1], but users may input their own criteria. The RCNM offers a metric pull-down menu and two or three command buttons to the right of the Receptor input dialogue box.

- Metric Pull-Down Menu

A pull-down menu allows the user to choose between the L10 or Leq metric, as in Figure 9. The chosen metric represents that used for the baseline levels, noise limits, and calculated results. For the noise limits and calculated results, Lmax values are also included.

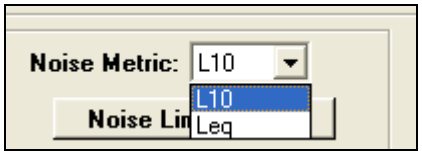

Figure 9. Noise Metric pull-down menu

- Noise Limit Criteria Pop-up Dialogue Box

A pop-up dialogue box allows the user to specify Noise Limit Criteria information for an area being studied in a case, as in Figure 10. The flexibility of the Noise Limit Criteria allows RCNM users to incorporate criteria based on local noise ordinances and baseline levels measured for each receptor.

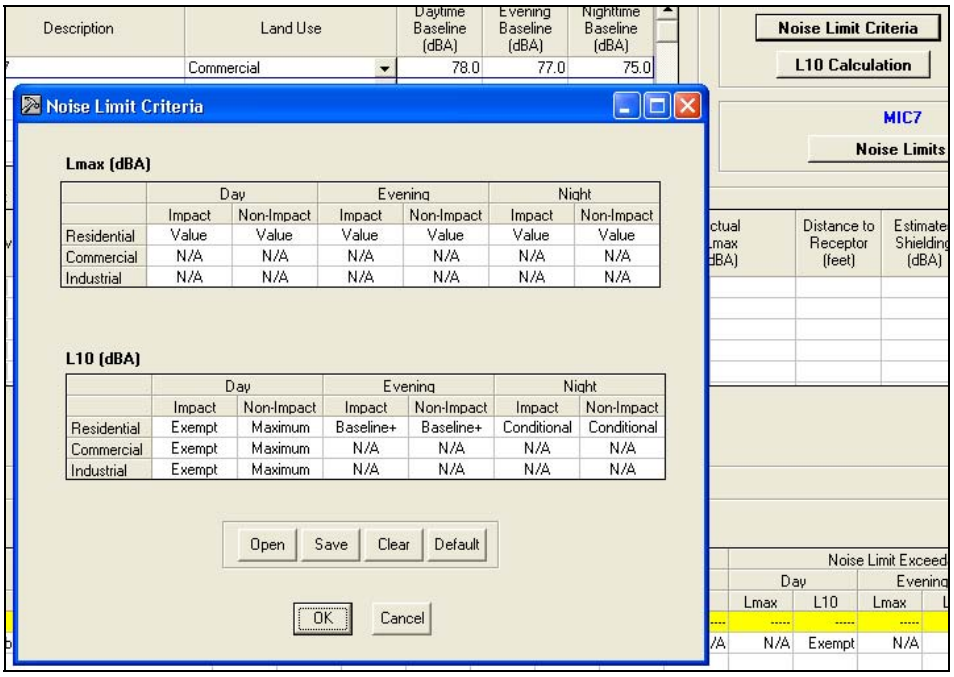

Figure 10. Noise Limit Criteria pop-up dialogue box

The user may populate this dialogue box with Noise Limit Criteria information derived from CA/T Construction Noise Control Spec. 721.560 [1] by clicking on the "Default" command button and clicking "Yes" when asked to load information from the default file, which is stored in the RCNM (see Table 2).

Table 2. Default Noise Limit Criteria

	Daytime (7 AM to 6 PM)		Evening (6 PM to 10 PM)		Nighttime (10 PM to 7 AM)	
Land Use	**L10 Limit (dBA)**	**Lmax Limit (dBA)**	**L10 Limit (dBA)**	**Lmax Limit (dBA)**	**L10 Limit (dBA)**	**Lmax Limit (dBA)**
Residential	maximum of 75 and baseline + 5 for non-impact* and exempt for impact**	85 for non-impact and 90 for impact	baseline + 5	85	if baseline <70 then baseline +5; if baseline ≥70 then baseline + 3	80
Commercial	maximum of 80 and baseline + 5 for non-impact and exempt for impact	N/A	N/A	N/A	N/A	N/A
Industrial	maximum of 85 and baseline+5 for non-impact and exempt for impact	N/A	N/A	N/A	N/A	N/A

* Non-impact equipment is equipment that generates a constant noise level while in operation.

** Impact Equipment is equipment that generates impulsive noise. Impulse Noise is defined as noise produced by the periodic impact of a mass on a surface, of short duration (generally less than one second), high intensity, abrupt onset and rapid decay, and often rapidly changing spectral composition.

Otherwise, the user may clear any information present in the dialogue box and specify new data in each cell. Clicking on the "Clear" command button will prompt the user to set all the cells in the dialogue box to Not Applicable (N/A), as in Figure 11. By clicking "Yes," the user will populate all cells with N/A; by clicking "No," the dialogue box will return to the data present before the user clicked "Clear."

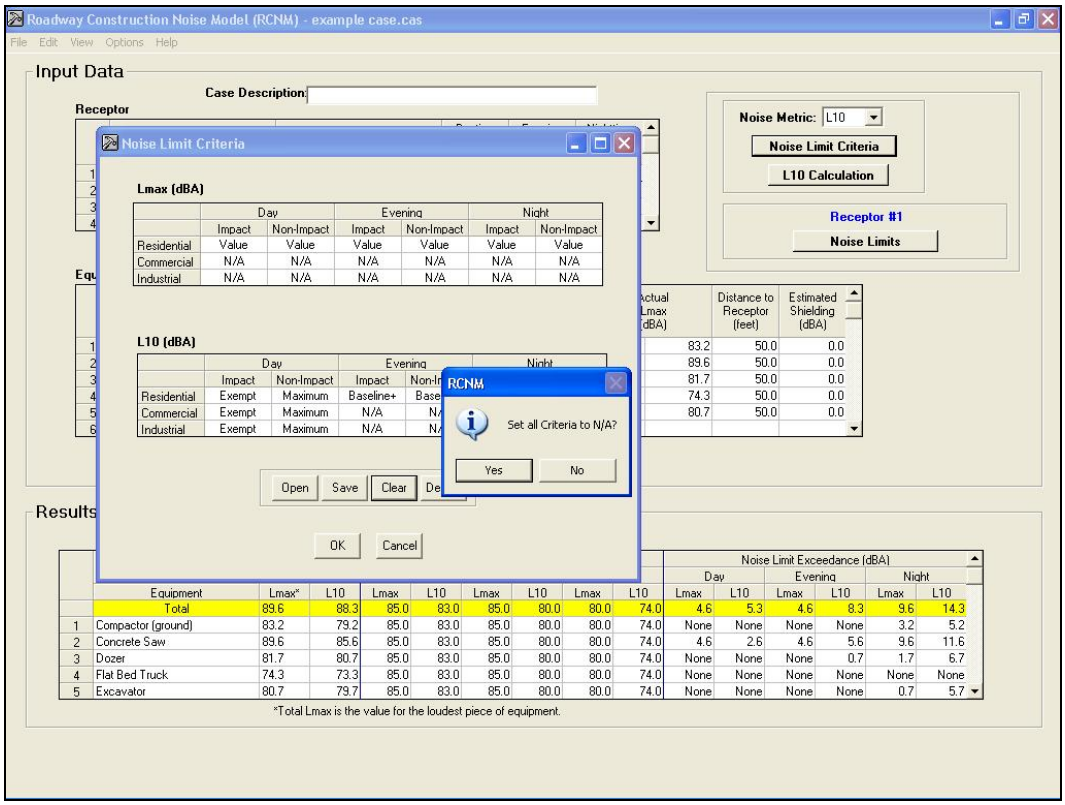

Figure 11. The Noise Limit Criteria "Clear" command button

Clicking on any cell in the Noise Limit Criteria dialogue box reveals a Noise Limit Criteria pull-down menu. Click on this pull-down menu to access the six options, as in Figure 12.

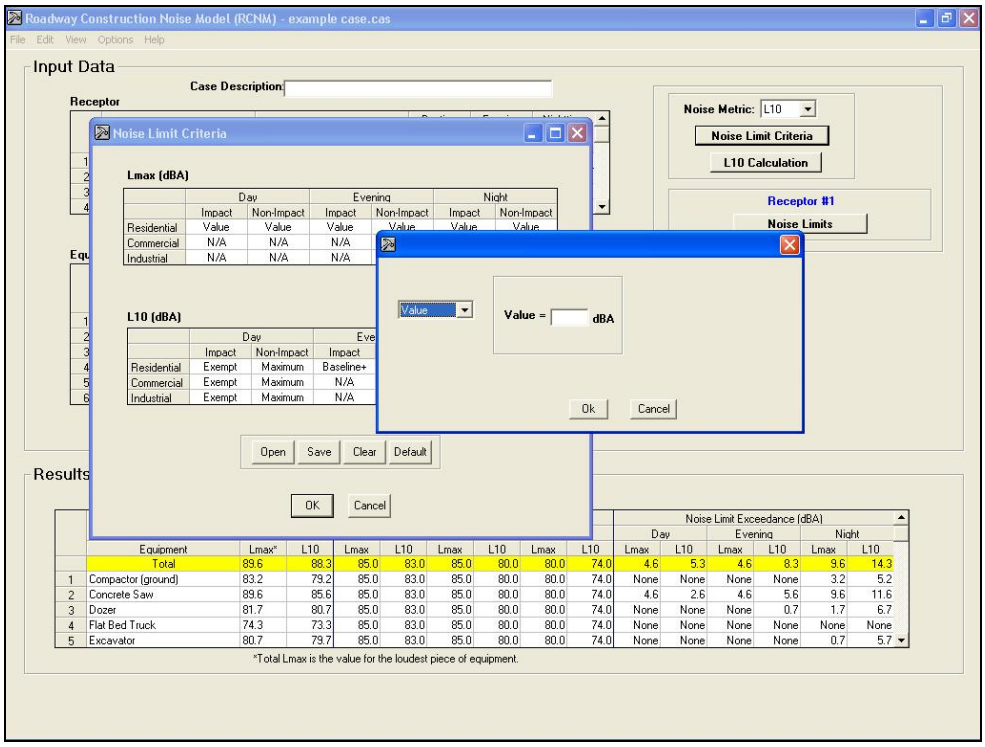

Figure 12. Noise Limit Criteria pull-down menu

Through these six options, the user specifies what Noise Limit Criteria changes, if any, are desirable in each cell. The six cell options are:

i. Exempt (for the specified metric and land use, the equipment is exempt from noise limits)
ii. N/A (for the specified metric and land use, the equipment does not have applicable noise limits)
iii. Value (user is prompted to enter a value for which the noise level should not exceed), as in Figure 13:

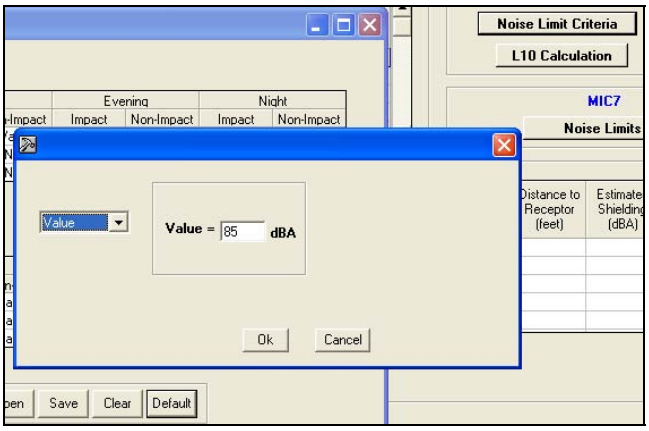

Figure 13. Noise Limit Criteria "Value" dialogue box

iv. Maximum (set value for which a noise level should not exceed to the maximum of two possible levels: A user-defined level or the Baseline level plus some user-defined increment), as in Figure 14:

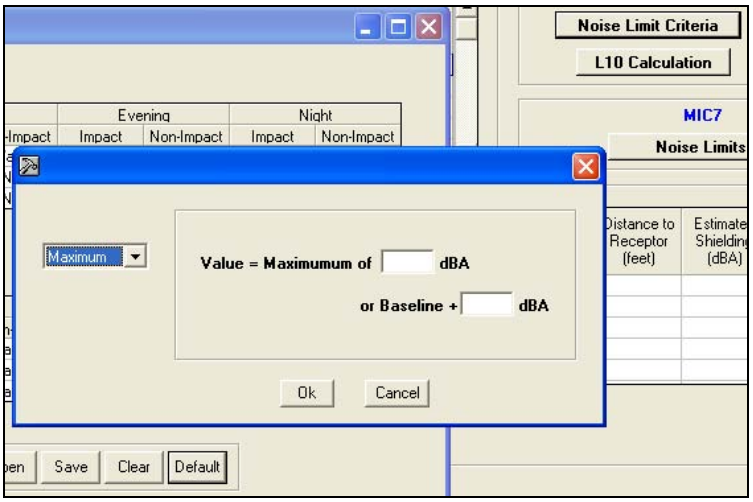

Figure 14. Noise Limit Criteria "Maximum" dialogue box

v. Baseline + (set value for which a noise level should not exceed to the Baseline level plus some user-defined increment), as in Figure 15:

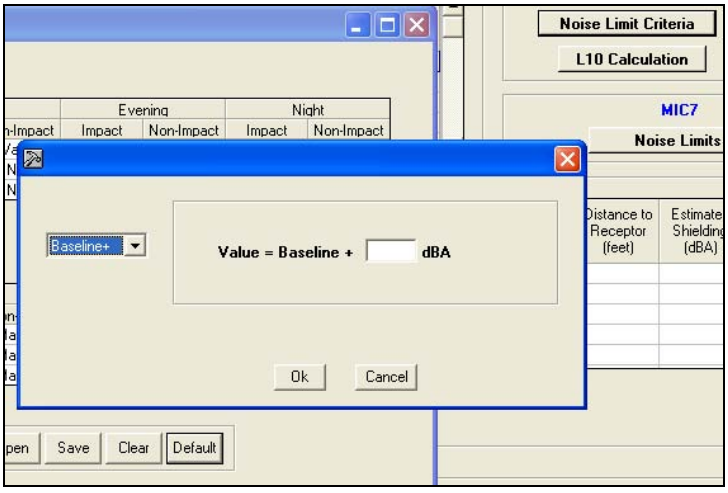

Figure 15. Noise Limit Criteria "Baseline +" dialogue box

vi. Conditional (set conditional value for which a noise level should not exceed; the user is prompted to enter the following information: 1. a comparison value, i.e., "If Baseline < [value], then …"; 2. an increment value to add to the baseline level if the baseline level is *less than* the comparison value; 3. an increment value to add to the baseline level if the baseline level is *greater than or equal to* the comparison value), as in Figure 16:

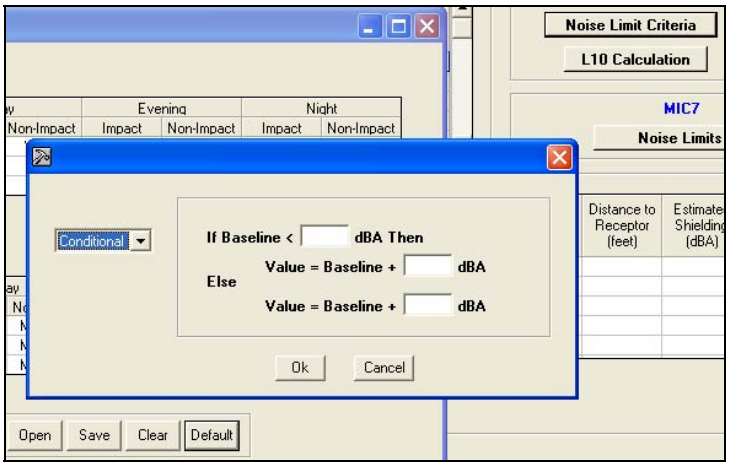

Figure 16. Noise Limit Criteria "Conditional" dialogue box

To see the current value of a cell, simply hold the mouse pointer over the cell. Once the user has specified values for all the cells in the Noise Limit Criteria dialogue box, these criteria can be saved in a criteria file ([name].cri) by clicking on the "Save" command button. The user will be prompted to give the criteria file a name. These criteria can thereafter be loaded into any case by clicking on the "Open" command button.

The user returns to the Noise Limit Criteria dialogue box by clicking "Ok", and returns to the case by clicking "Ok" again.

- L10 Calculation (this button is present if the L10 metric is chosen)

By clicking on the "L10 Calculation" command button, the user can specify the adjustment factor used to calculate L10, as in Figure 17. By clicking the "Default" command button, the user automatically calls for an adjustment factor of 3 dBA, a value empirically derived from extensive CA/T Project data [2].

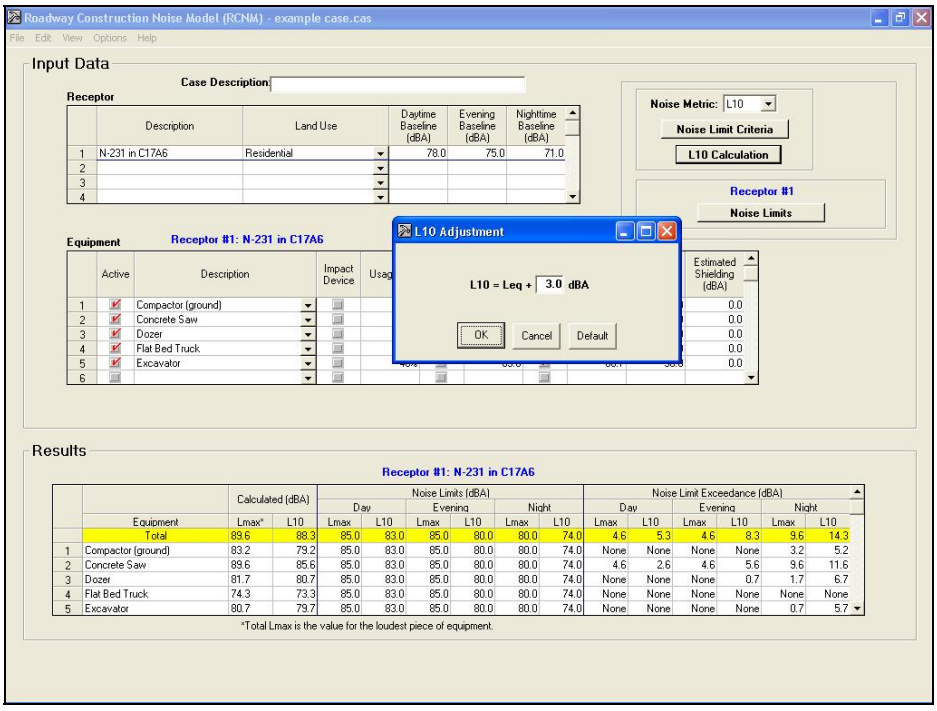

Figure 17. L10 Adjustment dialogue box

- Noise Limits

The "Noise Limits" command button opens a display window that looks exactly like the "Noise Limit Criteria" dialogue box, except that it is not editable, and the only button in the opened window is "Ok". The values in the cells are based on the criteria set in the Noise Limit Criteria window and the baseline levels for the selected receiver, as in Figure 18. (If a receiver is not selected, the dialogue box is unavailable for viewing.)

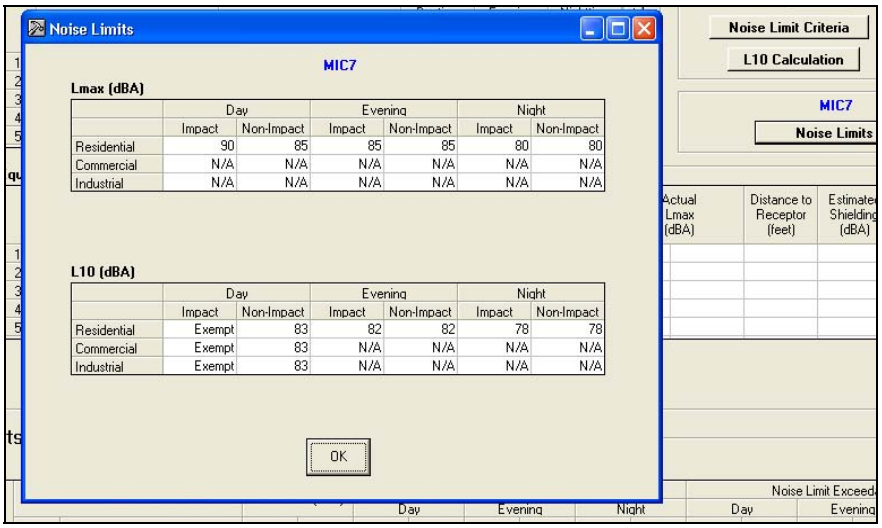

Figure 18. Noise Limits display window

Again, these limits may be changed by the user through the Noise Limit Criteria data entry window.

4 Results

Once the data for one receptor and up to 20 pieces of equipment have been specified in the Input Data portion of the main screen, the RCNM will automatically calculate the Results readout displayed in the bottom portion of the main screen, as in Figure 19. Any changes to the Input Data will automatically cause the RCNM to update the Results. The results for only one receptor will be displayed at a time; results for other receptors can be displayed by selecting the desired receptor in the Receptor window (click in any cell in the desired receptor row). Results for up to 100 receptors can be saved in a case. If Noise Limit Criteria information has been specified, the corresponding results (limits and exceedance values) will be updated as well.

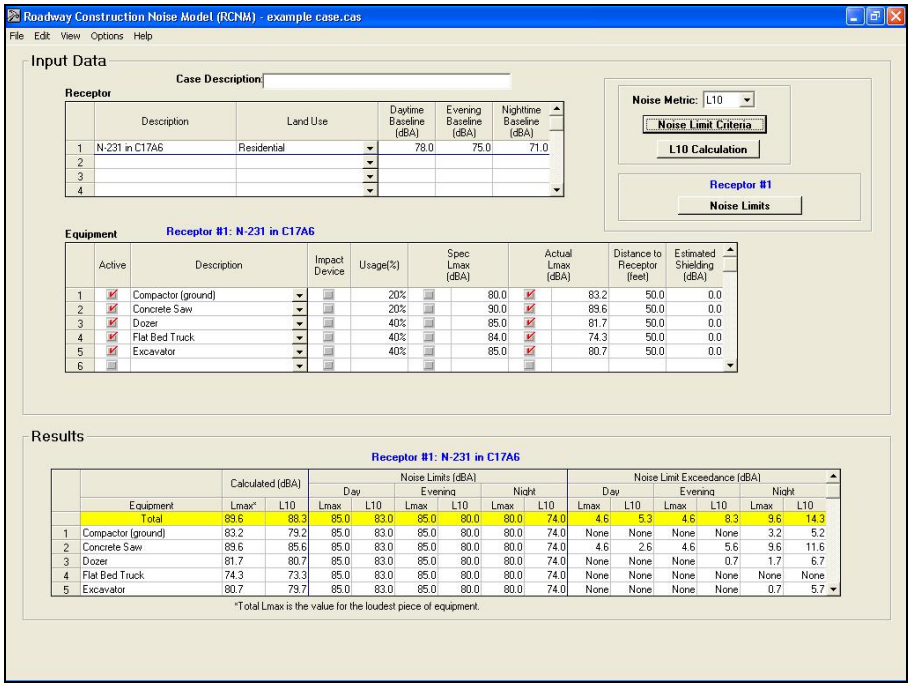

Figure 19. The RCNM main-page Results display

If there is insufficient input data for RCNM to compute a result, then a "Check Input Data" button will appear in the middle of the screen. Clicking on this button will provide the user with an indication of what additional input data are required.

The Results are presented in a read-only spreadsheet that contains the following fields, all applicable to the selected receptor:

- Equipment – the name/description of the equipment type
- Calculated Lmax – the calculated Lmax value for the equipment type. This is calculated from the "Spec" or "Actual" equipment Lmax, distance, and estimated shielding.

- Calculated Leq or L10 – the calculated Leq or L10 value (depending on what is selected in the Noise Metric pull-down menu) for the equipment type. This is calculated from the Calculated Lmax values, equipment usage factors, and selected adjustment factor.
- Day Lmax Noise Limit – the daytime Lmax noise limit for the equipment type.
- Day Leq or L10 Noise Limit – the daytime Leq or L10 noise limit for the equipment type.
- Evening Lmax Noise Limit – the evening Lmax noise limit for the equipment type.
- Evening Leq or L10 Noise Limit – the evening Leq or L10 noise limit for the equipment type.
- Night Lmax Noise Limit – the nighttime Lmax noise limit for the equipment type.
- Night Leq or L10 Noise Limit – the nighttime Leq or L10 noise limit for the equipment type.
- Day Lmax Noise Limit Exceedance – the daytime Lmax noise limit exceedance for the equipment type. If the criteria limit was not exceeded, the value is "None".
- Day Leq or L10 Noise Limit Exceedance – the daytime Leq or L10 noise limit exceedance for the equipment type. If the criteria limit was not exceeded, the value is "None".
- Evening Lmax Noise Limit Exceedance – the evening Lmax noise limit exceedance for the equipment type. If the criteria limit was not exceeded, the value is "None".
- Evening Leq or L10 Noise Limit Exceedance – the evening Leq or L10 noise limit exceedance for the equipment type. If the criteria limit was not exceeded, the value is "None".
- Night Lmax Noise Limit Exceedance – the nighttime Lmax noise limit exceedance for the equipment type. If the criteria limit was not exceeded, the value is "None".
- Night Leq or L10 Noise Limit Exceedance – the nighttime Leq or L10 noise limit exceedance for the equipment type. If the criteria limit was not exceeded, the value is "None".

The user may scroll down to view equipment results that are not visible, or the <View> / <Zoom +> menu may be used to zoom in on the Results display only (see Section 3.1.3). There is a row at the top of the Results display, highlighted in yellow, that calculates the total for all equipment combined. This row is always visible during scrolling of the Results spreadsheet. (Calculations for totals are explained in Section 5.3.)

Again, users may export a case's input information and results to a comma separated value (CSV) report file ([name].csv) by choosing the <Export Results> option from the <File> menu. The user can also save the case results to a text file (TXT), which saves the results to a space-separated text format ([name].txt). Results may be saved for a single receptor or all receptors in the case.

5 Calculations in the RCNM

The RCNM uses the primary equation described in the CA/T Construction Noise Control Specification 721.560 [1] for the construction noise calculations.

5.1 Metric Calculation

LmaxCalc = selected_Lmax – 20log(D/50) - shielding (1)

where

selected_Lmax is the "Spec" or "Actual" maximum A-weighted sound level at 50 ft., listed in Table 1 for all pieces of equipment, in dBA,
D is the distance between the equipment and the receptor, in feet,
shielding is the insertion loss of any barriers or mitigation, in dBA (see Appendix A).

Leq = LmaxCalc + 10log(U.F.%/100) (2)

where

U.F.% is the time-averaging equipment usage factor, in percent (see footnote 1 on p 7).

L10 = Leq + 3 dBA adjustment factor (3)

The RCNM calculates L10 by adding 3 dBA to the Leq, where the 3 dBA default L10 adjustment factor was empirically derived by comparing extensive CA/T construction noise data. This adjustment factor may be changed in the RCNM at the user's discretion.

5.2 Exceedance Calculation

Daytime Lmax Exceedance = LmaxCalc – Daytime Lmax Limit (4)

Daytime Leq or L10 Exceedance = Leq or L10 – Daytime Leq or L10 Limit (5)

Evening Lmax Exceedance = LmaxCalc – Evening Lmax Limit (6)

Evening Leq or L10 Exceedance = Leq or L10 – Evening Leq or L10 Limit (7)

Nighttime Lmax Exceedance = LmaxCalc – Nighttime Lmax Limit (8)

Nighttime Leq or L10 Exceedance = Leq or L10 – Nighttime Leq or L10 Limit (9)

5.3 Totals Calculation

The Total values in the Results section are determined in the following manner:

1) Total Leq = 10*log(Σ (individual equipment Leq values[3]))
2) Total L10 = 10*log(Σ (individual equipment L10 values[3]))
3) Total Lmax = Maximum among individual equipment Lmax values
4) Total noise limits and limit exceedances:
    a. Determine whether or not total is impact or non-impact
        i. If all the equipment is non-impact, label the total as non-impact.
        ii. If all the equipment is impact, label the total as impact.
        iii. If the equipment is mixed non-impact and impact, label the total as non-impact.

    b. Determine total noise limits and limit exceedances the same way as with individual pieces of equipment (see Section 5.2), only use the calculated total sound levels (Total Leq or Total L10) and the impact or non-impact label according to the criteria specified in i through iii.

[3] The Leq and L10 levels are energy averages.

6 References

[1] Construction Noise Control Specification 721.560, Central Artery/Tunnel Project, Massachusetts Turnpike Authority, Boston, MA, 2002.

[2] Thalheimer, Erich. "Construction Noise Control Program and Mitigation Strategy at the Central Artery/Tunnel Project". Noise Control Engineering Journal, Vol. 48, No. 5, pp 157-165, September - October 2000.

[3] "Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety", Environmental Protection Agency, ONAC 550/9-74-004. Washington, DC, March 1974.

[4] "Power Plant Construction Noise Guide". Bolt, Beranek, and Newman Inc. and Empire State Electric Energy Research Corp., Report No. 3321. New York, NY May 1977.

Appendix A: Best Practices for Calculating Estimated Shielding for Use in the RCNM

This Appendix presents some simplified shielding factors for use in the RCNM. These suggestions are "rules of thumb" based on experience gathered by CA/T construction noise experts working in the field [2].

1) If a noise barrier or other obstruction (like a dirt mound) just barely breaks the line-of-sight between the noise source and the receptor, use 3 dBA.

2) If the noise source is completely enclosed OR completely shielded with a solid barrier located close to the source, use 8 dBA. If the enclosure and/or barrier has some gaps in it, reduce the effectiveness to 5 dBA.

3) If the noise source is completely enclosed AND completely shielded with a solid barrier located close to the source, use 10 dBA.

4) If a building stands between the noise source and receptor and completely shields the noise source, use 15 dBA.

5) If a noise source is enclosed or shielded with heavy vinyl noise curtain material (e.g., SoundSeal BBC-13-2" or equivalent), use 5 dBA.

6) If dilapidated windows are replaced with new acoustical windows, or quality internal or exterior storm sashes, use an incremental improvement of 10 dBA for an overall Outside-to-Inside Noise Reduction (OINR) of 35 dBA.

7) If work is occurring deep inside a tunnel using the "top-down" construction method (i.e. cover the tunnel work with concrete roadway decks to allow surface traffic and then excavate underneath the roof deck), use 12 dBA.

EXHIBIT

19

Comments on Drakes Bay Oyster Company Special Use Permit Environmental Impact Statement

Point Reyes National Seashore

Prepared for:
Draft EIS DBOC SUP c/o Superintendent
Point Reyes National Seashore
1 Bear Valley Road
Point Reyes Station, CA 94956

On behalf of:
Drakes Bay Oyster Company

Prepared by:
ENVIRON International Corporation
Seattle, Washington

Date:
December 9, 2011

A more transparent and meaningful evaluation would be to provide a quantitative matrix to show the acreage and relative percentage of sand and tideflats, or estuarine, intertidal, unconsolidated shore, and sand/mud wetlands (using the Cowardin classification system) and each of the other "wetland" types in the Estero that would be under cultivation under each of the action alternatives. It is uncertain why such an analysis was not provided when the NPS clearly has such GIS data available.

Furthermore, potential wetland changes or impacts should have been compared to the baseline condition, which for all intents and purposes should be with some level of shellfish cultivation. The conclusion for Alternatives B, C, and D of short-term minor adverse and long-term moderate adverse impacts on wetlands is an artifact of the intensity definitions used, misleading, and does not appear to be supported by the best available science.

F3. Identification of a Wetland – On pages 165 of the DEIS, the definition of a wetland is presented as such:

> *Areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. (33 CFR 328.3[b]; 40 CFR 230.3[t]).* AND
>
> *Lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water. For purposes of this classification, wetlands must have one or more of the following three attributes: (1) at least periodically, the land supports predominantly hydrophytes; (2) the substrate is predominantly undrained hydric soil; and (3) the substrate is nonsoil and is saturated with water or covered by shallow water at some time during the growing season of each year (Cowardin et al. 1979).*

It should be noted that, based on these definitions of a wetland, the lands have to be *transitional* between terrestrial and aquatic systems. The lands where DBOC has mariculture structures are below the high water mark, which is considered completely aquatic. According to Tom Moore, an associate marine biologist at California Department of Fish and Game, DBOC is not farming in a wetland. His response when asked by Kevin Lunny was, "No, Drakes Estero is subtidal…below the mean high tide." Therefore, any reference to wetland impacts in Drakes Estero in the DEIS should be deleted, as this is not a valid definition of a wetland. Additionally, because DBOC aquaculture is not within a wetland, it meets the *NPS Management Policies 2006* of "no net loss" of wetlands.

G Coastal Flooding

G1. FEMA Does not Recognize Drakes Bay as a Flood Zone – The DEIS section "Impact on coastal flood zones" in Chapter 4: Environmental Consequences, is entirely based on implementing policies associated with protection of structures and facilities in a flood zone. However the flood zone was not mapped in that area by FEMA or any other federal agency even on the most recent FEMA maps (Flood Insurance Rate Maps (FIRM) 06041C0210D and 06041C0205D, FEMA 2009). FEMA usually designates even potential flooding in a coastal zone as Zone V, or similar zone (VE). The National Flood Insurance Program (NFIP) usually implements and adopts FEMA procedures. The NPS states that the FEMA map was not "available". FEMA does not map certain area, until it confirms through different sources and through detail hydrologic and hydraulic analyses the extent of the aerial flooding. That has not been confirmed for the Schooner Bay area of the Drakes Bay area.

The Executive Order 11988 on Floodplain Management allows any federal agency to make determination of the location of the floodplain based on the best available information.

However, the entire mapping and all of the consecutive conclusions in the DEIS were entirely based on only one storm of March 20, 2011 (pages 194-196 of the DEIS), with an unknown frequency, and conclusions were extrapolated from measurements taken at Bolinas Bay, a site 17 miles away. It was assumed by NPS that this storm, which was approximately a 100-year storm for Bolinas Bay, is similar to a 100-year storm for Drakes Estero.

The NPS is based on an unreliable methodology with a high potential for error. There are two problems with the extrapolation that NPS used in their evaluation: (1) the evaluation was based on only one storm recorded 18 miles away; and (b) there is significant change in bathymetry and shoreline between Bolinas Bay and the Drakes Bay area. Therefore, local conditions in between the two bays can significantly influence tidal and storm surge signatures. To be completely certain in this evaluation, the 100-year storm recorded at Bolinas Bay should have had at least 18-mile radius, covering both bays during the recorded event. Also, and again, 18 miles is significantly long distance, where it is possible for bathymetry and shoreline to substantially change. What if that was a 200-year storm? Would the consecutive floodplain mapping still be applicable? Impacts from different management actions entirely based on this mapping would simply be invalid.

A better methodology, with less potential for error, would be for NPS to collect tidal measurements simultaneously at Bolinas Bay, at Drakes Bay, and at another location midway (i.e., 9 miles from each site). Tidal signatures should be recorded throughout winter season in order to record changes in water level at these locations during several significant storms, which would preferably include a 100-year storm, 20-year storm, and an average annual storm. In that way, a correct relationship could be developed for different ranges of water levels during different storm events at these locations.

H Noise

H1. Background Sound Levels Misrepresented and Understate Existing Conditions – The NPS DEIS used the median daily sound level (i.e., the median L_{50} from 30 days of measurements) to represent the existing condition. The L_{50}, while a sometimes somewhat meaningful metric indicating the sound level exceeded ½ the time of a measurement period, is not particularly meaningful in this context for establishing an existing level against which to compare facility noise because ½ the time the measured sound levels were higher than reported. A more useful and representative metric would be the 30-day equivalent sound level (L_{eq}, or sound energy average) because the L_{eq} considers sound energy and duration of all noise events. It is therefore more useful for comparison purposes. The 30-day L_{eq} measured by Volpe was about 6 dBA higher than the 30-day L_{50} (Volpe 2011, Table 2, page ES-23), so comparing the existing L_{eq} to facility-related noise would change the conclusions of the analysis. In addition, the DEIS included discussion of only the summertime L_{50} while the available data included information for winter, and the measured wintertime 30-day L_{eq} and L_{50} were both about 2 dBA higher than the respective summer levels. Available data also include daytime-only L_{eq}s, which would better represent the period of DBOC operations that could be used for comparison with calculated facility-related noise to provide a more representative context. The data presented in the DEIS are incomplete and misrepresentative of the existing soundscape, and appear to have been selectively chosen to indicate lower existing sound levels that then artificially inflate the potential impact of DBOC operations noise. This flawed approach should be rectified to present a more complete and genuine discussion of existing noise sources and levels.

H2. Used Data from a Single Sound Level Measurement in the Vicinity to Estimate Existing Ambient Levels Throughout The Large Study Area (Volpe 2011) – The DEIS noise impact assessment was based on the assumption that a single sound level measurement (SLM location #4, see Figure H-1) provided an adequate representation of existing ambient levels throughout the large study area. Measured ambient sound levels at this location do not account for traffic noise on Sir Francis Drake Blvd., and so may understate ambient levels near this road, i.e., in the northern end of study area. A comprehensive noise impact assessment would include additional specific data regarding both sound levels and sources throughout the area for which impacts are being assessed.

Figure H-1. Drakes Estero Area Showing DBOC Facility Location and Volpe SLM Location #4

H3. DEIS Omitted Adequate Description of Existing Sound Sources as Documented In Volpe SLMs – The Volpe report provided a breakdown of observed noise sources, noted percentage-of-time contributions from aircraft, and indicated aircraft noise was audible more than 10 percent of the time (i.e., 13% summer; 18% winter; Table 3, page ES-24, Volpe 2011), which was the percent time contribution used as indication of "major" noise impacts from DBOC sources. But the DEIS ignored this fact and included no discussion of aircraft noise or the fact that it would remain a substantial contributor to the future soundscape, with or without DBOC. Because aircraft noise is already a substantial contributor to the existing soundscape in the study area and is unlikely to decrease in the future, even entirely removing DBOC-related noise from the area might have much less of an effect in restoring the natural soundscape than suggested in the DEIS noise analysis. The implications of aircraft noise versus DBOC noise for the future "restored" soundscape must be fully analyzed and explained if the conclusions of the noise impact assessment of the alternative future actions are to be believable.

H4. The DEIS Noise Analysis Substantially Exaggerates Noise from all DBOC-Related Sources, Invalidating Conclusions Based on This Analysis – The DEIS noise analysis relied on estimates from a library of sound level data to represent DBOC sources of concern. But there is a very small population of equipment involved that could have been easily and specifically quantified to provide more accurate results. As documented below, the sound source estimates used in the DEIS grossly overstated noise levels from DBOC equipment, thereby discrediting the conclusions derived from this flawed analysis.

On November 22, 2011 ENVIRON staff visited the DBOC facility and took direct sound level measurements of the noise sources identified in the DEIS and one that was not. ENVIRON used a B&K 2250 Type 1 sound level meter to both measure the sound levels and to record audio samples of the sources of interest during the measurements. These data were subsequently downloaded to a computer for aural and numeric analysis. The results of these measurements are summarized in Table H-1. Photos of the noise sources and graphic summaries of the measurement data are presented in the Noise Attachment (Attachment B).

Table H-1. DBOC Source Noise Sound Levels Reported in DEIS and Actual (dBA)

Equipment	NPS Reported Sound Level [a]	Measured Source Noise Levels			Overstated Factor [b]
		Duration	Fast Lmax	Leq	
Motorboat #1	71	15 seconds	63.4	60.1	12
Motorboat #2	71	30 seconds	61.7	58.2	19
Frontend Loader [c]	79	4, 30-seconds	67 - 68	64 - 65	25
Pneumatic Drills [d]	85	≈ 1 minute	77.5 / 79.7	70.4 [e]	29
Oyster Tumbler	79	2 minutes	59.4	49.8	825
Air Compressor [f]	Not considered	72 seconds	N/A [g]	58.0	

[a] Levels reported in the DEIS and used in the noise impact assessment. No metrics or time intervals for the source noise levels were reported. But because these levels were used to estimate exposure over time and because it would not make sense to use the Lmax for this purpose (because the fast Lmax is a 1/8-second sound level), ENVIRON interprets these levels as source noise Leqs.

[b] The "overstated factor" is the number of sound sources emitting an Leq as measured that it would take to generate the sound level used to represent this source in the DEIS noise analysis. For example, it would take 12 boats like DBOC boat #1 all operating in the same location and emitting a passby Leq of 60.1 dBA to generate the 71 dBA Leq that was used in the noise assessment reported in the DEIS.

[c] The small frontend loader, which is used to move empty shells into piles, was reported in the DEIS as a "forklift." The levels reported here are for four passby event SLMs.

[d] Due to space constraints, only one of the two pneumatic drills used at the facility was measured, twice. The other drill is identical and used in the same fashion, so the sound levels would be the same.

[e] The measured Leq for a single pneumatic drill was 67.4; assuming two drills were working at the same location simultaneously results in an Leq 3 dBA higher, as reported here.

[f] The air compressor that provides air to power the pneumatic drills was not considered in the DEIS. The compressor is housed inside a building, so except for openings within the building, noise from this source is already partially controlled and could be even more effectively quieted with a more complete enclosure.

[g] The compressor runs only occasionally, and when it does, produces a constant sound level. The Lmax metric is therefore not pertinent to this source.

Source: Sound level measurements by ENVIRON International Corporation, 2011

As shown in Table H-1, all of the estimated equipment noise levels used in the noise impact assessment presented in the DEIS substantially exaggerated noise from DBOC operations. Every single one of the estimated source noise levels was too high by factors ranging from 12 to 825. This fact invalidates the noise impact assessment presented in the DEIS and requires a completely new and accurate analysis.

H5. Inadequate DBOC Noise Impact Assessment – The noise impact assessment presented in the DEIS does not constitute use of "best science available to determine impacts" as required by Director's Order #47 (No. 7 Defining Impacts on Park Soundscapes) ("Soundscape Preservation and Noise Management," Director's Order #47, Washington, DC: National Park Service, December 2000; cited in Volpe, 2011 to define soundscape).

The noise analysis did not consider the duration of noise exposure from the intermittently operated sources related to DBOC operation, but simply assumed that roughly estimated hours of operation of various activities equated to hours of exposure at all possible locations. So there was no consideration of variability of noise from DBOC sources and especially mobile sources (i.e., small motor boats and the frontend loader). This overly simplistic approach may have grossly overstated DBOC-related noise impacts, and given the severity of the resulting conclusions, this simple approach cannot be justified. In addition, the combination of this simplistic methodology with the vastly exaggerated equipment noise levels used in the analysis (see comment H4) provides a completely unfair and inadequate assessment of potential noise impacts from the facility. An adequate analysis will require use of a noise model to simulate DBOC sound source activities at specific locations over the course of a day to develop noise isopleths that can be compared with new estimates of existing sound levels. NPS should provide a comprehensive and accurate noise impact assessment using a noise model that employs standard accepted calculational practices.

H6. No Consideration of Possible Noise Control Measures that could be Employed to Significantly Reduce DBOC-Related Noise if Needed – Possible noise control measures were not even mentioned in the DEIS, must less evaluated for potential effectiveness. This lack of an adequate evaluation of potential means to control any actually problematic noise sources again grossly overstates DBOC noise levels that could be achieved with effective controls. If a complete and accurate analysis indicates noise reductions are in fact needed to avoid impacts, some DBOC sources could be very simply and effectively controlled to reduce the potential for impact.

The NPS approach that did not consider possible control measures to reduce or eliminate identified noise impacts is not consistent with Director's Order #47 (No. 6 Establishing Soundscape Preservation Objectives) (a) which says, "the soundscape management goal [in the event of authorized noise sources] would be to reduce the noise to the level consistent with the best technology available – to mitigate the noise impact, but not adversely affect the authorized activity." The DEIS noise assessment ignored this directive and concluded that the only possible means of controlling noise was the total elimination of the DBOC noise sources. This is an inappropriate approach.

Excluding any consideration of means for reducing DBOC noise is also inconsistent with Director's Order #47 (No. 8 Constructive Engagement) which says that in addressing noise that has been found to be "inappropriate" that "Superintendents must work constructively and cooperatively with those responsible for inappropriate sources of noise in parks…" Such a cooperative effort to identify and, if needed, to reduce facility-related noise, has never been seriously attempted as mandated by this order. Cooperative discussion with DBOC should be included as part of the revamped noise impact assessment.

I Recreation

I1. The DEIS Distorts the Recreational Benefit of the Oyster Farm Itself by Evaluating Visitors to DBOC as a Share of the Total Number of Visitors to the Seashore – The DEIS determines that alternatives B, C, and D, those alternatives where DBOC would remain in operation, would have a "long-term moderate adverse impact on visitor experience and recreation". There is no discussion of the loss of unique recreation and education opportunities that would occur if DBOC were forced to close. DBOC is open from 8:30 am to 4:30 pm every day and receives approximately 50,000 visitors each year. DBOC is the only oyster farm in California permitted to allow visitation and regularly provides tours to school groups at no cost. Visitors are able to go on interpretive tours of the last oyster cannery in California, purchase oysters for consumption, and picnic onsite. Furthermore, undergraduate and graduate students from local universities come to DBOC for coursework and research purposes. The DEIS states that the continued operation of the oyster farm would disrupt the wilderness experience of the Seashore but does not reflect on the visitors to the Seashore that appreciate viewing a working aquaculture farm. Many visitors see the oyster farm as a vital part of their visit to the Seashore as demonstrated in the letter provided by the operators of the local kayak companies.

I2. DBOC Recreation Experience Discredit – On pages 212-214, Chapter 3, Visitor Experience is described. The discussion includes an analysis of why DBOC does not meet the definition of a visitor service. The section also includes an explanation of several different types of visitor experiences at the Seashore but minimizes the visitor experience of the DBOC. This is accomplished by disregarding the importance of the tradition of visiting the DBOC, the importance of acquiring fresh oysters which is an experience not otherwise available in the vicinity, and by suggesting that the experiences of the 50,000 annuals visitors is not statistically significant.

J Culture

J1. Affected Environment Shortcoming – On page x of the Executive Summary, the following statement is made: "Dismissed topics include vegetation, lightscapes, air quality, climate change and greenhouse gas emissions (carbon footprint), geological resources, paleontological resources, cultural resources, and environmental justice." Pursuant to 40 CFR 1502.15, the "Affected Environment" section of an EA or EIS should provide background information on the prehistory and history of the area and describe known historic and cultural resources that may be affected by the project. This should entail the inclusion of a Cultural Resources section describing the prehistoric context, the ethnographic setting, an historical background, known cultural resources present in or near the project area vicinity, Indian Trust Assets, and Native American consultation. The historical background review should include the wide-ranging local, regional, and national effects that the DBOC has had.

Chapter 3 of the DEIS provides sections describing the affected environment but fails to include a section on Cultural Resources. On page 155, the DEIS states "The 'Affected Environment' chapter describes the Drakes Estero environment; relevant physical and biological processes within Drakes Estero; and the existing conditions for those elements of the natural, cultural, and social environment that could be affected by the implementation of the actions considered in this DEIS. The impact topics addressed in this DEIS include wetlands, eelgrass, wildlife and wildlife habitat, special-status species, coastal flood zones, water quality, soundscapes, wilderness, visitor experience and recreation, socioeconomic resources, and NPS operations. Impacts for these impact topics are analyzed in 'Chapter 4: Environmental Consequences.'" Cultural resources were identified by NPS staff and

EXHIBIT

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Assessment of Photographs from Wildlife Monitoring Cameras in Drakes Estero, Point Reyes National Seashore, California

By William A. Lellis, Carrie J. Blakeslee, Laurie K. Allen, Bruce F. Molnia, Susan D. Price, Sky Bristol, and Brent Stewart

Open-File Report 2012–1249

U.S. Department of the Interior
U.S. Geological Survey

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Assessment of Photographs from Wildlife Monitoring Cameras in Drakes Estero, Point Reyes National Seashore, California

By William A. Lellis,[1] Carrie J. Blakeslee,[1] Laurie K. Allen,[1] Bruce F. Molnia,[1] Susan D. Price,[1] Sky Bristol,[1] and Brent Stewart[2]

Background

Between 2007 and 2010, National Park Service (NPS) staff at the Point Reyes National Seashore, California, collected over 300,000 photographic images of Drakes Estero from remotely operated wildlife monitoring cameras. The purpose of the systems was to obtain photographic data to help understand possible relationships between anthropogenic activities and Pacific harbor seal (*Phoca vitulina richardsi*) behavior and distribution.

The value of the NPS photographs for use in assessing the frequency and impacts of seal disturbance and displacement in Drakes Estero has been debated. In September 2011, the NPS determined that the photographs did not provide meaningful information for development of a Draft Environmental Impact Statement (DEIS) for the Drakes Bay Oyster Company Special Use Permit. Limitations of the photographs included lack of study design, poor photographic quality, inadequate field of view, incomplete estuary coverage, camera obstructions, and weather limitations.

The Marine Mammal Commission (MMC) reviewed the scientific data underpinning the Drakes Bay Oyster Company DEIS in November 2011 and recommended further analysis of the NPS photographs for use in characterizing rates and consequences of seal disturbance (Marine Mammal Commission, 2011). In response to that recommendation, the NPS asked the U.S. Geological Survey (USGS) to conduct an independent review of the photographs and render an opinion on the utility of the remote camera data for informing the environmental impact analyses included in the DEIS.

In consultation with the NPS, we selected the 2008 photographic dataset for detailed evaluation because it covers a full harbor seal breeding season (March 1 to June 30), provides two fields of view (two cameras were deployed), and represents a time period when cameras were most consistently deployed and maintained. The NPS requested that the photographs be evaluated in absence of other data or information pertaining to seal and human activity in the estuary and that we focus on the extent to which the photographs could be used in understanding the relationship between human activity (including commercial oyster production) and harbor seal disturbance and distribution in the estuary.

Photograph Analysis

The NPS provided 333,042 digital photographs of the Drakes Estero taken by remote cameras between 2007 and 2010. These same photographs are available to the public on the Point Reyes

[1] U.S. Geological Survey
[2] Hubbs-Seaworld Research Institute, San Diego, Calif.

National Seashore Reading Room Web site (NPS Reading Room, 2012; Web address listed in References Cited). Included in the collection were 165,282 photographs taken in 2008 from two sites within Drakes Estero: 100,457 from a site referred to as the Upper Estero Far (UEF) and 64,825 from a site referred to as the Oyster Bar (OB). These photographs were taken between March 14 and June 23, 2008, at an interval of one per minute during daylight hours (approximately 720 photographs per day at each site). Some of these photographs were duplicates.

Our initial plan was to analyze a random subsample of 10 percent of all 2008 photographs and assess each individual photograph for quality and information that could be used to study seal disturbance and displacement. Such information would include photograph clarity and resolution, obstructions, field of view, light, weather conditions, stage of tide, presence and number of seals, human activity, nonhuman activity, and evidence of seal disturbance. Seal disturbance was classified as head alert (increased vigilance), flushing on land (change in position), or flushing into water (abandon site). (See Marine Mammal Commission (2011, p. 13-16) for additional discussion.)

Initial review of a portion of the intended subsample indicated that many photographs were of no obvious value to understanding seal behavior during haulout because of inadequate light, inadequate observing conditions due to weather (fog, rain, wind), obstructions (plants), too wide a field of view, misdirection of camera, wrong tidal stage (no exposed sand bars for haulout), and (or) no seals within camera view (fig. 1). A smaller portion of the photographs contained potentially useful information such as exposed sandbars, presence of hauled out seals, and (or) potentially disturbing stimuli such as boats, people, birds, or other unidentified objects in the water, sky, or on land.

Within the photographs that contained hauled out seals, the distance of the camera from the seals was often too great, the angle of the camera too low to the water, and resolution of the photographs too low to allow an accurate count of the number of individual seals within groups hauled out on the sand. Nor was it possible, in most cases, to distinguish any behaviors among individual seals, such as head alerts, that could definitively be ascribed to increased vigilance in response to a stimulus. These same limitations also prevented determination of any distinguishing features that would allow for identification of specific boats or people, or activities in which they were engaged. Attempts to improve resolution through photographic enhancements were unsuccessful.

Video Analysis

Our initial approach of analyzing a random subsample of all photographs had two significant limitations. The first was that information contained within each photograph lacked the context of how it fit into events that occurred immediately before and after that moment in time. This lack of sequential information effectively prevented determination of seal flushing (change in number of seals over time) or the reasonable establishment of cause and effect between seal behavior and human or nonhuman activity. The second limitation was that examination of individual photographs was extremely time consuming and yielded little usable information for the given effort. As such, we changed our approach to animation of photographs into daily videos to allow more rapid screening and to add sequential context to each photograph.

To make the videos, we retrieved the 2008 photographs from the Point Reyes National Seashore Reading Room Web site using a utility that can copy a site's pages, images, movies, and other files. Each image on the Web site was dated and time-stamped. Although the NPS cameras were programmed to take one photograph every minute for 12 hours (720 photographs per day), camera malfunction, battery failure, changes in camera programming, or other technical issues resulted in some days containing more or less than 720 photographs. Missing photographs for specific dates and times were verified as nonexistent with Point Reyes staff.

After retrieval, we added the file name to each image as a watermark and imported the files into Apple iPhoto for production. The interval between frames (that is, photographs) was set to 1 second with no transition effects, in order to create a time-lapse style video. No photographs were edited from their original form or deleted during production. Videos were exported as MPEG4 files, which retained each photograph's original resolution. All videos can be downloaded from the USGS Applied Earth Systems Web site (Web address listed in References Cited).

Each video was reviewed by at least two observers working together to identify and record data of possible interest in an analysis of seal disturbance, including time of day when the sand bars appeared and disappeared, time of day when seals hauled onto or left a sandbar, human activity when seals were present, nonhuman activity when seals were present, and any abrupt changes in the size or location of a group or the number of seals hauled out on a sand bar. Within each video, human activity was recorded only during times when seals were hauled onto sandbars (that is, boat traffic was not recorded during high tide or when seals were not present on the sand bars).

In total, we produced 191 videos from the 2008 photographic collection (103 UEF, 88 OB). No hauled out seals were detected in any of the UEF videos, because of low resolution and wide field of camera view, so we conducted no further analyses of those pictures. Within the OB videos, we identified 75 different events (appendix 1) in which human activity was visible in the photographs while seals were hauled out, or there was an unusual amount of nonhuman stimuli (birds), or there was a sudden change in the number or position of hauled seals. Human activity during seal haulout included boats (44 events, 34 of which had people visible on the sand bars while the boat was stationary), camera maintenance (21 events), and kayaks (2 events). We detected camera service by either a change in camera angle or a reset in the image number during a daily photograph sequence.

Photographic sequences of each event, plus the 10 photographs before the start of each event and the 10 photographs after the end of each event (3,140 photographs total) were analyzed for incidence and cause of seal disturbance. Ten of the 75 events were classified as containing behaviors indicative of disturbance in the form of flushing (table 1, figs. 2-11, appendix 1). Two flushing events were associated with the presence of a kayak, two were associated with birds landing in the area, two were associated with boat activity, and four occurred when no obvious stimuli were visible within the field of view of the camera.

Scientific Value

Using the analysis we conducted of the 2008 Drakes Estero photographs as a representative sample of all 4 years of monitoring, we considered the scientific value of these photographs without other supporting information for use in analyses to determine the impacts of human and nonhuman activities on seal habitat, displacement, or disturbance.

Habitat

Fitness is defined as a measure of an individual seal's ability to survive and reproduce and is influenced by many factors, including suitable haulout habitat for resting, molting, and reproduction, particularly for females and pups during the spring breeding season (Marine Mammal Commission 2011, p. 13). Suitable haulout sites provide quick access to deep water for shelter, protection from storm events and predators, and minimization of disturbance and harassment. In that regard, monitoring cameras can provide site-specific information on habitat persistence over time; physical impact of weather, storms, and waves; occupancy rate; frequency and severity of harassment from predators such as coyotes and elephant seals; frequency and severity of disturbance from human and nonhuman

sources; and a general sense of degree of comfort seals have with a site (degree to which they maintain a resting position during haulout).

The 2008 Drakes Estero photographs can provide information on habitat persistence and use at the OB site. The photographs have adequate resolution, time and date-stamping, field of view, and span of operation to determine daily timing and duration of sand bar exposure, storm damage and wave conditions, frequency and timing of site usage, and how weather and tidal cycles affect site occupation. Data on sand bar exposure could be related to local tidal gages to develop predictive models of daily habitat timing and availability within the estuary.

Limitations of the 2008 photographs for habitat monitoring include lack of information during darkness, limited information during low visibility conditions such as fog, inconsistent or limited ability to count animals or estimate age for use in occupancy estimates, lack of information on concurrent use of other haulout sites, and inadequate resolution to identify specific predators on land or in the water (see 3/31/08 and 5/1/08 in appendix 1). Habitat monitoring could be improved by installation of high-definition cameras, multiple cameras with different focal lengths and field of view, and cameras capable of detecting animals during darkness.

Displacement

Displacement is defined as the avoidance of an otherwise preferred haulout site based on experience or perception of a possible threat (Marine Mammal Commission, 2011, p. 15). The 2008 OB monitoring camera provides a view of an area that simultaneously contains both hauled seals in the foreground and human activity in the form of boat traffic in water and foot traffic on submerged and exposed sandbars in the background. No seals were observed to be hauled out at any time in the area of human traffic in the photographs examined during this analysis. Thus, two questions on seal displacement can be raised for this site: are seals being completely displaced from the distant sandbars due to direct human activity and are seals being partially displaced from the closer sandbars due to indirect human activity? Answering these questions requires accurate counts of hauled seals over time and distance and a means of comparing occupancy rates during periods of human activity and no human activity.

Wildlife monitoring cameras can be used to study displacement by providing data on seal abundance and distribution over time in the presence and absence of human activity. The resolution of the 2008 OB photographs, however, is too low to provide consistently accurate counts of individual seals for this purpose. In addition, resolution diminishes with distance from the camera, thus creating an inherent bias to detect more seals in the foreground (site of haulout) than in the background (site of human activity). Monitoring to study seal displacement could be improved by installation of higher resolution cameras with greater image capture rate to increase accuracy of seal counts and by installation of cameras at multiple locations or with different focal lengths to remove distance sampling bias. Implementation of a statistically valid experimental design that controls human activity relative to variations in seal haulout activity over season, tide, and weather would also improve accuracy of displacement studies.

Disturbance

Disturbance is defined as an event or stimulus that alters a seal's behavior or use of estuary habitat for resting, molting, or reproduction (Marine Mammal Commission, 2011, p. 13). Disturbed seals may show a continuum of responses to disturbance, including vocalizations, increased vigilance such as raised head (head alert), change in position on land (flush toward water), flush into water and return, and flush into water and not return (abandon site).

The 2008 OB photographs lack sound, so they do not provide any information on vocalizations. Within some photographs, there is enough resolution to detect changes in head position in individual seals (see OB-05-15-08 IMG_ 1599-1601). However, the ability to detect change is inconsistent across photographs and position of seals within the photographs, so for practical purposes the resolution is too coarse in the 2008 OB photographs to document the more subtle indicators of seal disturbance. The photographs can be used to document the more coarse indicators of disturbance, including flush toward water (see OB-06-11-2008 IMG_1155-1158), flush into water and return (see OB-04-13-2008 IMG_2190-2219), and abandon site (see OB-03-31-2008 IMG_0018-0050). Documentation of disturbance events would be greatly enhanced with increased resolution and multiple camera angles.

Within the 2008 OB videos, we identified 10 incidents of seal disturbance that involved a flushing event (table 1, figs. 2-11, appendix 1). This does not include all incidents of disturbance, because we could not include vocalizations, nor could we consistently detect head alerts and other postural changes indicating increased vigilance. It is also possible that we missed incidents of flushing, particularly those involving changes in position on land within large groups of seals at distances farthest from the camera.

Correlation of these flushing events with specific stimuli was difficult due to lack of associated sound, coarse resolution, and limited field of view on land, water, and air. Three types of stimuli that could be directly connected, or at least associated with a flushing level of disturbance in the OB seals are kayaks passing in proximity (see OB-04-13-2008 IMG_2186-2200 and OB-04-13-2008 IMG_2218-2224), seabirds landing among or close to the seals or passing nearby (see OB-04-14-2008 IMG_0354-0359 and OB-04-23-2008 IMG_1315-1322), and boat traffic at nearby sandbars (see OB-05-15-2008 IMG_1590-1605 and OB-06-11-2008 IMG_1153-1163). However, there are numerous incidents of increased seabird activity in the photographs with no indication of flushing-level disturbance to seals. We recorded 40 incidents of boat visits to the adjacent sandbar (many with related foot traffic) that did not seem to cause a flushing-level disturbance in the hauled seals, and at times there are multiple sources of potential disturbance stimuli occurring simultaneously. We found no evidence that activities related to maintenance of the remote camera system directly caused any flushing-level disturbances in the seals, although the relationship between camera maintenance and bird movement could not be ascertained by these photographs.

Conclusions

Based on our analysis of 165,282 photographs taken in 2008 from two remote cameras within Drakes Estero, we conclude that the protocols used by the NPS camera monitoring program did provide some data that could be used to document gross haulout patterns of seals and some instances of reactions to potential stimuli in the Drakes Estero. Data are limited to seal use of the Oyster Bar site related to time, tide, and weather and to some coarse detection of disturbance as measured by flushing of seals from resting positions toward or into the water. The length of time that seals abandoned the haulout sites after flushing could also be quantified in these photographs.

Camera focus was generally too poor and image resolution was too low to allow accurate counting or aging of seals or to provide enough anatomical detail to quantify postures associated with increased vigilance to potentially disturbing stimuli. The methods and equipment used did not allow discrimination between visual and auditory elements of potentially disturbing stimuli, and the field of view was too narrow to discriminate causation from correlation between seals and observed visual stimuli for most disturbance events. A wide-angle camera system with higher image resolution capabilities, or a network of linked high-resolution cameras coupled with audio recording systems would help determine whether movements or subtle changes in the behavior and posture of harbor seals

is directly caused by human disturbance. The systems would also provide better opportunities for recording normal haulout patterns and behaviors.

Direct monitoring by on-site observers would allow better documentation and evaluation of seal behaviors and the variables that influence them, provided that the observers themselves do not create additional potential for seal disturbance, such as flushing of birds into the seal haulout area. A video and audio monitoring system that could broadcast continuously by radio frequency, cellular telephone, or satellite to a remote site would reduce the chances that operation of photographic equipment could confound the observations. That system would need to resolve the same issues of focus, field of view, angle, and resolution that have limited the utility of the time-lapse camera system used in 2008.

The first order limitation of all these methods is that they only document the brief response or non-response of harbor seals to a single potentially correlative stimulus. Larger scale questions on the significance of disturbance events to seal behavior within Drakes Estero, or the relationship of localized seal disturbances to overall population structure and viability, require rigorous investigation and hypothesis testing. If hypothesis testing and discrimination of causation from correlation is the intent of further effort at Point Reyes, then development of a more rigorous and comprehensive study design to incorporate several behavioral and environmental monitoring methods is needed.

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Table 1. Flushing events of Drakes Estero seals identified in 2008 National Park Service photographs. Videos can be retrieved from the USGS Web site (*https://my.usgs.gov/confluence/display/aesir/PRNS+Time+Lapse+Videos*), and image files can be retrieved from the NPS Reading Room Web site (*http://www.nps.gov/pore/parkmgmt/planning_reading_room_photographs_wmc_de_2008.htm*).
[m4v is a MPEG4 file; min, minute]

Date	Video File Name	Time	NPS Web site Folder	Image File Name	Notes
03/31/08	OB-03-31-2008-Large.m4v	1:57 p.m.	March 31-April 2	IMG_0026	Unidentified black object appears in single image (IMG_0023) 3 min prior to all seals flushing into the water; seals do not return to haulout site for the remainder of the tide.
04/13/08	OB-04-13-2008-Large.m4v	12:04 p.m.	April 10-April 14	IMG_2195	Kayak becomes visible in vicinity of seals at 11:55 a.m. (IMG_2186); 9 min later all seals flush into the water as kayak passes haulout site; seals return to site 6 min after flushing (IMG_2201.)
04/13/08	OB-04-13-2008-Large.m4v	12:32 p.m.	April 10-April 14	IMG_2223	Kayak becomes visible in vicinity of seals at 12:28 p.m. (IMG_2219); 4 min later all but 2 seals flush into the water.
04/14/08	OB-04-14-2008-Large.m4v	6:20 p.m.	April 14-April 17	IMG_0355	Unidentified birds land on sandbar at 6:19 PM (IMG_0354); 1 min later some seals flush into the water; some seals remain on sandbar
04/23/08	OB-04-23-2008_Large.m4v	1:14 p.m.	April 23-April 25	IMG_1319	Boat becomes visible at 1:09 p.m. (IMG_1314); people walk on sandbar; bird activity near seals increase; 5 min after boat becomes visible birds land on sandbar and some seals flush into the water; some seals remained hauled out during event.
05/06/08	OB-05-06-2008_Large.m4v	10:19 a.m.	May 5-May 7	IMG_0675	Boat becomes visible at approximately 8:57 a.m. (IMG_0593); many seals flush around 80 min later; some seals return within 10 min; boat remained on sand bar > 7 hours.
05/15/08	OB-05-15-2008_Large.m4v	2:07 p.m.	May 13 - May 15	IMG_1603	Boat becomes visible at 1:55 p.m. (IMG_1591); people walk on sandbar; boat leaves area at 2:06 p.m. (IMG_1602); some seals flush into water 1 min later.
05/31/08	OB-05-31-2008-Large.m4v	7:32 a.m.	May 29-June 2	IMG_0951	All but one seal flush into water; no visible human activity.
06/02/08	OB-06-02-2008-Large.m4v	7:11 a.m.	May 29-June 2	IMG_2370	All seals flush into water; no visible human activity; some seals returned to site approximately 1 hour later (IMG_2438)
06/11/08	OB-06-11-2008-Large.m4v	11:25 a.m.	June 9-June 12	IMG_1157	A portion of hauled seals flush toward water at 11:25 a.m., 3 min prior to boat arrival (IMG_1160); people seen walking on sandbar; seals remained hauled out during event.

Figure 1. Sample of photographs from Point Reyes monitoring cameras, 2008, showing different conditions in the estuary. A, Nighttime. B, Foggy. C, Windy. D, Calm, with grass obstruction, E, Exposed sandbars, no seals. F, Exposed sandbars with seals hauled out.

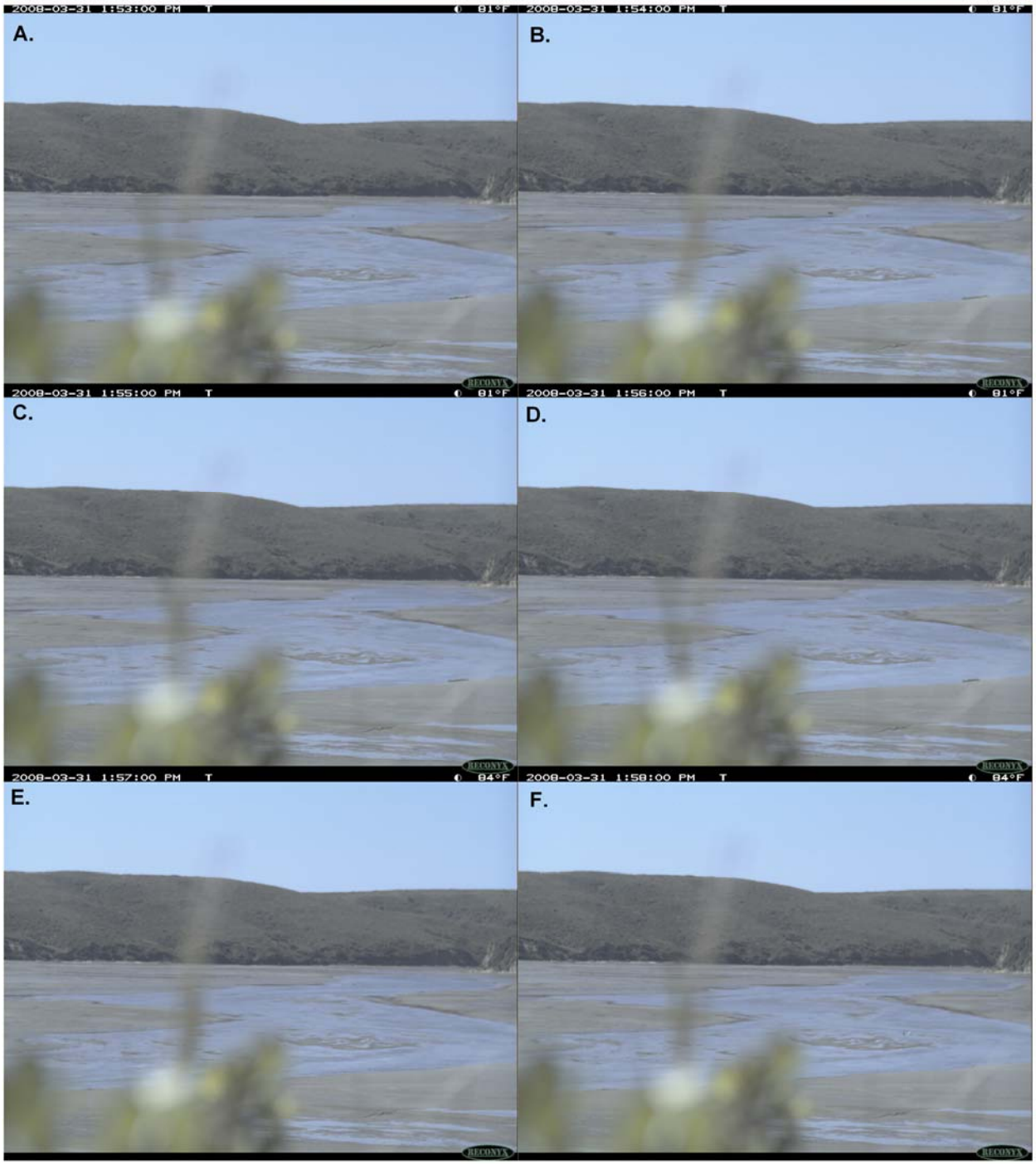


Figure 2. A series of photographs of a seal flushing event on March 31, 2008, at the Oyster Bar site within Drakes Estero. A, Seals hauled out onshore (lower right corner). B, Seals hauled out onshore with the appearance of an unidentified black object on the shore opposite to the seals. C, Black object is gone and seals remained hauled out. D, Seals remained hauled out. E, All seals flush from the haulout site. F, No seals evident. Photographs were taken at 1-minute intervals.

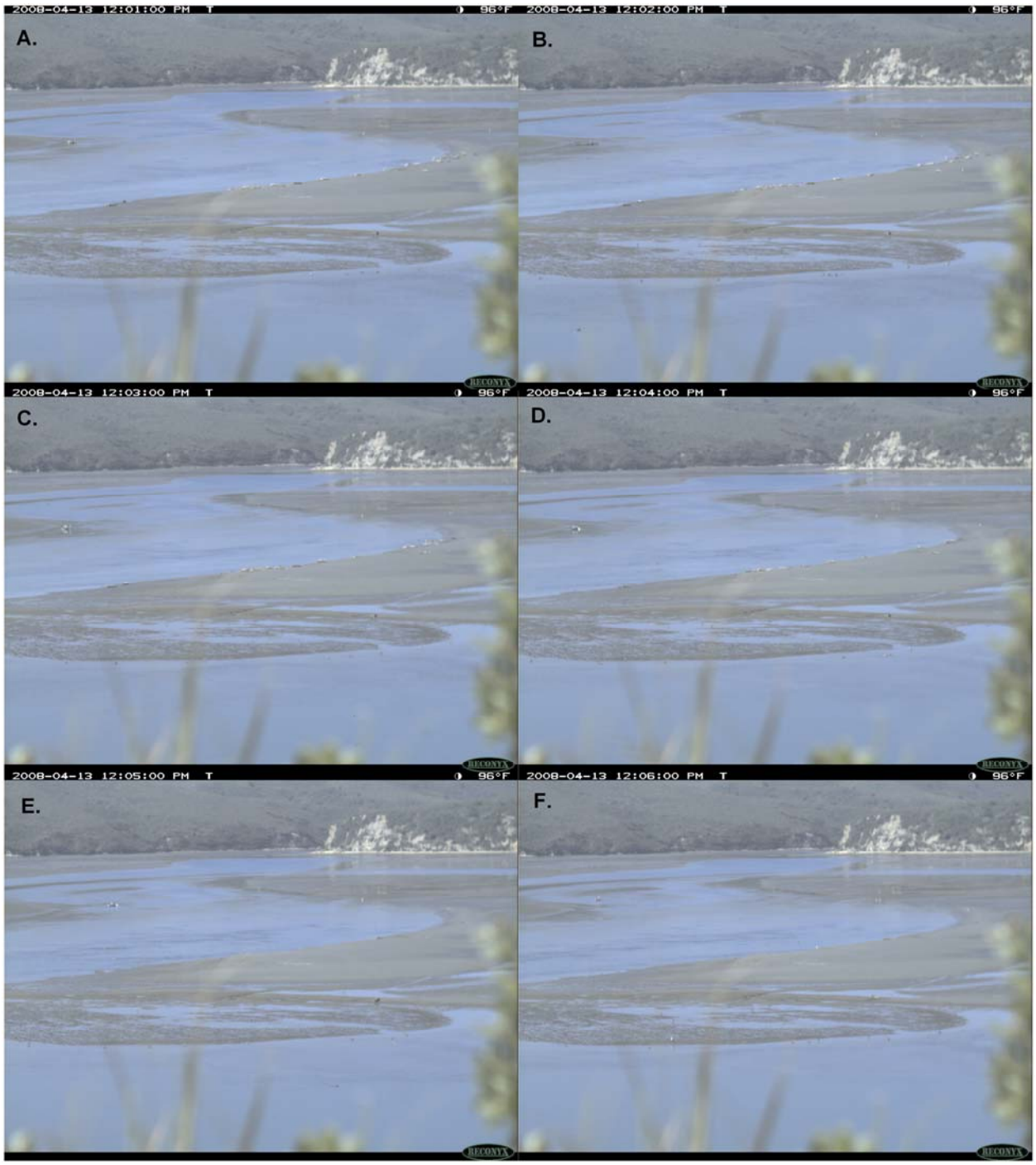


Figure 3. A series of photographs of a seal flushing event on April 13, 2008, beginning at12:01 p.m.at the Oyster Bar site within Drakes Estero. A, Seals hauled out along shore as a kayaker approaches. B, Seals remained hauled out as kayaker comes closer. C, Kayaker continues to approach hauled out seals without movement of seals. D, Some seals begin flushing from shore in the presence of the kayaker. E, All seals have flushed and kayaker remains in view. F, All seals remained flushed as kayaker leaves haulout site. Photographs were taken at 1-minute intervals.

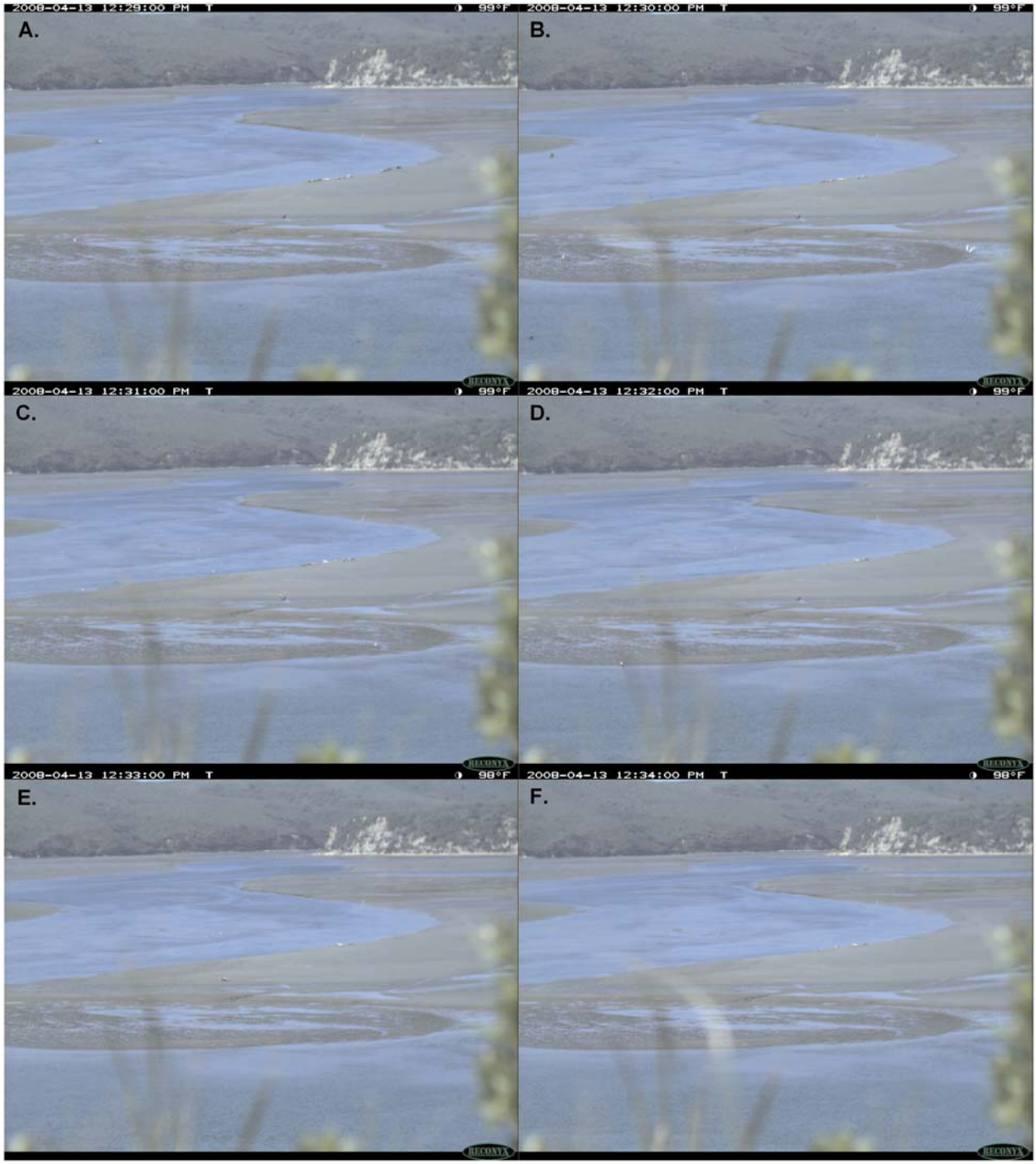


Figure 4. A series of photographs of a seal flushing event on April 13, 2008, beginning at 12:29 p.m. at the Oyster Bar site within Drakes Estero. A, Seals hauled out along shore as a kayaker approaches. B, Some seals begin to leave hauled out area as kayaker comes closer. C, Kayaker is no longer in view and seals continue to move. D, More seals have flushed into the water, with a few remaining seals hauled out. E, A few seals remain on shore. F, Some seals begin to return to haulout site. Photographs were taken at 1-minute intervals.

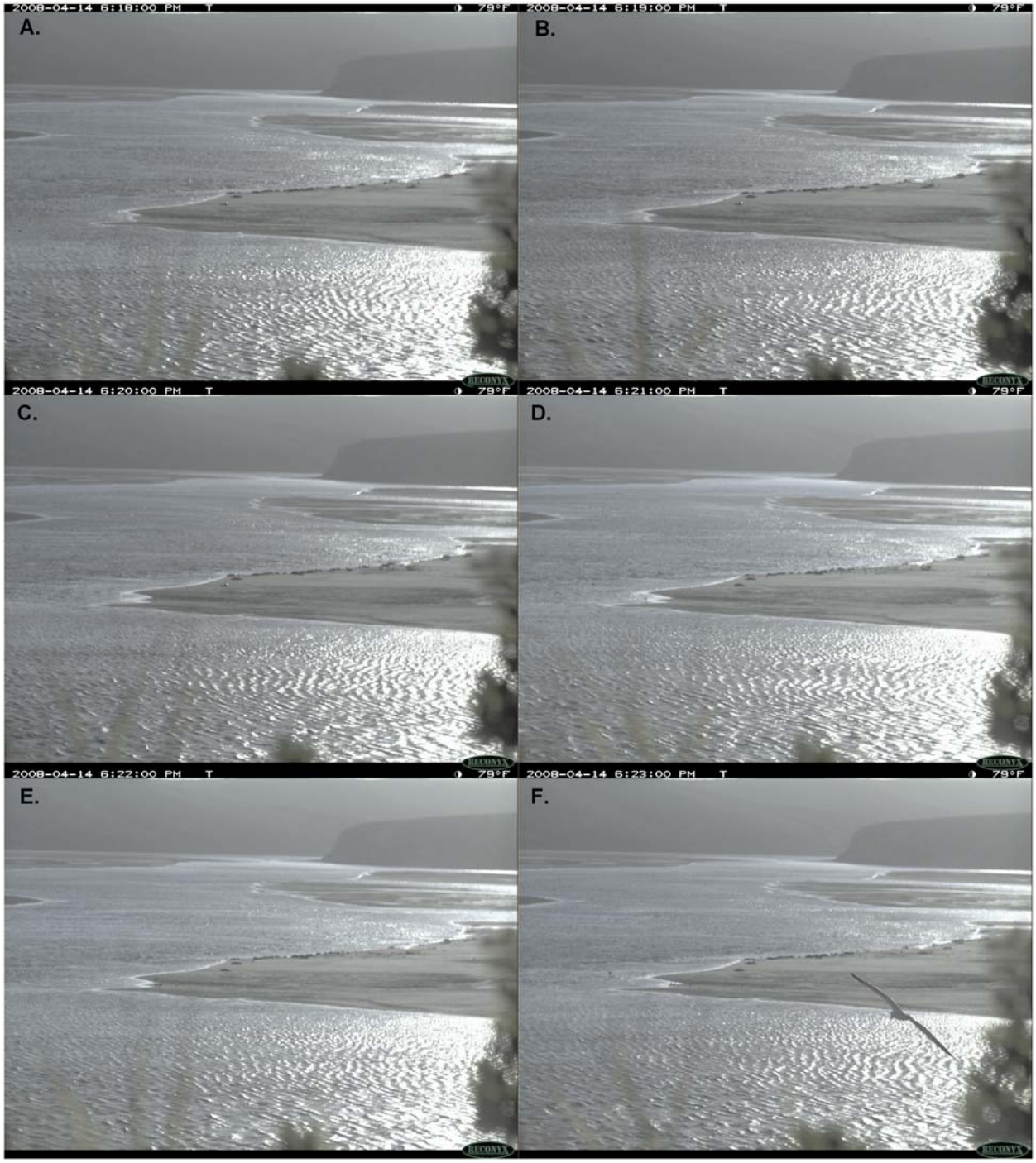


Figure 5. A series of photographs of a seal flushing event on April 14, 2008, at the Oyster Bar site within Drakes Estero. A, Seals hauled out along the shore. B, Seals still hauled out along the shore. C, Unidentified birds begin to land on sandbar near some hauled-out seals. D, A group of seals near the birds flush into the water. E, Birds remain on shore where some seals are still hauled out. F, Bird and seal activity does not appear to change. Photographs were taken at 1-minute intervals.

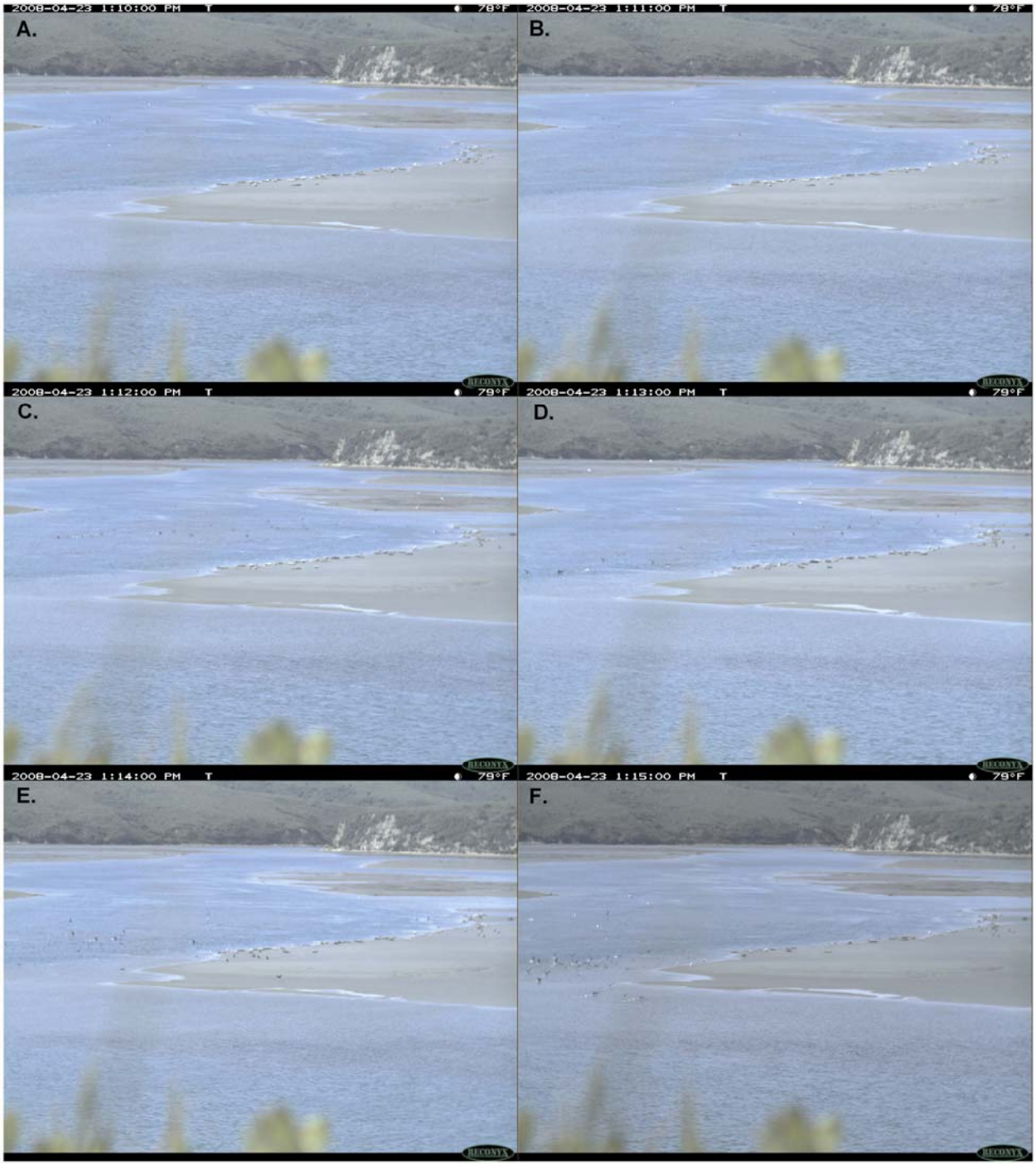


Figure 6. A series of photographs of a seal flushing event on April 23, 2008, at the Oyster Bar site within Drakes Estero. A, Seals hauled out along the shore while a boat with people associated with it is docked on the opposite channel (far upper left corner). B, Boat, people, and seal activity do not appear to change. C, Bird activity near the seals increases. D, Some birds land on the haulout site near the seals. E, Some seals begin to flush from the haulout site as birds continue to be active near and on the shore. F, More seals flush from the haulout site as bird activity continues (boat and people remain on opposite shore). Photographs were taken at 1-minute intervals.

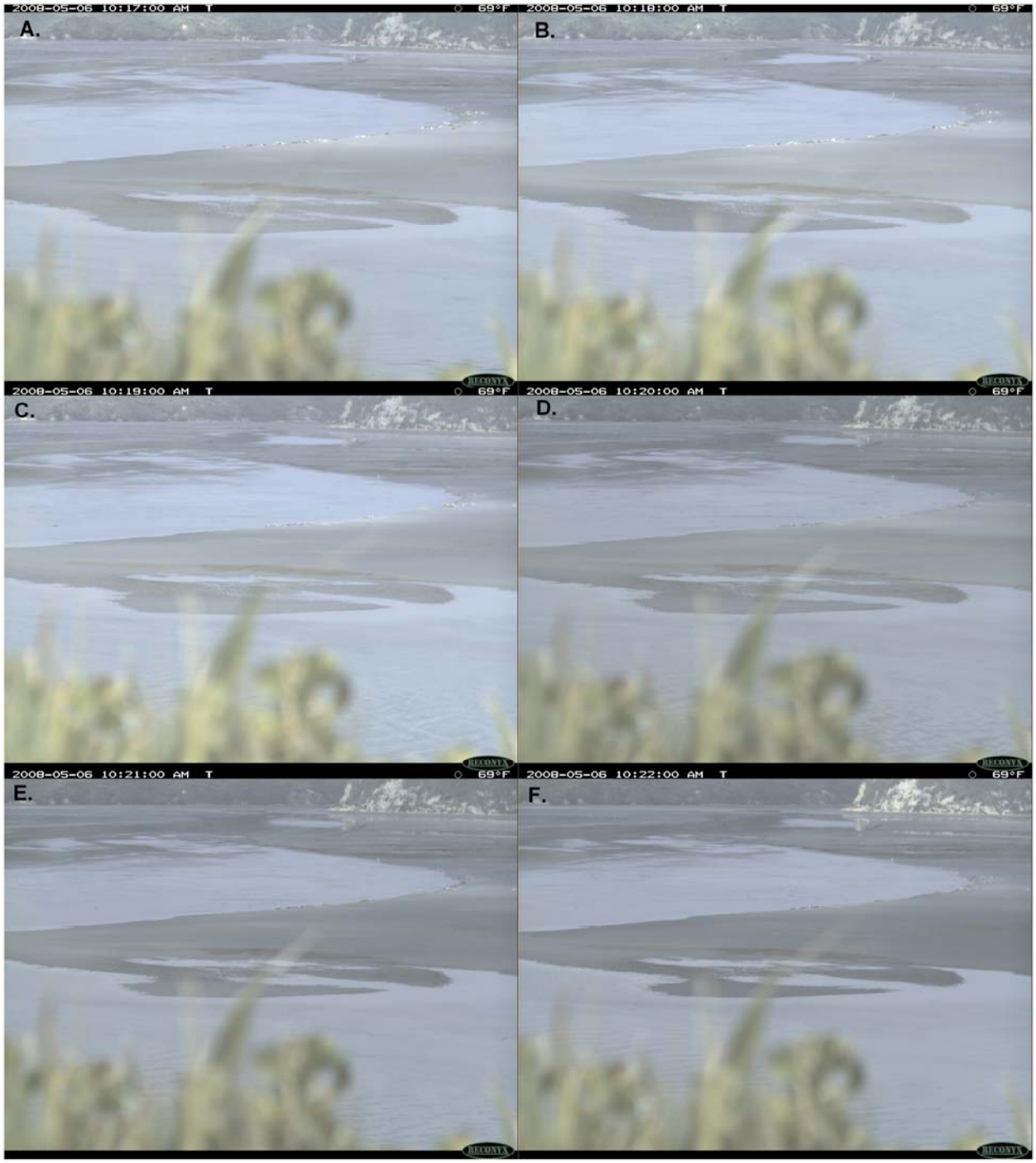


Figure 7. A series of photographs of a seal flushing event on May 6, 2008, at the Oyster Bar site within Drakes Estero. A, Seals hauled out along the shore while a boat is present along opposite shore (boat arrived approximately 80 minutes prior to photograph). B, Seal and boat activity do not change. C, About a third of the seals flush from the haulout site. D–F, Seal and boat activity do not change. (No people were visible within the camera view during the flushing event.) Photographs were taken at 1-minute intervals.

Figure 8. A series of photographs of a seal flushing event on May 15, 2008, at the Oyster Bar site within Drakes Estero. A, Seals hauled out along the shore and a boat docked along the far back channel (upper right corner). B, Slight increase in seal activity; boat remains along the far back channel. C, Some seals flush into the water with their heads visible; the boat has left the channel. D, Some seals remain in water, moving around. E, Seals begin to return to shore. F, Most of the seals have returned to the haulout site. Photographs were taken at 1-minute intervals.

Figure 9. A series of photographs of a seal flushing event on May 31, 2008, at the Oyster Bar site within Drakes Estero. A, Seals hauled out along the shore while the tide is rising. B, Seals becoming slightly inundated by the tide but remain hauled out. C, All seals but one flush from the shore, with no visible stimuli present. D, A single seal remains hauled out on the shore. E–F, No change in seal activity. Photographs were taken at 1-minute intervals.

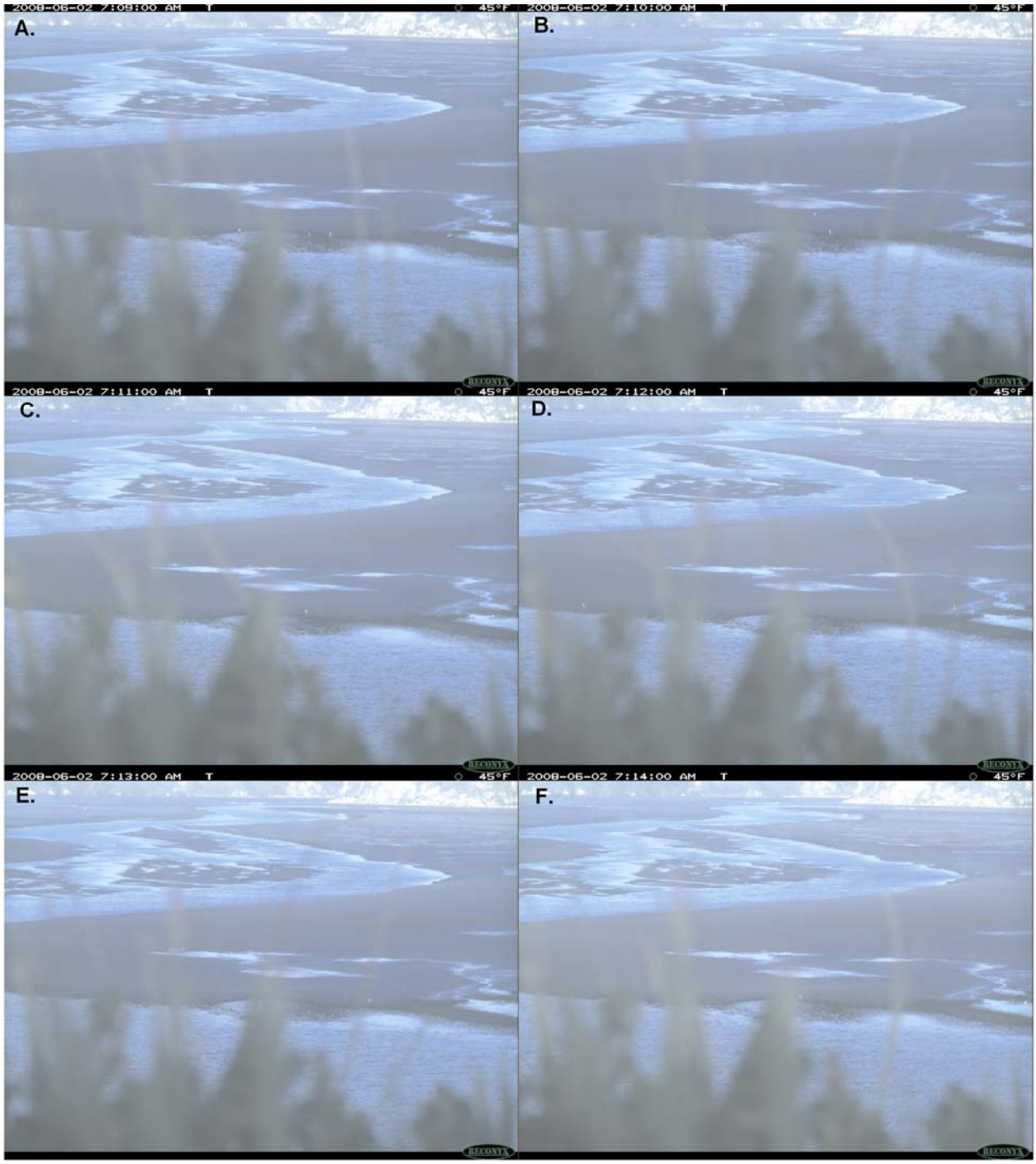


Figure 10. A series of photographs of a seal flushing event on June 2, 2008, at the Oyster Bar site within Drakes Estero. A, Seals hauled out along the shore. B, No change in seal activity. C, All seals flush from haulout site, with no visible stimuli. D, No seals present on shore. E–F, No change in activity. Photographs were taken at 1-minute intervals.

Figure 11. A series of photographs of a seal flushing event on June 11, 2008, at the Oyster Bar site within Drakes Estero. A, Seals hauled out along the shore. B, Not change in seal activity. C, A sudden, brief movement of seals toward the water's edge. D, Seals remain near water's edge. E, No change in seal activity. F, Boat enters frame landing on the shore opposite to the hauled out seals; seal activity does not change. Photographs were taken at 1-minute intervals.

Appendix 1. Summary analysis of 3,140 photographs from 75 potential disturbance events to hauled out harbor seals in Drakes Estero.

Date	Stimulus	Number of Photos Reviewed	Evidence of Seals Flushing	Connection Between Stimulus and Seal Flushing	Boat	Camera Serviced	Kayak	Birds	Unknown	Flushing Events	Comments
03/26/08	camera serviced	93	no			1				0	Camera service; poor camera focus; no evidence of disturbance to seals
03/27/08	boat	40	no		1					0	Boat visits area; people walking; poor camera focus; no evidence of disturbance to seals
03/27/08	boat	21	no		1					0	Boat visits area; no people; no evidence of disturbance to seals
03/27/08	camera serviced	36	no			1				0	Camera serviced; seals in camera view before servicing; no seals in changed camera view after servicing; no evidence of disturbance to seals
03/31/08	boat	89	no		1					0	Boat visits area; people walking; poor visibility; no evidence of disturbance to seals
03/31/08	camera serviced	23	no			1				0	Camera serviced; seals partially obscured by camera angle; poor camera focus; no evidence of disturbance to seals
03/31/08	black object	24	yes	Black object on opposite bank?					1	1	Black object on shore 3 minutes prior to flushing; small group (<10) of seals all flush; no evidence of human stimuli; many gulls and seabirds in area
04/05/08	birds	21	no					1		0	Lots of gulls and seabirds present; poor camera focus; no evidence of disturbance to seals
04/05/08	boat	53	no		1					0	Boat visits area; people walking; poor camera focus; water rising and seals correlatively leaving; no evidence of disturbance to seals
04/07/08	camera serviced	24	no			1				0	Camera serviced and moved; poor camera focus and resolution; no evidence of disturbance to seals
04/08/08	boat	25	no		1					0	Boat present; no people walking; high tide; seals partially submerged and leaving as water rises; no evidence of disturbance to seals
04/10/08	boat	181	no		1					0	Boat visits area; people walking; gulls and other seabirds present; low tide; no evidence of disturbance to seals
04/10/08	camera serviced	22	no			1				0	Camera serviced and moved; no evidence of disturbance to seals
04/10/08	boat	53	no		1					0	Boat visits area; people walking; no evidence of disturbance to seals
04/11/08	boat	31	no		1					0	Boat visits area; no people walking; poor visibility; fog and plants obscure view; seals hauling out as tide falls; no evidence of disturbance to seals
04/11/08	boat	36	no		1					0	Boat visits area; people walking; no evidence of disturbance to seals
04/12/08	boat	24	no		1					0	Boat visits area; no people walking; high tide; seals partially submerged; no evidence of disturbance to seals

Date	Stimulus	Number of Photos Reviewed	Evidence of Seals Flushing	Connection Between Stimulus and Seal Flushing	Boat	Camera Serviced	Kayak	Birds	Unknown	Flushing Events	Comments
04/12/08	boat	35	no		1					0	Boat visits area; no people walking; high tide; seals mostly submerged; no evidence of disturbance to seals
04/12/08	boat	30	no		1					0	Boat visits area; people walking; high tide; haulout habitat being exposed and seals starting to haul out; no evidence of disturbance to seals
04/12/08	boat	85	no		1					0	Boat visits area; people walking; very poor camera focus and resolution; no evidence of disturbance to seals
04/13/08	kayak	32	yes	yes			1			1	Kayak visits area; poor focus and camera resolution; small group of seals present; gulls and other seabirds present; kayak approaches group to within 100 meters or less; all seals flush; seals start hauling out within 10 minutes after kayak disappears
04/13/08	kayak	24	yes	yes			1			1	Kayak visits area; kayak approaches within 100 meters of small group of seals; all but 2 seals flush into water
04/14/08	camera serviced	21	no			1				0	Camera moved; no evidence of disturbance to seals
04/14/08	birds	22	yes	Birds landing?				1		1	Birds arrive in area; poor camera focus and visibility; a few seals in small group flush into water when birds arrive from area off camera; no evidence of human presence in the estuary
04/16/08	boat	32	no		1					0	Boat visits area; no people walking; high tide; poor camera focus and resolution; the few seals present are partially submerged; no evidence of disturbance to seals
04/16/08	boat	29	no		1					0	Boat visits area; no people walking; high water; poor camera focus; no evidence of disturbance to seals
04/17/08	camera serviced	21	no			1				0	Camera serviced; poor visibility; fog; tide just falling; gulls and seabirds present; seals are partially submerged; no evidence of disturbance to seals
04/23/08	boat/birds	37	yes	Not clear, boat present but flushing seems related to birds landing	1			1		1	Boat visits area; people walking; lots of gulls and other seabirds present; seabirds flying toward seals and boat beyond; 1/4 to 1/3 of seals flush into water; seabirds continue arriving from near camera; seals seem to be responding to birds
04/23/08	boat	36	no		1					0	Boat visits area; people walking; tide rising; seals partially submerged; no evidence of disturbance to seals

Date	Stimulus	Number of Photos Reviewed	Evidence of Seals Flushing	Connection Between Stimulus and Seal Flushing	Boat	Camera Serviced	Kayak	Birds	Unknown	Flushing Events	Comments
04/24/08	boat	36	no		1					0	Boat visits area; people walking; tide rising; poor camera focus and resolution; some seals leaving as water submerges them; no evidence of disturbance to seals
04/25/08	camera serviced	27	no			1				0	Camera serviced and moved; very poor camera focus and resolution; no evidence of disturbance to seals
04/26/08	boat	52	no		1					0	Boat visits area; people walking; poor camera focus and resolution; no evidence of disturbance to seals
04/26/08	boat	42	no		1					0	Boat visits area; people walking; no evidence of disturbance to seals
04/29/08	boat	27	no		1					0	Boat visits area; people walking; no evidence of disturbance to seals
04/29/08	camera serviced	21	no			1				0	Camera serviced and moved; no evidence of disturbance to seals
04/30/08	boat	37	no		1					0	Boat visits area; people walking; tide high and falling; a few seals present are partially submerged; no evidence of disturbance to seals
05/01/08	boat	78	no		1					0	Boat visits area; no people walking; high tide; no haulout habitat available; a few seals partially submerged; no evidence of disturbance to seals
05/01/08	black object	21	no						1	0	Unknown dark object in water; gulls and other seabirds present; no evidence of disturbance to seals
05/01/08	camera serviced	21	no			1				0	Camera serviced; very poor camera focus and resolution; low tide; gulls and other seabirds present; no evidence of disturbance to seals
05/02/08	boat	41	no		1					0	Boat visits area; people walking; very poor focus and resolution; tide falling; no evidence of disturbance to seals
05/03/08	boat	37	no		1					0	Boat visits area; people walking; light fog; poor camera focus; tide rising; seals partially submerged; no evidence of disturbance to seals
05/03/08	boat	45	no		1					0	Boat visits area; people walking; tide high and falling; few seals present partially submerged; no evidence of disturbance to seals
05/03/08	birds	21	no					1		0	Birds swimming in group along shoreline; lots of gulls and seabirds roosting and on water; no evidence of disturbance to seals
05/05/08	boat/camera	63	no		1	1				0	Boat visits area; people walking; camera maintenance; tide high and rising; very poor camera focus; no evidence of disturbance to seals
05/05/08	boat	94	no		1					0	Boat visits area; people walking; high tide; very poor camera focus; no evidence of disturbance to seals

Date	Stimulus	Number of Photos Reviewed	Evidence of Seals Flushing	Connection Between Stimulus and Seal Flushing	Boat	Camera Serviced	Kayak	Birds	Unknown	Flushing Events	Comments
05/06/08	boat	195	yes	1/3 of seals flushed, cause not clear, likely not related to boat	1					1	Boat visits area; people walking; low tide; 1/3 of seals hauled out flush; begin hauling out again within 10 minutes; not clear if human stimuli related to seal flushing; gulls and other seabirds roosting and in water
05/06/08	boat	23	no		1					0	Boat visits area; people walking; poor camera focus; a few seals present are partially submerged; no evidence of disturbance to seals
05/07/08	boat	254	no		1					0	Boat visits area; people walking; very low tide; poor camera focus; large number of roosting seabirds; no evidence of disturbance to seals
05/13/08	camera serviced	12	no			1				0	Camera serviced; mid-tide; poor camera focus; no evidence of disturbance to seals
05/13/08	boat	68	no		1					0	Boat visits area; no people walking; tide falling; poor camera focus; lots of birds flying and flushing from near camera side; no evidence of disturbance to seals
05/15/08	boat	31	yes		1					1	Boat visits area; people walking; very poor camera focus; some seals flush into water just after boat leaves the area
05/15/08	camera serviced	21	no			1				0	Camera serviced; extremely poor camera focus; no evidence of disturbance to seals
05/19/08	camera serviced	23	no			1				0	Camera serviced; poor camera focus; no evidence of disturbance to seals
05/22/08	camera serviced	23	no			1				0	Camera serviced; no evidence of disturbance to seals
05/22/08	boat	40	no		1					0	Boat visits area; people walking; water rising; no evidence of disturbance to seals
05/23/08	boat	57	no		1					0	Boat visits area; no people walking; poor camera focus; gulls and seabirds scattered and mobile; no evidence of disturbance to seals
05/23/08	camera serviced	62	no			1				0	Camera serviced and moved; high tide; very poor camera focus; seals mostly submerged; no evidence of disturbances to seals
05/27/08	camera serviced	22	no			1				0	Camera serviced and moved; very poor camera focus; lots of gulls and other seabirds roosting and rafting; no evidence of disturbance to seals
05/27/08	boat	35	no		1					0	Boat visits area; people walking; extremely poor camera focus and resolution; tide rising; no evidence of disturbance to seals
05/29/08	boat	15	no		1					0	Boat visits area; people walking; exceptionally poor camera focus; tide low slack; no evidence of disturbance to seals

Date	Stimulus	Number of Photos Reviewed	Evidence of Seals Flushing	Connection Between Stimulus and Seal Flushing	Boat	Camera Serviced	Kayak	Birds	Unknown	Flushing Events	Comments
05/29/08	camera serviced	10	no			1				0	Camera serviced; very poor camera focus; tide rising; no evidence of disturbance to seals
05/30/08	boat	26	no		1					0	Boat visits area; people walking; tide rising; poor camera focus; no evidence of disturbance to seals
05/31/08	unknown	21	yes	Not clear, no obvious stimulus apparent in slide sequence					1	1	Tide rising; small number of seals flush (~10); being submerged but no signs of stimulus; roosting birds nearby are undisturbed
06/02/08	unknown	21	yes	Not clear, no obvious stimulus apparent in slide sequence					1	1	Low tide; very poor camera focus; 2 small groups of seals all flush into water; no signs of stimuli to disturbance; lots of seabirds rafting and roosting
06/02/08	camera serviced	21	no			1				0	Camera serviced and moved; very poor camera focus; no evidence of disturbance to seals
06/03/08	boat	39	no		1					0	Boat visits area; people walking; very foggy and no visibility to some clearing; tide rising and submerging seals; no evidence of disturbance to seals
06/04/08	boat	38	no		1					0	Boat visits area; people walking; strong winds; seals mostly submerged and departing as tide rises; no evidence of disturbance to seals
06/05/08	boat	47	no		1					0	Boat visits area; people walking; very poor camera focus; no evidence of disturbance to seals
06/05/08	camera serviced	21	no			1				0	Camera serviced; no evidence of disturbance to seals
06/06/08	boat	49	no		1					0	Boat visits area; people walking; high tide; slack to slowly rising with high winds; very poor camera focus; no evidence of disturbance to seals
06/11/08	boat	34	yes	Minor flushing before boat arrival, cause unknown	1					1	Boat visits area; people walking; very poor camera focus; rafting birds scattered; brief movement of seals toward water's edge several minutes before boat arrives but none seen to enter water; no obvious disturbance to seals
06/12/08	boat	46	no		1					0	Boat visits area; people walking; poor camera focus; high tide; few seals mostly submerged; no evidence of disturbance to seals
06/12/08	camera serviced	23	no			1				0	Camera serviced; very poor camera focus; high tide with few seals present, mostly submerged; no evidence of disturbance to seals
	Total	**3,140**			**44**	**21**	**2**	**4**	**4**	**10**	

EXHIBIT

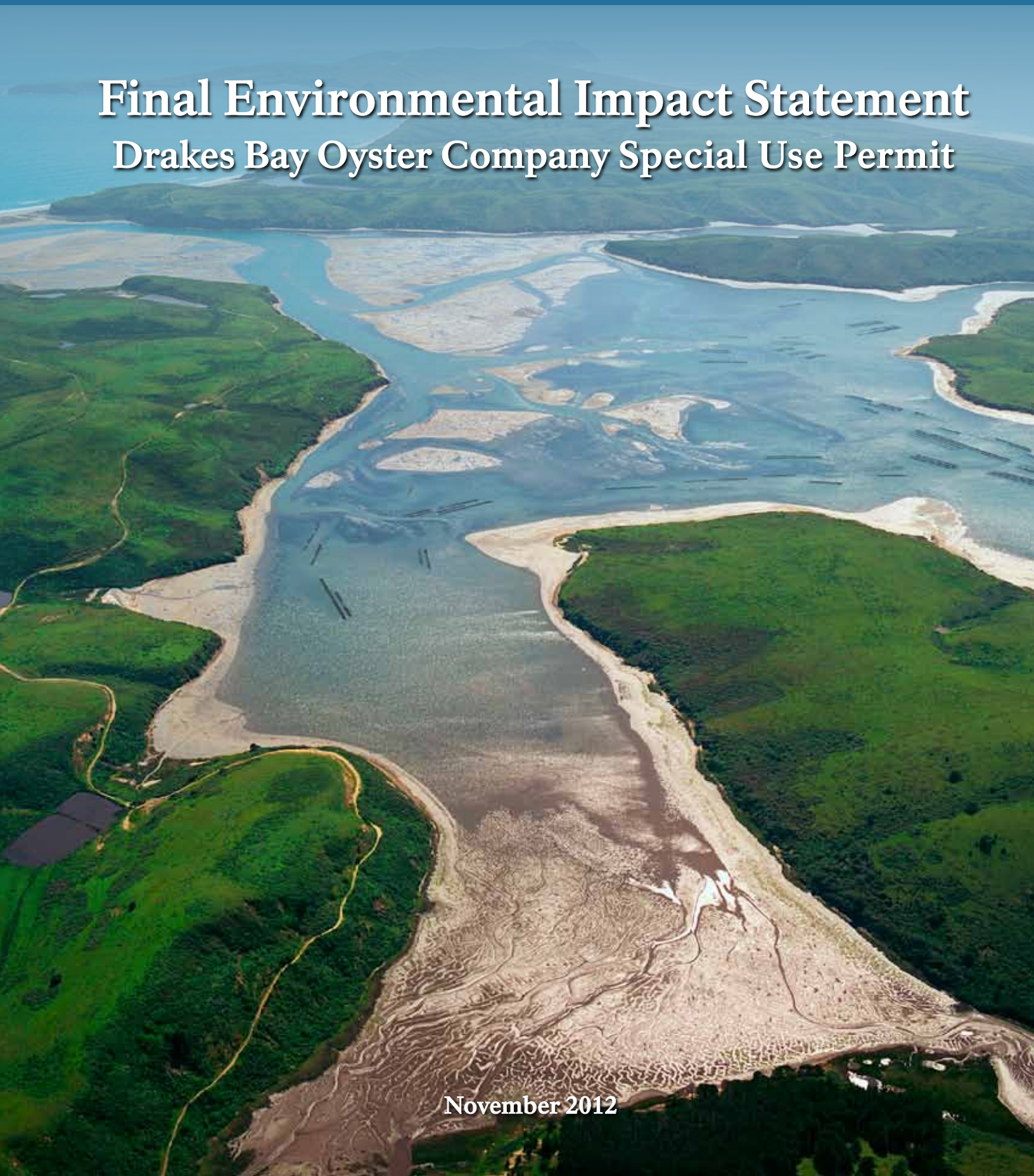
21

National Park Service
U.S. Department of the Interior

Point Reyes National Seashore
California

Final Environmental Impact Statement

Drakes Bay Oyster Company Special Use Permit



November 2012

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PURPOSE OF AND NEED FOR ACTION

Similar to the Atkins peer review, the NAS also made specific recommendations for improving the use of scientific information to inform the impact analyses. For each resource topic addressed by the NAS report, the NAS reviewed the quality of the information used and the analysis of that information and identified information gaps, where appropriate; made a determination of the reasonableness of the conclusions, assessed the level of uncertainty in making the conclusions, and suggested alternate conclusions; and suggested ways to reduce the level of uncertainty within the analysis. Based on this review, additional references have been reviewed and incorporated into the Final EIS, where applicable. Direct comments and critiques from the NAS committee are generally not cited in the text of the Final EIS. As with any other peer review, comments and critiques have been considered and changes have been made where appropriate. In addition, the general methodology for impact analyses has been revised to clarify how each alternative is assessed and how the conclusions are determined; and to define the area of analysis and the analysis period. The specific methodologies for each impact topic have been updated to clearly indicate what data is used in assessing impacts, where that data came from (research on Drakes Estero or other similar ecosystems), and what data is lacking. The intensity definitions for each impact topic also have been revised to use consistent language and clarify the area affected.

The NAS committee also evaluated whether the Atkins report was "fundamentally sound and materially sufficient" (NAS 2012a). NAS found that the "reviewers selected by Atkins are well-qualified;" however, the experts were "insufficient to address all of the scientific topics covered" by the Draft EIS. More specifically, the NAS committee "felt that additional expertise in water quality, wildlife (e.g., harbor seals, fish), and terrestrial soundscapes would be needed to provide a thorough peer review." Due to the "limited range of expertise of the reviewers and the constraints placed on the review (limited to DEIS chapters 3 and 4, did not include the intensity definitions or conclusions)," the NAS committee did not consider the Atkins report to be "fundamentally sound and materially sufficient."

USGS Photographic Review

Between spring 2007 and spring 2010 more than 250,000 digital photographs were taken from remotely deployed cameras overlooking harbor seal haul-out areas in Drakes Estero. The photographs were taken at one minute intervals. In December 2010, these photographs were posted on the NPS web site at http://www.nps.gov/pore/parkmgmt/planning_reading_room_photographs_videos.htm. Because the photographs were not collected using documented protocols and did not meet Departmental standards for a scientific product, the NPS did not rely on the photographs in the Draft EIS. Public comments on the Draft EIS requested that the NPS reconsider whether these photographs were useful in evaluating disturbances to harbor seals. In response to these comments, the NPS initiated a third-party review of the photographs with the U.S. Geological Survey (USGS), in consultation with a harbor seal specialist with the Hubbs-Sea World Research Institute. The USGS issued a report entitled, *Assessment of Photographs from Drakes Estero Wildlife Monitoring Cameras* (Lellis et al. 2012).

The USGS assessment focused on the 2008 harbor seal pupping season, when more than 165,000 photographs were collected from two sites overlooking Drakes Estero between March 14, 2008 and June 23, 2008. The USGS identified a series of limitations to the utility of the photographs, including lack of study design, poor photograph quality, inadequate field of view, incomplete estuary coverage, camera obstructions, and weather.

The USGS concluded that generally the camera focus was too poor and image resolution too low to allow for accurate counts or aging of seals, or to provide enough anatomical detail to quantify postures associated with increased vigilance (e.g., head alerts or other alert behavior). Evaluation of the photographs stitched together into time-lapse videos did allow for documentation of gross disturbance events (e.g., flushing to water or flushing to new areas of the sand bar). The USGS developed time-lapse videos for each camera, each day with the 2008 photographs (191 videos including 103 for Upper Estero Far [UEF] and 88 for Oyster Bar [OB]). The USGS determined that for the approximately 100,000 UEF images, seals could not be discerned due to the low resolution and wide field of view. As a result, the USGS concluded that further evaluation of photographs or videos focused on UEF was unwarranted. The USGS did identify that detailed analysis of the photographs in time-lapse sequence overlooking the OB site could be used to understand seal use of the OB site related to time, tide, and weather, and some coarse detection of disturbance as measured by flushing of seals from resting positions towards or into the water. However, the USGS assessment does not document time, tide, and weather.

The USGS identified 73 instances from the OB videos where human or other unusual stimuli could be identified in the photographs at the same time as seals were hauled out on the sandbars. The USGS assessment identified 10 flushing disturbance events at the OB site in 2008. As noted, due to the poor quality, no other level of disturbance, such as increased vigilance could be detected from the photographs or videos. The USGS assessment attributed a specific stimulus to 6 of the 10 observed flushing disturbance events. Two flushing disturbance events were attributed to boat traffic at nearby sand bars, two were attributed to a kayak using the lateral channel (note kayak was in Drakes Estero in violation of seasonal closure), and two appeared to be related to seabirds landing among the seals. Based on the USGS assessment, the NPS has incorporated some discussion of sources of gross flushing events into chapter 4. Because of quality and study design issues, the photographs are not amenable to use for other types of disturbance such as increased vigilance or alerts.

ISSUES AND IMPACT TOPICS

Issues and Impact Topics Retained for Further Analysis

This EIS analyzes the effects of the actions proposed herein on relevant resources in the context of the laws and policies that apply to NPS management of these resources. Many resources and activities have the potential to be affected by either issuing or not issuing a SUP for continued commercial shellfish operations within the Seashore. These resources were initially identified by NPS staff during internal scoping and were further refined through the public and agency scoping process. Impact topics retained for detailed analysis within this EIS include wetlands and other waters of the U.S., eelgrass, wildlife and wildlife habitat, special-status species - California coast Coho salmon (*Oncorhynchus kisutch*) and central California coast steelhead (*O. mykiss*), coastal flood zones, water quality, soundscapes, wilderness, visitor experience and recreation, socioeconomic resources, and NPS operations. The following text discusses issues/considerations that form the basis for the content in “Chapter 3: Affected Environment,” and the impact topics and detailed analysis presented in “Chapter 4: Environmental Consequences.”

Wetlands and Other Waters of the U.S. The identification of wetlands within the project area is necessary to ensure their protection in accordance with federal laws (section 404 of the Clean Water Act [CWA] and the Rivers and Harbors Act of 1899) and state laws (e.g., the California Coastal Act of 1976). NPS *Management Policies 2006* states that NPS will implement a "no net loss of wetlands" policy and will (1) provide leadership and take action to prevent the destruction, loss, or degradation of wetlands; (2) preserve and enhance the natural and beneficial values of wetlands; and (3) avoid direct and indirect support of new construction in wetlands unless there are no practicable alternatives and the proposed action includes all practicable measures to minimize harm to wetlands (NPS 2006d). Guidance related to the management of wetlands is further clarified by Director's Order 77-1: *Wetland Protection* (DO-77-1) (NPS 2002a). As defined by USACE and USFWS, wetland areas and other waters of the U.S. exist in the project area, both within Drakes Estero and along the shoreline where natural conditions persist. DBOC operations may have the potential to impact these wetlands through placement of materials (such as bags and trays) directly in wetlands, trampling of vegetated wetlands, and shading associated with racks, as well as people walking across mudflats, and propellers and boat hulls scraping the mud bottom. The impact topic of wetlands and other waters of the U.S. is retained for detailed analysis in this EIS.

Eelgrass. In Drakes Estero, eelgrass (*Zostera marina*) is the dominant form of submerged aquatic vegetation and is present throughout Drakes Estero in dense beds. Eelgrass beds provide important foraging and feeding ground for many aquatic organisms, they serve as the base of the food web in many coastal habitats, and they perform important environmental functions, such as trapping sediment, taking up excess nutrients, and protecting shorelines from erosion. Eelgrass beds are classified as a type of "special aquatic site," a category of "Waters of the United States" afforded additional consideration under the Clean Water Act section 404 (b)(1) guidelines developed by the EPA. Special aquatic sites possess characteristics of productivity, habitat, wildlife protection, or other important and easily disrupted ecological values. These sites are recognized as significantly influencing or positively contributing to the overall environmental health or vitality of the entire ecosystem of a region. DBOC operations in Drakes Estero and the eelgrass beds interact "via changes each makes to the immediate environment like altering water flow, sediment structure, light penetration, and nutrient supply. Other environmental changes arising from mariculture come from the addition of structures (e.g., bags, racks, and lines) and disturbances of transportation and culture operations" (NAS 2009). The termination or continuation of these activities related to DBOC operations could beneficially or adversely impact eelgrass. Therefore, the impact topic of eelgrass is retained for detailed analysis in this EIS.

Wildlife and Wildlife Habitat. Drakes Estero provides habitat for multiple native wildlife species, including benthic fauna (animals living on or in the submerged substrate), fish, harbor seals, and birds. Drakes Estero also includes privately owned species cultivated by DBOC, as well as nonnative invasive species such as the tunicate, *Didemnum vexillum* and the mud snail, *Batillaria attramentaria*. Commercial shellfish operations could potentially impact these species and their habitat through habitat competition, habitat improvement or degradation, noise and physical disruptions, and introduction of nonnative species. The impact topic of wildlife and wildlife habitat is retained for detailed analysis in this EIS.

Special-status Species. The Endangered Species Act (ESA) mandates that all federal agencies consider the potential impacts of their actions on species listed as threatened or endangered in order to protect the species and preserve their habitats. Potential impacts are assessed within an "action" area, which can be larger than individual project areas, and are determined by evaluating the geographic extent of potential environmental changes (i.e., biological, chemical, and physical effects). USFWS and NMFS share

EXHIBIT

22

President Barack Obama addresses the 146th Annual Meeting of the National Academy of Sciences

On April 27, 2009, President Barack Obama addressed members of the National Academy of Sciences (NAS) gathered at its 146th annual meeting in Washington, D.C. In his speech, the president shared his plans to give science and technology a central role in the nation's future and an immediate place in America's economic renewal. He outlined steps he is taking to increase research spending, achieve energy independence, and improve science education. Included was what Mr. Obama cited as the largest commitment to scientific research in American history—devoting more than 3% of our gross domestic product to research and development.

''Next, we are restoring science to its rightful place,'' Mr. Obama told a packed NAS auditorium audience. ''Under my administration, the days of science taking a backseat to ideology are over.'' He appealed to scientists' sense of personal responsibility to reach and educate young Americans: ''I want to challenge you to use your love and knowledge of science to spark a sense of wonder and excitement in a new generation.''

President Obama was welcomed to the National Academy of Sciences by President Ralph J. Cicerone and John P. Holdren, Assistant to the President for Science and Technology and Director of the White House Office of Science and Technology Policy.

The following is a transcript of that speech.*

Obama addresses the crowd at the National Academy of Sciences.

Remarks by President Barack Obama at the National Academy of Sciences

Well, thank you so much for the wonderful welcome. To President Cicerone, thank you very much for your leadership and for hosting us today. To John Holdren, thanks, John, for the outstanding work that you are doing.

I was just informed backstage that Ralph and John both are 1965 graduates of MIT—same class. And so I'm not sure this is the perfectly prescribed scientific method, but they're sort of a control group—[laughter]—who ages faster: The President's Science Advisor or the President of the Academy? [Laughter.] And we'll check in a couple of years. But it is wonderful to see them.

To all of you, to my Cabinet Secretaries and team who are here, thank you. It is a great privilege to address the distinguished members of the National Academy of Sciences, as well as the leaders of the National Academy of Engineering and the Institute of Medicine who've gathered here this morning.

And I'd like to begin today with a story of a previous visitor who also addressed this august body. In April of 1921, Albert Einstein visited the United States for the first time. And his international credibility was growing as scientists around the world began to understand and accept the vast implications of his theories of special and general relativity. And he attended this annual meeting, and after sitting through a series of long speeches by others, he reportedly said, ''I have just got a new theory of eternity.'' [Laughter.] So I will do my best to heed this cautionary tale. [Laughter.]

The very founding of this institution stands as a testament to the restless curiosity, the boundless hope so essential not just to the scientific enterprise, but to this experiment we call America.

A few months after a devastating defeat at Fredericksburg, before Gettysburg would be won, before Richmond would fall, before the fate of the Union would be at all certain, President Abraham Lincoln signed into law an act creating the National Academy of Sciences—in the midst of civil war.

Lincoln refused to accept that our nation's sole purpose was mere survival. He created this academy, founded the land grant colleges, and began the work of the transcontinental railroad, believing that we must add—and I quote—"the fuel of interest to the fire of genius in the discovery. . . of new and useful things."

This is America's story. Even in the hardest times, against the toughest odds, we've never given in to pessimism; we've never surrendered our fates to chance; we have endured; we have worked hard; we sought out new frontiers.

Today, of course, we face more complex challenges than we have ever faced before: a medical system that holds the promise of unlocking new cures and treatments—attached to a health care system that holds the potential for bankruptcy to families and businesses; a system of energy that powers our economy but simultaneously endangers our planet; threats to our security that seek to exploit the very interconnectedness and openness so essential to our prosperity; and challenges in a global marketplace which links the derivative trader on Wall Street to the homeowner on Main Street, the office worker in America to the factory worker in China—a marketplace in which we all share in opportunity, but also in crisis.

At such a difficult moment, there are those who say we cannot afford to invest in science, that support for research is somehow a luxury at moments defined by necessities. I fundamentally disagree. Science is more essential for our prosperity, our security, our health, our environment, and our quality of life than it has ever been before. [Applause.]

And if there was ever a day that reminded us of our shared stake in science and research, it's today. We are closely monitoring the emerging cases of swine flu in the United States. And this is obviously a cause for concern and requires a heightened state of alert. But it's not a cause for alarm. The Department of

*Obama B, 146th Annual Meeting of the National Academy of Sciences, April 27, 2009, Washington, DC.

The full video of this speech can be viewed at http://edg1.vcall.com/video/nas/lauch.asp.

Health and Human Services has declared a public health emergency as a precautionary tool to ensure that we have the resources we need at our disposal to respond quickly and effectively. And I'm getting regular updates on the situation from the responsible agencies. And the Department of Health and Human Services as well as the Centers for Disease Control will be offering regular updates to the American people. And Secretary Napolitano will be offering regular updates to the American people, as well, so that they know what steps are being taken and what steps they may need to take.

But one thing is clear—our capacity to deal with a public health challenge of this sort rests heavily on the work of our scientific and medical community. And this is one more example of why we can't allow our nation to fall behind.

Unfortunately, that's exactly what's happened.

Federal funding in the physical sciences as a portion of our gross domestic product has fallen by nearly half over the past quarter century. Time and again we've allowed the research and experimentation tax credit, which helps businesses grow and innovate, to lapse.

There are those who say we cannot afford to invest in science.

Our schools continue to trail other developed countries and, in some cases, developing countries. Our students are outperformed in math and science by their peers in Singapore, Japan, England, The Netherlands, Hong Kong, and Korea among others. Another assessment shows American 15-year-olds ranked 25th in math and 21st in science when compared to nations around the world. And we have watched as scientific integrity has been undermined and scientific research politicized in an effort to advance predetermined ideological agendas.

We know that our country is better than this. A half century ago, this nation made a commitment to lead the world in scientific and technological innovation; to invest in education, in research, in engineering; to set a goal of reaching space and engaging every citizen in that historic mission. That was the high water mark of America's investment in research and development. And since then our investments have steadily declined as a share of our national income. As a result, other countries are now beginning to pull ahead in the pursuit of this generation's great discoveries.

I believe it is not in our character, the American character, to follow. It's our character to lead. And it is time for us to lead once again. So I'm here today to set this goal: We will devote more than 3% of our GDP to research and development. We will not just meet, but we will exceed the level achieved at the height of the space race through policies that invest in basic and applied research, create new incentives for private innovation, promote breakthroughs in energy and medicine, and improve education in math and science. [Applause.]

This represents the largest commitment to scientific research and innovation in American history.

Just think what this will allow us to accomplish: solar cells as cheap as paint; green buildings that produce all the energy they consume; learning software as effective as a personal tutor; prosthetics so advanced that you could play the piano again; an expansion of the frontiers of human knowledge about ourselves and world the around us. We can do this.

The pursuit of discovery half a century ago fueled our prosperity and our success as a nation in the half century that followed. The commitment I am making today will fuel our success for another 50 years. That's how we will ensure that our children and their children will look back on this generation's work as that which defined the progress and delivered the prosperity of the 21st century.

This work begins with a historic commitment to basic science and applied research, from the labs of renowned universities to the proving grounds of innovative companies.

Through the American Recovery and Reinvestment Act, and with the support of Congress, my administration is already providing the largest single boost to investment in basic research in American history. That's already happened.

This is important right now, as public and private colleges and universities across the country reckon with shrinking endowments and tightening budgets. But this is also incredibly important for our future. As Vannevar Bush, who served as scientific advisor to President Franklin Roosevelt, famously said: "Basic scientific research is scientific capital."

The fact is an investigation into a particular physical, chemical, or biological process might not pay off for a year, or a decade, or at all. And when it does, the rewards are often broadly shared, enjoyed by those who bore its costs but also by those who did not.

And that's why the private sector generally under-invests in basic science, and why the public sector must invest in this kind of research—because while the risks may be large, so are the rewards for our economy and our society.

No one can predict what new applications will be born of basic research: new treatments in our hospitals or new sources of efficient energy; new building materials; new kinds of crops more resistant to heat and to drought.

It was basic research in the photoelectric field—in the photoelectric effect that would one day lead to solar panels. It was basic research in physics that would eventually produce the CAT scan. The calculations of today's GPS satellites are based on the equations that Einstein put to paper more than a century ago.

In addition to the investments in the Recovery Act, the budget I've proposed—and versions have now passed both the House and the Senate—builds on the historic investments in research contained in the recovery plan.

So we double the budget of key agencies, including the National Science Foundation, a primary source of funding for academic research; and the National Institute of Standards and Technology, which supports a wide range of pursuits from improving health information technology to measuring carbon pollution, from testing "smart grid" designs to developing advanced manufacturing processes.

And my budget doubles funding for the Department of Energy's Office of Science, which builds and operates accelerators, colliders, supercomputers, high-energy light sources, and facilities for making nanomaterials—because we know that a nation's potential for scientific discovery is defined by the tools that it makes available to its researchers.

But the renewed commitment of our nation will not be driven by government investment alone. It's a commitment that extends from the laboratory to the marketplace. And that's why my budget makes the research and experimentation tax credit permanent. This is a tax credit that returns two dollars to the economy for every dollar we spend, by helping companies afford the often high costs of developing new ideas, new technologies, and new products. Yet at times, we've allowed it to lapse or only renewed it year to year. I've heard this time and again from entrepreneurs across this country: By making this credit permanent, we make it possible for businesses to plan the kinds of projects that create jobs and economic growth.

Second, in no area will innovation be more important than in the development of new technologies to produce, use, and save energy—which is why my administration has made an unprecedented commitment to developing a 21st century clean energy

economy, and why we put a scientist in charge of the Department of Energy. [Applause.]

Our future on this planet depends on our willingness to address the challenge posed by carbon pollution. And our future as a nation depends upon our willingness to embrace this challenge as an opportunity to lead the world in pursuit of new discovery.

When the Soviet Union launched Sputnik a little more than a half century ago, Americans were stunned. The Russians had beaten us to space. And we had to make a choice: We could accept defeat or we could accept the challenge. And as always, we chose to accept the challenge.

President Eisenhower signed legislation to create NASA and to invest in science and math education, from grade school to graduate school. And just a few years later, a month after his address to the 1961 Annual Meeting of the National Academy of Sciences, President Kennedy boldly declared before a joint session of Congress that the United States would send a man to the moon and return him safely to the Earth.

The scientific community rallied behind this goal and set about achieving it. And it would not only lead to those first steps on the moon; it would lead to giant leaps in our understanding here at home. That Apollo program produced technologies that have improved kidney dialysis and water purification systems; sensors to test for hazardous gasses; energy-saving building materials; fire-resistant fabrics used by firefighters and soldiers. More broadly, the enormous investment in that era—in science and technology, in education and research funding—produced a great outpouring of curiosity and creativity, the benefits of which have been incalculable. There are those of you in this audience who became scientists because of that commitment. We have to replicate that.

There will be no single Sputnik moment for this generation's challenges to break our dependence on fossil fuels. In many ways, this makes the challenge even tougher to solve—and makes it all the more important to keep our eyes fixed on the work ahead.

But energy is our great project, this generation's great project. And that's why I've set a goal for our nation that we will reduce our carbon pollution by more than 80% by 2050. And that is why—[applause]—and that is why I'm pursuing, in concert with Congress, the policies that will help meet us—help us meet this goal.

My recovery plan provides the incentives to double our nation's capacity to generate renewable energy over the next few years—extending the production tax credit, providing loan guarantees, and offering grants to spur investment. Just take one example: Federally funded research and development has dropped the cost of solar panels by 10-fold over the last 3 decades. Our renewed efforts will ensure that solar and other clean energy technologies will be competitive.

My budget includes $150 billion over 10 years to invest in sources of renewable energy as well as energy efficiency. It supports efforts at NASA, recommended as a priority by the National Research Council, to develop new space-based capabilities to help us better understand our changing climate.

And today, I'm also announcing that for the first time, we are funding an initiative—recommended by this organization—called the Advanced Research Projects Agency for Energy or ARPA-E. [Applause.]

This is based, not surprisingly, on DARPA, the Defense Advanced Research Projects Agency, which was created during the Eisenhower administration in response to Sputnik. It has been charged throughout its history with conducting high-risk, high-reward research. And the precursor to the Internet, known as ARPANET, stealth technology, the Global Positioning System, all owe a debt to the work of DARPA.

So ARPA-E seeks to do the same kind of high-risk, high-reward research. My administration will pursue, as well, comprehensive legislation to place a market-based cap on carbon emissions. We will make renewable energy the profitable kind of energy. We will put in place the resources so that scientists can focus on this critical area. And I am confident that we will find a wellspring of creativity just waiting to be tapped by researchers in this room and entrepreneurs across our country. We can solve this problem. [Applause.]

Now, the nation that leads the world in 21st century clean energy will be the nation that leads in the 21st century global economy. I believe America can and must be that nation. But in order to lead in the global economy and to ensure that our businesses can grow and innovate and our families can thrive, we're also going to have to address the shortcomings of our health care system.

The Recovery Act will support the long overdue step of computerizing America's medical records, to reduce the duplication, waste, and errors that cost billions of dollars and thousands of lives.

We are restoring science to its rightful place.

But it's important to note, these records also hold the potential of offering patients the chance to be more active participants in the prevention and treatment of their diseases. We must maintain patient control over these records and respect their privacy. At the same time, we have the opportunity to offer billions and billions of anonymous data points to medical researchers who may find in this information evidence that can help us better understand disease.

History also teaches us the greatest advances in medicine have come from scientific breakthroughs, whether the discovery of antibiotics or improved public health practices, vaccines for smallpox and polio and many other infectious diseases, antiretroviral drugs that can return AIDS patients to productive lives, pills that can control certain types of blood cancers, so many others.

Because of recent progress—not just in biology, genetics and medicine, but also in physics, chemistry, computer science, and engineering—we have the potential to make enormous progress against diseases in the coming decades. And that's why my administration is committed to increasing funding for the National Institutes of Health, including $6 billion to support cancer research—part of a sustained, multi-year plan to double cancer research in our country. [Applause.]

Next, we are restoring science to its rightful place. On March 9th, I signed an executive memorandum with a clear message: Under my administration, the days of science taking a back seat to ideology are over. [Applause.] Our progress as a nation—and our values as a nation—are rooted in free and open inquiry. To undermine scientific integrity is to undermine our democracy. It is contrary to our way of life. [Applause.]

That's why I've charged John Holdren and the White House Office of Science and Technology Policy with leading a new effort to ensure that federal policies are based on the best and most unbiased scientific information. I want to be sure that facts are driving scientific decisions—and not the other way around. [Laughter.]

As part of this effort, we've already launched a web site that allows individuals to not only make recommendations to achieve this goal but to collaborate on those recommendations. It's a small step, but one that's creating a more transparent, participatory, and democratic government.

We also need to engage the scientific community directly in the work of public policy. And that's why, today, I am announcing the appointment—we are filling out the President's Council of Advisors on Science and Technology, known as PCAST, and I intend to work with them closely. Our co-chairs have already been introduced—Dr. Varmus and Dr. Lander along with John. And this council represents leaders from many scientific disciplines who will bring a diversity of experiences and views. And I will charge PCAST with advising me about national strategies to nurture and sustain a culture of scientific innovation.

In addition to John—sorry, the—I just noticed that I jumped the gun here—go ahead and move it up. [Laughter.] I'd already—I'd already introduced all you guys.

In biomedicine, just to give you an example of what PCAST can do, we can harness the historic convergence between life sciences and physical sciences that's underway today; undertaking public projects—in the spirit of the Human Genome Project—to create data and capabilities that fuel discoveries in tens of thousands of laboratories, and identifying and overcoming scientific and bureaucratic barriers to rapidly translating scientific breakthroughs into diagnostics and therapeutics that serve patients.

In environmental science, it will require strengthening our weather forecasting, our Earth observation from space, the management of our nation's land, water, and forests, and the stewardship of our coastal zones and ocean fisheries.

Some truths fill us with awe. Others force us to question long-held views.

We also need to work with our friends around the world. Science, technology, and innovation proceed more rapidly and more cost-effectively when insights, costs, and risks are shared; and so many of the challenges that science and technology will help us meet are global in character. This is true of our dependence on oil, the consequences of climate change, the threat of epidemic disease, and the spread of nuclear weapons.

And that's why my administration is ramping up participation in—and our commitment to—international science and technology cooperation across the many areas where it is clearly in our interest to do so. In fact, this week, my administration is gathering the leaders of the world's major economies to begin the work of addressing our common energy challenges together.

Fifth, since we know that the progress and prosperity of future generations will depend on what we do now to educate the next generation, today I'm announcing a renewed commitment to education in mathematics and science. [Applause.] This is something I care deeply about. Through this commitment, American students will move from the middle of the top—from the middle to the top of the pack in science and math over the next decade—for we know that the nation that out-educates us today will out-compete us tomorrow. And I don't intend to have us out-educated.

We can't start soon enough. We know that the quality of math and science teachers is the most influential single factor in determining whether a student will succeed or fail in these subjects. Yet in high school, more than 20% of students in math and more than 60% of students in chemistry and physics are taught by teachers without expertise in these fields. And this problem is only going to get worse. There is a projected shortfall of more than 280,000 math and science teachers across the country by 2015.

And that's why I'm announcing today that states making strong commitments and progress in math and science education will be eligible to compete later this fall for additional funds under the Secretary of Education's $5 Billion Race to the Top program.

And I'm challenging states to dramatically improve achievement in math and science by raising standards, modernizing science labs, upgrading curriculum, and forging partnerships to improve the use of science and technology in our classrooms. [Applause.] I'm challenging states, as well, to enhance teacher preparation and training, and to attract new and qualified math and science teachers to better engage students and reinvigorate those subjects in our schools.

And in this endeavor, we will work to support inventive approaches. Let's create systems that retain and reward effective teachers, and let's create new pathways for experienced professionals to go into the classroom. There are, right now, chemists who could teach chemistry, physicists who could teach physics, statisticians who could teach mathematics. But we need to create a way to bring the expertise and the enthusiasm of these folks—folks like you—into the classroom.

There are states, for example, doing innovative work. I'm pleased to announce that Governor Ed Rendell of Pennsylvania will lead an effort with the National Governors Association to increase the number of states that are making science, technology, engineering, and mathematics education a top priority. Six states are currently participating in the initiative, including Pennsylvania, which has launched an effective program to ensure that the state has the skilled workforce in place to draw the jobs of the 21st century. And I want every state, all 50 states, to participate.

But as you know, our work does not end with a high school diploma. For decades, we led the world in educational attainment, and as a consequence we led the world in economic growth. The G.I. Bill, for example, helps send a generation to college. But in this new economy, we've come to trail other nations in graduation rates, in educational achievement, and in the production of scientists and engineers.

That's why my administration has set a goal that will greatly enhance our ability to compete for the high-wage, high-tech jobs of the future—and to foster the next generation of scientists and engineers. In the next decade—by 2020—America will once again have the highest proportion of college graduates in the world. That is a goal that we are going to set. And we've provided tax credits and grants to make a college education more affordable.

My budget also triples the number of National Science Foundation graduate research fellowships. [Applause.] This program was created as part of the space race 5 decades ago. In the decades since, it's remained largely the same size—even as the numbers of students who seek these fellowships has skyrocketed. We ought to be supporting these young people who are pursuing scientific careers, not putting obstacles in their path.

So this is how we will lead the world in new discoveries in this new century. But I think all of you understand it will take far more than the work of government. It will take all of us. It will take all of you. And so today I want to challenge you to use your love and knowledge of science to spark the same sense of wonder and excitement in a new generation.

America's young people will rise to the challenge if given the opportunity—if called upon to join a cause larger than themselves. We've got evidence. You know, the average age in NASA's mission control during the Apollo 17 mission was just 26. I know that young people today are just as ready to tackle the grand challenges of this century.

So I want to persuade you to spend time in the classroom, talking and showing young people what it is that your work can mean, and what it means to you. I want to encourage you to participate in programs to allow students to get a degree in

science fields and a teaching certificate at the same time. I want us all to think about new and creative ways to engage young people in science and engineering, whether it's science festivals, robotics competitions, fairs that encourage young people to create and build and invent—to be makers of things, not just consumers of things.

I want you to know that I'm going to be working alongside you. I'm going to participate in a public awareness and outreach campaign to encourage students to consider careers in science and mathematics and engineering—because our future depends on it.

And the Department of Energy and the National Science Foundation will be launching a joint initiative to inspire tens of thousands of American students to pursue these very same careers, particularly in clean energy.

It will support an educational campaign to capture the imagination of young people who can help us meet the energy challenge and will create research opportunities for undergraduates and educational opportunities for women and minorities who too often have been underrepresented in scientific and technological fields, but are no less capable of inventing the solutions that will help us grow our economy and save our planet. [Applause.]

And it will support fellowships and interdisciplinary graduate programs and partnerships between academic institutions and innovative companies to prepare a generation of Americans to meet this generational challenge.

For we must always remember that somewhere in America there's an entrepreneur seeking a loan to start a business that could transform an industry—but she hasn't secured it yet. There's a researcher with an idea for an experiment that might offer a new cancer treatment—but he hasn't found the funding yet. There's a child with an inquisitive mind staring up at the night sky. And maybe she has the potential to change our world—but she doesn't know it yet.

As you know, scientific discovery takes far more than the occasional flash of brilliance—as important as that can be. Usually, it takes time and hard work and patience; it takes training; it requires the support of a nation. But it holds a promise like no other area of human endeavor.

In 1968, a year defined by loss and conflict and tumult, Apollo 8 carried into space the first human beings ever to slip beyond Earth's gravity, and the ship would circle the moon 10 times before returning home. But on its fourth orbit, the capsule rotated and for the first time Earth became visible through the windows.

Bill Anders, one of the astronauts aboard Apollo 8, scrambled for a camera, and he took a photo that showed the Earth coming up over the moon's horizon. It was the first ever taken from so distant a vantage point, and it soon became known as "Earthrise."

Anders would say that the moment forever changed him, to see our world—this pale blue sphere—without borders, without divisions, at once so tranquil and beautiful and alone.

"We came all this way to explore the moon," he said, "and the most important thing is that we discovered the Earth."

Yes, scientific innovation offers us a chance to achieve prosperity. It has offered us benefits that have improved our health and our lives—improvements we take too easily for granted. But it gives us something more. At root, science forces us to reckon with the truth as best as we can ascertain it.

And some truths fill us with awe. Others force us to question long-held views. Science can't answer every question, and indeed, it seems at times the more we plumb the mysteries of the physical world, the more humble we must be. Science cannot supplant our ethics or our values, our principles or our faith. But science can inform those things and help put those values—these moral sentiments, that faith—can put those things to work—to feed a child, or to heal the sick, to be good stewards of this Earth.

We are reminded that with each new discovery and the new power it brings comes new responsibility; that the fragility, the sheer specialness of life requires us to move past our differences and to address our common problems, to endure and continue humanity's strivings for a better world.

As President Kennedy said when he addressed the National Academy of Sciences more than 45 years ago: "The challenge, in short, may be our salvation."

Thank you all for all your past, present, and future discoveries. [Applause.] May God bless you. God bless the United States of America. [Applause.]

EXHIBIT

23

Investigative Report of
Drakes Bay Oyster Company
Environmental Impact Statement

Report Date: February 7, 2013

This is a version of the report prepared for public release.

SYNOPSIS

On May 2, 2012, the Office of Inspector General (OIG) initiated an investigation based on allegations against unnamed employees from the National Park Service (NPS) and NPS contractor Vanasse Hangen Brustlin (VHB) of misconduct, scientific misconduct, and fraud, waste, and abuse. The complainant, an elected member of the National Academy of Sciences (NAS) and adjunct professor at a California university, alleged that either NPS or VHB altered, concealed, or unfavorably misrepresented soundscape data in a draft environmental impact statement (DEIS) that was prepared jointly by NPS and VHB to address environmental impacts for the potential issuance of a special use permit (SUP) to Drakes Bay Oyster Company (the Company). The data in question led to the assessment of the Company's oyster farming equipment as having a "major" impact on the soundscape within the Point Reyes National Seashore.

Included in the allegations of misrepresented data were claims that NPS and VHB failed to use the "best science available" when selecting proxy data to represent the Company's equipment and how NPS was required to collect actual noise emissions from Company equipment. The complainant claimed draft edits and revisions were performed with the intent to deceive the public, peer reviewers, and decisionmakers. The complainant also alleged that NPS and VHB staff engaged in misconduct and/or scientific misconduct. Specifically, the complainant alleged that NPS influenced decisions over where to place ambient sound level collection devices in Drakes Bay, influenced VHB to report unfavorable findings, and deviated from soundscape management regulations and policies. In addition, he alleged NPS and VHB staff failed to recuse themselves from the DEIS project, despite the appearance of conflicts of interest. Finally, the complainant alleged the deceptive information in the DEIS constituted fraud; the complainant, as well as the Company's owner, also claimed the institution of the EIS process in order to issue an SUP was unwarranted and therefore wasted taxpayer funds.

We found no evidence, documents, DEIS revisions, or witnesses that supported the complainant's allegations.

The results of this investigation were reported to the NPS Director.

BACKGROUND

Point Reyes National Seashore

The Point Reyes National Seashore (Point Reyes) Act was signed into law by President John F. Kennedy on September 13, 1962, making Point Reyes the third of 14 National seashores eventually added to the National Park System.[1] The intent of Congress in the passage of the Act was to preserve the diminishing coastal shoreline. As a National seashore, Point Reyes is managed by NPS and is considered to be one of the most geologically and ecologically diverse National parks in the NPS system.

[1] "Final Environmental Statement, Proposed Wilderness Point Reyes National Seashore," prepared by the Department of Interior, National Park Service, Western Regional Office, April 23, 1974.

Point Reyes National Seashore Wilderness Plan and Act

The National Wilderness Preservation System (NWPS), which was created subsequent to the Wilderness Act of 1964, establishes a process for congressional designation of future acreage of land within the National Parks and wildlife refuges.[2] The NWPS directs Federal land management agencies to survey their territory and submit their recommendations to Congress as to which land qualifies for consideration as wilderness designation. Congress maintains the power to bypass agency recommendations and make independent decisions.

In conformance with the NWPS, Stuart Udall, then Secretary of the Interior, directed NPS to evaluate "potential wilderness" designations of all suitable areas of 5,000 or more continuous acres in all existing NPS units.[3] Based on Secretary Udall's directive, NPS studied Point Reyes to determine the suitability of designating any of its land as wilderness. In 1973, NPS submitted its Wilderness Plan for Point Reyes to Congress with a recommendation to designate 10,600 acres within Point Reyes as wilderness under the NWPS. The plan states: "In terms of preserving and protecting marine life systems, Drakes Estero and Limantour Estero could well be considered the most significant ecological units within the [National] seashore."[4]

On October 20, 1976, the Point Reyes Wilderness Act (Public Law 94-567) was signed into law by President Jimmy Carter, which designated much of Point Reyes' coastal land and water as wilderness.[5] In addition, it expanded Point Reyes' boundaries to include an added 25,370 acres of designated wilderness, as well as identified an additional 8,003 acres as "potential wilderness."

Potential wilderness is defined as "lands that are surrounded by or adjacent to lands with the wilderness designation but that do not themselves qualify for immediate designation due to temporary, nonconforming, or incompatible conditions."[6] According to NPS 2006 Management Policies for Wilderness Preservation and Management § 6.3.1., potential wilderness areas are required to be managed under the same guidelines as wilderness areas to the extent that existing nonconforming conditions allow.

The potential wilderness designated lands within Point Reyes includes the waters of Drakes Estero and the adjoining intertidal land upon which the Company currently operates as a commercial oyster business.[7] While most of Drakes Estero has been designated or converted to

[2] Public Law 88-577, also known as the Wilderness Act, was signed into law by President Lyndon B. Johnson on September 3, 1964. This legislation not only protected over 9 million acres of Federal land throughout the United States, it also provided a legal definition for the term "wilderness" as "an area where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain." (House, "Point Reyes National Seashore Wilderness Act," 94th Congress, 1976, Public Law 94-544 (accessed March 21, 2008); available from Congressional Universe.)

[3] "Digest of Federal Resource Laws of Interest to the U.S. Fish and Wildlife Service" (accessed March 24, 2008); available from http://fws.gov/lawsdigest/WILDRNS.HTML.

[4] "Final Environmental Statement, Proposed Wilderness Point Reyes National Seashore," prepared by the Department of Interior, National Park Service, Western Regional Office, April 23, 1974.

[5] House Report (Interior and Insular Affairs Committee) "Point Reyes National Seashore Act" No. 94-1680, September 24, 1976 (To accompany H.R. 8002) and Public Law 94-544, http://www.nps.gov/pore/parkmgmt/upload/lawsandpolicies_publiclaw94_544.pdf.

[6] NPS Management Policies Manual, § 6.2.2.1, 2006.

[7] Field Solicitor, Office of the Solicitor, San Francisco, California, "Point Reyes Wilderness Act," to Superintendent, Point Reyes, February 26, 2004.

wilderness status, the acreage used by the Company remains potential wilderness because the cultivation of oysters for food was a nonconforming use of a wilderness area, which is allowed to operate in Point Reyes until its reservation of use and occupancy (RUO) agreement with NPS expires on November 30, 2012. The Department of Interior (DOI) Office of the Solicitor has expressed that according to the Wilderness Act, once the RUO expires, NPS must convert the Company and Estero tracts to wilderness as soon as possible.

History of the Drakes Bay Oyster Company and Point Reyes

Soon after Point Reyes was officially added to the National Park System, NPS officials began the task of acquiring tracts of lands designated as wilderness areas from private entities that owned land within Point Reyes' boundaries. The three primary methods by which NPS purchased this land included outright purchase, acquisition of titles with reservations for ranchers to continue working the land, and exchange of Federal lands of equal value elsewhere in California or an adjacent State.[8]

After a decade of negotiations, Charles W. Johnson, then the owner of the Johnson Oyster Company, sold 5 acres of onshore property located within Drakes Estero to NPS in 1972. As a condition of this sale, Johnson agreed to operate under an RUO. The agreement allowed him to retain the right to use and occupy 1.5 acres and to continue oyster-farming operations. The RUO would be in place for 40 years, expiring on November 30, 2012.[9] NPS RUOs are deeded interests in the real estate and by policy cannot be renewed beyond their expiration dates.[10] In 2005, Johnson assigned the right of the remaining years in this RUO agreement to Kevin Lunny, who purchased the oyster farm and renamed it Drakes Bay Oyster Company.[11]

Environmental Impact Statement Compliance

The National Environmental Policy Act (NEPA) (42 U.S.C. § 4321 et seq.) was signed into law on January 1, 1970. NEPA establishes National environmental policy and goals for the protection, maintenance, and enhancement of the environment and provides a process for Federal agencies to implement these goals. Title I of NEPA contains a "Declaration of National Environmental Policy," which requires the U.S. Government to use all practicable means to create and maintain conditions under which man and nature can exist in productive harmony. Section 102 requires Federal agencies to incorporate environmental considerations in their planning and decisionmaking. Specifically, all Federal agencies are to prepare detailed statements assessing the environmental impact of and alternatives to "major Federal actions" significantly affecting the environment. These statements are commonly referred to as environmental impact statements (EISs). According to the Council on Environmental Quality (CEQ), the primary purpose of an EIS is to serve as an action-forcing device to ensure that NEPA policies and goals are infused into the ongoing actions of the Government. An EIS provides full and fair discussion of significant environmental impacts and informs

[8] Paul Sadin, "Managing a Land in Motion: An Administrative History of Point Reyes National Seashore," NPS, October 2007, 129.
[9] NPS, "Tracts Conveyed Between 01/01/1950 and 05/20/2003 for Point Reyes NS," computer run date April 20, 2003, I, File L1425 Land Acquisition Priority List and LWC Fund Calls, Land Files, CCF, Point Reyes.
[10] NPS Director's Order No. 25: Land Protection, dated January 19, 2001.
[11] NPS Grant Deed with Johnson Oyster Company, dated November 9, 1972.

decisionmakers and the public of reasonable alternatives that would avoid or minimize adverse impacts or enhance the environment.[12]

Before NPS can issue a new special use permit (SUP) to the Company, which is viewed as a major Federal action by NEPA standards, NPS is required to comply with the NEPA process and conduct an EIS to assess environmental impacts of the Company's operations within Point Reyes.[13]

CEQ regulations address how NPS should collect information for the EIS. Specifically, the CEQ addresses issues of "Incomplete or Unavailable Information" in 40 C.F.R. § 1502.22, which states:

> When an agency is evaluating reasonably foreseeable significant adverse effects on the human environment in an environmental impact statement and there is incomplete or unavailable information, the agency shall always make clear that such information is lacking.
>
> (a) If the incomplete information relevant to reasonably foreseeable significant adverse impacts is essential to a reasoned choice among alternatives and the overall costs of obtaining it are not exorbitant, the agency shall include the information in the environmental impact statement.

In addition, NEPA guidance for the EIS process (40 C.F.R. §1502.24), regarding "Methodology and Scientific Accuracy," states: "Agencies shall insure the professional integrity, including scientific integrity, of the discussions and analyses in environmental impact statements. They shall identify any methodologies used and shall make explicit reference by footnote to the scientific and other sources relied upon for conclusions in the statement."

Consistent with NEPA, NPS Director's Order 12 mandates that every Federal agency prepare an in-depth study of the impacts of "major Federal actions having a significant effect on the environment" and propose alternatives to those actions. Order 12 further requires that each agency make the information an integral part of its decisions. In addition, Director's Order 12 defines purpose, need, and objectives to assist in the development of a range of alternatives, one of which becomes the "preferred" alternative or the environmentally preferred alternative at the conclusion of the analysis process. This "preferred alternative" is then identified in either an environmental assessment or EIS before it is released to the public for review and comment.[14]

In addition, NPS Director's Order 47 provides NPS with operational policies under NEPA that require the protection, maintenance, or restoration of the natural soundscape resource to a condition unimpaired by inappropriate or excessive noise sources. The order requires park planning efforts to—

[12] CEQ Regulations for Implementing NEPA for EISs.
[13] NEPA EIS Guidance, 40 C.F.R. Part 1500.
[14] NPS Director's Order No.12, Conservation Planning, Environmental Impact Analysis, and Decision-making.

1. describe the baseline natural ambient sound environment in qualitative and quantitative terms;
2. identify sound sources and sound levels consistent with park legislation and purposes;
3. identify the level, nature and origin of internal and external noise sources;
4. articulate desired future soundscape conditions; and
5. recommend the approaches or actions that will be taken to achieve those conditions or otherwise mitigate noise impacts.[15]

According to Order 47, ambient sounds attributable to human activities in National parks are defined as human-made sound. In a National park setting, these sounds may be associated with activities that are essential to the park's purpose, they may be a byproduct of park management activities, or they may come from outside the park. It is these sounds and sound levels that need to be measured and evaluated in park planning processes to determine whether they are consistent with or detrimental to soundscape management objectives.

The Drakes Bay Oyster Company Environmental Impact Statement

On February 26, 2004, the DOI Field Solicitor's letter expressed his interpretation of the Wilderness Act and the Point Reyes Wilderness Act regarding the designated potential wilderness areas of Drakes Estero. In the solicitor's opinion, NPS did not possess the authority to renew an RUO for continued oyster fishing operations within Point Reyes based on the intent of the aforementioned Acts. In addition, he felt NPS was required to "actively seek to remove from potential wilderness the temporary, nonconforming conditions that preclude wilderness designation."

In May 2009, the National Academy of Sciences (NAS) conducted a review of environmental reports for Point Reyes and concluded that there was no scientific evidence that the Company had major adverse ecological effects on Drakes Estero. The NAS review did not address soundscape or the impacts of sound in their report. In October 2009, Senator Diane Feinstein's (D-CA) rider in DOI's appropriations bill authorized the Secretary of the Interior to decide whether or not to issue a new SUP to the Company for a period of 10 years, with the same terms and conditions as the existing authorization, while taking into consideration NAS' 2009 recommendations.

In January 2010, NPS' Environmental Quality Division (EQD) began planning with NPS' Inter-disciplinary Team (IDT) at Point Reyes to determine the need and scope of the Company EIS. One of EQD's roles is to manage all of NPS' complex or controversial environmental issues. EQD and Point Reyes staff held internal scoping meetings in July 2010 to determine the need and scope of the EIS, while the General Schedule contract was advertised and contractors submitted bids for the project. No documentation from these scoping meetings suggests that sound or soundscape issues were predicted to be major impacts in the EIS, aside from sound being one of 30 general areas of consideration listed on NPS' Environmental Screening Form and addressed in the scoping meetings. In August 2010, VHB was awarded the Company EIS project. Immediately after the award, VHB, NPS, EQD, and Point Reyes staff began conducting

[15] NPS Director's Order No. 47, Soundscape Preservation and Noise Management.

additional internal scoping meetings. In addition to the scoping meetings, VHB attended site visits with Point Reyes staff members on October 2010 and February 2011, where VHB representatives made observations and solicited information from the Company pertinent to performing the EIS.

In October 2010, VHB assisted Point Reyes staff members present the EIS process in public scoping meetings and solicited input and feedback from the public in order to address all potential concerns pertaining to the SUP for the Company. Between January and May 2011, VHB began circulating internal copies of draft EIS chapters to the IDT and EQD members, where numerous comments, edits, and revisions were made. These chapter revisions were in preparation of circulating a complete internal draft EIS to cooperating agencies. In June 2011, the complete draft EIS was sent to all cooperating agencies as a non-public, internal draft for their review and edits. In September 2011, the first public version of the draft was circulated and public feedback was solicited; during the public review process, more than 52,000 comments were received from supporters as well as those who opposed issuing an SUP to the Company. The September 2011 draft identified two areas that were assessed as having major impacts on the Seashore using thresholds ranging from negligible, minor, moderate, to major; the two areas assessed as major were soundscape and socioeconomic.

From January to February 2012, NPS contractor Atkins North American, Inc. (Atkins), performed an independent peer review of DEIS's scientific/data driven chapters, specifically Chapter 3, "Affected Environment," and Chapter 4, "Environmental Consequences"; Atkins examined the "scientific and technical information and scholarly analysis presented in the document" to determine appropriateness and reasonability of the information. In March 2012, Atkins published its peer review report stating that the DEIS was "well-written with adequate analysis and use of best available scientific information." Atkins pointed out that the socioeconomic analysis did not reflect the best available science, but that in general, the DEIS as a whole contained appropriate analyses and there was "no fundamental flaw with the larger scientific underpinning of the DEIS." The discrepancies identified by Atkins were created by a lack of appropriate citations, and were "for the most part minor, and can be rectified if the NPS so wishes."

In March 2012, the complainant submitted his allegation of scientific misconduct and misconduct against NPS and VHB to DOI's Scientific Integrity Office (SIO). SIO and OIG agreed to conduct a joint investigation of the allegations, where OIG would focus on the misconduct aspects and SIO would assess the scientific misconduct claims. In accordance with the DOI Departmental Manual, part 305, the complainant was asked to provide additional biographical details as well as evidence supporting his allegations. In late April 2012, the complainant subsequently resubmitted an additional complaint in which he questioned SIO's integrity and claimed the SIOs had conflicts of interest. The departmental SIOs assigned to investigate the scientific misconduct allegations recused themselves and the scientific misconduct allegation was referred to OIG.

In its Consolidated Appropriations Act of 2012 (P.L. 112-74), Congress directed NAS to "assess the data, analysis, and conclusions in the DEIS in order to ensure there is a solid scientific

foundation for the Final Environmental Impact Statement expected in mid-2012."[16] In May 2012, NAS announced its initiation of a review of the DEIS as well as the peer review conducted by Atkins.

Previous Allegations and OIG Investigations

A 2007 OIG investigation[17] determined that Point Reyes staff published a report[18] on Drakes Estero containing several inaccuracies regarding the ecological impact of the non-native oyster's and their sedimentation's effect on the Estero's vegetation and fish species and how the Company's boat operations impacted the harbor seals. After receiving information from the complainants, NPS removed the report from its Web site and posted an "acknowledgement of errors" in its place. The 2007 investigation determined that a Point Reyes senior science advisor had misrepresented research regarding sedimentation and harm to the harbor seals in Drakes Estero.

Key Reference Material Pertinent to Assessing Drakes Estero Soundscape

During the course of this investigation, several key references were cited either within the DEIS by VHB or NPS, while others were noted in the complainant's allegations. Below is a summary of each of these key references and their relevance to this investigation.

Road Construction Noise Model

The U.S. Department of Transportation (DOT) - Federal Highway Administration's (FHWA), Road Construction Noise Model (RCNM) User Guide, dated January 2006,[19] was developed as FHWA's national model for the prediction of construction noise. Because construction is often conducted in close proximity to residences and businesses, construction noise must be monitored to avoid impacts on communities. FHWA developed the RCNM based on the noise prediction calculations and the equipment database used during the Central Artery Tunnel (CA/T) project in Boston, MA, in the 1990s. The RCNM provides a construction noise screening tool to predict construction noise levels and to determine compliance with noise limits for a variety of construction noise projects of varying complexity.

The coauthors of the RCNM collected the majority of sound levels illustrated in the RCNM from the CA/T project, where the equipment was measured under actual working conditions. Other sound level data in the RCNM was extracted from various other construction sites over a period of 8 to 10 years, where "thousands of individual equipment noise emission measurements" were captured. The RCNM sound levels are averages of the equipment researched, and none of the levels are specific to make, model, or capacity of the listed equipment. VHB and NPS used this report in the DEIS to select proxy equipment and associated noise levels to represent the Company's noise generators.

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[16] Public Law 112-74, Congressional Record Volume 157, Number 193, December 15, 2011, Conference Report on H.R. 2055, National Park Service, Operations of the National Park System.
[17] Refers to DOI OIG's 2007 investigation Case No. OI-CA-07-0297-I.
[18] Point Reyes' report titled "Drakes Estero: A Sheltered Wilderness Estuary, dated February 2007."
[19] U.S. Department of Transportation, "FHWA Roadway Construction Noise Model User's Guide," FWHA-HEP-05-054, DOT-VNTSC-FHWA-05-01, January 2006.

John A. Volpe National Transportation System Center

In 2009, DOT's Research and Special Programs Administration, John A. Volpe National Transportation System Center (Volpe Center) partnered with the Federal Aviation Administration (FAA) and NPS to conduct preliminary research for the future development of an Air Tour Management Plan (ATMP) for Point Reyes, which has commercial air tours. To develop an ATMP, Point Reyes was monitored to establish the lowest and highest baselines or ambient sound levels; the baseline is used for comparison purposes to determine the impacts of noise levels generated by air tours. The Volpe Center monitored four sites within Point Reyes in the summer and winter of 2009. In March 2011, the Volpe Center and FAA finalized their report, titled "Baseline Ambient Sound Levels in Point Reyes National Seashore," hereafter referred to as the Volpe 2011 report.

Noise Unlimited

Noise Unlimited, Inc. (NU) is an independent research consultant who authored the report, "Boat Noise test Using Static and Full-Throttle Measurement Methods," in November 1995. NU's report revealed their research was conducted for the State of New Jersey, Department of Law and Public Safety, Division of State Police, Marine Law Enforcement Bureau. The report unfortunately does not clarify the need or scope of the testing of the personal watercraft. The NU research focused its noise level measurements on personal watercraft vessels. VHB and NPS used this report in the DEIS as a source for representative sound data in which they selected proxy data to represent Company boats.

Environ International Corporation

The Company contracted Environ International Corporation (Environ) to review the DEIS and offer their comments on the document. On November 22, 2011, Environ staff recorded direct sound level measurements of the Company's noise generators, where Environ indicated their sound levels were significantly lower than cited by VHB in the DEIS, based on proxy or representative data extracted from the previously addressed NU and RCNM documents. Environ's comments report lower noise emissions, which subsequently reduces the estimated distances before the noise levels dissipate. Environ compiled its collective findings regarding all areas within the DEIS and published their "Comments on [the Company] Special Use Permit Environmental Impact Statement [Point Reyes]," dated December 9, 2011.

DETAILS OF INVESTIGATION

The complainant, an elected member of the National Academy of Sciences (NAS) and adjunct professor at a California university, alleged that the National Park Service (NPS) and its contractor, Vanasse Hangen Brustlin (VHB), falsified soundscape data in the Drakes Bay Oyster Company (the Company) Draft Environmental Impact Statement (DEIS) for the issuance of a special use permit (SUP) to continue oyster farming operations beyond November 30, 2012. The complainant alleged that NPS and VHB engaged in scientific misconduct and misconduct, and the deceptive information in the DEIS constituted fraud. The complainant, as well as the Company's owner, also claimed the institution of the EIS process to issue an SUP was

unwarranted and therefore wasted taxpayer funds.

Specifically, the complainant alleged that NPS and VHB presented falsified soundscape data in the DEIS for the Company. The complainant stated that the soundscape data did not originate from the Company's equipment and therefore the "data and metrics were distorted, invented, falsely represented, overestimated, underestimated, and exaggerated," which ultimately led to the Company's operations being assessed as having a "major" impact on Point Reyes soundscape. The complainant also alleged that either NPS or VHB failed to use the best available science in the DEIS and claimed that NPS and VHB made revisions "between the June 2011 non-public version of the DEIS and the September 2011 public version in such a way as to intentionally deceive the public and peer-reviewers." The complainant further alleged that the revised versions of the DEIS "deceived" the NPS contracted scientific peer reviewer of the DEIS.

In addition, the complainant alleged that either NPS or VHB engaged in scientific misconduct and misconduct based on the claim that NPS influenced VHB's collection of data and subsequent reporting, revealing a "bias" by the DEIS preparers to find "major impacts of environmental harm by [the Company]." The complainant alleged that NPS deviated from its own directives as well as National Environmental Protection Act (NEPA) policy for EISs by failing to "measure [the Company] noise generators and misrepresented ambient baseline conditions" collected by the John A. Volpe National Transportation System Center (Volpe Center). The complainant also claimed that several key individuals conducting the DEIS for NPS and VHB had a conflict of interest and failed to recuse themselves from the project.

In addition to the allegations of data misrepresentation and misconduct by members involved in the EIS process, the complainant and the Company owner alleged NPS committed fraud via deceptive reporting and a waste of taxpayer funds by unjustly implementing the EIS process for the issuance of an SUP.

Allegations of Misrepresentation of Scientific Soundscape Data

The complainant alleged that either NPS or VHB presented falsified scientific data, specifically within the soundscape sections of the DEIS, which led to unfavorable and false conclusions regarding the Company's impact on Point Reyes' soundscape and wilderness.

Allegations of the Over- and Underestimated Sound-Level Data to Represent Company Equipment

The complainant alleged that either NPS or VHB used acoustical data references in the DEIS that were not accurate or applicable. He claimed that the references and proxy data used did not accurately represent the Company's equipment and that NPS or VHB overestimated the Company's sound emissions. The complainant said that the Environ International Corporation (Environ) report declared lower noise emissions and reduced sound dissipation distances than those cited in the DEIS.

Our investigation and interviews of U.S Department of Transportation (DOT) acoustic experts revealed that VHB appeared to follow the industry standard of modeling and properly selected

proxy data to represent Company noise generators in an attempt to predict the noise levels emitted by the Company's commercial oyster farming equipment. The DOT developers of the Federal Highway Administration (FHWA) Road Construction Noise Model (RCNM) User Guide explained the proper use of the guide and how selections should be based on mechanical similarities and function, the same process that VHB appeared to follow. The surfacing of new relevant soundscape research suggested the sound levels selected by VHB to represent Company boats were likely underestimated; NPS' and VHB's acoustic experts plan to incorporate this new soundscape data, as well as the Environ report, once all the data have been vetted, which will better clarify the noise level ranges estimated for the Company's equipment. According to NEPA and Council on Environmental Quality (CEQ) regulations, the collection of new data for an EIS is not a requirement unless there is a clear data gap; otherwise, the guidance recommends the use of best available information and science at the time of the research, the classification of which is subjective. The VHB staff responsible for selecting representative data for Company noise generating equipment expressed that there was a limited amount of sound information available, but told us that their selections were reasonable and justified based on mechanical similarities. The aforementioned information was determined through the following investigative steps.

Our review of the September 2011 DEIS, Chapter 3, Table 3-3 (Figure 1), revealed a list of the Company's noise generators and the associated represented sound levels. The complainant alleged the sources of cited reference material did not accurately depict Company equipment, as the reference material was derived from sources dealing with road construction equipment or were from outdated personal watercraft noise levels from out of state. The estimated levels illustrated in the DEIS violate the NPS' standard impact thresholds of sound not to exceed 60 decibels (dBA)[20] within National parks.

TABLE 3-3. NOISE GENERATORS AT DBOC

Equipment	Description†	Frequency of Use (Weather Permitting)†	Representative Sound Level at 50 Feet (dBA)[a]
Motorboat	20 HP, 4-cycle engine	Up to 12 40-minute trips/day	71*
Motorboat	40 HP, 4-cycle engine	Up to 12 40-minute trips/day	71*
Forklift	60 HP diesel engine	2 to 4 hours/day	79**
Pneumatic drills	Handheld hydraulic drills	Approximately 2 hours/day	85**
Oyster tumbler	Tube for sorting oysters by size, run by electric motor	Approximately 2 hours/day	79**

Sources: †DBOC [Lunny], pers. comm., 2011h; *Noise Unlimited, Inc, 1995; **FHWA 2006.

[a] Hourly values

Figure 1. Table 3-3 from the September 2011 version of the DEIS. Figure 1 appears as here as it does in the September 2011 DEIS, based on the allegations that the shortened citations deceived the peer reviewer and public.

Our review of the DEIS' soundscape section (Chapter 3) identified references to distances for from how far away measurements were made by researchers; for instance, VHB reports: "At 50 feet from the receptors, [Company] operations contribute . . . noise to the natural soundscape

[20] dB(A) is an acoustic term that represents an A-weighted curve toward the midrange of sounds the human ear detects.

within the study area." VHB, however, did not collect actual measurements; this statement alludes to the collection methodology in the reference material. In addition, Table 3-3 (see Figure 1) shows that all predicted sound levels were, above water, hourly values and were "representative sound level at 50 feet," from the sound generator.

Noise Unlimited, Inc., Report

The personal watercraft chosen by VHB out of the 1995 Noise Unlimited, Inc., (NU) report to represent Company boats (see reference in Figure 1) was a Kawasaki Jet Ski 750 STS, which was recorded as having a "static" level dBA of 71 and the recorded sound level for the same Jet Ski increased by 10 dBA during a "passby" measurement (dBA of 81). The NU report on personal watercraft noise emissions clarifies their methodology used to collect the data as well as terminology in the report. NU defined a "static measurement" as a measurement "made with the engine at idle with the microphone located 4ft above the water line and 2ft behind the transom of the boat, in accordance with SAE J2005 Draft, 'Stationary Sound Level Measurement Procedure for Pleasure Motorboats.' dated 10/16/89." NU defined a "passby measurement" as a measurement "made with the boat operating at full throttle, passing by the microphone at a distance of 50ft, in accordance with NJAC 7:6-6.3." The NU report states the static level for the Jet Ski (71 dBA) was collected from 2 feet behind the watercraft and 4 feet above the water line, not at 50 feet as reported in the DEIS (reference Figure 1).

VHB's acoustics representative and director of Air Quality and Noise Services spoke with us regarding the sound-level data used in the DEIS. He informed us that he possessed more than 40 years of sound and acoustics experience and that he was the project technical advisor for the DEIS and reviewed its soundscape sections for accuracy. He stated that during his research for this project, he personally located the NU 1995 report on the Internet and subsequently selected the watercraft measurements from the NU report to represent Company boats, which was based on information collected by VHB staff members during Company site tours.

We asked VHB's acoustics representative to clarify the discrepancy between the Jet Ski's dBA measured at 50 feet as recorded in Table 3-3 (see Figure 1) and its actual dBA measurement at 50 feet. He explained that upon first review of the NU report, he selected the Jet Ski because it was the smallest motor- or watercraft tested and he believed 71 dBA was a passby measurement. He said that during his search for related reference material he discovered there was a limited amount of information for sound emissions on personal watercraft, but he felt the data he chose from the NU report was reliable and an accurate representative of Company boats.

After the first DEIS was circulated and he read the public comments, VHB's acoustics representative reread the NU report and confirmed that the sound level selected for the Jet Ski (71 dBA) was in fact a static measurement and not the passby measurement he had believed it to be. He told us that the verbiage and table headers regarding distances would be corrected in the later draft iterations and the final EIS if the represented sound levels changed to illustrate the 81 dBA passby level and explained that VHB was currently coordinating with NPS on the current round of revisions.

We also interviewed the senior acoustics scientist at NPS' Natural Sounds and Night Skies

Division (NSD), Ft. Collins, CO. He told us that he had more than 17 years in the acoustics field. He believed the proxy sound levels used to represent Company's equipment were "slightly underestimated" because the Jet Ski noise level from the NU report was a static measurement and not a passby measurement. He said that he understood why the Jet Ski was selected to represent Company boats, as it was the "smallest" and "lightest vehicle" measured in the report. He also told us that since the circulation of the DEIS in September 2011, new personal watercraft sound-level research reports had been located, originating from Missouri's Ozark National Scenic Riverway and the German Ministry of Environment. These new references contain a range of higher sound levels for motors similar in size and horsepower to those used by the Company. NSD's senior scientist told us that these new research reports, as well as the Environ report, were being vetted for merit before being incorporated in the later versions of the DEIS or the final EIS.

Karen Trevino, NPS' Chief of NSD, explained that onsite noise emissions' monitoring is the preferable scientific methodology by acoustic experts over that of modeling or using representative/proxy data. Onsite monitoring, however, is not always cost effective or feasible due to time and budgetary constraints. She explained that the use of scientific proxy data in this case, the data drawn from the NU report and the RCNM, and modeling is common practice for predicting noise levels and impacts for soundscape projects. Regarding VHB's selection of representative equipment presented in the DEIS, she felt the best available science at the time was used and that the proxy data selected was high quality and negated the need to collect new data.

Company Equipment and the Road Construction Noise Model

The DOT-FHWA noise team leader and coauthor of the 2006 RCNM, stated that the guide is a tool that provides users broad predictions and estimates in noise levels associated with road construction. He clarified that the RCNM provides only estimates and should not be used for definitive answers since the outputs of noise levels vary and were mainly isolated to the CA/T project. He advised us that there is no requirement to use the RCNM when predicting noise emissions.

The DOT-FHWA noise team leader also explained to us that the guide or model is generally used in pre-planning stages to predict the potential impacts of noise on future projects before construction began. If the RCNM is referenced, the citation should be clear that the data regarding impact and results are not definitive and that it is a generalized tool. To get actual results or dBAs for a given piece of machinery or a project, the user would need to develop a model to capture the data and record how the sampling was conducted so that the conditions and environment that yielded the results could be recreated by other researchers.

A member of the DOT-FHWA Environmental Technical Services Team spoke with us regarding the RCNM. He explained that there is not an industry standard for determining the impacts of sound on the environment; there are only default values and general community practices. He confirmed that the RCNM is a model used only to predict the potential impacts of sound on an environment and contains generalized sound information. He said that the RCNM does not factor in the "local noise budget," which he described as the variances in background noise, or how

these variances (e.g., wind, engine noise, human factors) of each environment can affect sound levels. There are research study protocols to guide soundscape collections, but he said it is the researchers' responsibility to use the best science available.

A senior acoustical noise engineer at Parsons Brinkerhoff coauthored the 2006 RCNM with the DOT-FHWA noise team leader and was contracted as the lead researcher for the user guide by DOT. He explained that the majority of sound levels were collected on the CA/T site under actual working conditions. He said that other data were extracted from other construction sites over a period of 8 to 10 years, and that he collected "thousands of individual equipment noise emission measurements." The senior acoustical noise engineer explained he never recorded make, model, or capacity data for any of the equipment he researched or surveyed. He said that the noise levels reflected in the RCNM were averages of the thousands of samples; for example, he surveyed approximately 500 cranes, averaged their DBA levels, and used this figure in the RCNM.

The senior acoustical noise engineer also stated that the RCNM was developed to be a flexible tool to provide users with rough estimates of emissions to predict noise levels during the course of a construction project, affording planners and developers the ability to determine potential impacts a construction project may have on the immediate environment. He told us that the RCNM explains the methodology used during their research in case future users wanted to incorporate additional items to the list of equipment in the RCNM. He emphasized that the RCNM remains the world's most comprehensive report for heavy construction equipment and has been used and referenced in scores of noise analysis internationally.

Table 3-3 from the DEIS lists the Company equipment in question and provides a represented sound level for each (see Figure 1). We met with Lunny, who advised us that the Company's oyster tumbler was developed and handcrafted onsite to meet the business' operational needs; he told us that the holes in the tumbler's barrels were hand drilled and demonstrated how hole size helps the his staff sift and sort the oysters by size for growing purposes.

We clarified VHB's selection process of equipment from the RCNM to represent Company equipment with the acoustics representative, who verified he chose to use the RCNM as a reference and reiterated how he personally selected the items various items of construction equipment from the RCNM to represent the Company equipment referenced in the DEIS' Table 3-3 (see Figure 1 and Attachments 4 and 5). He stated he selected the representative items and the associated estimated sound levels from the RCNM based on the mechanical similarities to and functionality of each item of Company equipment observed during VHB's onsite tour on February 16, 2011. For example, the RCNM category "pneumatic tools" was used to represent the Company's pneumatic hammer/drill. He told us the selection from the RCNM to represent the oyster tumbler was based on what he felt were similarities between the oyster tumbler's motors, operation, and function to that of a cement mixer, which was eventually selected to represent the oyster tumbler in the DEIS. VHB's acoustics representative said, however, the oyster tumbler was likely louder than his selection from the RCNM and what was reflected in the DEIS, based on the sound produced by the oyster shells colliding inside the drum, unlike liquid concrete. He confirmed his belief that all of his selections were reasonable and justifiable based on the information provided to him by the VHB staff members who attended the onsite tours of

the Company.

VHB's acoustics representative explained he has historically used the RCNM for similar projects at both the State and Federal levels. He felt his selections were reasonable based on the information provided to him by the VHB staff members who attended the Company's onsite tours and the limited amount of information relative to Company equipment. He said that he was never onsite with the Company and never personally observed or heard the equipment in use; VHB's Federal program manager provided a specifications sheet with the details of each Company operational noise generator and frequency of use to him, and VHB's EIS project manager drafted the soundscape section for VHB. Photos of the Company equipment, as well as a verbal account, accompanied the details sheet from VHB's Federal program manager regarding the mechanics of each item.

Environ Report

The complainant alleged that the DEIS "Exaggerated that [Company] equipment could be heard up to 3.3 miles from source, when [Environ's] actual measurements revealed the sounds dissipate in hundreds of feet" (See Attachment 1). He said that Environ's measurements of Company equipment noted a significant decrease in sound levels. He also said: "DEIS claimed that the [Company] oyster tumbler could be heard for 12,672 feet (2.4 miles). The [Environ] data shows that it can be heard for only 140 feet. . . . Nevertheless, [the peer reviewer] does not change his conclusions."

Our interviews of the NPS Environmental Quality Division (EQD) staff (see Attachment 6) and VHB staff responsible for the technical accuracy (see Attachments 4 and 5) of the DEIS revealed that the Environ report was still being reviewed for scientific methodology at the time the DEIS was undergoing its revisions. Until that review is complete, a decision cannot be made regarding whether the Environ data or report can be incorporated into the DEIS as a supporting document to establish the range of sound levels.

Allegations of Falsely Represented Percentage of Use by the Company/Availability of Key Information

The complainant and the Data Quality Act (DQA) complaint alleged the DEIS falsely represented the percentage of use of Drakes Estero by Company boats. The DQA complaint states that the Company recorded the frequency and duration of each boat trip via GPS trackers, and, while those data sets were made available to NPS, they were not used to determine the Company's percentage of use. The complainant and the DQA alleged: "The NPS staff and scientists are aware of these data. Lunny disclosed the existence of the GPS recordings at the February 2010 Marine Mammal Commission (MMC) panel . . . and he offered to make this data available to the MMC panel members and NPS scientists." The DQA complaint claimed the complainant was "the only scientist to have ever requested and obtained the [Company] GPS data." The DQA and the complainant also alleged that the Company's GPS boat data would "irrefutably demonstrate" that the percentage of use in the DEIS is "exaggerated and misleading," and the number of boat trips into Drakes Estero was overestimated, which led to an assessment of a major impact on the Point Reyes soundscape.

Our investigation revealed that based on NPS' Impact Thresholds manual, VHB was required to not only locate representative sound levels for the Company's noise generators, but to calculate the frequency and duration of Company boat trips into Drakes Estero to determine the percentage of use. Lunny provided VHB with a verbal estimated account of Company boat trips during a site tour. VHB then made several more requests for the Company's GPS records to vet Lunny's estimates. Those data, however, were never provided to VHB. Because of the limited information available to VHB to determine percentage of use, VHB based the percentage of use in the DEIS on Lunny's verbal statements, which led to an assessment of a major impact on Point Reyes' soundscape. This information was collected during the following investigative steps.

The sound-level thresholds for NPS derived from title 36 Code of Federal Regulations (C.F.R.), § 2.12: "Parks, Forests, and Public Property, Audio Disturbances" states:

> Operating motorized equipment or machinery such as an electric generating plant, motor vehicle, motorized toy, or an audio device, such as a radio, television set, tape deck or musical instrument, in a manner: (i) That exceeds a noise level of 60 decibels measured on the A-weighted scale at 50 feet; or, if below that level, nevertheless; (ii) makes noise which is unreasonable, considering the nature and purpose of the actor's conduct, location, time of day or night, purpose for which the area was established, impact on park users, and other factors that would govern the conduct of a reasonably prudent person under the circumstances.

According to NPS' manual for "Environmental Impact Methodologies and Thresholds 2006," soundscape impact thresholds are declared as negligible, minor, moderate, or major based on two criteria: first, the noise emissions exceeds the threshold set by the C.F.R. (60 dBA for Point Reyes); and second, the human-caused sound exceeds a predetermined percentage of use, or the percentage of time the Company boats operate within the designated wilderness area. For example, in areas deemed "Designated and Recommended Wilderness," as illustrated in Figure 2, an impact threshold can be declared as a major impact if the percentage of use exceeds 10 percent.

Management Zone	Impact Threshold	Percent of Time that All Human Caused Sounds, including those from a Proposed Action, are Audible	Percent of Zone Affected
Designated and Recommended Wilderness	Negligible	<5%	<5%
	Minor	<5%	<10%
	Moderate	<10%	<10%
	Major	>10%	>10%

Figure 2. NPS' Soundscape Impact Thresholds based on percent of time use. This table was re-created from NPS' manual for "Environmental Impact Methodologies and Thresholds 2006," to illustrate what constitutes negligible, minor, moderate, or major impacts for Designate and Recommended Wilderness regarding percentage of use.

We also asked VHB's EIS project manager, who drafted the soundscape section, about the NPS impact thresholds used in the DEIS. She stated the Company DEIS was initially supposed to be a pilot project in which VHB would explore the use of an "alternate methodology for assessing impacts," which did not use the minor, moderate, or major rating system. After review of the April 2011 draft, however, NPS requested that VHB use the existing threshold criteria from the NPS manual titled "Environmental Impact Methodologies and Thresholds." The EIS project manager explained that NPS asked that the existing thresholds be used to prevent future lawsuits and to display consistency in methodology. She explained that the impacts within the soundscape section went unchanged and only the methodology by which the impacts were assessed changed, which led to the Company's equipment being assessed as having a major impact on Point Reyes' soundscape.

The DQA complaint stated that NPS knew of and had access to three separate forms of data for Company boat trips that relate directly to the DEIS' analysis regarding the Company's percentage of use. These consist of Company boat trip logs, Company GPS records of boat trips, and NPS time and date stamped photos and observer logs of Company boat trips. The complainant and the DQA complaint claimed: "None of those records, which were collected over a several-year period, show 'up to 12 40-minute boat trips/day.'"

The DQA complaint states that:[21]

> Consciously ignoring detailed, highly reliable, accurate, timely data reflecting frequency and duration of [Company] boat trips is not a sound and accepted scientific practice and is contrary to NPS' obligation to use the best available science and data. . . . Kevin Lunny installed GPS equipment in his two oyster boats at his own expense, made NPS personnel aware of the existence of this data, and offered to provide it to NPS to allow them to accurately determine the frequency and duration of [Company] boat trips. NPS refused to evaluate this data and include it in the DEIS, thereby violating its information-quality guidelines.

During the course of our investigation, we reviewed numerous email communications between the Company, NPS, and VHB, as well as all scoping and meeting minutes documenting items discussed by the DEIS Interdisciplinary Team (NPS and VHB). Based on a review of the emails and documents spanning from September 1, 2010, and March 8, 2011, we observed several written requests from VHB and NPS to the Company for its GPS boat tracker data were made before, during, and after Company site tours. After the onsite tour in early October 2010, VHB requested information from the Company, and the Company responded by providing its vessel transit plan, which stated that the Company staff uses handheld GPS units on boat trips into Drakes Estero. The vessel transit plan was accompanied by a map of all offshore oyster beds and racks, as well as a map of the Company's GPS tracks illustrating its boat routes. Neither the vessel transit plan nor maps, however, make mention of the frequency of Company boat trips into Drakes Estero.

We reviewed an audio recording of VHB and NPS' onsite tour of the Company hosted by Lunny

[21] DQA Section 7.1.3.2, "Ignoring Detailed GPS Data Reflecting Frequency and Duration of DBOC Boat Trips is Not a Sound and Accepted Scientific Practice."

on February 16, 2011. Lunny can be heard on the recording explaining his operation to VHB's Federal program manager; VHB's biologist; and the Point Reyes Chief of Natural Resources, Natalie Gates. During the tour, Lunny listed the Company equipment (forklift, oyster tumbler, and pneumatic hammers) and provided the number of boats, size of the boat motors, and their associated horsepower ratings. Regarding the frequency of Company boat trips into Drakes Estero, Lunny told the tour participants that Company boats collectively made "up to a dozen trips into the bay," while "other days we'll have none." Lunny stated that Company staff keeps boat logs detailing each trip into the bay and that the Company also keeps GPS boat records accounting each trip into the bay/Drakes Estero. Lunny also told VHB that Company boats make "maybe 1,500 trips a year," and that each trip takes "20 minutes out and 20 minutes back"; otherwise, the boats were either docked or parked near the oyster racks and beds.

At the conclusion of the recorded tour, the VHB biologist asked Lunny to clarify the data illustrated on the GPS track maps on the vessel transit plan. Lunny explained that the GPS maps displayed only the Company boat routes into Drakes Estero, not frequency. The VHB biologist asks Lunny if the GPS boat records capture each trip and if the Company's GPS data would be made available to VHB. Lunny confirmed that his GPS software recorded the time, date, and miles per hour stamps for each trip and that the Company downloaded the GPS memory from each boat weekly. Lunny told VHB that releasing the Company's GPS records made him "a little uncomfortable" because the intended purpose of the GPS records were to help the Company defend against claims that its operations disturbed harbor seals. He said that the Company would be "happy to share things" as long as he knew where the information would be used. VHB's Federal program manager explained to Lunny that the EIS, once final, would be a public record. Lunny said that if there was a "reason" VHB needed all of the GPS data, then the data would be provided, but he expressed his fear that the data would be used against the Company regarding seal disturbances.

In addition, our review of requests by VHB and NPS revealed after the February 2011 onsite visit, VHB forwarded a follow-up request to the Company for more information. One of the items specifically requested was "all GPS boat transit data, as specific as possible (mentioned weekly GPS data downloads and potential GPS data for routes organized by rack/bed number)." In March 2011, Lunny responded to VHB's request in a written response on Company letterhead. He replied that the Company would not make the GPS information available unless it was necessary to prove the whereabouts of a Company boat. Lunny added that he was concerned about the safety of the data because certain Point Reyes staff members that were involved with the EIS process have made public claims of the Company causing environmental harm. Lunny was concerned these employees could use the data to further their own agenda.

We asked VHB's Federal program manager about the aforementioned requests for Company GPS data. She explained that after several requests for the data and after receiving the Company's formal response,

VHB considered the issue closed and notified NPS there was no need to make additional requests to the Company. Based on the limited amount of information to validate the Company's percentage of use (frequency and duration of Company boat trips into Drakes Estero), it was based on VHB's assessment of the available information, which were the verbal accounts

provided to VHB by Lunny during the February 2011 site tour, i.e., 1,500 trips per year, up to 12 trips per day.

The VHB biologist told us that when the issue of GPS data arose during the February 2011 site tour, Lunny informed VHB that he did not feel comfortable releasing that information. The VHB biologist said that the Company had sent GPS tracker maps displaying the points within Drakes Estero frequented by Company boats. The maps, however, lacked frequency, duration, speed, or date and time data needed to determine the percentage of use.

We asked Lunny about the frequency and duration of Company boat trips. He provided us with estimations that were approximately identical to those he verbally provided to VHB's Federal program manager and the biologist, and Gates during the February 2011 site tour: 1,500 trips per year and up to 12 trips per day, while other days the Company made no trips into Drakes Estero.

We clarified the aforementioned issues surrounding the availability of Company GPS data with the complainant, who said he was unaware of VHB's request for information and the Company's response. The complainant told us that aside from the GPS data, the frequency and duration of Company boat trips could be determined by reviewing the 280,000 photographs captured with "secret cameras" deployed by NPS in Drakes Estero to monitor the Company and harbor seals. The complainant explained that the cameras were "secret" because NPS camouflaged them, failed to notify the Company of them, and "suppressed" the photographs.

The complainant told us he reviewed the NPS photographs, observer logs, and calendars; by his calculations the Company boats made 0.7 trips per day into the Estero. The observer logs and calendars covered a 66-day observation period from March to May 2008. The complainant's review, which was also documented in the DQA complaint, estimated that, on average, Company boats traveled into Drakes Estero an "average of one trip per day (six days per week); at times, two trips in a single day; and, on very rare occasions, as many as three trips in a single week."

We reviewed the NPS observer logs and calendars associated with the 280,000 photographs that captured Company boat trips in Drakes Estero. We noted that several of the entries on the observer logs simply stated "boat" or "boat stopped" and failed to provide a location or direction. The logs primarily focused on the three specific sandbars harbor seals frequent within Drakes Estero: Oyster Bar (OB), Upper Estero Near (UEN) and Upper Estero Far (UEF);the Company's oyster racks and bags located in other areas of Drakes Estero, however, were not specifically documented. We compared the maps that detailed the NPS camera angles and fields of view associated with the photos to a map that illustrated all Company oyster bags and racks in the Estero. The comparison revealed that there were several oyster bags and racks beyond the field of view of the NPS cameras that were unaccounted for in the observer logs; therefore, the exact number of Company boat trips into Drakes Estero could not be determined. We clarified this issue with the complainant and he told us that in his estimation, he did not account for the Company trips to the oyster racks and beds beyond the field of view or those areas that are close to the onshore Company operation.

We asked VHB's NPS program manager about VHB's knowledge of the referenced NPS photos, and she told us that VHB was aware of the 280,000 photographs. VHB was informed, however,

that the images and data set was undergoing a peer review by the U.S. Geological Survey (USGS) to determine the methodology and applicability before possible insertion in the DEIS. The VHB NPS program manager referred us to Ray Sauvajot at NPS, who oversaw the coordination with USGS for peer review of the photos.

Sauvajot, NPS' Chief of Natural Resource Programs for the Pacific West Region, oversaw the coordination between NPS and USGS to peer review the 280,000 photos taken of Drakes Estero. He explained that in the early planning stages of the Company EIS, NPS management decided to incorporate only information into the DEIS that met the highest standard of quality. Before being incorporated, the photos needed to be vetted to determine their merit.

Sauvajot explained that a Point Reyes senior science advisor had set up camera systems on the bluffs of Drakes Estero to capture data on harbor seal disturbances within the habitat. The study occurred over a 3-to-4-year period during the seals' pupping season (March to May). He explained the photos offered only a superficial assessment, due to several issues with the camera system and how it was maintained. For instance, Sauvajot explained that the Point Reyes camera systems were maintained infrequently and the fields of view were changed often, making analysis difficult. These variables created holes in the data sets, which made it hard for reviewers to determine the value of the information. Based on these issues, NPS decided that the photos offered an unclear data set with questionable value. NPS then asked USGS to peer review the photos to determine what information could be gained by the photos and if the data could be used in the future.

Sauvajot explained to us that USGS performed its comprehensive review of the photos to determine their credibility by evaluating the methodology and techniques used to collect the data. Sauvajot told us that he was recently informed that USGS had concluded its review and that he was awaiting its report regarding the photos' suggested use in the final EIS.

Sauvajot also commented on the Point Reyes cameras that the media labeled "secret cameras." He explained that the camera systems are highly valuable to NPS, so they are often camouflaged for security purposes and to prevent theft. Sauvajot said that NPS as an agency has a 10-to-15-year history of deploying remote camera systems in National parks and that the use of cameras has become common practice with the advancement in associated technology.

We asked whether NPS had any obligation to notify park visitors of the deployment of camera systems. Sauvajot explained there was no reasonable expectation of privacy on National park lands, and therefore there was no requirement to notify park visitors of active data collections. He reiterated that notifying park visitors has affected outcomes and altered data in the past, since visitors tend to alter their behavior if they assume they are being monitored.

The complainant alleged the NPS photos offer an equally valuable data set to determine the percentage of use. The NPS photos, however, were collected only during harbor seal pupping season, and so a 9-month data gap exists for each year. These gaps would need to be filled to estimate the Company's number of boat trips per day and year (percentage of use). In addition, the NPS camera angles were set to a limited field of view; therefore, the photos cannot account for every area visited by Company boats beyond the cameras' view.

Allegations of False Representations of Key Acoustic Data

The complainant alleged that either NPS or VHB made "false representations of key acoustic data in Chapter 4 of the DEIS," which led to "exaggerated [Company] equipment sound levels & distances" required before the noise emissions dissipated. The complainant claimed that the ambient noise levels that NPS and VHB cited in the DEIS could not be found in the Volpe 2011 report. The complainant claimed that this falsely cited data was then used in Chapter 4's tables, which underestimated the ambient levels within Point Reyes and affected the Company's assessed impact on the soundscape. These claims, when coupled with the percentage of use addressed in the above section, allegedly led to an assessment of a major impact for the soundscape sections.

Our investigation of the alleged "false representations of key acoustic data" revealed no evidence to support the complainant's allegations, based on interviews of the authors of the DEIS, the baseline ambient acoustic levels, and tables illustrating dissipation rates and distances in the DEIS tables in Chapter 4 that were derived from the Volpe 2011 report. Our investigation revealed that NPS' senior acoustics scientist from NSD, provided the calculations and verbiage in the DEIS dissipation tables to VHB. His comments and suggestions offered to VHB illustrated the dissipation of sound through the entire recorded ambient range of 25 to 44 dBA. Regarding the term "lowest daily ambient level" used in the DEIS, we located similar verbiage present in the Volpe 2011 report to address median ambient sound levels. As for the "exaggerated" distances from which Company equipment could be heard, the calculations within Chapter 4's tables were based on the proxy data selected to represent Company equipment and were calculated as though the noise were traveling across a flat surface; the terrain present within Drakes Estero was not factored into dissipation calculations. The distances the noise levels could travel were mapped in the DEIS, and an illustration depicted the perimeter affected by each item of Company equipment. This information was collected during the following investigative steps.

During our initial interview of the complainant on May 16, 2012, he said that the September 2011 version of the DEIS had changed from the June 2011 version and noted that the latest version cited 24 dBA as the "lowest daily ambient level" which was referenced as originating from the Volpe 2011 report.[22] The complainant alleged that the 24 dBA was not a measurement he located in the Volpe 2011 report and the DEIS was unclear about the origin of the term "lowest ambient sound level." The complainant explained that his research of VHB revealed that the company routinely performed EISs for the Government and historically used L_{eq}[23] to report sound data. He alleged that VHB intentionally changed its reporting metric and use of L_{eq} to deceive the public.

We learned that prior to the initiation of the Company DEIS, NPS had identified noise generated by air tours passing over the park as having a potential impact. NPS, EQD, and Point Reyes staff solicited the Volpe Center's assistance to measure and establish baseline ambient sound levels within Point Reyes for future use in generating an Air Tour Management Plan (ATMP) to mitigate the level of noise generated by the air tours (see Attachment 34).

[22] "Baseline Ambient Sound Levels in Point Reyes National Seashore, 2011," coauthored by FAA and Volpe.
[23] L_{eq} is the equivalent sound level determined by the logarithmic average of sound levels of a specific period.

In the documents the complainant provided to us, he alleged that the tables in Chapter 4 of the DEIS exaggerate the distances for which Company equipment could travel based on the false representation of ambient levels. He claimed that these tables, which calculated the dissipation rates of sound from its origin or noise generator, used measurement metrics (L_{Aeq})[24] not identified or used in the Volpe 2011 report. He claimed that the measurement metric used in the DEIS has never appeared in any other EIS performed by NPS. The complainant alleged that the 24 dBA measurement used to establish the lowest sound levels recorded by the Volpe Center was a "measure . . . apparently cherry-picked from [Volpe 2011] Figure 57." Figure 57 of the Volpe 2011 report illustrates the "Daily sound levels and wind speeds for the [Point Reyes site 004] for summer season," ranging from July 15, 2009, to August 11, 2009, which plots the sound levels recorded during this period. Based on the symbols and colors selected to illustrate the sound levels, it is difficult to determine the exact levels being reported in the Volpe 2011 report.

The NPS' manual, "Environmental Impact Methodologies and Thresholds, 2006," defines the term "natural ambient sound environment" as follows:

> The background condition from which all comparisons are made relative to adverse impacts. As stated earlier, the natural soundscape in a park is defined as its mix of ambient acoustic conditions and sounds without the intrusion of inappropriate sounds. Where data exists, this level is computed by finding the median decibel value for all natural sounds recorded during the collection period.

In addition, the manual identifies metrics and explains how they are used to manage soundscapes:

> Metrics can be used in defining standards for management of soundscapes and for setting impact levels. Examples are: L_{eq} (constant sound energy level); L_{90} (sound level exceeded 90% of the time, approximating background); L_{50} (sound level exceeded 50% of the time); % time human-caused sound is audible/detectable; area or distance over which a sound source is audible/ detectible; noise frequency of occurrence and noise free intervals.

NSD's senior scientist, told us that during a review of an early draft of the EIS, he observed a reported 20 dBA range in ambient levels between the highest and lowest daily medians recorded and reported in the Volpe 2011 report. He attributed the range variance to the winds present at Point Reyes and explained that wind can be a major factor in determining baseline ambient levels. He stated that he reviewed the Volpe 2011 report and noted it presented the highest and lowest daily median levels Point Reyes using a metric of L_{50}, with 44 dBA being the highest and 24 dBA being the lowest. He justified presenting both measurements in the DEIS, because the intent of the NEPA process is to fully disclose all data showing the complete range or measurements collected.

NSD'S senior scientist also explained the uses of the various sound-level descriptors (L_{eq}, L_{50},

[24] L_{Aeq} refers to the equivalent continuous A-weighted sound pressure level having the same energy as a fluctuating sound over a specified time period.

and L_{max}[25]) for the highest and lowest daily averages that were reported in different versions of the DEIS. These different descriptors were used to represent the relationship between the baseline ambient levels and significant noise events. He explained that NPS uses L_{eq} not only because it is used in several published scholarly articles, but also because using L_{eq} was a common practice in the acoustics field. He commented that L_{eq} is a more scientifically sound measurement and is more commonly recognized as an international standard when representing data for passby assessments. In addition, L_{eq} is NPS' preferred descriptor for reporting noise level data.

We asked the VHB EIS project manager, who drafted the soundscape sections for VHB, about the origin of the 24 dBA reported in the DEIS as the lowest daily median ambient sound level. She stated that the actual sound levels and terminology used to compile the DEIS was derived from either the final Volpe 2011 report, the draft Volpe 2011 report, or DEIS reviewer comments/emails from NSD's senior scientist; she clarified that VHB was provided a preliminary draft of the Volpe 2011 report from NPS' EQD while waiting for the report to be finalized. She explained how the high and low L_{50} (median sound levels) were present in the Volpe 2011 report's figures 20 and 21 titled "Comparison of daily L_{50} sound levels for all sites for the summer season." In the Volpe 2011 figures, the low for the daily daytime L_{50} sound level, illustrated by a light blue line, indicates that the lowest recorded level (approximately 25 dBA) occurred between July 25 and 30, 2009. The highest recorded level (approximately 44 dBA) occurred between July 20 and July 25, 2009.

We asked the EIS project manager about the term "lowest daily median ambient sound level" that appears before the tables in Chapter 4 of the DEIS. She stated that the term came from the results section of the Volpe 2011 report, as well as comments received during the review process of the DEIS from NSD's senior scientist.

We asked the EIS project manager to clarify why sound dissipation rates depicted in tables 4-2, 4-3, and 4-4[26] were calculated down to the lowest number recorded (24 dBA) versus the median sound level recorded (34 dBA). She explained that those suggestions and calculations were received from NSD's senior scientist's comments, and that in Chapter 3's soundscapes section, VHB quoted the data from the Volpe 2011 report: "The daytime L_{50} for this site was 34 dBA, although daily L_{50} values varied between 44 dBA and 25 dBA."

A review of the Excel spreadsheet titled "Point Reyes National Seashore Drakes Bay Oyster Company Special Use Permit EIS, Internal Review Draft EIS," dated July 1, 2011, confirmed that NSD's senior scientist provided the feedback, calculations, and verbiage that VHB used verbatim to populate DEIS tables 4-2, 4-3, and 4-4. This included the sound dissipation rates calculated down to 24 dBA and used to represent the complete range of ambient levels reported in the Volpe 2011 report. Regarding the complainant's questioning of the origin of the term "lowest daily ambient level," the Excel table reveals that NSD's senior scientist provided the information to VHB, where he addresses dissipation rates and includes several footnotes, references, and caveats for each sound level as the distances increase and the sound levels decreased. Associated to the 24 dBA level, he entered the following explanation: "noise levels

[25] L_{max} represents the highest instantaneous noise level heard at a receiver site during a single event.
[26] Tables 4-2, 4-3, and 4-4 display the dissipation rates for the entire range of sound levels reported in the Volpe 2011 report.

equal the median ambient sound level from the lowest daily ambient level measured."

We interviewed the coauthor of the Volpe 2011 report and DOT's acoustics project manager for ATMP, about ATMPs and the Volpe Center's relationship with NSD. She told us the Volpe Center has worked on projects and shared information with NSD for several years, and that the methodologies for noise used by NSD were rigorous. In addition, she said, NSD has offered her researchers several cutting-edge scientific methodologies that have saved the Volpe Center time and funding. Regarding the protocol for reporting ambient levels back to NSD (use of L_{eq} and L_{50}), she explained the current protocol is based on 10 years of data collection. The Volpe Center provides NSD with all data sets (L_{50}, L_{90}, and L_{eq}) and NSD then selects the data that is used in the impacts section of the ATMP. She stated she reviewed the Company DEIS after the allegations against it became public to ensure VHB referenced her report properly. She verified that the

DEIS citation and data derived from the Volpe 2011 report and that they were cited and used correctly.

Allegations of Failure To Use Best Available Science Pertaining to Soundscape

The complainant alleged that either NPS or VHB failed to use the best available science when preparing the EIS. NPS or VHB allegedly did not use appropriate proxies or representative data for Company equipment, which led to the assessment that the Company had a major impact on the soundscape.

Our investigation revealed that the term "best available science" was subjective. CEQ regulations for NEPA and the EIS process, however, do address how EIS preparers are to identify, via footnote or caveat, when information is limited or unavailable, and to address whether or not the collection of new data would be cost effective. Regarding methodology, the CEQ regulations require the use of high quality data in EISs. The NSD and VHB acoustical experts involved in the EIS process vetted the reference material and deemed it to be high quality. VHB's acoustics representative emphasized there was limited information pertaining to commercial fishing operational equipment, as well as personal watercraft research, but stated his selections of representative data were reasonable and justifiable, which was echoed by NSD's senior scientist. This information was based on the following investigative steps.

Regarding NEPA compliance and the use of best available science, we interviewed Patrick Walsh, NPS' EQD Plans and Development Branch Chief. He said that when NPS decided not to collect any onsite measurements of Company equipment, it was following regulations specific to EIS compilation. Walsh explained that other sources of data had been identified and were available to make sound-level predictions for Company equipment. He said that NEPA standards, as set forth in the CEQ regulations, state it is not necessary to collect new data if information is unavailable or there a clear data gap, meaning no relevant information can be located. He further explained that NEPA guidance for drafting EISs and NPS Director's Orders require the use of best available data or best available science to produce the "highest quality" reports. Based on the available relevant information (RCNM, NU, and Volpe 2011), though limited, NPS made the decision not to collect new data.

Walsh stated the above practices are acceptable since EISs are not meant to be classified, nor viewed as a "scientific research paper." He told us that an EIS is a tool to identify impacts, recommend corrective actions, and disclose relevant information to the public and decisionmakers; he said it was not practical to attempt to gather every article of data and incorporate into the EIS. He clarified that NPS' requirement is to use the best available science that has been vetted and deemed to be of the highest quality.

The CEQ regulation for NEPA's EIS procedures (40 C.F.R. § 1500.1(b)) states:

> NEPA procedures must ensure that environmental information is available to public officials and citizens before decisions are made and before actions are taken. The information must be of high quality. Accurate scientific analysis, expert agency comments, and public scrutiny are essential to implementing NEPA. Most important, NEPA documents must concentrate on the issues that are truly significant to the action in question, rather than amassing needless detail.

In addition, the CEQ regulation for incomplete or unavailable information (40 C.F.R. § 1502.22) states:

> When an agency is evaluating reasonably foreseeable significant adverse effects on the human environment in an environmental impact statement and there is incomplete or unavailable information, the agency shall always make clear that such information is lacking.
>
> (a) If the incomplete information relevant to reasonably foreseeable significant adverse impacts is essential to a reasoned choice among alternatives and the overall costs of obtaining it are not exorbitant, the agency shall include the information in the environmental impact statement.
>
> (b) If the information relevant to reasonably foreseeable significant adverse impacts cannot be obtained because the overall costs of obtaining it are exorbitant or the means to obtain it are not known, the agency shall include within the environmental impact statement:
>
> 1) a statement that such information is incomplete or unavailable; a statement of the relevance of the incomplete or unavailable information to evaluating reasonably foreseeable significant adverse impacts on the human environment;
> 2) a summary of existing credible scientific evidence which is relevant to evaluating the reasonably foreseeable significant adverse impacts on the human environment, and;
> 3) the agency's evaluation of such impacts based upon theoretical approaches or research methods generally accepted in the scientific community. For the purposes of this section, "reasonably foreseeable" includes impacts, which have catastrophic consequences, even if their probability of occurrence is low,

> provided that the analysis of the impacts is supported by credible scientific evidence, is not based on pure conjecture, and is within the rule of reason.

CEQ's associate director for NEPA Oversight, addressed the CEQ regulation dealing with incomplete or unavailable information and the use of available data (40 C.F.R. § 1502.22). He explained that for this section of the CEQ guidance to apply, there has to be a clear data gap or the situation must be so unique that there is no information available. He expressed the opinion that the term "best available" data or science is highly debated and subjective, though the use of best available data is a recognized method. NEPA requires the data used to be vetted, properly cited, and relevant. In addition, each Federal agency has its own specific guidance on what is required and allowable when addressing environmental issues in an EIS.

Regarding the methodology used in an EIS, CEQ's associate director quoted the CEQ NEPA guidance for methodology and scientific accuracy (40 C.F.R. § 1502.24):

> Agencies shall insure the professional integrity, including scientific integrity, of the discussions and analyses in environmental impact statements. They shall identify any methodologies used and shall make explicit reference by footnote to the scientific and other sources relied upon for conclusions in the statement. An agency may place discussion of methodology in an appendix.

We then asked NSD's senior scientist if there was a standard for using representative information versus direct measurement. He commented that there was no policy per se guiding the use of one or the other, but that NEPA requirements recommend the use of the best available science and researchers are supposed to make a "reasonable effort to fill data gaps." He emphasized that it was an acceptable practice to use a "comparable source of the analysis" for noise generators, since researchers will "never" find a true or exact "equivalent" noise source when using representative information. NSD's senior scientist stated that based on his review of the available information, he felt VHB used the best available science in the DEIS and was compliant with NEPA guidance.

The Atkins-North American peer reviewer (peer reviewer) of the DEIS from the Bioacoustics Research Program at the Cornell Lab of Ornithology, Cornell University, said that the DEIS appeared to have used the best available data. As a scientist, he said, he would have preferred to have been presented with a richer data set representing the acoustic footprint for the Company, but the DEIS' sound level data appeared reasonable.

VHB's acoustics representative and director of Air Quality and Noise Services told us that he personally located the reference material in question (NU's 1995 report and DOT's RCNM) and selected items out of both reports to represent Company equipment and their associated sound levels. He said that there was a limited amount of information related to personal watercraft or commercial fishing equipment, but felt the NU report used the best available science. He felt his selections from these reports were reasonable and justified. He told us the scope of work (SOW) for the DEIS contract requested that VHB use readily available data and did not require the collection of new data. He explained that in his experience with EISs, approximately half of the projects used similar SOWs while the other half required the collection of new data once data

gaps were identified and a need was determined. He said VHB complied with the CEQ, NEPA, and NPS guidance regarding the management of EISs because they used readily available data and science.

A review of the contract awarded to VHB on August 5, 2010, for the scope of work, revealed that "available data" was addressed in the section titled "Task 8. Science Team":

> Using a list of contacts provided by NPS, the Contractor shall invite subject matter experts to be members of the Science Team. These contacts may include academic researchers, the USGS, NMFS, resource specialists within the NPS Natural Resource Program Center and state agencies. Using the alternatives developed by NPS, the Science Team will review available data, published literature, and provide insight regarding potential impacts of the alternatives on resources in Drakes Estero. The Science Team will also assist with identifying areas where information may be incomplete or unavailable.

We asked Trevino, NPS' Chief of NSD, about VHB's selection of representative equipment within the DEIS for Company equipment. She said that VHB used the best available science at that time and how she deemed the "proxy data" used (from the NU report and the RCNM) was high quality data, based on her knowledge of CEQ, NEPA, and NPS DO standards, thereby negating the need to collect new data. She said that NPS' decision not to collect new data at the Company complied with all guidance regarding the EIS process. Trevino explained that since the circulation of the public DEIS in September 2011, new scientific reports surfaced that are being evaluated for future use and possible incorporation into the final EIS. She said the Company DEIS was under a truncated timetable, and in her experiences with the EIS process, time can greatly impact the amount of research conducted.

Allegations That Draft Revisions Were Intended To Deceive the Public and Decisionmakers

The complainant alleged that overall, the revisions and edits to the DEIS that occurred between the June 2011 internal/non-public DEIS and the September 2011 public draft were intended to "further deceive the public, peer reviewers and decision makers." The complainant referred specifically to edits in Table 3-3 (see Figure 1) and tables in Chapter 4. He explained that a non-public copy of the DEIS was provided to him by a Government employee with direct access to the report and called the employee a "whistleblower." The complainant claimed that revisions between draft versions "should lead to clarity and consistency," but that the revisions to the DEIS led to inconsistencies and ultimately falsely produced a negative impact on the Company's operations.

Our investigation revealed that the aforementioned changes and revisions to Table 3-3 (see Figure 1) and tables in Chapter 4 were performed during peer reviews, as well as by contracted technical editors to better clarify the tables' content and to ensure the DEIS complied with NPS' "Denver Service Center Editing Reference Manual" and "The Chicago Manual of Style" for proper citation and style. Finally, revisions were made to correct a mathematical error discovered during the peer review process. Our review of the DEIS revisions revealed there were 12 internal drafts of the DEIS and its individual chapters were peer reviewed individually before the first

internal draft circulated to the cooperating agencies in June 2011. An additional three DEIS versions were developed before the public version was circulated in September 2011. Each of the aforementioned drafts underwent the revision and edit process by NPS, Point Reyes staff, EQD, technical editors, and cooperating agencies, and all comments and suggested edits were documented and tracked via Microsoft Excel spreadsheets, pen and ink comments, or Microsoft Word tracked changes.

We reviewed all of the tracked comments and proposed edits provided by Point Reyes and NPS staff members and found their input was limited to scope, policy, NEPA compliance, staff's specific area of expertise, or general comments about the readability and flow of the document. This information was gathered during the following investigative steps.

VHB's Federal program manager compiled the initial list of Company noise generators during NPS' and VHB's onsite Company tour on February 16, 2011, which was hosted by Lunny. During the tour, VHB's Federal program manager drafted a complete list of Company equipment based on personal observations and additional details provided by Lunny. VHB's Federal program manager's notes were later transcribed and provided to VHB's EIS project manager and VHB's acoustics representative, who together formulated the DEIS' Table 3-3 (see Figure 1).

VHB's EIS project manager told us that she was personally responsible for drafting the information within the soundscape sections of the DEIS and formulated Table 3-3(see Figure 1), which was created based on written and verbal information provided to her by VHB's Federal program manager from the February 16, 2011 Company tour. She explained that VHB's acoustics representative selected the representative sound-level values to depict Company equipment and she felt the proxy data selected was reasonable based on VHB's acoustics representative's literature research and selection of the NU report and RCNM.

Regarding the citations under Table 3-3 (see Figure 1), VHB's NPS program manager said that VHB typically fully lists all citations and reference material in the text of its internal documents and under tables until all reviews of the material have been conducted and it is being prepared to be finalized. She stated that the normal process when preparing to finalize the report is to reduce the full in-text citations to an author/date citation.

VHB's EIS project manager and acoustics representative and Point Reyes' EIS project manager all described a mathematical error by VHB's EIS project manager in Chapter 4's tables, which pertained to dissipation rates and distances, and changed the report to correct the issue.

NSD's senior scientist told us that during the review and editing process, he suggested that changing a header in Table 3-3 (see Figure 1) from "estimated" to "representative" would be a more accurate depiction of the information presented in the table because the term "estimated" implies that data was collected on Company equipment.

We interviewed the owner and operator of the technical editing firm "The Final Word." VHB subcontracted her to edit the DEIS and ensure the document complied with NPS editing standards. The owner of The Final Word, who has more than 14 years of experience editing NEPA documents, explained that she ensures editing complies with both the "NPS Denver

Service Center Editing Reference Manual" and "The Chicago Manual of Style." She said that she received only one draft version of the DEIS from VHB on June 16, 2011; she reviewed it and provided her comments and proposed edits to VHB on July 1, 2011. She stated that her edits to citations or sources in chapters 3 and 4, as well as Table 3-3 (see Figure 1) were in accordance with the "NPS Editing Reference Manual." She shortened the full citations and references listed under the tables and in the text and subsequently moved the full citations to the bibliography section or a footnote, which she explained is standard practice for environmental assessments and EISs. She ensured the author/date citation format was used in the body of the text or under tables, and she shortened in-text citations only for consistency. She added that she had no contact with NPS or Point Reyes staff members and worked only with VHB's NPS program manager.

Allegations That the DEIS Deceived the Peer Reviewers

The complainant alleged NPS and VHB presented information in the DEIS in such a way as to deceive the peer reviewers. Specifically, the revisions to the DEIS tables and citations ultimately deceived the peer reviewer for the soundscape sections into believing the acoustical data was derived from actual measurements collected from Company equipment. The complainant claimed: "These actions are consistent with a motivation to deceive the reader, and indeed one key reader, [from] (Cornell [University], the peer reviewer of this section) was deceived into believing that the NPS data were from [Company]." The complainant alleged there was a "scheme to deceive and distort the DEIS and the [Atkins] peer review came from unnamed individuals at NPS and/or VHB."

Our investigation of the allegations that NPS deceived the peer reviewer revealed that the peer reviewer had not been not under the impression that the sound data was derived from collections on Company equipment and he was aware the DEIS used proxy data to represent Company equipment. The allegations that revisions were made to the DEIS with the intent to deceive the public and decisionmakers were addressed in the aforementioned section, which revealed revisions and edits performed on the draft between versions were done to comply with NPS editing standards. This information was determined during the following investigative steps.

During our initial interview of the complainant on May 16, 2012, he stated that after reviewing the DEIS, NU report, and RCNM, he also reviewed the Atkins peer review report for the DEIS. He claimed the soundscape peer reviewer had been deceived into believing the sound data came from Company equipment. The complainant explained that in late March 2012, he contacted the soundscape peer reviewer from Cornell University who was contracted by Atkins to perform the DEIS peer review. The complainant informed the peer reviewer of his observations and claimed that the DEIS was deceptive due to false ambient noise levels and false equipment sound emissions. He explained to the peer reviewer the similarities between the current DEIS and historical issues between NPS and the Company regarding the harm of harbor seals and oyster sediment.[27]

According to the complainant, during his conversations with the peer reviewer it became evident that the peer reviewer was under the impression that all of the noise level measurements cited in the DEIS were collected onsite from the Company. The peer reviewer allegedly also believed

[27] Refers to DOI OIG's 2007 investigation into NPS' report about harbor seal disturbances, Case No. OI-CA-07-0297-I.

that the NU citation referred to previous Company measurements and not to an acoustics project conducted for the State of New Jersey. The complainant said that the peer reviewer told him he had not received or reviewed the Environ report, but if he had it would have changed his conclusions pertaining to the Company's impacts on the Point Reyes Soundscape. The complainant later provided his notes, transcribed minutes after his conversation with the peer reviewer, as well as emails exchanged between him and the peer reviewer, where he quoted the peer reviewer's responses to his questions about the DEIS.

The complainant provided us with copies of the emails he and the peer reviewer exchanged between March 20 and 22, 2012, in which the peer reviewer confirmed he received a copy of the Environ report. The peer reviewer wrote the following based on his review of the Environ report:

> Neither the DEIS nor the [Environ] material realistically deals with the actual sound fields experienced as a result of exposure to the different sources. In any case, to me this is really not about the science of absolute or even relative sound fields generated by various machines and things that humans do. . . . Rather, it's about whether or not and just how much society values wilderness. In this case, it really doesn't matter whether the DEIS incorrectly gives 79 dBA or 65 dBA as the sound value for a "Frontend Loader." The issue is really about whether we, or whomever, decide that there are places that should be left alone in every way possible.

The complainant responded:

> I think you're missing the point. The NPS clearly has a preferred alternative—A[28]—they just didn't say so. Everyone involved knows what it is. You've missed many of their press releases and work via their surrogates. You shouldn't have any doubt. They have been trying for six years to convince the community and elected officials that they have scientific data to show environmental harm to wildlife, when they don't.
>
> About the only so-called data in the EIS are the acoustic data, and now you see that those are not Drakes Estero data, but rather New Jersey and Washington DC data of little relevance. You have inadvertently become involved in what is a metaphor for a big political mess—NPS misuse of science. So you may think that this shouldn't be about scientific data, but in fact it is. They really don't have the legal basis to simply make the decision you think they can make—they have been instructed to make it according to measures of environmental harm. There are numerous mandates from the Senate on this one.
>
> Your peer-reviewed study is controversial because it is in place of the congressionally mandated NAS study. So welcome to the politics. My advice is that you should stay out of the politics, unless you want to learn more than you now know. It is complicated, and doesn't look good for NPS. Instead, to keep yourself

[28] Chapter 2 of the DEIS lists proposed alternatives (A-D) ranging from no action to the issuance of a new SUP. Alternative A refers to the alternative where an SUP is not issued and the Company's leased area is converted into Wilderness.

> clean, you should stick to the data. That is your expertise. That is what you were asked to review. You were deceived. You were shown data from other equipment and other places and told it was from Drakes Estero. The really numbers are apparently much lower. End of story. Of course, if asked, the acoustic numbers don't indicate any harm to wildlife.

We interviewed the peer reviewer, who told us he had 40 years of experience in the acoustics field and more than 20 years of experience peer reviewing EISs (see Attachment 40). The Company DEIS was his first peer review of an NPS EIS. The peer reviewer said he peer reviewed the soundscape sections (chapters 3 and 4) of the DEIS for Atkins, and he expressed to us that in his peer review comments that there were no discrepancies with the scientific methods, aside from the noted limited amount of scientific data available on the subject matter of sound levels for commercial fishing equipment and personal watercraft. The peer reviewer confirmed that he conversed and exchanged emails with the complainant in late March 2012 regarding his peer review comments. We asked the peer reviewer if he recalled informing the complainant that he (the peer reviewer) had been deceived by the DEIS or had been led to believe that the sound data originated from Company equipment. The peer reviewer did not recall making any such comments to the complainant. He told us that he knew some of the actual data in the DEIS were representative or proxy data for Company equipment, while other information was derived from the Company.

The complainant also alleged that he provided the peer reviewer a copy of the Environ report, which indicates significantly lower levels for Company equipment and reduced sound dissipation distance. He told us that the peer reviewer commented that if he had been given the Environ comments earlier, it would have changed the outcome of the peer review (see Attachment 33). We asked the peer reviewer for clarification about the Environ comments; the peer reviewer did not recall making the statement the complainant alleged, nor did he recall reviewing any material that would have changed the outcome of his peer review (see Attachment 40). The peer reviewer stated to the best of his knowledge, the Environ data was generated after Atkins began its peer review of the DEIS. The peer reviewer confirmed he reviewed the Environ report and noted that the research was conducted on a single day and that Environ did not address or factor in all of the environmental variables typically captured or considered over a longer period of collections. The peer reviewer stated that it is a luxury in the field of science to have all the available information, but reiterated the Environ data did not change his conclusions.

The peer reviewer told us his contact with the complainant began with an email from the complainant on March 20, 2012, titled "time sensitive request." The peer reviewer provided copies of his email exchange with the complainant and noted in the first email, the complainant identified himself as an adjunct professor at a California University and a managing partner of an alternative investment firm. The complainant indicated that he was interested in the peer reviewer's review of the soundscape in the DEIS, telling the peer reviewer that he found the peer reviewer's comments interesting and would like to better understand them.

The peer reviewer recalled that his conversation with the complainant began casually, with the complainant expressing his interest in the Company. He also informed the peer reviewer he was an NAS member and a fellow scientist; the peer reviewer told us he assumed their conversation

was a friendly exchange between colleagues. The complainant asked the peer reviewer if he was aware the information in Table 3-3 (see Figure 1) was "not up to date."

The peer reviewer explained to the complainant that his review of Table 3-3 (see Figure 1) revealed nothing unreasonable and clarified that his role was to focus on the DEIS scientific process, which he stated followed a "good process." The peer reviewer's initial review of the draft also addressed NPS guidance and policy and the proposed alternatives; the Atkins project manager, however, requested that the peer reviewer focus his review on the scientific process and methods related to sound.

We asked the peer reviewer to clarify one of the statements that the complainant quoted the peer reviewer as stating during their exchange:

> When I was working on my write-up, the Atkins folks told me to remove any hint of policy and leave it to science in my report. Somewhere in a phone call. I came to believe that the "Park wanted Alternative A" (even though it was not specified as such in the DEIS), and that Alternative A was the "likely outcome."

The peer reviewer explained to us that initially he misunderstood that Alternative A was not NPS' preferred alternative; he assumed the "A" represented the preferred alternative, rather than simply following a sequence titled either Alternative A, B, or C. He stated he concluded that the DEIS did not imply NPS had a preferred alternative, and he explained how most of the EISs he reviewed had an environmentally preferred alternative, which was categorized as the alternative with the fewest environmental impacts. The peer reviewer did not recall stating Alternative A was the "likely outcome" of the Company's EIS.

The peer reviewer stated that the Environ methods of collection were strong and that they followed the standard protocol of field collections and used certified equipment for sound sampling. He believed the Environ data was collected after the DEIS was formulated and felt it was limited in scope. He said he reviewed the references cited in the DEIS and felt the sound-level findings were factual and properly represented; he added that the use of representative or proxy data was common practice in the acoustics field.

We told the peer reviewer that the complainant quoted him as stating: "I am not in agreement with the National Park. Given what you've told me about the numbers in Table 3-3 and the [Environ] report, I would conclude that there is no biological impact of the oyster farm on wildlife." The peer reviewer was unable to recall making this statement to the complainant and said he did not agree with its conclusion.

According to the peer reviewer, the complainant took excerpts from the personal emails he and the complainant exchanged and used the peer reviewer's comments out of context in some form of public address that was circulated in the media, which the peer reviewer was then asked to comment on by several reporters. The peer reviewer said he and the complainant never discussed publicly releasing their exchanged comments or emails. Overall, the peer reviewer told us, the DEIS was well done, well organized, and complete. Chapter 4's scientific methods led him to believe the DEIS was "robust" and the acoustics data presented appeared to have been derived

using strong scientific methods. He denied being in contact with any NPS staff involved in the DEIS process or receiving any guidance alluding to a preferred outcome.

During the course of this investigation, we developed a timeline for the release of the DEIS versions as well as the major revisions through our interview. The Environ comments were published and made available to NPS on December 9, 2011, 90 days after the public DEIS was released for comments. NPS contracted Atkins to perform the peer review of the September 2011 version of the DEIS between January 27, 2012, and February 19, 2012; their review was based on the DEIS and no other supplemental material was provided. To date, the September 2011 draft EIS is the only public version to be released for review.

Allegations of Misconduct and Conflicts of Interest by NPS and VHB Staff

The complainant alleged that NPS staff engaged in misconduct because he believed them to have influenced the VHB staff who drafted the EIS as well as the Volpe Center researchers who performed baseline ambient research on Point Reyes in 2009. In addition, the complainant alleged that NPS used the Freedom of Information Act process to hinder his evaluation of the reference data within the EIS, specifically the Volpe 2011 raw data and recordings. Finally, he alleged that various NPS and VHB personnel involved in the EIS process had conflicts of interest and failed to recuse themselves.

Allegations That NPS Influenced Selection of Volpe Microphones Onsite and Data Collected on the Company

The complainant alleged that NPS influenced the selection sites used by Volpe to collect the ambient sound levels within Point Reyes in 2009. Specifically, he stated that NPS influenced the deployment of a data collection system targeted to collect data on Company boats and operations. The complainant alleged: "NPS intentionally picked this 'sound-sensitive area' on shore of Drakes Estero near [Company] oyster boats and workers." He said it was "no coincidence" that the site selected was near the NPS' "secret cameras along Drakes Estero" that recorded the harbor seals during pupping season.

Our investigation revealed that the coauthor of the Volpe 2011 report titled "Baseline Ambient Sound Levels in Point Reyes National Seashore," was the sole assessor and personally selected the data collection sites within Point Reyes for its air tour management plan (ATMP). Her trip proposal documents and witness interviews of the other members on the ATMP team confirmed that she selected the collection sites. According to those involved in the site selection process, neither the presence of Company operations nor harbor seals were factors when selecting Point Reyes sites, as the focus was the collection of ambient sound levels. Regarding the close proximity of a site to NPS' "secret cameras," Volpe Center's lead researcher was unaware of the camera's deployment and the Point Reyes staff member assigned to the ATMP team assumed that Volpe Center had deployed the camera. We collected this information through the following investigative steps.

A review of the National Parks Air Tour Management Act of 2000[29] revealed that the act was

[29] National Parks Air Tour Management Act of 2000. P.L.06-181, 114 Stat. 61, Title VIII, Section 801, April 2000.

created to regulate commercial air tour operations over National park units. FAA and NPS develop ATMPs for all National parks with commercial air tours. The Volpe Center supported FAA, NPS, and NPS' NSD in the development of ATMPs for approximately 85 park units, including Point Reyes. In 2009, the Volpe Center and FAA partnered with the NPS to conduct preliminary research for the future development of an ATMP for Point Reyes, based on the presence of commercial air tours. In order to develop an ATMP, Point Reyes was monitored to establish the lowest and highest baselines or ambient sound levels; the baselines are then used for comparison purposes to determine the potential impacts of noise levels generated by air tours. The Volpe Center monitored four sites within Point Reyes during the summer and winter of 2009.

We interviewed the Volpe Center's ATMP acoustics project manager and coauthor of the Volpe 2011 report, which was used by VHB and referenced in the DEIS, regarding her team's research to establish the ambient sound levels in Point Reyes. She explained that the Volpe Center research for ATMPs focuses on two types of generated sounds: natural and non-natural. She defined natural sounds as noise produced by the wind, surf, and wildlife, whereas non-natural sound is generated by aircraft, vehicles, and people. She also explained that National parks are cataloged into ecosystem zones, which are characterized by unique traits (e.g., vegetation, shoreline, visitor areas). The size and number of zones identified in each park helped the Volpe Center to determine the minimal number of data collections systems (microphones) to be deployed in each zone.

The ATMP acoustics project manager stated that she generated a trip proposal for site selection in 2009 and personally developed a list of proposed Point Reyes sites at which to collect data. She selected sites based on areas that were accessible by the research team and that provided an acceptable level of concealment and security for the Volpe Center's equipment. She also ensured the sites were away from roads, paths, or non-natural generators of sound. She explained that one of the larger zones present in Seashore was water, but said that her past experiences using microphones in stationary research boats to collect data were unsuccessful due to sound generated by surf crashing against the side of the boat.

We asked the ATMP acoustics project manager what influence Company operations had on site selections. She explained that she would not have selected a site near the Company's operation because the non-natural producers of sound affects the characterization of ambient sound levels and would have negated her team's research. She denied being influenced or instructed to select the site[30] near Drakes Head Estero to monitor the Company's operation. She said that if she had become aware that a site was located near Company operations, she would have moved the equipment to collect the ambient levels needed for the ATMP. She stated she was unaware of any fixed camera system near the Drakes Head Estero site and clarified that the Volpe Center would not have deployed a fixed camera as part of its collection system. She related that Volpe Center staff recorded site conditions and equipment setup with photos, but was unaware of any other cameras being used at any Point Reyes site she selected.

We asked the ATMP acoustics project manager to explain how the Volpe Center deployed its data collections systems within Point Reyes for the ATMP. She explained that to capture

[30] PORE004 refers to the abbreviated Volpe Collection system for Point Reyes #004.

ambient sound levels, the Volpe Center positions its microphones upward or into areas she called "free field," which she described as being free from bounding surfaces. The microphones deployed for Point Reyes' ATMP were non-directional and recorded data for sound levels and atmospheric conditions at intervals of every second of every day during the observation periods in 2009. Regarding the microphone's accuracy of capturing Company boats noise levels in the Estero, she explained that to record accurate data and determine how much noise was generated by Company boats, the microphone would have to be pointed at the boats from approximately 50 feet away. In addition, the Company boat would have to make several passes at various speeds near the microphone to accurately determine the sound levels produced by that boat. The ATMP acoustics project manager said that her Point Reyes staff point of contact for the research related to the Volpe 2011 report was the former chief of natural resources and NSD's Vicki McCusker, Director of Natural Resources Stewardship and Science.

The ATMP acoustics project manager told us that she reviewed the Company DEIS after the allegations became public to ensure her report was referenced appropriately. She verified the citation and data in the DEIS derived from the Volpe 2011 report for ambient sound data for Point Reyes was cited and used correctly. She offered her opinion on the DEIS after her review, saying she felt both Environ and VHB "exaggerated" their findings and impacts. For example, she explained the Volpe Center microphones were approximately 3,000 feet from Company boat routes and that both her observers and microphones detected operational boat noise. According to the ATMP acoustics project manager, Environ's report said the sound dissipated at 400 feet, whereas VHB's assessment of proxy data estimated the boat noise could be heard at 5,000 feet. She said the sound levels did not dissipate at 400 feet because her equipment detected the Company's boat noise at 3,000 feet. She was unable to attest to the total distance at which the sound levels could have been heard beyond the 3,000-foot mark. She explained that researching the noise levels generated by the Company's boats and equipment could not be accurately conducted in a single day as was reported by Environ, because there are countless environmental variations that would more likely be noted over a longer collection period.

A 30-year NPS employee, who retired from the position of Point Reyes' chief of natural resources in 2011, told us that Point Reyes did not employ a physical scientist or soundscape specialist, and that his duties often included soundscape tasks. In 2009, the former chief of natural resources assisted FAA and the Volpe Center in collecting data at Point Reyes to establish ambient sound baseline for a future ATMP. He explained the Volpe Center staff researched and selected the sites to deploy their microphones and data collection kits. Volpe Center, NPS, and FAA staff discussed site selections as a group. He explained that he provided no input or guidance as to what sites to select. He did voice concern, however, about the potential placement of data collection systems in areas designated as wilderness because any non-conforming use of wilderness, such as setting up data collection equipment, as specified in the Wilderness Act, requires NPS management approval and any use of wilderness area has to be monitored.

We asked the former chief of natural resources how the ecological zones were used to select sites for microphone deployment; he explained that NPS developed the zones as part of Point Reyes' General Management Plan[31] of 1980. He explained that the Drakes Estero Head, where the

[31] A General Management Plan is a strategic planning document outlining the future management of a NPS site for 15 to 20

Volpe Center placed microphones[32] during the study, covered two ecological zones and was near a popular visitors' walking trail as well as approximately 80 yards from the water's edge. We asked the former chief of natural resources if the Volpe Center selected the site due its close proximity to the harbor seals' pupping grounds. He told us that when the Volpe Center analyzes sites for selection, harbor seals were not considered as a factor in establishing ambient sound levels. He denied that anyone from Point Reyes or NPS recommended or requested that the Volpe Center staff place data collection systems in specific areas. He reiterated to us that the ATMP team did not discuss Company operations and that each zone was selected based on its own significance. Regarding the deployment of a camera near the Estero, the former chief of natural resources was under the impression the Volpe Center staff had deployed the camera system, but did not know the specifics of the cameras' operation or angles.

Vicki McCusker has more than 14 years of experience ensuring NEPA compliance regarding soundscapes. She confirmed that in 2009, she helped to manage a joint project between NPS and the Volpe Center to establish ambient sound levels for an ATMP within Point Reyes and that the former chief of natural resources was her Point Reyes point of contact for the project. She recalled that it was the Volpe Center staff who selected the sites to deploy the data collection systems. She said that the ATMP acoustics project manager led the team of researchers. McCusker confirmed that the Volpe Center considered neither Company operations nor the presence of harbor seals when selecting the sites to deploy the data collection systems.

Allegations That NPS Influenced VHB To Report Negatively Against the Company

The complainant alleged that NPS influenced VHB to report unfavorable findings about the Company in the DEIS. He claimed that the Company gave VHB and NPS staff a tour during which they would have personally observed the noise emitting from the Company equipment in question. The complainant claimed the same staff members who attended the tour later reviewed the DEIS and failed to correct the report when they observed overestimated sound levels representing Company noise levels and the distance for which the equipment traveled within the Estero.

Our investigation found no evidence that NPS influenced VHB to report negative findings against the Company. We did not find any information to suggest the DEIS preparers or reviewers failed to ensure the DEIS was accurate. According to those NPS and VHB staff members who were in attendance at the onsite tours of the Company, the information presented in the DEIS appeared reasonable. Each tour attendee who later reviewed the DEIS for accuracy, however, admitted they lacked the acoustics background to question the proxy levels selected when compared to their personal observations. This information was collected during the following investigative steps.

During our initial interview of the complainant in May 2012, he stated that in February 2011, Lunny provided a Company tour to the NPS and VHB employees conducting the DEIS. The Company tour was recorded by VHB. Lunny was later given a copy of the audio recording. The

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years, The plan sets the basic philosophy and broad guidance for management decisions that affect the park's resources and the visitor's experience.

[32] Point Reyes #004 (PORE004).

complainant said he reviewed the recording and that the quality was generally poor due to wind noise. At times, however, he claimed conversations could be heard and the tour attendees appeared to use normal speaking voices that could be heard over the wind and boat engine noise. The complainant alleged that if the noise measurements in the DEIS for the boats were accurate, the conversations he listened to on the recording could not have taken place, because he claimed the sound levels would have been too loud for the tour attendees to hold a normal conversation. Based on this information, he claimed the NPS and VHB staff on the tour must have been "following someone's orders" and that they did not question or revise the DEIS to reflect their personal observations.

In the complaint forwarded to OIG, the complainant alleged that NPS and VHB employees "knew (or should have known) as they were writing and revising the DEIS that the soundscape impact was based upon false representations of imported data. Some of them knew (or should have known) that the data from the [Point Reyes site 004] microphone contradicted the DEIS."

During this investigation, we interviewed several of the VHB and NPS staff members who attended the September 1, 2010 onshore tour hosted by Lunny. Specifically, we spoke with VHB's EIS project manager; VHB's NPS program manager; VHB's market leader; and Point Reyes' EIS project manager. The VHB EIS project manager, VHB's NPS program manager, and VHB's market leader all recalled that the hand-held air hammers used by the Company were loud. The VHB EIS project manager could not recall whether the noise from the hammers overpowered conversations, nor could she recall the distance between her and the hammers. VHB's NPS program manager remembered having to stop her conversation with others while she was near the hammers. VHB's market leader remembered that a small "hand-held jackhammer" was in use, but could not, however, recall any specific details about the tool other than the fact that it was loud. The Point Reyes EIS project manager did not recall whether the Company was in operation during this visit, but had heard hammers operating from the site in the past.

On February 16, 2011, VHB's Federal program manager VHB's biologist, and Gates were provided an on- and offshore tour of the Company's operations. VHB's Federal program manager told us that during the tour she could hear the pneumatic hammers from the boats during the offshore tour. She described the oyster tumbler as being a prominent noise source during the tour, stating that it generated a "tremendous amount of noise." Regarding her recollection of the noise generated by the Company boats during the tour, VHB's Federal program manager explained the tour attendees all sat close to each other on the boat. She recalled it being windy while on the water in Drakes Estero, but neither the wind or boat motor noise required the attendees to talk loudly. Gates recalled that the site visit was tape recorded, but explained the quality of the recording was "somewhat useless" because of the noise of the boat and the wind.

The VHB Biologist's overall impression of the Company noise generators onsite was that the prominent noise source for the day was the wind. He felt the Company boat motor during the offshore tour was noisy and recalled having to raise his voice to communicate with others on the boat. He recalled seeing the oyster tumbler and pneumatic hammers, but did not remember them operating in his presence; he occasionally separated from the tour to document details on

Company structures.

During our interview of the VHB and Point Reyes tour attendees (VHB's Federal program manager, VHB's biologist, VHB's EIS project manager, Point Reyes' EIS project manager, and Gates), we asked each of them if they had received training or were well versed in determining acoustic levels. None of the interviewees who attended any of the tours admitted to being acoustic experts or to possessing the knowledge to translate personal observations into approximate noise levels. We also asked each of the interviewees if, upon review of the DEIS, the represented levels selected for the Company appeared to be over- or underestimated. None of VHB's or NPS' staff questioned the represented levels due to their lack of an acoustics background; they each felt the levels appeared reasonable.

VHB's acoustics representative, who personally selected the proxy data to represent the Company boats and equipment, did not attend either tour the Company hosted and made proxy selections based on the information and photos provided to his fellow VHB members who did attend the tours.

Allegations That NPS Failed To Follow Management Policies

The complainant alleged that NPS deviated from its own 2006 management policy, as well as NPS' Director's Order 47, "Soundscape Preservation and Noise Management." The complainant based these allegations on VHB and NPS' alleged failure to "measure [Company] noise generators." The complainant claimed that NPS was "directed by these policies to identify noise-generating human activities, measure human-generated sounds, [and] measure baseline conditions. . . . [Company] noise sources had an unknown impact until proxies were selected & analyzed using NPS' thresholds." Lastly, he alleged that NPS or VHB produced "soundscape analysis in DEIS that is different from other NPS EIS reports in that it did not measure human-generated sounds and did not follow NPS policies."

Our investigation found no evidence to suggest that NPS violated Director's Order 47 or that it deviated from NPS policy regarding soundscape management or the EIS process. CEQ, NEPA, and NPS EIS regulations and guidance did not require NPS to measure Company noise generators since Company noise emissions had never been named as having a potential impact on the environment or wildlife. Neither NPS nor VHB staff predicted that Company equipment would have been assessed as having a major impact, and they were unaware of the totality of the impacts until the proxies were selected and NPS thresholds were applied. According to the NPS staff members we interviewed, the Company operating within a potential wilderness area created a unique management circumstance, and the Company DEIS resembled no other NPS EIS. We were informed that the EIS is essentially NPS' only tool available to assess the Company's impacts on the environment and generate its findings for the decision authorities. This information was collected through the following investigative steps.

As described in the background section of this report, Director's Order 47 defines what NPS categorized as "man-made sound levels," provides NPS guidance on how to manage soundscapes, and gives specifics on how to address "excessive/inappropriate levels of noise" from known noise sources.

The complainant and the owner of the Company claimed that prior to this DEIS the potential impacts of noise from Company equipment to affect the environment had never been addressed.

We interviewed Point Reyes' outreach coordinator. She recalled other members of Point Reyes staff receiving complaints from visitors, claiming that Company machinery, specifically the pneumatic tools, were "loud" and affected Point Reyes' visitors' experience. When asked what Point Reyes' protocol was for referring these complaints to the Company, she stated that the Company operates under a lease agreement and as long as the Company's reported actions fell within the parameters of its lease and were deemed not to violate the terms of the lease agreement, then those complaints deemed to fall within the lease agreement would never be referred to Company owners.

A review of NPS' and VHB's initial internal scoping meeting minutes document from September 2 and 3, 2010, revealed that NPS' "Environmental Screening Form" was used as a guide and checklist to address all of the potential areas that needed to be addressed and assessed in the EIS to determine if the Company had impacts on any of the 30 categories on the screening form. The meeting minutes noted that NPS and VHB covered a broad array of topics and considerations to prepare the EIS. There was no special consideration or footnotes for soundscape to suggest that the group predicted the category would produce any major impacts on the environment.

A review of Director's Order 47's requirement to measure man-made noise generators would have been applicable if the Point Reyes staff had previously identified Company noise generators as being problematic, directly impacting the environment, or in direct violation of the terms of the Company's lease. Our investigation, however, uncovered no evidence to support that Point Reyes staff had previously identified noise as an issue, unlike the noise generated by air tours flying over the park, which was measured by the Volpe Center in 2009 in preparation of an ATMP, which generated the Volpe 2011 report.

During our investigation, we interviewed several NPS and VHB staff members who attended the scoping meetings and well as the teleconferences (see Attachment 58). No one we interviewed recalled predicting or being forewarned that soundscapes would have produced an assessment of "major" for impacts.

We asked NSD's senior scientist about the increased attention soundscapes have received in all National parks. He explained that sound has become a growing area of consideration in EISs since the 1970s because of an increase in evidence showing the direct impacts noise has on wildlife and park visitor experiences.

We interviewed Karen Trevino, NPS' Chief of the NSD, and presented her with similar questions regarding soundscapes. She stated that sound levels within National parks have become a major topic addressed in EISs and are monitored more closely now. She referred to the Organic Act and told us that it states National parks are for the enjoyment of the public and therefore all park resources have to be protected. Trevino said that each year National parks receive a high percentage of visitors who visit the parks specifically for the tranquility and quiet.

The complainant claimed that Company noise generators had an unknown impact until VHB's proxies were selected and analyzed using NPS' thresholds. We previously addressed the complainant's allegations that inappropriate proxies were selected to represent Company equipment and that the NPS thresholds were based on erroneous ambient sound-level information. Our interviews of the VHB staff responsible for compiling the soundscape data and sections, mainly the EIS project manager and the acoustics representative, revealed they were unaware of the assessed impacts from Company equipment until all the represented selections and thresholds were applied. VHB stated that there was a limited amount of reference material to select from for representative data in the fields of commercial fishing equipment and personal watercraft measurements, and the selections were based on mechanical similarities and the percentage of use was based off of Lunny's verbal estimates of use.

The complainant also alleged that the Company DEIS did not resemble any other EIS performed by NPS, and therefore the NPS policy was not followed.

During the course of this investigation, we interviewed CEQ and NEPA experts, all of which declared the Company DEIS was a unique situation because there was a commercial fishing venture operating within a potential wilderness area. None of the witnesses we interviewed were able to provide examples of other commercial businesses operating within a protected area, and the majority of EISs that were at all similar addressed seasonal concessionaire businesses operating under short-term leases with parks.

Our review of NPS Director's Order 12 regarding EISs refers to NEPA (sec. 102(2)(C)), which requires an EIS whenever a park proposes or approves an action whose impacts on the human environment may be significant. Federal approvals of permits for private applicants are also considered actions that trigger the need for NPS NEPA analysis (1508.18).

Allegations of Conflict of Interest

The complainant and Lunny claimed that several key NPS and VHB employees involved in the DEIS process failed to recuse themselves from the project due to conflicts of interest. The complainant alleged that a VHB employee was a retired NPS employee who allegedly provided VHB with the 1995 NU report that was used in an unknown NPS project regarding Jet Skis (no further information). Lunny alleged a key Point Reyes staff member and project manager for this EIS had made public statements to a media outlet claiming the Company had a negative impact on the environment and called for its removal from Drakes Estero.

Our investigation revealed that the allegations against VHB's market leader and retired NPS employee were unfounded. VHB's acoustics representative declared he personally researched and located the NU report and subsequently made the selections of representative data (see Attachment 4). NPS and VHB staff confirmed the market leader's limited involvement and that he recused himself from the project after he saw he believed he had a conflict of interest.

Moreover, the conflict-of-interest allegations against Point Reyes' Natalie Gates had no direct impact on the EIS and were based on a highly contested news article. Our investigation produced no evidence to support that Gates was involved in any of the questioned portions of the EIS

presented by the complainant. All of these questioned revisions and data were identified as being contributed by NSD or VHB staff. This information was collected through the following investigative steps.

VHB's market leader has been employed by VHB for 3 years, where he helps to propose and execute projects contracted by NPS. Prior to working for VHB, he was a career NPS employee. His last position was as the Chief of EQD, Washington, DC, where in which he oversaw NPS' compliance with NEPA. He retired in August 2008 and joined VHB approximately 60 to 90 days later. He explained that he had no oversight or involvement with any prospective EIS planning pertaining to the Company's special use permit while he was an NPS employee.

VHB's market leader told us that he helped VHB prepare the proposal for the EIS project, and upon award of the contract to VHB, he acted as a facilitator at the internal scoping "kickoff" meetings with NPS staff. He recalled that after the internal scoping meetings with NPS, he attended a site tour of the Company with NPS and Point Reyes staff in which Lunny provided an overview of the Company's operations.

VHB's market leader said he ceased to be involved with the Company EIS almost immediately after the internal scoping meetings due to a self-perceived conflict of interest. At that time, he was on the Board of Directors of an organization called the Coalition of National Park Service Retirees (CNPSR). He explained that after NPS announced its intention to write an EIS regarding the Company's special use permit, a CNPSR executive wrote a letter to NPS declaring an official position on whether the permit should or should not be granted to the Company. He stated that although he was not involved in writing the letter, as a Board member his name appeared on the organization's letterhead. He believed that this presented a conflict of interest, and so he recused himself from any further involvement with the EIS. He was replaced by VHB's NPS program manager. He stated he also withdrew from CNPSR.

When asked about the NU reference used in the DEIS, VHB's market leader declared he did not recognize the report. He stated that he provided no sources of information to VHB staff for this EIS, and he was not involved in decisions on what data to use. He recalled giving VHB the name of a technical editor at The Final Word who had assisted him on similar projects while he was with NPS and had produced quality work. He stated that he never felt any pressure from NPS staff to ensure negative findings were reported within the EIS, and emphasized that if he had felt pressure at any time, he would have terminated the contract and reported the issue to NPS leaders. He said that he would not work with anyone that could cause damage to either VHB or himself.

During our Company tour and meeting, Lunny explained that when he was notified by Point Reyes management that Natalie Gates would be the project manager for the DEIS, he requested and attended a meeting with Point Reyes Superintendent Cicely Muldoon and Gates about a possible conflict of interest. Lunny claimed Gates had made statements to the local ABC News channel for San Francisco that the Company had a negative impact on the environment and that the business "must go." Lunny claimed he addressed this issue with Muldoon and Gates and was told that no conflict existed; he said that Muldoon asked Gates, in Lunny's presence, if she felt conflicted and Gates said no.

An online article by ABC 7 News San Francisco, dated May 21, 2010, quoted Gates as saying: "The oysters are actually extracting a lot of nutrients that a lot of other species depend on." The article adds: "Natalie Gates says research done by and on behalf of the park shows the oyster farm is having an impact on the Estero and needs to go."

We interviewed Gates, who told us she served as the coordinator at the onset of the EIS project between Point Reyes and EQD for approximately 3 months; Point Reyes management then assigned someone to be the full-time EIS coordinator. Gates said that the EIS required a great deal of her time, which she could not afford to dedicate due to managing several other major programs for Point Reyes; she did, however, remain as one of many Point Reyes staff members on the NPS' Interdisciplinary Team. Gates stated there was no "collusion" or effort by Point Reyes staff to find that the Company had negative impacts on the environment and that the EIS process was an honest effort to compile the best information and publish it to get a reaction from the public. She denied hearing or being a part of any conversations about NPS' intent to terminate the Company's lease.

Regarding her interview with ABC 7 news and the alleged quote that the Company "needs to go," she explained she was interviewed by Ken Miguel of ABC and once the story went public, she noted she had been misquoted. She said that she never made the "needs to go" comment. Gates said the story was riddled with misquotes and typos, which NPS brought to ABC's attention; she told us that ABC corrected some of the information, but not her misquote. She claimed that ABC refused to provide copies of the video or audio where she supposedly made the statement and that NPS and ABC have been unable to resolve the matter.

EQD's environmental protection specialist told us that her division managed the Company EIS because the EQD handles all complex or controversial environmental issues within the NPS system. The environmental protection specialist explained that she personally acted as the liaison between NPS and VHB throughout the project. She said that she also solicited the assistance of the NPS acoustic experts at NSD to ensure the EIS process complied with NEPA and acoustics methodology.

Allegations of Fraud, Waste, and Abuse

The complainant alleged that his claim "involves false representations and concealment of data and deception, key elements of the definition of fraud." The complainant alleged that, based on the deception and fraud in the DEIS, the document and the EIS process were a "waste and abuse of taxpayer money." The complainant claimed that the core issue of the DEIS is deception, a term that is not present in the DOI Scientific Integrity Policy. He, therefore, refers to § 3.8A of the policy, which states: "Cases of fraud, waste, and abuse should be directly referred to the Office of Inspector General." The complainant, as well as the Company's owner, also claimed the institution of the EIS process to issue an SUP was unwarranted and therefore wasted taxpayer funds.

The complainant quoted Senator Feinstein, in her March 29, 2012 letter to Secretary Salazar: "It is my belief that the case against [the Company] is deceptive and potentially fraudulent." Senator Feinstein was quoted within the complainant's allegation as stating that using the NU report's

17-year-old data for New Jersey Jet Skis as documentation of noise emissions from oyster boat engines was “incomprehensible” and “potentially fraudulent.”

Our investigation revealed no intent to deceive the public through the concealment of information as alleged. Because the issuance of an SUP is considered a major Federal action, conducting an EIS was required in accordance with NEPA guidance before an SUP could be issued. This information was collected through the following investigative steps.

According to NEPA, 43 U.S.C. § 4332, NPS is required to conduct an EIS to assess all environmental impacts before the issuance of a new SUP to the Company. CEQ’s associate director for NEPA Oversight confirmed EISs must be performed any time a Federal action is projected for all major projects, policies, and plans that may affect the environment. Land leases and SUPs fall into this category based on the potential to impact these contractual agreements may have on National parks or land on which these commercial businesses operate.

SUBJECT(S)

National Park Service
Point Reyes National Seashore
Point Reyes Station, CA

Vanasse Hangen Brustlin
351 McLaws Circle, Suite 3
Williamsburg, VA

DISPOSITION

This information was provided to the NPS Director.

EXHIBIT

24

DIRECTOR'S ORDER #11B: Ensuring Quality of Information Disseminated by the National Park Service

Approved: /s/ Fran P. Mainella, Director

Effective Date: 10/16/02

Sunset Date: Effective until amended or rescinded

Contents:

I. BACKGROUND AND PURPOSE

In Section 515(a) of the Treasury and General Government Appropriations Act for Fiscal Year 2001 (Public Law 106-554; HR 5658), Congress directed the Office of Management and Budget (OMB) to issue government-wide guidelines that "provide policy and procedural guidance to Federal agencies for ensuring and maximizing the quality, objectivity, utility, and integrity of information (including statistical information) disseminated by Federal agencies. The guidelines require also that administrative mechanisms be established to allow affected persons to seek and obtain correction of information maintained and disseminated by the agency when that information does not comply with guidelines issued by the Office of Management and Budget. The purpose of this Director's Order is to establish National Park Service (NPS) guidelines to comply with these requirements.

A notice published by the Office of Management and Budget (OMB) in the Federal Register, issued February 22, 2002, Vol. 67, No. 36, page 8452, directed Federal agencies to issue and implement guidelines to ensure and maximize the quality, objectivity, utility and integrity of Government information disseminated to the public. The NPS is issuing these guidelines in order to comply with this direction. This document is the basis for the NPS's policy.

The NPS disseminates a wide variety of information to the public regarding the national parks, natural and cultural resources, geographic and spatial data, and commemorative

events. Such information takes the form of brochures, research and statistical reports, policy and regulatory information, and general reference information. All offices should evaluate and identify the types of information disseminated that will be subject to these guidelines.

II. AUTHORITY TO ISSUE THIS DIRECTOR'S ORDER

The authority to issue this Director's Order is contained in the 1916 NPS Organic Act (16 U.S.C.1 through 4), delegations of authority contained in Part 245 of the Department of the Interior Manual, and the Department of the Interior's information quality guidelines.

III. INFORMATION QUALITY STANDARDS

The National Park Service disseminates organizational information, natural and cultural resource information, and budget information. Organizational information includes general descriptive information about the NPS and its component parks and offices. Examples include the parks' history, functions, and legislative authorities; organizational charts, the offices within the parks and their functions; the parks' strategic and performance plans and their budgetary information; and information pertaining to the parks' history, natural and cultural resources and administrative processes. All information disseminated by the NPS must comply with basic standards of quality to ensure and maximize the objectivity, utility, and integrity of information disseminated to the public.

A. Reliable Data. The National Park Service will ensure that information it releases will be developed from reliable data sources and will otherwise ensure information quality at each stage of information development. The NPS's methods for producing quality information will be made transparent, to the maximum extent practicable, through accurate documentation, use of appropriate internal and external review procedures, consultation with experts and users, and verification of the quality of the information disseminated to the public. The NPS will also keep users informed about corrections and revisions.

Information will be developed only from reliable data sources based on accepted practices and policies utilizing accepted methods for information collection and verification. It will be reproducible to the extent possible. Influential information will be produced with a high degree of transparency about data and methods. The information should include all pertinent information to allow the public to understand the park's legislative authorities, mission, activities, organization, strategic plan, performance plan, and performance accomplishments.

B. Accuracy and Timeliness. All information will be accurate, timely, and reflect the most current information available. All information sources will be documented. Where appropriate, it will provide users with additional documentation or with method(s) to access supporting documentation by reference (e.g., citations) or by electronic means (e.g., "links").

C. Compliance with Laws, Regulations and Policy. All information will comply with current NPS and Departmental policies and guidelines that govern information

dissemination to the public. The information will also comply with the requirements of applicable public laws, such as the Government Performance and Results Act of 1993, and implementing rules, regulations, directives and instructions issued under the authority of such laws. To the maximum extent possible, information will be made available on Service websites for easy access by the public.

In addition to these standards, the information quality standards as described by OMB's final guidelines and the Department of the Interior's guidelines are incorporated by reference as NPS policy and standards.

D. Third Party Information Under the Guidelines. If NPS relies upon technical, scientific, or economic information submitted or developed by a third party, that information is subject to the appropriate standards of objectivity and utility. These standards of these guidelines apply not only to information that NPS generates, but also to information that other parties provide to NPS, if NPS disseminates or relies upon this information.

E. Paperwork Reduction Act. NPS's components will make use of OMB's Paperwork Reduction Act (PRA) clearance process to help improve the quality of information that NPS collects and disseminates to the public. All proposed collections of information that are disseminated to the public should demonstrate in their PRA clearance submissions to OMB that the proposed collection of information will result in information that will be collected, maintained, and used in a way consistent with the DOI and OMB Quality Information guidelines.

IV. POLICIES AND INSTRUCTIONS

A. Information Approval. All information disseminated to the public must be approved by the appropriate program and/or regional office prior to its dissemination and must satisfy OMB and Departmental guidelines. The approval process will include documentation of the specific information quality standards used in producing the information in a way to substantiate the quality, utility, objectivity, and integrity of the information in a manner that conforms to OMB and Departmental guidelines.

B. Documentation. Offices may issue documentation for standard types of information that they disseminate and reference these in subsequent approvals. These standards must be approved by the originating office and the documentation retained by the office as long as the standard is active.

C. Complaints About Information Quality. Affected persons may avail themselves of four methods for notifying the NPS of complaints:

1. Informally discuss their complaint in person with park or program office staff, providing information in the form of written documents or oral presentations.
2. Informally direct complaints about the quality of disseminated information to the superintendent of the park or manager of the program office responsible for disseminating the information.

3. Formally direct complaints about the quality of disseminated information by mail to the NPS Washington Administrative Program Center, attention: Correspondence Control Unit (CCU), 1201 Eye Street NW, Washington, DC 20005. The complainant should use the subject: "Complaint About Information Quality" so that it may be clearly recognizable to those managing the process.

4. Formally direct complaints by e-mail to Ms. Doris Lowery at doris_lowery@nps.gov. The complainant should use the subject: "Complaint About Information Quality" so that it may be clearly recognizable to those managing the process.

A request for formal informational correction must include the following:

1. A written statement that the person is seeking correction of information disseminated by the National Park Service and the specific reasons for believing the information fails to meet OMB or DOI standards, along with supporting documentation, if any.
2. Name, mailing address, telephone number, email address (if applicable) and organizational affiliation, if any, of the individual making the complaint. Organizations submitting a complaint should identify one individual to serve as the primary contact.
3. A detailed description of the specific material in question, including where the material is located (that is, publication title, date, and publication number, if any, or the website and web page address).
4. A description of how the person submitting the complaint is affected by the informational error.
5. The specific recommendations for corrective action.

D. Processing Complaints. The CCU will route complaints they receive to the park or office that disseminated the information and track response to assure that it complies with the requirements of this Director's Order. The park or office receiving the complaint, regardless of the manner of receipt, will notify the complainant of receipt within 10 working days. The disseminating office will evaluate the complaint within 60 calendar days of the day it is received by the NPS, in accordance with the OMB guidelines, and notify the complainant as to whether the information has been corrected, deleted, or confirmed to be accurate.

A second complaint received before the issuance of a 60 calendar day notice for an overlapping complaint under review will be treated with simultaneous consideration, and the second complainant will be notified within 10 working days that an analysis is in progress and advised of its status. The earlier and later complaints will be combined, and a combined 60 calendar day finding will be issued based on the date of the first complaint. If the second identical complaint on the same subject is received after a 60 calendar day notice has been issued, then the second complaint will require a new and separate review, however recent. Unless substantial new information has been submitted, the 60 calendar day finding for the earlier complaint shall suffice and should be relatively easy to produce.

E. Comments Associated with Structured Reviews. The NPS conducts a substantial

amount of business through processes which involve a structured opportunity for public review and comment on proposed documents prior to their issuance in final form. These activities include rulemakings and analyses conducted under the National Environmental Policy Act (NEPA). In these instances, requests made under these guidelines for corrections of information in draft documents will generally be treated as a comment on the draft document and the response will be included in the final document.

In the case of rulemaking and other public comment procedures where the NPS disseminates a study analysis or other information prior to the final agency action or information product, requests for correction will be considered prior to the final agency action or information dissemination in those cases where the agency has determined that an early response would not unduly delay issuance of the agency action or information, and the complainant has shown a reasonable likelihood of suffering actual harm from the agency's dissemination if the agency does not resolve the complain prior to the final agency action or information product.

In cases where a request pertains to a final document, the NPS will first determine whether the request pertains to an issue discussed in the draft document upon which the requester could have commented. If the NPS determines that the requester had the opportunity to comment on the issue at the draft stage and failed to do so, it may consider the request to have no merit. If information which did not appear in the draft document is the subject of a request for correction, the NPS will consider that request. If the NPS determines that the information does not comply with the guidelines issued by the Department or OMB, such that the non-compliance with the Department or OMB guidelines presents significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts, the NPS will use existing mechanisms to remedy the situation, such as re-proposing a rule or supplementing a NEPA analysis.

F. Exemptions. Information specifically not subject to these guidelines includes:

1. Press Releases - These guidelines do not apply to press releases, fact sheets, press conferences or similar communications in any medium that announce, support the announcement, or give public notice of information NPS has disseminated elsewhere.
2. Public Filings - Information in public filings (such as public comments received by NPS in rulemaking proceedings), except where NPS distributes information submitted by a third party in a manner that suggests that NPS endorses or adopts the information, or indicates in its distribution that it is using or proposing to use the information to formulate or support a regulation, guidance, or other NPS decision or position.
3. Exclusion for Agency Employed Scientist, Grantee, or Contractor - Dissemination of information by an agency-employed scientist, grantee, or contractor is not subject to the guidelines, namely those situations in which they publish and communicate their research findings in the same manner as their academic colleagues, therefore not implying official agency endorsement of their views or findings.

4. Testimony and Other Submissions to Congress - Information presented or submitted to Congress which is simultaneously disseminated or previously disseminated to the public is exempt from these Data Quality Guidelines.
5. Inadvertent or Unauthorized Disclosure of Information intended Only for Inter-agency and Intra-agency Use or Communication - Documents in working form which are generated in day-to-day internal conduct of NPS and other Government business are exempt from these Guidelines.
6. Correspondence with Individuals - An exchange of information between two individuals is not considered to be a dissemination.
7. Records Covered by Other Laws - Responses to requests for NPS records under the Freedom of Information Act, the Privacy Act, the Federal Advisory Committee Act or similar laws are not included in these Guidelines.
8. Archived Records and Information Disseminated Prior to October 1, 2002 - Archived records of information disseminated and subsequently archived are exempt from the Guidelines.

Note: Information disseminated prior to October 1, 2002, but not archived, and which is still being used in a decision making process, is not exempt from these guidelines.

G. Appeals Process. If a complainant does not receive the notice or the response within the time frames described above, or wishes to appeal a determination of merit, or wishes to appeal the proposed correction of information, the complainant may appeal to the Director, National Park Service. If that official determines that an appeal of a determination of merit or the proposed correction of information has merit, the affected program office or park will be notified. The challenged information will be withdrawn, to the extent practicable, from the public domain and will not be used in any Departmental, bureau, or office decision-making process until it is corrected. The Director, National Park Service, will make a decision on the final appeal within 60 calendar days.

H. Further Information. NPS personnel and the public should consult the website at www.nps.gov/notices.htm.

V. RESPONSIBILITIES

A. The Associate Director, Administration, through the Washington Administrative Program Center, is responsible for management and administration of the program.

B. Associate directors and research contractors are responsible for ensuring that their staffs implement these policies and procedures.

C. Managers are responsible for:

1. Ensuring that the information they release to the public, in any manner, is developed from reliable sources and ensuring information quality at each stage of information development.
2. Documenting the quality of all information that they release to the public, including information on the internet.

3. Notifying complainants of the receipt of their complaint within 10 working days of its receipt in the Correspondence Control Unit.
4. Responding to complaints about information quality within 60 calendar days from receipt of a complainant in CCU.

D. The CCU is responsible for:

1. Routing public complaints they receive about information quality to the information disseminating office.
2. Reminding offices of their deadlines to respond to pending complaints forwarded by the CCU.
3. Generating annual reports to the Department of the Interior of the number, nature, and resolution of complaints received by the CCU.

VI. DEFINITIONS

In complying with this Director's Order, the following definitions apply:

A. Quality - is an encompassing term comprising utility, objectivity, and integrity. Therefore, the guidelines sometimes refer to these four statutory terms, collectively, as "quality."

B. Utility - refers to the usefulness of the information to its intended users, including the public. In assessing the usefulness of information that the NPS disseminates to the public, the office needs to consider the uses of the information not only from the perspective of the office, but also from the perspective of the public. As a result, when transparency of information is relevant for assessing the information's usefulness from the public's perspective, the office must take care to ensure that transparency has been addressed in its review of the information.

C. Objectivity - involves two distinct elements, presentation and substance. "Objectivity" includes whether disseminated information is being presented in an accurate, clear, complete, and unbiased manner. This involves whether the information is presented within a proper context. In addition, "objectivity" involves a focus on ensuring accurate, reliable, and unbiased information. In a scientific, financial, or statistical context, the original and supporting data shall be generated, and the analytic results shall be developed, using sound statistical and research methods.

D. Integrity - refers to the security of information - protection of the information from unauthorized access or revision, to ensure that the information is not compromised through corruption or falsification.

E. Information - means any communication or representation of knowledge such as fact or data, in any medium or form, including textual, numerical, graphic, cartographic, narrative, or audiovisual forms. This definition includes information that an office disseminates from a web page, but does not include the provision of hyperlinks to information that others disseminate. This definition does not include opinions, where the

office's presentation makes it clear that what is being offered in someone's opinion rather than fact or the office's views.

F. Dissemination - means NPS initiated or sponsored distribution of information to the public. Dissemination does not include distribution limited to government employees or NPS contractors or grantees; intra- or inter-agency use or sharing of government information; and responses to requests for agency records under the Freedom of Information Act, the Privacy Act, the Federal Advisory Committee Act, or other similar law. This definition also does not include distribution limited to correspondence with individuals or persons, press releases, archival records, public filings, subpoenas or adjudicative processes.

VII. LEGAL EFFECT

These guidelines are intended only to improve the internal management of the National Park Service relating to information quality. Nothing in these guidelines is intended to create any right or benefit, substantive or procedural, enforceable by law or equity by a party against the United States, its agencies, its offices, or any other person. These guidelines do not provide any right to judicial review.

---------- End of Director's Order ----------

EXHIBIT

25

Department of the Interior
Departmental Manual

Effective Date: 1/28/11
Series: Departmental Management
Part 305: Departmental Science Efforts
Chapter 3: Integrity of Scientific and Scholarly Activities

Originating Office: Office of the Deputy Secretary

305 DM 3

3.1 **Purpose**.

A. This chapter establishes Departmental policy on the integrity of scientific and scholarly activities the Department conducts and science and scholarship it uses to inform management and public policy decisions**.** Scientific and scholarly information considered in Departmental decision making must be robust, of the highest quality, and the result of as rigorous scientific and scholarly processes as can be achieved. Most importantly, it must be trustworthy. It is essential that the Department establish and maintain integrity in its scientific and scholarly activities because information from such activities is a critical factor that informs decision making on public policies. Other factors that inform decision making may include economic, budget, institutional, social, cultural, legal and environmental considerations.

B. This chapter also establishes scientific and scholarly ethical standards, including codes of conduct, and a process for the initial handling of alleged violations. This chapter is not intended to, and does not create any right or benefit, substantive or procedural, enforceable by law or in equity by any party against the United States, its departments, agencies, or entities, its officers, employees or agents, or any other person.

3.2 **Background**. The Presidential Memorandum on Scientific Integrity dated March 9, 2009, and the Office of Science and Technology Policy (OSTP) 2010 guidance memorandum on scientific integrity call for ensuring the highest level of integrity in all aspects of the executive branch's involvement with scientific and technological processes. The 2002 Office of Management and Budget (OMB) Information Quality Guidelines, and the 2005 OMB Information Quality Bulletin for Peer Review provide additional guidance for ensuring information quality. The Secretary issued Order No. 3305, *Ensuring Scientific Integrity within the Department of the Interior*, on September 29, 2010, directing the establishment of a Departmental Manual Chapter that sets forth principles of scientific and scholarly integrity and clarifies the roles and responsibilities of all Department of the Interior (DOI) employees in upholding these principles.

3.3 **Scope**. This chapter establishes requirements for the professional conduct and management of scientific and scholarly activities, and the use of scientific and scholarly information, by and on behalf of the Department. The requirements contained in this chapter are in addition to and do not supersede the Standards of Ethical Conduct for Employees of the Executive Branch, DOI Supplemental Standards, any of the Criminal Conflict of Interest Statutes (18 U.S.C. §§ 201-209), or law enforcement actions and/or investigations and inspections for regulatory compliance. As of the effective date, this policy applies to:

A. All DOI employees, including political appointees, (hereafter employees) when they engage in, supervise, manage, or influence scientific and scholarly activities, or communicate information about the Department's scientific and scholarly activities, or utilize scientific and scholarly information in making agency policy, management or regulatory decisions.

B. All contractors, cooperators, partners, permittees, leasees, and grantees who assist with developing or applying the results of scientific and scholarly activities.

C. All volunteers who assist with developing or applying the results of scientific and scholarly activities.

3.4 **Policy.** The Department supports a culture of scientific and scholarly integrity. Science and scholarship play a vital role in the Department's mission, providing one of several critical inputs to decision making on conservation and responsible development of natural resources, preservation of cultural resources, and responsibilities to tribal communities. The Department recognizes the importance of scientific and scholarly information and science and scholarship as methods for maintaining and enhancing our effectiveness and establishing credibility and value with all sectors of the public, both nationally and internationally. The Department is dedicated to preserving the integrity of the scientific and scholarly activities it conducts, and activities that are conducted on its behalf. It will not tolerate loss of integrity in the performance of scientific and scholarly activities or in the application of science and scholarship in decision making. The Department will:

A. Use clear and unambiguous codes of conduct for scientific and scholarly activities to define expectations for those covered by this policy.

B. Facilitate the free flow of scientific and scholarly information, consistent with privacy and classification standards, and in keeping with the Department's Open Government Plan.

C. Document the scientific and scholarly findings considered in decision making and ensure public access to that information and supporting data through established Departmental and Bureau procedures—except for information and data that are restricted from disclosure under procedures established in accordance with statute, regulation, Executive Order, or Presidential Memorandum.

D. Ensure that the selection and retention of employees in scientific and scholarly positions or in positions that rely on the results of scientific and scholarly activities are based on the candidate's integrity, knowledge, credentials, and experience relevant to the responsibility of the position.

E. Ensure that public communications policies provide procedures by which scientists and scholars may speak to the media and the public about scientific and scholarly matters based on their official work and areas of expertise. In no circumstance may public affairs officers ask or direct Federal scientists to alter scientific findings.

F. Provide information to employees on whistleblower protections.

G. Communicate this policy and all related responsibilities to contractors, cooperators, partners, permittees, leasees, grantees, and volunteers who assist with developing or applying the results of scientific and scholarly activities on behalf of the Department, as appropriate.

H. Encourage the enhancement of scientific and scholarly integrity through appropriate, cooperative engagement with the communities of practice represented by professional societies and organizations.

I. Examine, track, and resolve all reasonable allegations of scientific and scholarly misconduct while ensuring the rights and privacy of those covered by this policy and ensuring that unwarranted allegations do not result in slander, libel, or other damage to them.

J. Facilitate the sharing of best administrative and management practices that promote the integrity of the Department's scientific and scholarly activities.

3.5 **Definitions**.

A. Conflict of Interest. Any personal, professional, financial, or other interests that conflict with the actions or judgments of those covered by this policy when conducting scientific and scholarly activities or using

scientific and scholarly data and information because those interests may:

(1) Significantly impair objectivity; or

(2) Create an unfair competitive advantage for any person or organization, or

(3) Create the appearance of either (1) or (2).

B. Contractors, Cooperators, Partners, Permittees, Leasees, and Grantees. Groups, organizations, or individuals who provide goods or services to, or otherwise interact with the Department under terms specified in a written agreement (such as a cooperative agreement, grant, or memorandum of understanding), contract, lease, or permit.

C. Decision Makers. Departmental employees who may:

(1) Develop policies or make determinations about policy or management;

(2) Make determinations about expenditures of Departmental funds;

(3) Implement or manage activities that involve, or rely on, scientific and scholarly activities; or

(4) Supervise employees who engage in scientific and scholarly activities.

D. Employees Who Engage in Scientific and Scholarly Activities.

(1) Individuals who conduct or directly supervise scientific and/or scholarly activities, including but not limited to proposing, performing, or reviewing inventory, monitoring, research, and assessment, or in reporting results of these activities; and

(2) Individuals who directly supervise or personally perform work involving the compilation and translation of scientific and scholarly data or information into formats used by the Department's decision makers and other non-scientist or non-scholar personnel.

E. Fabrication. Making up data or results and recording or reporting them. (Federal Policy on Research Misconduct, 65 FR 76260-76264, December 6, 2000.) Fabrication does not include documented use of modeling or statistical techniques.

F. Falsification. Manipulating research materials, equipment, or processes, or changing or omitting data or results such that the research is not accurately represented in the research record. (Federal Policy on Research Misconduct, 65 FR 76260-76264, December 6, 2000.)

G. Plagiarism. The appropriation of another person's ideas, processes, results, or words without giving appropriate credit. (Federal Policy on Research Misconduct, 65 FR 76260-76264, December 6, 2000.)

H. Reporting. Dissemination of scientific and scholarly activities and results.

I. Scientific Method. A method of research in which a problem is identified, relevant data are gathered, a hypothesis is formulated from these data, and the hypothesis is empirically tested.

J. Scientific and Scholarly Activities. Activities involving inventorying, monitoring, experimentation, study, research, modeling, and scientific and scholarly assessments are scientific and scholarly activities. These activities are conducted in a manner specified by documented protocols and procedures and include any of the physical, biological, cultural, or social sciences as well as landscape architecture,

engineering, mathematics, and statistics that employ the scientific method.

K. Scientific and Scholarly Assessment. Scientific and scholarly information constructed to evaluate a body of scientific and scholarly knowledge, typically by analyzing and synthesizing multiple factual inputs, data, models, assumptions, and/or by applying best professional judgment to bridge and/or characterize uncertainties in the available information.

L. Scientific and Scholarly Integrity. The condition resulting from adherence to professional values and practices, when conducting and applying the results of science and scholarship, that ensures objectivity, clarity, reproducibility, and utility and that provides insulation from bias, fabrication, falsification, plagiarism, outside interference, censorship, and inadequate procedural and information security.

M. Scientific and Scholarly Misconduct.

(1) Fabrication, falsification, or plagiarism in proposing, performing, or reviewing scientific and scholarly activities, or in the products or reporting of the results of these activities. (Federal Policy on Research Misconduct, 65 FR 76260-76264, December 6, 2000.)
Misconduct also includes: (a) intentionally circumventing policy that ensures the integrity of science and scholarship, and (b) actions that compromise scientific and scholarly integrity. Scientific and scholarly misconduct does not include honest error or differences of opinion.

(2) Fabrication, falsification, or plagiarism in the application of scientific and scholarly information to decision making, policy formulation, or preparation of materials for public information activities.

(3) A finding of scientific and scholarly misconduct requires that:

(a) There be a significant departure from accepted practices of the relevant scientific and scholarly community.

(b) The misconduct be committed intentionally, knowingly, or recklessly.

(c) The allegation be proven by a preponderance of evidence.

N. Scientific and Scholarly Product. The results of scientific and scholarly activities including the analysis, synthesis, compilation, or translation of scientific and scholarly information and data into formats used in the Department's decision-making processes or publications.

O. Professional Judgment. An authoritative evaluation that is characterized by or conforms to the technical and ethical standards of a discipline, and requires specialized knowledge or applicable academic preparation.

P. Volunteer. A person who provides, under the terms of a Volunteer Agreement, uncompensated hours of service to the Department for civic, charitable, or humanitarian reasons. A volunteer is not subject to the wage, hour, and compensation provisions of the Fair Labor Standards Act.

Q. Volunteer Agreement. The official Department document that must be reviewed and signed by the volunteer or volunteer group leader and the appropriate agency representative, before work can begin. The agreement statement of work will include the requirements of this chapter and describes the activity(ies) and circumstances under which the volunteer work is performed.

R. Supervisors and Managers. Employees who manage the people, funds and resources of the Department.

3.6 Responsibilities.

A. Deputy Secretary is responsible for:

(1) Providing leadership for the Department on scientific and scholarly integrity.
(2) Ensuring Departmental compliance with this policy.

(3) Designating the duties of Departmental Scientific Integrity Officer (DSIO) to a senior career staff person with scientific and/or scholarly credentials.

(4) Serving as the "Office of Primary Responsibility" for revisions to the policy in this chapter.

B. Office of the Executive Secretariat and Regulatory Affairs:

(1) Serving as the neutral point of contact for receiving allegations of misconduct against DOI employees.

(2) Referring allegations to the DSIO or appropriate Bureau Scientific Integrity Officer (BSIO).

C. Departmental Scientific Integrity Officer is responsible for:

(1) Providing Department-wide leadership for implementing this chapter.

(2) Serving as Scientific Integrity Officer for the Office of the Secretary.

(3) Implementing this chapter as it pertains to bureaus and offices of the Department.

(4) Reviewing bureau implementation procedures for consistency with this policy.

(5) Ensuring the integrity and consistency of the process across the Department.

(6) Coordinating with the appropriate Human Resources Offices.

(7) Providing additional guidance for implementing and updating this chapter, as needed.

(8) Conducting a review of allegations and submitted materials received from the Office of the Executive Secretariat and Regulatory Affairs (OES) to determine whether an inquiry is warranted and appropriate next steps, following the procedures described in Section 3.8 below.

(9) Keeping the Deputy Secretary informed on the status of the implementation of this chapter.

D. Assistant Secretaries are responsible for:

(1) Providing leadership for their bureaus/offices on scientific and scholarly integrity.

(2) Ensuring their bureaus and offices comply with this policy.

(3) Reviewing bureau/office-specific guidance, as appropriate.

E. Heads of Bureaus are responsible for:

(1) Providing leadership for the bureau on scientific and scholarly integrity.

(2) Designating a BSIO who will report to the Bureau Head or appropriate senior executive and will coordinate bureau level allegations of scientific and scholarly misconduct with the DSIO.

(3) Ensuring bureau compliance with this policy.

(4) Developing bureau-specific guidance, as appropriate.

(5) Providing bureau employees with the policy and guidance.

(6) Ensuring employees and volunteers are aware of their responsibilities and comply with the policy and any bureau-specific guidance.

(7) Ensuring that contractors, cooperators, partners, permittees, leasees, and grantees covered under the scope of this chapter are aware of their responsibilities for complying with the principles of this policy and any bureau-specific guidance.

F. Bureau Scientific Integrity Officers are responsible for:

(1) Implementing this chapter as it pertains to the bureau.

(2) Keeping the bureau head or appropriate senior executive informed on the status of the implementation of this chapter.

(3) Coordinating with the appropriate servicing human resources officer.

(4) Conducting a review of allegations and submitted materials received from the Office of the Executive Secretariat and Regulatory Affairs to determine whether an inquiry is warranted and appropriate next steps, following the procedures described in Section 3.8 below.

(5) Coordinating with the DSIO on all submitted allegations and subsequent actions to ensure integrity and consistency of the process across the Department.

G. Managers and Supervisors are responsible for:

(1) Implementing this chapter as it pertains to their area of management or supervision.

(2) Taking appropriate administrative and disciplinary action.

(3) Consulting, as appropriate, with the DSIO, BSIO, Servicing Human Resources Officer (SHRO), Ethics Officer, Administrative Office or Contracting Office, Office of Inspector General (OIG), Office of the Solicitor (SOL) and Office of Collaborative Action and Dispute Resolution (CADR).

(4) Complying with this chapter, 370 DM 752 on Discipline and Adverse Actions, and established collective bargaining agreements.

(5) Ensuring that all contracts, written agreements, cooperative agreements, grants, permits, and leases, covered under the scope of this chapter and under their purview include the requirements of this policy in their performance work statement.

H. Employees and Volunteers are responsible for:

(1) Being aware of and upholding the principles contained in the Code of Scientific and Scholarly Conduct contained in this chapter, as well as principles of ethical conduct set forth in the Standards of

Ethical Conduct for Employees of the Executive Branch (5 CFR 2635).

(2) Complying with the policy and any additional bureau/office-specific guidance.

(3) Reporting to the appropriate officials, as described in Section 3.8 of this chapter, knowledge of scientific misconduct that is planned, is imminent, or has occurred.

(4) Ensuring that any contractors, cooperators, partners, permittees, leasees, and grantees covered under the scope of this chapter with whom they are executing contracts, written agreements cooperative agreements, grants, leases or permits are aware of their responsibilities for complying with this policy and bureau/office-specific guidance.

(5) Upholding the employee responsibilities and conduct contained in Part 370 DM.

I. Contractors, Cooperators, Partners, Permittees, Leasees, and Grantees are responsible for abiding by the principles contained in this policy regarding the integrity of the Department's scientific and scholarly activities, as specified in written agreements or statements of work.

J. Scientific and Scholarly Misconduct Review Panel members are responsible for:

(1) Impartially examining allegations of scientific and scholarly misconduct, as requested.

(2) Preparing and submitting a report of findings to DSIO/ BSIO and responsible manager/supervisor.

(3) Complying with personnel requirements including established collective bargaining agreements and/or representational rights.

3.7 Code of Scientific and Scholarly Conduct.

A. All Departmental Employees, and all Volunteers, Contractors, Cooperators, Partners, Permittees, Leasees, and Grantees as described in section 3.3 (Scope) of this chapter, will abide by the following code of scientific and scholarly conduct to the best of their ability.

(1) I will act in the interest of the advancement of science and scholarship for sound decision making, by using the most appropriate, best available, high quality scientific and scholarly data and information to support the mission of the Department.

(2) I will communicate the results of scientific and scholarly activities clearly, honestly, objectively, thoroughly, accurately, and in a timely manner.

(3) I will be responsible for the resources entrusted to me, including equipment, funds, my time, and the employees I supervise.

(4) I will adhere to the laws and policies related to protection of natural and cultural resources and to research animals and human subjects while conducting science and scholarship activities.

(5) I will not engage in activities that put others or myself in an actual or apparent conflict of interest.

(6) I will not intentionally hinder the scientific and scholarly activities of others or engage in scientific and scholarly misconduct.

(7) I will clearly differentiate among facts, personal opinions, assumptions, hypotheses, and professional judgment in reporting the results of scientific and scholarly activities and characterizing associated uncertainties in using those results for decision making, and in representing those results to other scientists, decision makers, and the public.

(8) I will protect, to the fullest extent allowed by law, the confidential and proprietary information provided by individuals, communities, and entities whose interests and resources are studied or affected by scientific and scholarly activities.

(9) I will be responsible for the quality of the data I use or create and the integrity of the conclusions, interpretations, and applications I make. I will adhere to appropriate quality assurance and quality control standards, and not withhold information that might not support the conclusions, interpretations, and applications I make.

(10) I will be diligent in creating, using, preserving, documenting, and maintaining scientific and scholarly collections, records, methodologies, information, and data in accordance with federal and Departmental policy and procedures.

B. In addition, for Scientists and Scholars:

(1) I will place quality and objectivity of scientific and scholarly activities and reporting of results ahead of personal gain or allegiance to individuals or organizations.

(2) I will maintain scientific and scholarly integrity and will not engage in fabrication, falsification, or plagiarism in proposing, performing, reviewing, or reporting scientific and scholarly activities and their products.

(3) I will fully disclose methodologies used, all relevant data, and the procedures for identifying and excluding faulty data.

(4) I will adhere to appropriate professional standards for authoring and responsibly publishing the results of scientific and scholarly activities and will respect the intellectual property rights of others.

(5) I will welcome constructive criticism of my scientific and scholarly activities and will be responsive to their peer review.

(6) I will provide constructive, objective, and professionally valid peer review of the work of others, free of any personal or professional jealousy, competition, non-scientific disagreement, or conflict of interest. I will substantiate comments that I make with the same care with which I report my own work.

C. In Addition, for Decision Makers:

(1) I will do my best to support the scientific and scholarly activities of others and will not engage in dishonesty, fraud, misrepresentation, coercive manipulation, censorship, or other misconduct that alters the content, veracity, or meaning or that may affect the planning, conduct, reporting, or application of scientific and scholarly activities.

(2) I will offer respectful, constructive, and objective review of my employees' scientific and scholarly activities and will encourage their obtaining appropriate peer reviews of their work. I will respect the intellectual property rights of others and will substantiate comments that I make about their work with the same care with which I carry out and report the results of my own activities.

(3) I will adhere to appropriate standards for reporting, documenting and applying results of

scientific and scholarly activities used in decision making and ensure public access to those results in accordance with Departmental policy and established laws.

3.8 Procedures for Reporting and Resolving Allegations Regarding Loss of Scientific and Scholarly Integrity.

The Department is dedicated to preserving the integrity of the scientific and scholarly activities it conducts, and are conducted on its behalf. It will not tolerate loss of integrity in the performance of scientific and scholarly activities or in the application of science and scholarship in decision making. This section outlines procedures for reporting and resolving allegations in a timely and fair manner (see Appendices A-1 and A-2).

A. Reporting an Allegation. Allegations of scientific and scholarly misconduct with respect to DOI employees, volunteers, contractors, cooperators, partners, permittees, leasees, and grantees must be submitted in writing. The Department will consider allegations submitted within 60 days of discovery of alleged misconduct. Allegations may be submitted by individuals or entities, internal or external to the Department. Misconduct includes intentional fabrication, falsification, or plagiarism and is not the result of honest error or difference of opinion, such as with a scientific and scholarly process or a management decision. Cases of fraud, waste, and abuse should be directly referred to the Office of Inspector General.

An initial notice of an allegation of scientific and scholarly misconduct should be submitted to the OES and contain the following information:

(1) The name, affiliation, and signature of the person(s) submitting the allegation and the name and organization of the person(s) alleged to have committed the misconduct.

(2) Upon receipt of the above information, OES will open a file to track the allegation. The following additional information is required within 10 days of submission of the information in paragraph (1).

(3) A description of the allegation that includes the date, circumstances, and location of the alleged misconduct.

(4) Any documents or other relevant items (such as data, scientific papers, memos, etc.) with annotation showing specifically how the item relates to the allegation.

(5) An explanation of how the allegation relates to scientific and scholarly misconduct and demonstrating the impact of the alleged misconduct.

(6) A statement explaining any conflict(s) of interest the person making the allegation has with the subject(s), entity(ies), or situation(s), named in the allegation.

Allegations may be returned if they do not contain the above information.

B. Inquiry into an allegation of scientific and scholarly misconduct. The OES will refer allegations to the DSIO or the appropriate BSIO. Allegations related to bureau heads or offices within the Office of the Secretary will be referred to the DSIO. Allegations related to the bureaus will be referred to the appropriate BSIO.

(1) Where a union holds an exclusive recognition, managers and supervisor are reminded to fulfill their labor-management obligations, as appropriate, prior to implementing this policy.

(2) Particular attention should be given to any applicable collective bargaining agreement containing language which conflicts with this policy.

(3) Such language prevails over this policy until the contract is renegotiated or unless

otherwise agreed to by the parties. The bureau Human Resources Office should be contacted for assistance.

C. The DSIO or BSIO will conduct a review of the allegations and submitted materials to determine whether an inquiry is warranted. Allegations that have been previously resolved will not be reopened unless substantial new information is submitted. If the DSIO or BSIO determines that the allegation does not warrant investigation, or that the allegation was previously investigated, the DSIO or BSIO will dismiss the allegation and inform the submitter.

D. If the DSIO or BSIO determines that an inquiry is warranted:

(1) If Employees and/or Volunteers are the Subject of the Allegation:

(a) The DSIO or BSIO will contact the responsible manager(s) of the subject of the allegation (henceforth referred to as the "subject") to inform the manager (s) that an allegation of scientific and scholarly misconduct has been filed. For employees and volunteers, the responsible manager will normally be the supervisor, except when it is ascertained that the supervisor may have a conflict of interest, in which case an appropriate responsible manager will be assigned.

(b) The DSIO or BSIO working with the responsible manager and an assigned Servicing Human Resources Officer (SHRO), will conduct an inquiry to determine if the allegation is covered under the provisions of this chapter and will provide consistency, oversight, and guidance throughout the entire process.

(c) The subject will be notified in writing (Appendix B - Sample Notification of Allegation of Scientific Misconduct) that an allegation of scientific and scholarly misconduct has been filed against them. The notification shall be conducted privately and preferably in person. At the time of notification, the manager will ensure that all original records and materials relevant to the allegation are immediately secured.

(d) Throughout the inquiry and fact finding, confidentiality must be maintained and identities of the subject of the allegation and person submitting the allegation will be protected.

(2) If Contractors, Cooperators, Partners, Permittees, Leasees, or Grantees are the Subject of the Allegation:

(a) The DSIO or BSIO will contact the appropriate federal official responsible for the activities of the contractors, cooperators, partners, permittees, leasees, or grantees that are the subject of the inquiry to inform the official that an allegation of scientific and scholarly misconduct has been filed. The appropriate official could be the Contracting Officer or Financial Assistance official (CO/FA) or permit/lease manager. The DSIO or BSIO working with the appropriate official shall notify the subject's organization (or the subject in the case of a single independent contractor, cooperator, partner, permittee, leasee, or grantee) of the allegation to request investigation and remedy.

(b) Throughout the inquiry and fact finding, confidentiality must be maintained and identities of the subject of the allegation, their organization, and person submitting the allegation will be protected.

E. Potential outcomes of inquiry into an allegation of scientific and scholarly misconduct.

(1) Employees and Volunteers:

(a) If the DSIO or BSIO working with the manager establishes through the inquiry that no misconduct has occurred, the case will be dismissed and closed. The DSIO or BSIO working with the manager will issue a memorandum to the subject with a copy to the DSIO (if from the BSIO) explaining that

the case is dismissed (Sample Closure Memorandum - Appendix C).

(b) If during the inquiry the DSIO or BSIO working with the manager determines that an incident occurred but (1) was not intentional or reckless and therefore not misconduct, or (2) that misconduct occurred, however there is no need for further fact finding; the DSIO or BSIO will work with the manager and SHRO to determine appropriate corrective action, as necessary. The DSIO or BSIO and manager will meet with the subject to explain any actions that will be taken concerning this incident, close the case, and report resolution of the case to the DSIO (if from the BSIO).

(c) If the DSIO or BSIO working with the manager determines that there appears to be merit to the allegation, and that a formal review and further fact finding by a panel of experts is required to determine the validity of the allegation and the extent and nature of the alleged misconduct, then the DSIO or BSIO will notify the manager and the subject(s) and a panel will be established as follows.

(i) In the case of an allegation against a bureau employee, the bureau head will then establish a Scientific and Scholarly Integrity Review Panel (SIRP). The bureau head may not influence the panel process or results. The BSIO will have oversight over the panel and inform the DSIO of the resolution.

(ii) In the case of an allegation against a bureau head or an Office of the Secretary employee, the DSIO will inform the relevant Assistant Secretary or the Deputy Secretary, as appropriate. Either the Assistant Secretary or the Deputy Secretary, or designee, will establish a SIRP. The DSIO will have oversight over the panel.

(2) Contractors, Cooperators, Partners, Permittees, Leasees, and Grantees:

(a) If the DSIO or BSIO working with the appropriate CO/FA official establishes that no misconduct has occurred then no further action will be taken against the subject's organization. The appropriate CO/FA official will issue a memorandum to the subject's organization with a copy to the BSIO and DSIO explaining that no further action will be taken, and that the case will be closed.

(b) If the DSIO or BSIO working with the appropriate CO/FA official determines that there appears to be merit to the allegation, the subject's organization will be requested to investigate the matter and provide the results to the government, certifying that the results of the investigation are true and accurate to the best knowledge of the organization. Penalties for falsifying results of an investigation may include, but not be limited to, termination of the contract or agreement or suspension and/or debarment from future federal awards.

(c) If no misconduct is reported by the subject's organization and the DSIO or BSIO working with the appropriate CO/FA official accepts this report, no further action will be taken against the subject's organization. Working with the appropriate CO/FA official, a memorandum will be issued to the subject's organization with a copy to the BSIO and DSIO explaining that no further action will be taken concerning this allegation, and that the case will be closed. The DSIO or BSIO working with the appropriate CO/FA official has the authority to question the organization's report until all issues have been satisfactorily addressed, after which the DSIO or BSIO will close the case.

(d) If misconduct is reported by the subject's organization, the DSIO or BSIO, working with the appropriate CO/FA official will decide the course of action with regard to the organization to include, but not be limited to, acceptance of the organization's resolution of the misconduct, issuing a poor performance review, termination of the contract/agreement or initiation of debarment procedures. The BSIO will report resolution of the case to the DSIO.

F. Formal Review and Fact Finding by Scientific and Scholarly Integrity Review Panel (Employees and Volunteers Only).

(1) Guidance for establishment and operations of the Scientific and Scholarly Integrity Review Panel (SIRP) are provided in Appendix D.

(2) The SIRP Chair will notify the subject that a SIRP will be convened to conduct fact finding related to the allegation of scientific and scholarly misconduct; advise the subject on his/her rights and responsibilities during this process, and ask the subject to sign an Employee/Volunteer Information and Acknowledgement Form - Appendix E. The subject will be entitled to have a representative if desired; however legal fees are the responsibility of the subject.

(3) The SIRP will provide a report as outlined in Appendix D. The report produced by this panel falls under the Privacy Act, and will constitute pre-decisional, deliberative material containing analysis and recommendations related to Agency policy. These reports are intended to provide advice, recommendations, and opinions which are part of the deliberative, consultative, decision-making processes of the Department.

(4) Within 30 calendar days of the completion of the fact finding report, the Chair of the SIRP shall forward the report to the appropriate bureau head(s), BSIO(s), and the DSIO. The DSIO or BSIO, as appropriate, will work with the responsible manager and SHRO to determine corrective or disciplinary action. If the SIRP determines there is no misconduct, the manager will issue a memorandum to the subject with a copy to the DSIO or BSIO explaining that no further action will be taken concerning this allegation and that the case will be closed (Appendix C).

G. Corrective and Disciplinary Actions (Employees and Volunteers Only).

(1) If the incident that led to the allegation of misconduct is determined to have resulted in an impact to the integrity of the science or scholarship, the manager will take steps to correct the loss of integrity and to prevent future occurrences of the sequence of events that led to the impact to integrity.

(2) For employees, if the allegation is determined to have merit either as a result of the inquiry led by the DSIO or BSIO or as a result of further fact finding by an SIRP, the responsible manager and SHRO will work together to determine the appropriate action to be taken using the Departmental Manual chapter 370 DM 752 - Discipline and Adverse Actions, and any union contracts, as applicable.

(3) For volunteers, if the allegation is determined to have merit either as a result of the inquiry led by the DSIO or BSIO or as a result of further fact finding by an SIRP, the manager will determine appropriate action which may include loss of privileges or termination of their volunteer service agreement.

H. Appeal Rights (Employees and Volunteers Only). If disciplinary action is taken against an employee, they may have appeal rights under Departmental Manual chapter 370 DM 752 - Discipline and Adverse Actions, and any union contracts, as applicable. Employees should contact their SHRO for additional information.

I. Resources for Federal Employees and Volunteers.

(1) The Department's COnflict REsolution PLUS (CORE PLUS) system for managing conflict in the workplace, jointly managed by the Office of Collaborative Action and Dispute Resolution and its counterparts in the bureaus, provides managers and employees with tools and assistance to address science and scholarship integrity issues and concerns. CORE PLUS assistance may include, but is not limited to, facilitating consultation to help define issues or specific concerns, providing training on effective communication and conflict management, coaching parties in their attempts to resolve conflicts on their own, facilitating meetings, mediating (when it is appropriate and the parties are willing to participate), or securing the services of other alternative dispute resolution practitioners, such as ombudsman assistance, acceptable to all parties.

(2) The informal conflict management and alternative dispute resolution processes available through CORE PLUS do not take the place of any other avenue of redress available to managers and employees. See 370 DM 770.

3.9 Participation as an Officer or Member on the Board of Directors of Professional Societies or other non-Federal Organizations.

The Department encourages the enhancement of scientific and scholarly integrity through engagement with the communities of practice represented by professional societies. The Department encourages employees to participate in outside professional organizations in order to enhance their professional development, especially when that participation advances the Department's mission, programs, and operations. Department scientists, scholars, and other professionals should engage in scientific, scholarly, and other activities with these professional networks in accordance with the following guidelines.

A. An employee's service as an officer or as a member on the board of directors (or in any position that creates a fiduciary duty under State or other applicable law) of a non-Federal organization may create an actual or apparent conflict of interest or may affect the employee's ability to act impartially. Employees in these positions must avoid any activity that may create the potential for preferential treatment, improper official endorsement, inappropriate use of official time, actual or apparent loss of impartiality, disclosure of non-public information, or any situation that would adversely affect the public's confidence in the Department. Employees wishing to serve in an official capacity in any position that creates a fiduciary duty to a non-Federal organization are required to complete, prior to serving in such a role, the waiver, memorandum of understanding (MOU), and recusal memorandum described below.

B. Employees serving in their official capacity on advisory committees, working groups, or other positions that do not create a fiduciary duty to a non-Federal organization must comply with all applicable ethics statutes and regulations during the period of their service. Employees should consult with an ethics counselor to ensure compliance with these statutes and regulations and should obtain supervisory approval to ensure bureau or Departmental interest in the employee's participation. They are not, however, required to complete the waiver, MOU, and recusal memorandum described below.

(1) Service in a Personal Capacity as an Officer or Member of a Board of Directors or in any Position that Creates a Fiduciary Duty. Employees serving in their personal capacity as an officer or member on the board of directors of a non-Federal organization or in any position that creates a fiduciary duty must adhere to all applicable ethics statutes and regulations and should consult with their Bureau's Deputy Ethics Counselor or the Departmental Ethics Office to ensure their compliance. Failure to comply could result in violation of the Federal criminal conflicts of interest statute (18 U.S.C. § 208) or violation of the Standards of Ethical Conduct for Executive Branch Employees (5 C.F.R. 2635).

(2) Service in an Official Capacity as an Officer or Member of a Board of Directors or in any Position that Creates a Fiduciary Duty. Departmental employees may participate in their official capacity as an officer or member on the board of directors of non-Federal organizations or in any position that creates a fiduciary duty when the Department or their Bureau has determined that such participation is in the best interest of the Federal Government. In order to avoid any actual or apparent conflicts of interest, employees could, in an alternative, serve as a designated non-voting liaison, representing the Department or their bureau. When serving in their official capacity as an officer or on the board of directors of a non-Federal organization or in any position that creates a fiduciary duty to that organization, Department employees must adhere to the following requirements:

(a) Prior to service as an officer or member of the board of directors of a non-Federal organization or in any position that creates a fiduciary duty, employees must receive a Conflicts of Interest Waiver (Appendix F). Waivers shall only be granted by the Designated Agency Ethics Official or a bureau head and will not be granted retroactively. To initiate the waiver process, Departmental employees should

contact the Departmental Ethics Office or their Deputy Ethics Counselor.

(b) Employees must execute a written MOU (Appendix G), acknowledging that their primary duty of loyalty is to the U.S. Government should the interests of the Government conflict with the interests of the non-Federal organization. The MOU must be signed by the executive director or an officer of the non-Federal organization and by the Designated Agency Ethics Official or Bureau Head.

(c) Employees must execute a Recusal Memorandum (Appendix H) in which they acknowledge that they may not be involved in any official government matter that would affect the financial interest of the non-Federal organization, including the following: decisions or discussions pertaining to grants, contracts, cooperative research and development agreements (CRADAs), or other support; the preparation of requests from the non-Federal organization to obtain Federal funds or manpower to support its activities; approval of Federal travel authorizations to travel on behalf of the non-Federal organization; or fundraising and lobbying on behalf of the non-Federal organization.

3.10 **Authorities**.

A. Statutes and Regulations.

(1) 5 U.S.C. 301 allows the head of an executive department to prescribe regulations for the conduct of its employees.

(2) 43 CFR 20.501 requires employees of the Department to comply with all Federal statutes, Executive Orders, Office of Government Ethics and Office of Personnel Management regulations, and Departmental regulations.

(3) 43 CFR 20.502 states that employees are required to carry out the announced policies and programs of the Department.

(4) 56 FR 28012-28018 is the Federal Policy for the Protection of Human Subjects, which provides guidelines for all research involving human subjects conducted, supported or otherwise subject to regulation by any federal department or agency.

(5) 7 USC, 2131-2159 is the Animal Welfare Act as Amended, which requires that minimum standards of care and treatment be provided for certain animals bred for commercial sale, used in research, transported commercially, or exhibited to the public.

(6) 43 CFR 20.502(a) states that an employee is subject to appropriate disciplinary action if he or she fails to comply with any lawful regulations, orders, or policies.

(7) 18 U.S.C. 208 and 5 CFR 2635 Subparts D and E state that department scientists and scholars are subject to requirements pertaining to conflict of interest and appearance of a lack of impartiality.

B. Departmental Manual - 370 DM 752.

C. Standards of Ethical Conduct for Employees of the Executive Branch, 5 CFR 2635.

D. Federal Policy on Research Misconduct, 65 FR 76260-76264, December 6, 2000.

E. Whistleblower Protection Act, 5 USC, 2302(b)(8).

Action Flow Chart for Allegations of Misconduct Regarding Employees and Volunteers

Allegation. Within 60 days of discovery, notice of allegation must be submitted to the Office of the Executive Secretariat and Regulatory Affairs followed within 10 days by required documentation.

***Allegations of* fraud, waste and abuse** or criminal law violations will be immediately referred to the DOI Office of Inspector General.

Allegation is referred to the DSIO or appropriate BSIO. The DSIO or BSIO will evaluate the timing, content and reasonableness of the allegation to determine if the allegation should be dismissed or should proceed to the inquiry stage.

***If the allegation is found to* have no merit or was previously investigated**, no action is taken, the subject receives notification and the case is dismissed and closed.

Inquiry. The DSIO or BSIO working with the appropriate manager and SHRO will assess the merit of the allegation and determine whether it constitutes loss of scientific integrity. If the DSIO or BSIO working with the manager concludes the allegation is true and/or unintentional, the process proceeds to Administrative Action. If further fact finding is needed, a Scientific Integrity Review Panel (SIRP) will be established.

***If the allegation is found to* have no merit**, no action is taken, the subject receives notification and the case is dismissed and closed.

Further Fact Finding Required

Alleged Administrative Misconduct (5 CFR 752)

Formal Fact Finding. A formal review and fact-finding of the allegation is carried out by an SIRP. The SIRP compiles and analyzes the factual record to determine the scope and impact of the alleged misconduct. The SIRP prepares a report with findings that is forwarded to the appropriate DSIO, BSIO and responsible manager.

Administrative and/or Corrective Action. For employees, the responsible manager and SHRO will work together to determine the appropriate action. The Departmental Manual chapter 370 DM 752 and any union contracts provide applicable guidance. For volunteers, the manager will determine appropriate action, which may include termination of the volunteer service agreement. The manager will provide a summary of the resolution of the allegation to the BSIO and DSIO.

Action Flow Chart for Allegations of Misconduct Regarding Contractors, Cooperators, Partners, Permittees, Leasees, and Grantees

Allegation. Within 60 days of discovery, notice of allegation must be submitted to the Office of the Executive Secretariat and Regulatory Affairs followed within 10 days by documentation.

→ ***Allegations of* fraud, waste and abuse** or criminal law violations will be immediately referred to the DOI Office of Inspector General.

↓

Allegation is referred to the DSIO or appropriate BSIO who will contact the CO/FA official responsible for the contractor, cooperator, partner, permittee, leasee, or grantee. The official shall notify the subject's organization.

→ If the allegation is found to **have no merit or was previously investigated**, no action is taken, the subject receives notification and the case is dismissed and closed.

↓

Inquiry. The DSIO or BSIO will contact the appropriate CO/FA official responsible for the contractor, cooperator, partner, permittee, leasee, or grantee. The official shall notify the subject's organization. The subject's organization will investigate and provide certified results. If misconduct is reported, Administrative Action will be taken.

→ If **no misconduct is reported** by the subject's organization and the appropriate official accepts this result, no action is taken, the subject receives notification and the case is dismissed and closed.

Administrative and/or Corrective Action. If the subject's organization reports misconduct, the appropriate official will decide the action taken, to include but not limited to, poor performance review, determination of the contract/agreement or initiation of debarment procedures. The official will report resolution of the case to the BSIO and DSIO.

Sample Notifications of Allegation of Scientific Misconduct

TO: Subject

FROM: DSIO or BSIO

CC: DSIO and Manager

SUBJECT: Allegation of Scientific Misconduct

An allegation of scientific misconduct has been filed with the Department of the Interior regarding the following: *Insert as specific and detailed a description of the allegation as possible here, but do not disclose the name of the person who filed the allegation.*

This allegation has not yet been investigated or determined to have merit. However, pursuant to the Department of the Interior's scientific integrity policy, I will be conducting an inquiry to determine its merits. Under the Department's procedures, you must preserve and provide to my office all original research records and materials relevant to the above allegation.

An interview will be scheduled with you to discuss the allegation and will be part of the official record. You may also provide for the record a written response to the allegation.

Once an inquiry into this matter is concluded, I will inform you in writing that: (1) a review of this matter has dismissed the allegation and the matter is closed; (2) a review of this matter has verified that scientific misconduct has taken place and you will be contacted about possible additional action; or (3) the allegation has been referred to a Scientific Integrity Review Panel (SIRP) for further fact-finding. If the matter is referred to an SIRP, the Chairperson of the Panel will notify you of your rights concerning their review, your obligations during their investigation, and your opportunity to respond to the allegation.

For Volunteers:
If a Panel conducts fact-finding into this allegation, I will review their findings to determine the appropriate action necessary to resolve this matter. You will be advised of the action to be taken.

If conflict arises as this process proceeds or if the action was not deliberate and was more about a disagreement or difference of opinion, I may utilize the Department's CORE PLUS system for managing conflict in the workplace. The CORE PLUS system is jointly managed by the Office of Collaborative Action and Dispute Resolution and its counterparts in the bureaus, and provides managers and employees with tools and assistance to address science and scholarship integrity issues and concerns. CORE PLUS assistance may include, but is not limited to, consultation to help define issues or specific concerns, providing training on effective communication and conflict management, coaching parties in their attempts to resolve conflicts on their own, facilitating meetings, mediating (when it is appropriate and the parties are willing to participate), or securing the services of other alternative dispute resolution practitioners, such as ombuds assistance, acceptable to all parties.

I have attached a copy of the DOI Manual chapter xxxxx on Scientific Integrity. Please review it carefully and let me know if you have any questions about this process.

Appendix C

Sample Closure Memorandum

TO: Subject

FROM: DSIO or BSIO

CC: DSIO and Manager

SUBJECT: Resolution of Allegation of Scientific Misconduct

I am pleased to inform you that**,** after an inquiry into the allegation of scientific misconduct that was filed against you, I have found no merit in the charge. (*Insert as specific and detailed a description of the allegation as possible but do not disclose the name of the person who filed the allegation*). As a result, the concerns of this allegation are considered closed. I appreciate your cooperation in this important process.

Appendix D

Scientific and Scholarly Misconduct Review Panel

PURPOSE

A Scientific Integrity Review Panel (SIRP) will be established by the Head(s) of a Bureau(s) for Bureau related allegations of misconduct or by the DSIO for allegations of misconduct against the Bureau Head or Office of the Secretary. The SIRP will conduct fact finding and review allegations of misconduct reported against DOI employees and volunteers. The panel shall address the materiality or significance of the alleged misconduct and explain why the conduct does or does not constitute a serious deviation from accepted practices under institutional or general scientific and scholarly standards. To fully understand the severity of alleged misconduct, an effort to determine deliberate intent should be included in the investigation. Scientific and scholarly misconduct is the result of a deliberate action by an employee or volunteer that compromises the scientific integrity of the conduct, production, or use of scientific and scholarly activities and assessments. Misconduct includes intentional fabrication, falsification, or plagiarism and is not the result of honest error or difference of opinion with a scientific and scholarly process or a management decision.

Three criteria are necessary to establish research misconduct (Federal Policy on Research Misconduct):

(1) There is a significant departure from accepted practices of the relevant research community, and
(2) The misconduct is committed intentionally or knowingly or recklessly, and
(3) The allegation is proven by a majority of evidence.

COMPOSITION OF THE PANEL

The SIRP shall consist of a Chairperson and at least three subject matter experts that may come from any part of the Department as appropriate. The Bureau Head(s) or DSIO, or a designee in consultation with the BISO and appropriate senior management as needed shall appoint the panel members based on the specific discipline or a specific area of expertise that is required to understand the probable nature of the alleged misconduct. The Chairperson, with the concurrence of the Bureau Head (s) or DSIO, will select additional panel members as needed. The Bureau Head(s) or DSIO may replace any panel member at any time. Depending on the Bureau's needs, this may be a standing committee.

Panel members shall have appropriate expertise to evaluate the allegations of scientific misconduct. The integrity and fairness of the peer-evaluation process is paramount, every effort will be made to maintain a balance of subject matter expertise at, appropriate grade levels among panel members.

SERVICING HUMAN RESOURCES OFFICE, ETHICS OFFICE, OR ADMINISTRATIVE ASSISTANCE

The Chairperson of the Panel will set the specific dates, time, and place for the panel to meet. The servicing human resources officer will serve as an ad hoc member of the panel and along with the, BSIO or DSIO, and the Bureau or Department Ethics office, will provide support or advice to the panel as necessary.

PANEL OPERATIONS AND RESPONSIBILITIES

The Chairperson of the Panel will ensure that information concerning the case is distributed to panel members at least two weeks prior to the meeting date.

The Panel, at its discretion, will conduct fact-finding and may utilize one or both of the following methods: (1) Securing and reviewing documentary evidence including all original experimental records, protocols, and data; (2) Interviewing relevant persons, whether in person, or by telephone; and securing written statements from the interested parties, as necessary.

The Chairperson of the Panel shall advise panel members of the extreme importance of confidentiality of materials and discussions relating to the alleged scientific misconduct. There is to be no release of information by panel members pertaining to any allegation. All discussions by the panel shall be safeguarded and not shared outside of the Scientific Integrity Review Panel.

The Scientific Integrity Review Panel will arrive at a consensus decision, if possible, about whether or not misconduct has occurred. Consensus decision means that all panel members, including the Chairperson, agree in general with a decision; this is distinct from a majority-rule decision. In the consensus-based process, panel members work together to develop a finding with which all of the members of the panel can agree. The Chairperson will determine if consensus has been reached by asking all panel members if they agree with the finding. If consensus is reached, then the Panel shall write a report of their findings that contains: a summary of the findings, the basis for determining whether or not scientific misconduct occurred, and an assessment of the seriousness and extent of any misconduct found that is in violation of the DOI Policy on Integrity of Scientific and Scholarly Activities.

The Panel will take the time necessary to address all of the relevant issues associated with the allegation in order to reach a consensus finding. If after all efforts are exhausted, the Panel is still unable to reach consensus about whether or not misconduct has occurred, then a majority decision will be made. In this case, the panel report will include majority and minority findings.

The report produced by this panel will constitute pre-decisional, deliberative material containing analysis and recommendations related to Agency policy. These reports are intended to provide advice, recommendations, and opinions which are part of the deliberative, consultative, decision-making processes of the Department of the Interior. At a minimum the report will include: (1) Summary of the alleged misconduct, (2) Summary of the fact finding activities of the panel, (3) Discussion and conclusion as a result of the fact finding and (4) Appendices as needed containing supporting documents and written statements. The report and supporting documents constitute the record of the panel activities and will be kept according to the appropriate records disposition schedule by the appropriate DSIO or BSIO.

Within 30 calendar days of the completion of the review and fact finding, the Chairperson of the Panel shall forward the completed report to the BISO, DSIO, and responsible manager.

Employee and Volunteer Information and Acknowledgement Forms

EMPLOYEE INFORMATION AND ACKNOWLEDGMENT FORM

The Chairperson of the Scientific Integrity Review Panel will ensure that the subject of the allegation initials each statement below and returns the original signed/dated form to the Chairperson. A copy of the completed form will be provided to the subject of the allegation.
The employee acknowledges that:

I have been informed and I understand this is a formal review and fact-finding process involving matters relating to my official duties as a Federal employee.

I have been informed and I understand that, as a Federal employee, I am required to cooperate with this formal process and provide truthful answers.

I have been informed and I understand that if I refuse to cooperate and answer questions during this formal process, my refusal to cooperate can be a basis for disciplinary action, which may result in my removal from Federal service.

I have been informed and I understand that if I provide information during this formal process that I know to be false at the time I provided the information, my providing false information can be a basis for disciplinary action that may result in my removal from Federal service and also can be a basis for criminal prosecution.

I understand that I will have the opportunity to respond to the allegation and to present evidence to the Scientific Misconduct Review Panel orally and/or in writing and that I may have representation at my own expense.

I understand that I may have rights as an employee during this process, and that my servicing Human Resources Office can inform me of these rights.

Signature: _____ Date: _____
Name (please print): _____
Position Title, Series and Grade: _____
Duty Station: _____

PRIVACY ACT NOTICE. Pursuant to the Privacy Act of 1974, as amended, 5 U.S.C. § 552a, you are advised of the following:

1. Authority. Solicitation of this information is authorized by 5 U.S.C. 301 that allows the head of an executive department to prescribe regulations for the conduct of its employees and other authorities cited at 305 DM 3.10.

2. Principal Purpose. The principal purpose for soliciting the information is to implement the Policy on Integrity of Scientific and Scholarly Activities of the Department of the Interior at 305 DM 3.

3. Routine Uses. Routine uses of the solicited information are the same as those listed in the system notice OPM/GOVT-1.

4. Effect of Noncompliance. Failure to provide the solicited information may result in disciplinary action, including the removal from Federal service.

VOLUNTEER INFORMATION AND ACKNOWLEDGMENT FORM

The Chairperson of the Scientific Integrity Review Panel will ensure that the subject of the allegation initials each statement below and returns the original signed/dated form to the Chairperson. A copy of the completed form will be provided to the subject of the allegation.

The Volunteer acknowledges that:

I have been informed and I understand this is a formal review and fact-finding process involving matters relating to my official duties as a DOI volunteer.

I have been informed and I understand that if I refuse to cooperate and answer questions during this formal process, my refusal to cooperate may result in termination of my volunteer agreement.

I have been informed and I understand that if I provide information during this formal process that I know to be false at the time I provide the information; my providing false information can be a basis for termination of my volunteer agreement.

I understand that I will have the opportunity to respond to the allegation and to present evidence to the Scientific Integrity Review Panel orally and/or in writing and that I may have representation at my own expense.

Signature: _____ Date: _____

Name (please print): _____

Office: _____

PRIVACY ACT NOTICE. Pursuant to the Privacy Act of 1974, as amended, 5 U.S.C. § 552a, you are advised of the following:

1. Authority. Solicitation of this information is authorized by 5 U.S.C. 301 that allows the head of an executive department to prescribe regulations for the conduct of its employees and other authorities cited at 305 DM 3.10.

2. Principal Purpose. The principal purpose for soliciting the information is to implement the Policy on Integrity of Scientific and Scholarly Activities of the Department of the Interior at 305 DM 3.

3. Routine Uses. Routine uses of the solicited information are the same as those listed in the system notice INTERIOR/DOI-05.

4. Effect of Noncompliance. Failure to provide the solicited information may result in termination of your volunteer agreement.

Appendix F

Conflict of Interest Waiver Request Template

Memorandum

To: [Name of Bureau Ethics Counselor]

From: [Deputy Ethics Counselor]

Subject: Conflict of Interest Waiver for [Employee Name]

The purpose of this memorandum is to request that you grant [Employee Name] a waiver of the criminal conflict of interest provisions that may apply to [his or her] service in an official capacity as [an officer or a member of the board of directors, or other position] of the [name of outside non-profit organization] [abbreviation]. [Employee Name]'s official [Department or bureau] duty is to serve as the [title]. As such, [he or she] [explain the employee's duties, including information that shows how they relate to service in the outside organization (may require more than one sentence)].

The criminal conflict of interest statute, 18 U.S.C. § 208(a), requires that an employee refrain from participating personally and substantially in an official capacity in any particular matter that will have an effect on the financial interests of any organization in which the individual serves as an officer, director, trustee, or employee.

In the absence of: (1) specific statutory authority placing a federal employee in an officer or director position in an ex officio capacity; (2) a release of fiduciary obligations by the organization (if permitted by state law); or (3) a waiver of the requirements of 18 U.S.C. § 208(a), the statute effectively would preclude [Employee Name]'s service, as an official duty activity, as [officer, director or other position] with the [name of outside non-profit organization].

[Describe the position in the outside organization and the outside organization]. [Describe the relationship of the outside organization to [Department or bureau] programs and operations.]

A memorandum of understanding between the [Department or bureau] and the [name of outside non- profit organization] concerning the service of [Employee Name] is attached.

Inasmuch as [Employee Name]'s appointment with the [name of outside non-profit organization] is not pursuant to a statute or release of fiduciary obligations, [he or she] has requested that you, as the official to whom waiver authority is delegated, authorize [his or her] participation in certain particular matters that may affect the financial interests of the [name of outside non-profit organization]. Under 18 U.S.C. § 208(b)(1), a waiver may be granted if the official to whom waiver authority is delegated determines that the disclosed financial interest is "not so substantial as to be deemed likely to affect the integrity of the employee's services to the Government."

In the course of [his or her] assigned duties, the following types of particular matters potentially could come before [Employee Name] for [his or her] personal and substantial participation:

(1) particular matters of general applicability, such as legislation, regulation, or policy that may affect the financial interests of the [name of outside non-profit organization] as a member of a class of similarly situated entities;

(2) matters that affect the financial interests of the [name of outside non-profit organization] through

investigation or regulation of the [name of outside non-profit organization];

(3) particular matters involving specific parties, such as grants, contracts, or application approvals that specifically involve the [name of outside non-profit organization] or otherwise affect its financial interests; or

(4) other miscellaneous matters involving the conduct of the [name of outside non-profit organization] and [Department or bureau] support.

While performing the usual and customary duties of the position of [officer, director or other position] with an outside organization as an official [Department or bureau] activity, any actions taken either in the Federal workplace or at the organization that affect the financial interests of the outside organization are deemed official matters to which 18 U.S.C. § 208(a) applies. For example, such actions may include:

(a) requesting that official travel funds be spent or other government resources be utilized for the employee to conduct the affairs of the organization;

(b) signing a training authorization to use [Department or bureau] funds to pay for an employee to attend a conference or other meeting of the organization;

(c) speaking as an official duty activity at a conference or other meeting of the organization;

(d) providing advice and consultation with respect to, or otherwise conducting, the business affairs of the organization including voting on matters that come before the [name of outside non-profit organization] officers and board members.

While the financial impact may be insignificant, under well-settled precedent, 18 U.S.C. § 208(a) has no de minimis aspect.

I believe that a waiver under 18 U.S.C. § 208(b)(1) to allow [Employee Name] to serve as an [officer or a member of the board of directors, or other position] for [name of outside non-profit organization] in [his or her] official capacity is justified for the following reasons:

First, because [Employee Name] will serve as [position with the outside non-profit organization] as an official duty activity, and [Employee Name]'s position in the outside organization is fully known to the [Department or bureau], the risk that the integrity of the services that the government expects from [Employee Name] would be affected by [his or her] service is greatly diminished. Moreover, the [Department or bureau] has already determined that, to a significant degree, the interests of the [Department or bureau] and the interests of the [name of outside non-profit organization] are consonant. The [Department or bureau] expects that the interests of the [Department or bureau] and the interests of the [name of outside non-profit organization] can both be furthered through the performance of [Employee Name]’s official duties and service with the [name of outside non-profit organization].

Second, most, if not all, of the particular matters in which [Employee Name] would participate would not have a significant effect on the financial interest of the [name of outside non-profit organization] because of the limits in this request set forth below. [Employee Name] will have no involvement in any [Department or bureau] grants, contracts, cooperative agreements, or other Federal support (financial or otherwise) to the [name of outside non-profit organization] other than the use of travel or training funds solely for [Employee Name]’s service with the [name of outside non-profit organization]. [Employee Name] will not participate in investigations of the activities of the [name of outside non-profit organization], other than as a provider of information or testimony. [Employee Name] will not participate in developing regulations that would impact the [name of outside non-profit organization] or be involved in enforcing regulations pertaining to the [name of outside non-profit organization].

Contradictory with Limitations 1

Accordingly, if approved, the requested waiver will permit [Employee Name] to serve as an [officer or a member of the board of directors, or other position] in [name of outside non-profit organization] and permit participation in [his or her] capacity with the [name of outside non-profit organization] in particular matters that will affect the financial interests of the [name of outside non-profit organization], EXCEPT the particular matters listed below that might have a direct and predictable effect on the financial interests of the [name of outside non-profit organization] as to which [Employee Name] has committed to recuse [himself or herself].

LIMITATIONS:

[Employee Name] may not participate in any of the following particular matters because they may affect the financial interests of the [Department or bureau] and the [name of outside non-profit organization] or otherwise violate Federal laws or regulations:

1. Any involvement or participation in decisions pertaining to [Department or bureau] grants, contracts, cooperative agreements [list any other types of agreements that the [Department or bureau] might have with the outside non-profit organization], or other support to include personnel and equipment to the [name of outside non-profit organization], except the actions specifically permitted above, that is:

> "(a) requesting that official travel funds be spent or other government resources be utilized for the employee to conduct the affairs of the organization;
>
> (b) signing a training authorization to use [Department or Bureau] funds to pay for an employee to attend a conference or other meeting of the organization;
>
> (c) speaking as an official duty activity at a conference or other meeting of the organization;
>
> (d) providing advice and consultation with respect to, or otherwise conducting, the business affairs of the organization including voting on matters that come before the [name of outside non-profit organization] officers and board members."

2. Any involvement or participation in any regulatory or investigatory matters on behalf of any Department or agency of the U.S. Government involving the [name of outside non-profit organization] other than as a provider of information or testimony.

3. Preparation or presentation of requests from the [name of outside non-profit organization] to obtain any Federal funds, manpower, or any other form of Federal support on its behalf to support [name of outside non-profit organization] activities, except as permitted in 1.(a) through (c) above.

4. Lobbying on behalf of the [name of outside non-profit organization] in any manner to a Member of Congress, a jurisdiction, or an official of any government as prohibited by 18 U.S.C. § 1913. This includes the use of money appropriated by any enactment of Congress to pay for any personal service, advertisement, telegram, telephone, letter, printed or written matter, or other device, intended or designed to influence in any manner a Member of Congress, a jurisdiction, or an official of any government, to favor, adopt, or oppose, by vote or otherwise, any legislation, law, ratification, policy, or appropriation, at any time unless specifically authorized by Act of Congress. This does not prevent employees of the United States or of its departments or agencies from communicating to Members of Congress or other officials, at his request, or to Congress or such official, through the proper official channels regarding requests for any legislation, law, ratification, policy, or appropriations which they deem necessary for the efficient conduct of the public business.

5. Approval of Federal travel authorizations to travel on behalf of the [name of outside non-profit organization].

6. Participation in fundraising activities of the [name of outside non-profit organization].

A copy of the recusal memorandum is attached. In this manner, [Employee Name]'s service with the [name of outside non-profit organization] is severed from his service as the [Employee's Department or bureau duty title] on particular matters where both the [name of outside non-profit organization] and the [Department or bureau] may have financial interests, thereby avoiding any potential that [he or she] could act contrary to interests of the [Department or bureau] for the benefit of the [name of outside non-profit organization].

[Employee Name] understands and agrees that, as an official duty activity, no separate compensation or reimbursements may be received from the [name of outside non-profit organization] in connection with his or her service. Travel, lodging, per diem or other incidental expenses incurred by [Employee Name] on behalf of the [name of outside non-profit organization], if any, may be accepted by the [Department or bureau] under 31 U.S.C. § 1353 as appropriate. Acceptance of [Employee Name] travel expenses, if any, from the [name of outside non-profit organization] shall be accomplished via a Form DI-2000 which must be approved by the [Departmental or bureau] Ethics Office prior to the travel, or when circumstances do not permit prior approval, within seven days of conclusion of the travel.

3 Attachments:
1. MOU between the [Department or bureau] and the [name of outside non-profit organization], dated
2. [Employee Name] Recusal letter, dated
3. Form DI-2000, *Acceptance of Travel Expenses from a Non-Federal Source*

DECISION:

_____ Waiver granted, subject to the terms and conditions stated above, based on my determination, made in accordance with 18 U.S.C. § 208(b)(1), that the disclosed financial interests are not so substantial as to be deemed likely to affect the integrity of the service which the government may expect from the employee.

_____ Waiver denied.

_____ Date:
[Name]
[Departmental or Bureau Ethics Counselor]
[Name of Department or bureau]

I have read and fully understand ALL of this 18 U.S.C. § 208(b)(1) waiver decision and its limitations. I agree to fully comply with its limitations and acknowledge my understanding and compliance by signing below:

_____
[Employee Name] Date:
[Title]
[Department or bureau]

Memorandum of Understanding Template

Memorandum of Understanding
between the
(U.S. Department of the Interior or bureau)
and the
(Organization name)

1. This Memorandum of Understanding sets forth the agreement between the (Department or bureau) [abbreviation] and the (organization name) [abbreviation] concerning the service of (employee name) as an [officer or member of a board of directors] of the (organization name) as a part of (his or her) official government duties through [month/year]. (Employee name) will be serving as _____. It is estimated that the amount of official time (employee name) will spend on this activity will be approximately (number) hours per month.

2. Before (employee name) performs any duties as an [officer or member of a board of directors] of the (organization name) as part of (his or her) official duties (he or she) must be granted a waiver under the Federal conflict of interest statute, 18 U.S.C. § 208. Waivers that permit an employee to serve as an officer or a member of a board of directors are limited and enable (employee name) to serve as an [officer or board member] of the (organization name) in (his or her) official capacity as a [Department or bureau] employee without violating 18 U.S.C. § 208. However, even if an 18 U.S.C. § 208 waiver is granted, (employee name) may not make or participate in any official decisions on behalf of the (Department or bureau) regarding any request from the (organization name) for public funds or support. (Employee name) may not take any actions that violate Federal, state or local law. Requests for public funds or support include, but are not limited to grants, cooperative agreements, contracts or any other action where the (organization name) is requesting any form of support from the Department of the Interior or one its bureaus. To ensure that no conflicts of interest arise, the (organization name) agrees that it will notify the (Department or bureau) Ethics Office if it intends to seek public funds or support from the Department of the Interior or one of its bureaus. Notice will be provided to: [Department or bureau] Ethics Office [address]. The (organization name) also understands that if it elects to request public funds or support from the Department of the Interior or one of its bureaus, (employee name) may be directed to resign as an [officer or board member] in the (organization name) in (his or her) official capacity.

3. The primary beneficiary of (employee name)'s service as an [officer or board member] in the (organization name) is intended to be the (Department or bureau). It is expected that the benefits to the (Department or bureau) will include, but not be limited to the following:

   a. acquisition of state-of-the-art technical information about (name subjects).

   b. knowledge about organizational arrangements and relationships of organizations with which the (Department or bureau) interacts, in order to enhance the working relationships between the (Department or bureau) and such other organizations;

   c. improved understanding of current issues in the (name the field of endeavor) that concern (Department or bureau) missions and operations;

   d. utilization of professional networks and channels to disseminate information relevant to the accomplishment of (Department or bureau) missions; and

   e. utilization of other mechanisms to facilitate accomplishment of (Department or bureau) missions, functions and processes, such as meetings, conferences, symposia, and publications.

4. In order to avoid the possibility of an actual or potential use of public office for private gain, when [name of employee] uses official time to serve as an [officer or board member] in the (organization name), the following principles will apply:

a. Federal employees may not represent anyone other than the United States before an agency or court in connection with any particular matter in which the United States is a party or has a direct and substantial interest. (18 U.S.C. § 205)

b. When serving as an officer or member of a board of directors of a non-Federal organization in an official capacity, Federal employees must refrain from any involvement or participation in or taking any official action on behalf of the Department of the Interior or its bureaus on any application or request for public funds or other support by the (organization name). (18 U.S.C. § 208)

c. If a Federal employee's participation in a project undertaken in conjunction with a private organization was done as a part of (his or her) official duties, the Federal employee is prohibited from receiving any supplementation of his/her Federal salary. (18 U.S.C. § 209)

d. Federal employees are prohibited from using appropriated funds, official time or Government equipment to instigate or generate lobbying activity on any issue pending before or of interest to the Congress or an official of any government. (18 U.S.C. § 1913)

e. Federal employees are prohibited from being involved in the fundraising activities of the (organization name).

f. Federal employees may not utilize official Government postage, stationery, envelopes, or labels for other than official Government business. (18 U.S.C. § 1719)

The relationship between the (organization name) and the (Department or bureau) addressed in this document is intended to enhance service to the American public through more efficient applications of (Department or bureau) programs. All actions should be directed toward attainment of that mutually beneficial goal.

5. Under Federal law, a Federal employee serving in (his or her) official capacity owes (his or her) first duty of loyalty to the Government of the United States. By signing this memorandum of understanding, the (organization name) acknowledges and consents to the fact that since (employee name) is acting as an [officer or a member of a board of directors] in (organization name) in (his or her) official capacity as a (Department or bureau) employee, (employee name) will owe (his or her) first duty of loyalty to the United States Government and specifically the (Department or bureau) before that of the (organization name) if those interests ever conflict. Consequently, to the fullest extent permitted by state law, the (organization name) agrees to waive any fiduciary duty owed by (employee name) to the (organization name) as an [officer or a member of a board of directors] in the (organization name) when (employee name) acts in the interests of the United States Government. This waiver is limited to actions taken in the interests of the United States Government by (employee name) as an [officer or a member of a board of directors] in the (organization name) while acting in (his or her) official capacity. (Employee name) retains a fiduciary duty to act in the best interests of the (organization name) except when in conflict with the interests of the United States Government.

6. The (organization name) agrees to provide (employee name) liability insurance coverage for any acts performed as an [officer or board member] in the (organization name) equivalent to liability coverage provided to other [officers or board members] of the (organization name). The (organization name) agrees to hold the United States harmless for acts taken by (employee name) in (his or her) official [Department or bureau] capacity as an [officer or board member] in the (organization name).

The foregoing is not intended to impose on the (organization name) any obligations or restrictions other than those set forth above. The (organization name) has an obligation to respect the limitations described above on the activities and function of (employee name) and benefits which may be received by the (Department or bureau). This agreement does not constitute a representation or warranty by the (organization name) as to the benefits which the (Department or bureau) will receive in fact from (employee name)'s service as an officer or member of the board of directors in the (organization name). Nor does the (organization name) assume any

obligation to inquire into or enforce (employee name)’s compliance with paragraph 4 above.

_____ Date:
[Name]
[Official Department or Bureau Position]
[Departmental or Bureau]

_____ Date:
[Name]
[Position]
[Organization name]

Appendix H

Recusal Memorandum Template

MEMORANDUM

TO: [Supervisor Name and Title]

Date

FROM: Name, Title and address [employee signs here]

SUBJECT: Notice of Recusal by [Employee name]

1) This is to notify you that I have an interest in the [name of outside non-profit organization] [abbreviation] because I have been elected as [officer or board of director position] with the [name of outside non-profit organization] through [end date month/year]. **I will not be serving as [officer or board of director position] in an official [Department or Bureau] capacity unless and until I am granted a waiver of the conflict of interest statute**, 18 U.S.C. § 208(b)(1), by the Director of the [Department or bureau].

2) Even though a waiver granted to me pursuant to 18 U.S.C. § 208(b)(1) by the Director of the [Department or bureau] will allow me to serve as [officer or board of director position] and act on [name of outside non-profit organization] matters utilizing limited Government time and resources, I will not involve myself with the following:
   a. Any [Department or bureau] grants, contracts, cooperative agreements or other agreements with the [name of outside non-profit organization];
   b. Providing support to the [name of outside non-profit organization], including personnel or equipment from or to the [name of outside non-profit organization];
   c. Directing a subordinate to speak at any conference or other meeting of the [name of outside non-profit organization];
   d. Participating in investigations of the activities of the [name of outside non-profit organization], other than as a provider of information or testimony;
   e. Developing regulations that would impact the [name of outside non-profit organization] or enforcing regulations pertaining to the [name of outside non-profit organization];
   f. Preparation or presentation of requests from the [name of outside non-profit organization] to obtain any Federal funds, manpower, or any other form of Federal support to support [name of outside non-profit organization] activities. A waiver will permit me to request official travel authorizations to attend and/or to be a speaker or presenter at meetings or conferences of the [name of outside non-profit organization] but approval of my travel authorization requests must be based on a determination by my travel approval authority that my attendance or presentation at the meeting or conference of the [name of outside non-profit organization] is in the best interests of the [Department or bureau];
   g. Lobbying on behalf of the [name of outside non-profit organization] in any manner to a Member of Congress, a jurisdiction, or an official of any government as prohibited by 18 U.S.C. § 1913. This includes the use of money appropriated by any enactment of Congress to pay for any personal service, advertisement, telegram, telephone, letter, printed or written matter, or other device, intended or designed to influence in any manner a Member of Congress, a jurisdiction, or an official of any government, to favor, adopt, or oppose, by vote or otherwise, any legislation, law, ratification, policy, or appropriation, at any time unless specifically authorized by Act of Congress. This does not prevent employees of the United States or of its departments or agencies from communicating to Members of Congress or other officials, at his request, or to Congress or such official, through the proper official channels regarding requests for any legislation, law, ratification, policy, or appropriations which they deem necessary for the efficient conduct of the public business;
   h. Participation in fundraising activities of the [name of outside non-profit organization]; or

i. Approval of Federal travel authorizations of [Department or bureau] employees to attend meetings or conferences of the [name of outside non-profit organization].

3. I have retained a copy of this recusal memorandum for my records and distributed it as listed below.

-

Copy to: [Departmental or bureau] Ethics Office

EXHIBIT

26

United States Department of the Interior

NATIONAL PARK SERVICE
1849 C Street, N.W.
Washington, D.C. 20240

DIRECTOR'S ORDER #12: CONSERVATION PLANNING, ENVIRONMENTAL IMPACT ANALYSIS, AND DECISION-MAKING

Approved: Jonathan B. Jarvis
Director

Effective Date: 10/5/2011

Duration: This order will remain in effect until updated or rescinded

This Order updates and replaces the 2001 edition. Together with Handbook 12, this Order supersedes and replaces any conflicting guidance issued previously.

Contents:

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1. Background

The National Environmental Policy Act of 1969 (NEPA) (42 U.S.C. 4321 et seq.), as amended, is landmark environmental protection legislation establishing as a goal for Federal decision-making a balance between use and preservation of natural and cultural resources. NEPA requires all Federal agencies to (1) prepare in-depth studies of the impacts of and alternatives to proposed "major Federal actions"; (2) use the information contained in such studies in deciding whether to proceed with the actions; and (3) diligently attempt to involve the interested and affected public before any decision affecting the environment is made. The 1916 National Park

Service Organic Act (16 U.S.C. 1 et seq.) directs the National Park Service to "conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations." (16 U.S.C 1) Read together, the provisions of NEPA and the National Park Service Organic Act are consonant and jointly commit the Service to make informed decisions that perpetuate the conservation and protection of park resources unimpaired for the benefit and enjoyment of future generations. Planning, environmental evaluation, and public involvement in management actions that may affect national park system resources are essential in carrying out the trust responsibilities of the National Park Service. Particularly in this era of heightened environmental concern, it is essential that NPS management decisions (1) be scientifically informed, and (2) insist on resource preservation as the highest of many worthy priorities.

2. Purpose and Scope

The purpose of this Director's Order is to set forth the policy and procedures by which the NPS will comply with NEPA. The Council on Environmental Quality (CEQ), part of the Executive Office of the President, is the "caretaker" of NEPA. The NPS will abide by all CEQ NEPA regulations (40 CFR 1500-1508) and any other procedures and requirements imposed by other higher authorities, such as the Department of the Interior (DOI). This Order is not intended, however, to document all those procedures and requirements; for a comprehensive compilation, employees must refer to Handbook 12.

The NPS also administers a broad range of programs that form a vital part of the NPS mission and which may require NEPA compliance, but are not subject to the provisions of the 1916 Organic Act as they are generally unrelated to management of national park system units. Handbooks applicable to the specific programs should also be consulted for additional guidance.

3. Authority

Authority to issue this Order is contained in the NPS Organic Act and in delegations of authority found in Part 245 of the DOI Manual. This Order is intended only to improve the internal management of the NPS, and is not intended to, and does not, create any right or benefit, substantive or procedural, enforceable at law or equity by a party against the United States, its departments, agencies, instrumentalities or entities, its officers or employees, or any other person.

4. Instructions, Requirements, and Policies

4.1 Sources of NEPA Guidance. The NPS will comply with the substantive and procedural requirements of NEPA, 40 CFR Parts 1500-1508, 43 CFR Part 46, 516 DM, and any additional NPS procedures or instructions regarding NEPA.

4.2 Director's Order and Handbook. References in NPS *Management Policies* to public involvement, alternative analysis, and environmental evaluation of NPS and other government actions on resources administered by the NPS are supplemented by this Order and Handbook 12.

The Associate Director for Natural Resource Stewardship and Science will develop and issue Handbook 12, containing uniform Servicewide implementing procedures and such supplemental material as may be necessary to carry out NPS responsibilities under NEPA and related statutes. For NPS program activities unrelated to managing units of the national park system, directives and handbooks specific to those programs should also be consulted for more information. Where other directives and guidelines appear to differ from this Order and Handbook in the areas of impact analysis and other responsibilities under NEPA, this Order and Handbook take precedence.

4.3 Full and Open Evaluation. The procedures contained in Handbook 12 will ensure that both adverse and beneficial impacts of NPS proposed actions are fully and openly evaluated before actions are taken that may impact the human environment. This evaluation must include provisions for:

- Meaningful participation by the public and other stakeholders;
- Development and critical evaluation of alternative courses of action;
- Rigorous application of scientific and technical information in the planning, evaluation and decision-making processes;
- Use of NPS knowledge and expertise through interdisciplinary teams and processes; and
- Aggressive incorporation of mitigation measures, pollution prevention techniques, and other principles of sustainable park management in all actions.

4.4 Interdisciplinary Approach Required. Laws, regulations, and policies applicable to the NPS require interdisciplinary approaches to problem-solving and decision-making. NPS decisions need to reflect this approach as the standard for management within all park units. Both present and new NPS managers must consistently apply the principles of interdisciplinary decision-making in order to achieve our goals as resource stewards and "environmental leaders." Benchmarks demonstrating best management processes in development, analysis, and review of projects (such as interdisciplinary teams and project review teams) will be established for use by parks and regions.

4.5 Technical and Scientific Analysis. Pursuant to NEPA and the National Parks Omnibus Management Act of 1998 (16 U.S.C. 5901 et seq.), NPS management decisions will be based on technical and scientific studies properly considered and appropriate to the decisions made. In making decisions, the NPS will articulate a reasoned connection between the technical and scientific information considered and the final agency action. Technical and scientific information that is essential in making a well-reasoned decision will be obtained even though such information may not be readily available. If such information cannot be obtained due to excessive cost or technical impossibility, the proposed alternative should be modified to eliminate the action causing the unknown or uncertain impact or another alternative may be selected.

4.6 Unknown or Uncertain Impacts. When it is not possible to modify alternatives to eliminate an activity with unknown or uncertain potential impacts, and such information is essential to making a well-reasoned decision, the NPS will follow the provisions of the CEQ regulations (40 CFR 1502.22). The NPS will include in the environmental document (1) a statement that such information is incomplete or unavailable; (2) a discussion of the relevance of

the incomplete or unavailable information to evaluating reasonably foreseeable significant adverse impacts on the human environment; (3) a summary of existing credible scientific evidence which is relevant to evaluating the reasonably foreseeable significant adverse impacts on the human environment; and (4) an evaluation of such impacts based upon theoretical approaches or research methods generally accepted in the scientific community. Reasonably foreseeable impacts—including impacts that have catastrophic consequences—will be included, even if their probability of occurrence is low, if such analysis (1) is supported by credible scientific evidence; (2) is not based on pure conjecture; and (3) is within the rule of reason. Scoping processes will be used to help determine data needs.

4.7 Peer Review. Peer review will be used to address conflicts among resource specialists regarding validity and interpretation of data and resource information. When conflicting information and opinions concerning resource impacts exists, managers must resolve such disputes. Peer review and similar mechanisms will be used as a primary method for resolution of such conflicts. These processes will be reflected in the decision file.

4.8 Alternative Dispute Resolution. In order to reduce the potential for litigation, relationships with established alternative dispute resolution providers and scientific professional societies will be established and used within the NEPA process, when appropriate, to provide a vehicle for resolution of internal and external disputes. In those instances where the NPS has been sued successfully under NEPA, or has settled litigation, a review and evaluation of the process will be conducted so that corrections can be made to improve our project planning, evaluation, and decision-making processes. *(See also Director's Order #93: Conflict Resolution.)*

4.9 The Decision File. Where an action undertaken by the NPS may cause an adverse effect on park resources, the decision file must reflect the manner in which park unit resource studies have been considered, alternatives examined, mitigations incorporated, and final decisions reached.

4.10 Prohibition on Impairment. In managing units of the national park system, the Service may undertake actions that have beneficial or adverse impacts (or both) on park resources and values. However, by the provisions of the laws governing the NPS, the Service is prohibited from taking or authorizing any action that would impair park resources or values unless specifically authorized by Congress. In addition, under other environmental laws, certain adverse impacts may be prohibited as well.

4.11 Decision Documents. Decisions described in findings of no significant impact (FONSIs) and records of decision (RODs) will record information as required by the CEQ NEPA regulations and by NPS policies and practices described in the Handbook accompanying this Order.

4.12 Evaluating Proposals by Others. The NPS will participate in the early and candid evaluation of proposals by other governmental or private entities to avoid adverse environmental impacts to NPS park units or other park or recreation resources subject to the provisions of Federal law. This is an essential element of effective NPS stewardship. When participating in

the environmental impact analysis processes of other entities, the Associate Director for Natural Resource Stewardship and Science will ensure that the NPS's responsibilities for commenting are clearly defined and that the Service and its personnel work with Federal, tribal, State, and local governments in identifying and evaluating potential impacts to resources under NPS jurisdiction or within areas of NPS expertise. Examples include, but are not limited to:

- Consultation under provisions of Section 4(f) of the Department of Transportation Act;
- Evaluation of noise, visual, or other impacts to national park system resources resulting from external activities;
- Hydropower re-licensing projects through Federal Energy Regulatory Commission procedures;
- Impacts of proposed projects on non-NPS areas that have benefited from NPS-administered partnership programs (e.g. Land and Water Conservation Fund, Rivers and Trails, National Natural Landmarks, National Register Properties, etc.);
- Analysis of cumulative ecosystem or other impacts upon the integrity of NPS administered resources; and
- The impacts of any Federal activity on other park resources.

Further, the NPS will provide to other agencies or project proponents responsive and professional evaluation of the potential impacts of their proposals, including whether such impacts may result in the derogation of national park system resources or values, or the derogation of other park and recreation resources subject to the provisions of Federal law. The purpose of these efforts will be to assist other agencies in avoiding or successfully mitigating impacts to resources and values of NPS units, or to NPS programs administered under other statutory or administrative authorities.

5. Responsibilities

5.1 The Associate Director for Natural Resource Stewardship and Science is responsible for issuing and updating procedures for implementing this Order and will work cooperatively with other associate directors, regional directors, support offices, superintendents, and field personnel to ensure that training, technical assistance, and other resources are available and fully used to implement the legal, regulatory, and policy requirements of this order.

5.2 The WASO Environmental Quality Division, which reports to the Associate Director for Natural Resource Stewardship and Science, will:

- Serve as the focal point for all matters relating to NEPA planning and other related environmental mandates;
- Provide technical assistance to parks and regions;
- Provide project management and coordination on nationally significant environmental impact analysis issues and proposals; and
- Coordinate NPS review of NEPA and other documents prepared by other agencies.

The Environmental Quality Division may provide policy review and clearance for NPS EISs on a case by case basis, depending on the level of controversy or policy issues involved in the proposed action. Information concerning NPS NEPA documents or the NEPA process can be obtained by contacting this office.

5.3 Regional directors are responsible to the Director for integrating the NEPA process into all regional activities and for NEPA planning in their regions. Regional directors are delegated the authority to approve most park-specific environmental impact statements (EISs) for public review and are responsible for approval of environmental assessments (EAs) for public review. Regional directors are delegated the authority to sign an ROD or FONSI. The Director retains signature and approval authority for proposals of nationwide application and may assume signature and approval authority for any proposal that is unusually controversial or that involves major policy issues.

Regional directors also accept or reject requests for the NPS to be a cooperating or joint lead agency on another agency's environmental documents.

Regional directors should designate a regional environmental coordinator or similar position for their particular region. Subject to the direction of the regional director, regional environmental coordinators:

- Have functional oversight responsibility for all environmental compliance activities within a given region;
- Usually are the point of contact with the Washington Office, Department of the Interior, Office of Environmental Policy and Compliance, and Solicitor's Office on significant environmental issues;
- Provide policy review for all NPS NEPA documents and coordinate external review for the region; and
- Serve as a resource to other NPS professionals for understanding the various environmental requirements under which the Service operates.

Regional directors should also designate an associate regional director to serve as a contact for the peer review and alternative dispute resolution processes described in paragraphs 4.7 and 4.8, above.

5.4 Park superintendents are responsible for day-to-day implementation of conservation planning and impact analysis activities related to parks under their administration. They must:

- Assure that within-park actions have been adequately analyzed, an adequate range of alternatives considered, and the public and other agencies appropriately involved;
- Assure that ample resource information appropriate to a decision is available, and the technical and scientific studies appropriate to analyze proposed actions are conducted;
- Assure that resource conflicts and allocations are adequately resolved before projects are implemented;
- Recommend EAs, EISs, RODs, and FONSIs for approval by the regional director;
- Assure that all actions approved under a FONSI or ROD are implemented;
- Designate a park resource specialist to serve as coordinator for NEPA and related impact analysis activities;
- Assure that mitigation measures are included in projects once they are approved;
- Approve actions that fall under established NPS categorical exclusions; and
- Assure that park comments on external project proposals are consistent with NPS guidelines for review of non-NPS NEPA documents.

5.5 Park resource specialists, subject to the direction of the superintendent, are responsible for:

- Having knowledge of existing technical and scientific information on park resources and the quality of such information;
- Identifying additional resource information needs and technical and scientific studies necessary to ensure that ample resource information appropriate to analyze proposed actions is available;
- Serving as park NEPA coordinator to facilitate conservation planning and impact analysis;
- Having knowledge of impact analysis processes and procedures;
- Working with the park superintendent and other park staff to assure consideration of potential resource impacts in park proposals; and
- Working with contracting officers in parks, regions, and the Washington Office to ensure that mitigating measures identified in environmental documents are included in the subsequent contract documents implementing projects.

5.6 Project managers and contracting officers are responsible for working with park staff to assure that mitigating measures and other items identified in environmental documents to provide for resource protection are included in the subsequent documents implementing projects.

----------*End of Director's Order*----------

EXHIBIT

27

National Park Service

DIRECTOR'S ORDER #47: SOUNDSCAPE PRESERVATION AND NOISE MANAGEMENT

Approved:/s/ Robert Stanton
Robert Stanton, Director

Effective Date: December 1, 2000

Sunset Date: December 1, 2004

Table of Contents

A. PURPOSE AND BACKGROUND

The purpose of this Director's Order is to articulate National Park Service operational policies that will require, to the fullest extent practicable, the protection, maintenance, or restoration of the natural soundscape resource in a condition unimpaired by inappropriate or excessive noise sources.

Natural Sounds and the NPS Mission. An important part of the NPS mission is to preserve and/or restore the natural resources of the parks, including the natural soundscapes associated with units of the national park system. Natural sounds are intrinsic elements of the environment that are often associated with parks and park purposes. They are inherent components of "the scenery and the natural and historic objects and the wild life" protected by the NPS Organic Act. They are vital to the natural functioning of many parks and may provide valuable indicators of the health of various ecosystems. Intrusive sounds are of concern to the NPS because they sometimes impede the Service's ability to accomplish its mission.

Intrusive sounds are also a matter of concern to park visitors. As was reported to the U.S. Congress in the "Report on the Effects of Aircraft Overflights on the National Park System," a system-wide survey of park visitors revealed that nearly as many visitors come to national parks to enjoy the natural soundscape (91 percent) as come to view the scenery (93 percent). Noise can also distract visitors from the resources and purposes of cultural areas--the tranquility of historic settings and the solemnity of memorials, battlefields, prehistoric ruins, and sacred sites.

Increasingly, even those parks that appear as they did in historical context do not sound like they once did. Natural sounds are being masked or obscured by a wide variety of human activities. In some parks, natural sounds are disappearing at such a rate that some may be gone before their existence can even be documented. Thus, soundscape preservation and noise management is one more dimension of the complex problem of achieving the NPS mission of preserving park resources unimpaired for the enjoyment of present and future generations.

Appropriate and Inappropriate Noise. Park purposes are defined in enabling legislation or proclamations, and through a comprehensive public planning process. Park purposes may be highly varied, in the same way that activities appropriate to each park's purpose may be highly varied. Park activities may include transportation systems, visitor centers, maintenance activities, recreational activities, weapons-firing demonstrations, cultural events, and many others. These activities are often found to be appropriate even though they generate elevated sound levels for areas within the parks. However, when activities (whether inside or outside a park) generate excessive levels of noise, they can jeopardize the natural soundscape resource and/or the purposes for which the park was created.

Addressing the Problem. This Director's Order addresses the problem of excessive/ inappropriate levels of noise. It directs park managers to (1) measure baseline acoustic conditions, (2) determine which existing or proposed human-made sounds are consistent with park purposes, (3) set acoustic management goals and objectives based on those purposes, and (4) determine which noise sources are impacting the park and need to be addressed by management. Furthermore, it requires park managers to (1) evaluate and address self-generated noise, and (2) constructively engage with those responsible for other noise sources that impact parks to explore what can be done to better protect parks. In this regard, the Service will give appropriate recognition and weight to the vital missions of other government agencies, such as the Federal Aviation Administration (FAA) and the military services, and respect the rights of park neighbors.

B. AUTHORITY

Authority to issue this Director's Order is contained in the National Park Service Organic Act, as amended (16 USC 1 through 4), and delegations of authority contained in Part 245 of the Department of the Interior Manual.

C. INSTRUCTIONS AND REQUIREMENTS

To accomplish the purpose of this Director's Order, the NPS will apply the following requirements to its soundscape preservation and noise management activities.

1. Applicable Policies

Soundscape preservation and noise management activities will be subject to the policies contained in NPS Management Policies. The portions of Management Policies that are most pertinent to this topic are: Chapter 1, Introduction; Chapter 4, Natural Resource Management; Chapter 5, Cultural Resource Management; Chapter 6, Wilderness Preservation and Management; and Chapter 8, Use of the Parks. Policies in the form of regulations covering general audio requirements are published in title 36, section 2.12, of the Code of Federal Regulations. Policy on the regulation of commercial air tourism is established by Public Law 106-181, and implementing FAA regulations.

2. Reference Manual

The Associate Director for Park Operations and Education will develop and maintain a reference manual (RM-47) to provide comprehensive guidance on soundscape preservation and noise management. The reference manual will include applicable policies and procedures; technical guidance on planning, inventory, monitoring, education, noise prevention and mitigation; and other information that will help field managers and staff to meet their responsibilities.

3. Soundscape Preservation and Noise Management Planning

Superintendents will address the preservation of natural soundscapes and the elimination, mitigation, or minimization of inappropriate noise sources through NPS planning processes (see Director's Order #2: Park Planning) and operations policies. Soundscape preservation and noise management can be addressed in appropriate sections of General Management Plans or through a variety of park implementation plans. If needed to deal with the complexity or urgency of a noise issue, a separate implementation plan (e.g., a Soundscape Preservation and Noise Management Plan as described in Reference Manual 47) will be developed. These park planning efforts will (1) describe the baseline natural ambient sound environment in qualitative and quantitative terms; (2) identify sound sources and sound levels consistent with park legislation and purposes; (3) identify the level, nature and origin of internal and external noise sources; (4) articulate desired future soundscape conditions; and (5) recommend the approaches or actions that will be taken to achieve those conditions or otherwise mitigate noise impacts.

4. Interim Noise Management Measures

Where noise management actions – particularly those related to park-generated noise or noise from sources covered by existing regulations – do not require a planning process with public participation, superintendents will act to lessen the impact of noise in parks by identifying the inappropriate and intrusive noise sources and by implementing any immediately feasible mitigation or preventative measures. Noise Prevention and Mitigation Considerations in Reference Manual 47 will provide guidance in this process.

5. Inventorying and Monitoring the Soundscape

As needed for baseline resource inventory, soundscape preservation and noise management planning, development of interim management measures, commercial air tour management planning purposes, or for other plans (general management plans, commercial services plans, use management plans, etc.), superintendents will inventory and monitor park soundscapes as described in Reference Manual 47. The information provided from inventory and monitoring is essential to understanding the relationship between the baseline natural soundscape and human-made components of the soundscape--existing and proposed. This information (1) makes it possible to better understand the resource that needs to be protected and the appropriate and inappropriate sources of noise; (2) enables a park to define acoustic goals for different parts of the park, and to determine the nature and level of impacts; and (3) suggests where management intervention can most effectively contribute to protecting park resources and improving the visitor experience consistent with park purposes. Monitoring over time will allow measurement of progress toward defined acoustic goals.

6. Establishing Soundscape Preservation Objectives

In the planning process, acoustic objectives must be established to define the desired future soundscape conditions of parks. These objectives must be consistent with park purposes and plans, as well as with the goal of returning the soundscape to as near natural conditions as possible over time – while allowing visitors to access and enjoy the park in a manner consistent with park management goals. The timeframe for this restoration will be a function of local conditions and will be established in appropriate planning documents.

The fundamental principle underlying the establishment of soundscape preservation objectives is the obligation to protect or restore the natural soundscape to the level consistent with park purposes, taking into consideration other applicable laws. Where natural soundscape conditions are currently not impacted by inappropriate noise sources, the objective must be to maintain those conditions. Where the soundscape is found to be degraded, the objective is to facilitate and promote progress toward the restoration of the natural soundscape. This basic principle is modified by two circumstances:

(a) The first is where the Congress has legislated (e.g., through park legislation, the Alaska National Interest Lands Conservation Act, the Wendell H. Ford Aviation Investment and Reform Act for the 21st Century) specific provision for noise-making activities, and then only to the extent that the noise cannot be contained below certain levels consistent with that activity. If, for example, congressional action provided for a noise-producing activity in or next to a national park, the soundscape management goal would be to reduce the noise to the level consistent with the best technology available – to mitigate the noise impact, but not adversely affect the authorized activity.

(b) The second circumstance relates to noise-generating activities that are appropriate to the park under the NPS Organic Act and other relevant legislation related to natural and cultural resource management or the provision of visitor services. This includes many appropriate management and maintenance activities, visitor and permittee activities, concession operations, etc. In these situations, soundscape management goals are to reduce noise to minimum levels consistent with the appropriate service or activity, as long as that service or activity continues to be needed. It is critical that the Service lead by example and not impose conditions on others that the Service is not itself prepared to implement. Where appropriate new services or activities are initiated consistent with park management plans, soundscape management goals will be adjusted to the extent necessary to facilitate the service or activity. Another consideration in this regard is the management of permitted noise-generating activities, such as concerts in urban parks, to ensure that noise is kept to levels that will not adversely impact residents of adjacent neighborhoods.

7. Defining Impacts on Park Soundscapes

In planning for soundscape preservation and noise management, superintendents must use the best science available to determine the impact of existing or proposed noise sources on the soundscape, wildlife, aquatic and marine life, cultural resources, other resources and values, and the visitor experience, as appropriate. With respect to determinations related to the impacts of sound on the park soundscape, the natural soundscape is the "affected environment." Under 16 USC 1 et seq., the Service possesses broad and sole authority to manage the lands, resources, and visitors in the areas under its charge. The Service has the "special expertise" and "jurisdiction," as the terms are used in the National Environmental Policy Act and its implementing regulations, to determine the nature, extent, and acceptability of impacts on park resources and visitors. This includes determining the type, magnitude, duration, and frequency of occurrence of noise that is compatible or incompatible with protecting the resources or the visitor experience for which the park was established and planned, as well as determining the significance of noise levels or impacts. This may also include determining whether certain noise sources are necessary or appropriate. In some cases, it may be necessary for parks to conduct additional ecological and sociological studies to better understand the extent and nature of actual or potential impacts on park resources or visitors.

Even in those situations where the responsibility for assessing the noise impacts of its proposed action rests with another Federal agency, under guidance established by the Council on Environmental Quality (CEQ) in implementing the National Environmental Policy Act, the NPS has jurisdiction by law and expertise to determine the effects of that noise on units of the national park system. CEQ guidance indicates that these agencies must take NPS standards and evaluations into account in the evaluation of impacts.

8. Constructive Engagement

Superintendents must work constructively and cooperatively with those responsible for inappropriate sources of noise in parks, including NPS operations, permittees, visitors, commercial tours with or without commercial use permits, concessionaires, and park neighbors. In some cases, such as where there are aircraft overflights or noise sources located outside park boundaries, other agencies or entities may have jurisdiction over the noise-producing activity. However, where such activity impacts park resources or visitors, the Service has the obligation to protect and manage park resources and visitors, and Service jurisdiction may overlap or interact with the other agency's jurisdiction in complex ways. The vital missions of other government agencies such as the FAA and the military services, and park neighbors, must be given appropriate consideration in the process of setting soundscape preservation and noise management goals and objectives. The Service will work constructively with other agencies and entities to minimize and mitigate any impacts to park resources or visitors.

9. Air Tour Management Planning

Public Law 106-181 and implementing FAA regulations provide for a cooperative FAA/NPS public planning process to develop an Air Tour Management Plan (ATMP) when and where a commercial air tour operator seeks to provide tours over units of the national park system (the legislation exempts Grand Canyon National Park, Rocky Mountain National Park, and parks in Alaska from the process). The Service will assist the FAA in this localized process and determine the nature and extent of impacts on natural and cultural resources and visitor experience opportunities. The FAA, with responsibility for ensuring the safe and efficient use of the nation’s airspace and for protecting the public health and welfare from aircraft noise, will lead the ATMP effort and regulate these commercial activities as provided for in the cooperative planning effort. The FAA and the NPS must approve and sign the environmental decision document required by NEPA, which may include a finding of no significant impact, an environmental assessment, or an environmental impact statement, and the record of decision for the ATMP. This requires superintendents to work cooperatively with the FAA, air tour operators, and other stakeholders in the development of these plans. Procedures for this interagency process, and plan content requirements, are provided in Reference Manual 47.

10. Interpreting the Soundscape to Visitors

Educating the American public about the nation’s natural and cultural heritage is one of the fundamental responsibilities of the National Park Service and is central to its resource preservation efforts. Superintendents will use educational and interpretive materials (e.g. The Nature of Sound education materials) on the natural soundscape and its values to educate visitors about their soundscapes. Internally, NPS staff will lead by example by minimizing use of mechanical equipment, and by using the quietest and least impacting technologies available.

11. National Program Steering Committee

The Associate Director for Park Operations and Education may establish a program steering committee to promote consistency and improvement in NPS soundscape preservation and noise management efforts, and to facilitate interagency coordination and actions. The committee will (1) assess NPS progress toward natural soundscape restoration and preservation; (2) review programmatic needs and provide recommendations on resource needs; (3) identify and assess programmatic issues; and (4) provide recommendations and advice to establish accountability, consistency, and continuity within the program. An established committee will function until such time as the Associate Director determines the committee is no longer needed.

D. DEFINITIONS

The following definitions apply to this Director’s Order:

1. Sound

A mechanical wave or an oscillation in pressure, stress, particle displacement, and particle velocity transmitted though solids, liquids, and gases—some types of which are able to cause a sensation of hearing. The vibration causes the propagation of sound waves. Basic analytical parameters of sound include: frequency, amplitude (related to sound pressure and intensity), envelope (shape of amplitude in time), spectrum and duration.

2. Soundscape

Soundscape refers to the total ambient acoustic environment associated with a given environment (sonic environment) in an area such as a national park. It is also refers to the total ambient sound level for the park. In a national park setting, this soundscape is usually composed of both natural ambient sounds and a variety of human-made sounds.

3. Natural Ambient Sound Level

The natural ambient sound level of a park is the natural soundscape of that park. It is comprised of the natural sound conditions in a park which exist in the absence of any human-produced noises. These conditions are actually composed of many natural sounds, near and far, which often are heard as a composite, not individually. In an acoustic environment subjected to high levels of human-caused sound, natural ambient sounds may be masked by other noise sources. The natural soundscape is an important resource of parks; there may also be important relationships between how this environment is perceived and understood by individuals and society. (Natural ambient sound is considered synonymous with the term "natural quiet.") This is the basis for determining the "affected environment" in NEPA documents and other environmental assessments related to human actions producing inappropriate or intrusive impacts on the park soundscape.

4. Background Sound Level

This is the sound level that can be measured in those situations where it is not possible to measure the natural ambient sound level with certainty because of high levels of human-caused sound, or where it is prohibitively expensive to measure natural ambient sound levels. In such situations, this level will be estimated using a statistic called L_{90}, the sound level that is exceeded 90 percent of the time. This metric is often used in acoustics literature to characterize "background" or "ambient," and is incorporated, for example, in state laws in Massachusetts, Connecticut and Illinois.

5. Man-made Sound Levels

The ambient sounds attributable to human activities in national parks are defined as human-made sound. The sound levels associated with these sounds are actually composed of many human-made sounds, near and far, which may be heard individually or as a composite. In a national park setting, these sounds may be associated with activities that are essential to the park's purpose, they may be a by-product of park management activities, or they may come from outside the park. It is these sounds and sound levels that need to be measured and evaluated in park planning processes to determine whether they are consistent with or destructive to soundscape management objectives.

6. Noise

Noise is generally defined as an unwanted or undesired sound, often unpleasant in quality, intensity or repetition. This makes noise a subjective term and pushes society to address which sounds or aspects of sound constitute unwanted interruptions in specific situations. Noise is often a byproduct of desirable activities or machines. In a national park setting, noise is a subset of human-made noises. National park staff are responsible for analyzing the sound energy associated with human activities and defining which sounds are appropriate or necessary for park purposes within the various park management zones, and which sounds are inappropriate or impact park purposes within various park management zones.

----------End of Director's Order----------

EXHIBIT

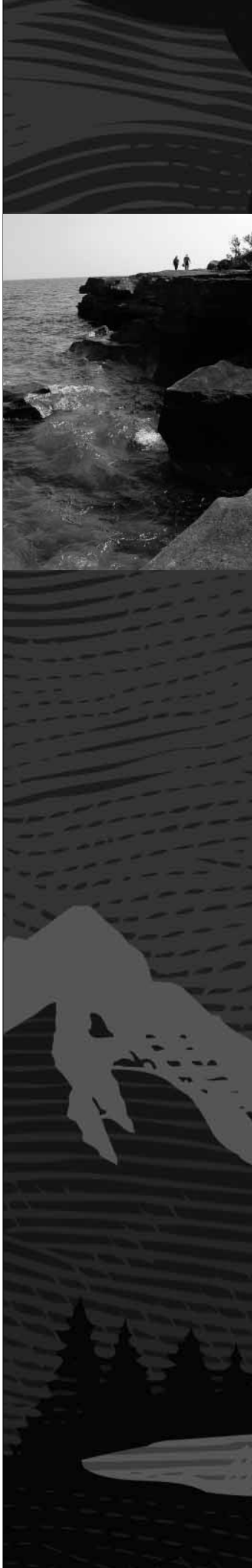
28

Management Policies 2006

Introduction

Law, Policy, and Other Guidance

This volume is the basic Service-wide policy document of the National Park Service. Adherence to policy is mandatory unless specifically waived or modified by the Secretary, the Assistant Secretary, or the Director.



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Cultural Resource Management

The National Park Service is steward of many of America's most important cultural resources, including the home of President Franklin D. Roosevelt in Hyde Park, NY.

The National Park Service will protect, preserve, and foster appreciation of the cultural resources in its custody and demonstrate its respect for the peoples traditionally associated with those resources through appropriate programs of research, planning, and stewardship.

The National Park Service is the steward of many of America's most important cultural resources. These resources are categorized as archeological resources, cultural landscapes, ethnographic resources, historic and prehistoric structures, and museum collections. The Service's cultural resource management program involves

- research to identify, evaluate, document, register, and establish basic information about cultural resources and traditionally associated peoples;
- planning to ensure that management processes for making decisions and setting priorities integrate information about cultural resources and provide for consultation and collaboration with outside entities; and
- stewardship to ensure that cultural resources are preserved and protected, receive appropriate treatments (including maintenance) to achieve desired conditions, and are made available for public understanding and enjoyment.

The cultural resource *Management Policies* of the National Park Service are derived from a suite of historic preservation, environmental, and other laws, proclamations, executive orders, and regulations. A comprehensive list can be found in the Cultural Resource Management Handbook issued pursuant to Director's Order #28. Taken collectively, this guidance provides the Service with the authority and responsibility for managing cultural resources in every unit of the national park system so that those resources may be preserved unimpaired for future generations. Cultural resource management will be carried out in a manner that is consistent with these legislative and regulatory provisions and with implementing policies and procedures such as the Secretary of the Interior's *Standards and Guidelines for Archeology and Historic Preservation (48 Federal Register (FR) 44716-740)*, and *Standards and Guidelines for Federal Agency Historic Preservation Programs Pursuant to the National Historic Preservation Act (63 FR 20497-508).*

Superintendents and qualified cultural resource professionals will work together to carry out the Park Service's cultural resource management program. Other NPS staff and volunteers participating in cultural resource research, planning, and stewardship activities will be supervised by full-performance-level cultural resource professionals of the appropriate disciplines. Law enforcement professionals will consult with full-performance-level cultural resource professionals of the appropriate disciplines when investigating cultural resource crimes.

Superintendents and cultural resource professionals will ensure that research about and stewardship of cultural resources are carried out only after adequate planning and consultation with interested or affected individuals, groups, and other outside entities.

(See Decision-making Requirements to Identify and Avoid Impairments 1.4.7. Also see NHPA [16 USC 470h-4]; Secretary of the Interior's Professional Qualification Standards [48 FR 44738-44739]; Employee Training and Development Planning and Tracking Kit [1996])

5.1 Research

5.1.1 NPS Research

The National Park Service will conduct a vigorous interdisciplinary program of research into the cultural resources of each park. The principal goals of such research will be to

- ensure a systematic, adequate, and current information base representing park cultural resources and traditionally associated peoples in support of planning, management, and operations;
- ensure appropriate protection, preservation, treatment, and interpretation of cultural resources, employing the best current scholarship;
- develop approaches for managing park cultural and natural resources that ensure consideration of the views held by traditionally associated peoples and others by emphasizing cooperative conservation and civic engagement;
- collect data on subsistence and other consumptive uses of park resources in order to reach informed decisions; and
- develop appropriate technologies and methods for monitoring, protecting, preserving, and treating cultural resources.

Adequate research to support informed planning and compliance with legal requirements will precede any final decisions about the treatment of cultural resources, or about park operations, development, and natural resource management activities that might affect cultural resources. Research will be periodically updated to reflect changing issues, sources, and methods. Research needs will be identified and justified in a park's approved resource stewardship strategy.

A written scope of work, research design, project agreement, proposal, or other description of work to be performed will be prepared and approved before any research is conducted. All archeological research, whether for inventory, data recovery, or other purposes, must comply with the Archaeological Resources Protection Act of 1979 (ARPA), the Antiquities Act, and the Native American Graves Protection and Repatriation Act (NAGPRA), as applicable. The National Park Service will not take or allow any action that reduces the research potential of cultural resources without first performing an appropriate level of research, consultation, and documentation. Because research involving physical intervention into cultural resources or the removal of objects or specimens is a destructive process entailing an irretrievable commitment of the resources and often affecting traditional practices associated with the resources, research in parks will employ nondestructive methods to the maximum extent feasible.

The features of sites, landscapes, and structures will be left in place unless impracticable. Field data, objects, specimens, and features of sites and structures retrieved for preservation during cultural resource research and treatment projects, together with associated records and reports, will be managed within the park museum collection, stored in NPS or non-NPS repositories, as appropriate, including repositories maintained by partners. All collections of archeological material remains and associated records will be maintained in repositories in accordance with applicable regulations.

Research conducted by NPS personnel, contractors, and cooperative researchers will be subjected to peer review both inside and outside the Service to ensure that it meets professional standards, reflects current scholarship, and adheres to the principles of conduct for the appropriate discipline. The data and knowledge acquired through research will be recorded on permanent and durable (long-lived) media, documented in the appropriate Service-wide databases, and placed permanently in park museum and library collections and park files. This information will be made widely available and be incorporated, as appropriate, into park planning documents, exhibits, and interpretive programs. As appropriate, information will be shared with proper state and tribal historic preservation offices, other tribal offices, and certified local governments.

Certain research data may be withheld from public disclosure to protect sensitive or confidential information about archeological, historic, or other NPS resources when doing so would be consistent with the Freedom of Information Act, section 304 of the National Historic Preservation Act, or section 9 of the Archaeological Resources Protection Act. In some circumstances, the Service may withhold information about ethnographic resources. The Solicitor's Office should be consulted when there is any question about the legal authority to withhold information.

(See Levels of Park Planning 2.3; Studies and Collections 4.2; Confidentiality 5.2.3; Research and Scholarship 7.5.4; Use by American Indians and Other Traditionally Associated Groups 8.5. Also see 36 CFR 79; 36 CFR Part 800; 43 CFR Parts 3, 7, and 10; NHPA; Secretary of the Interior's Standards and Guidelines for Preservation Planning [48 FR 44716-720]; Secretary of the Interior's Standards and Guidelines for Historical Documentation [48 FR 44728-730]; Director's Order #28: Cultural Resource Management; Cultural Resource Management Handbook; Director's Order #66: FOIA and Protected Resource Information)

5.1.2 Independent Research

The National Park Service will promote relationships with individuals and organizations qualified to perform research, and encourage them to direct their research toward park management objectives and the broader contexts within which park resources exist. The Park Service will encourage independent researchers to follow the Secretary of the Interior's standards and guidelines and NPS guidelines to the fullest extent possible; the Service will also require that the views of traditionally associated peoples be fully considered. Research done in cooperation with tribal governments, tribal colleges, and tribal organizations should include mutually agreed upon conditions concerning the dissemination of data as well as consideration of the confidentiality of culturally sensitive information.

Research that includes taking plants, fish, wildlife, rocks, or minerals must comply with the permit requirements of 36 CFR 2.5. Permits that would allow cultural resources to be physically disturbed or allow objects or specimens to be collected will be issued only when there is compelling evidence that the proposed research is essential to significant research concerns, and when that the purpose of the research can be reasonably achieved only by using park resources. Permits must require provision for the long-term preservation and management of any recovered objects and specimens and for their cataloging, together with any associated records, in the NPS museum cataloging system. Independent researchers will be authorized to conduct archeological research on park lands only through the issuance of an ARPA or Antiquities Act permit by the appropriate regional director. This permitting authority cannot be further delegated. As appropriate, parks will also issue other necessary permits, such as a special use permit. Archeological research conducted by independent researchers must comply with the Native American Graves Protection and Repatriation Act when applicable.

NPS facilities, collections, and assistance will be made available to qualified scholars conducting NPS-authorized research as long as park operations are not substantially impeded or park resources are not adversely impacted.

(See Independent Studies 4.2.2; Consultation 5.2.1; Natural and Cultural Studies, Research, and Collection Activities 8.10. Also see 43 CFR Parts 3, 7, and 10)

5.1.3 Identification and Evaluation of Resources

The National Park Service will conduct surveys to identify and evaluate the cultural resources of each park, assessing resources within their larger cultural, chronological, and geographic contexts. The resulting inventories will provide the substantive data required for (1) nominating resources to the National Register of Historic Places; (2) general park planning and specific proposals for preserving, protecting, and treating cultural resources to achieve desired conditions; (3) land acquisition, development, and maintenance activities; (4) interpretation, education, and natural and cultural resource management activities; and (5) compliance with legal requirements.

5.1.3.1 Inventories

The Park Service will (1) maintain and expand the following inventories (or their successors) about cultural resources in units of the national park system, (2) enter information into appropriate related databases, and (3) develop an integrated information system—

- Archeological sites inventory for historic and prehistoric archeological resources and the related

Archeological Sites Management Information System (ASMIS) database

- Cultural Landscapes Inventory (CLI) of historic designed landscapes, historic vernacular landscapes, ethnographic landscapes, and historic sites
- List of Classified Structures (LCS), encompassing historic and prehistoric structures
- National Catalog of Museum Objects, encompassing all cultural objects, archival and manuscript materials, and natural history specimens in NPS collections and the related automated version, the Automated National Catalog System (ANCS+)

(See Levels of Park Planning 2.3; Confidentiality 5.2.3. Also see Secretary of the Interior's Standards and Guidelines for Identification [48 FR 44720-723]; Director's Order #28: Cultural Resource Management; Cultural Resource Management Handbook)

5.1.3.2 Evaluation and Categorization

Cultural resources will be professionally evaluated and categorized to assist in management decisions about their treatment and use. Cultural resources will be evaluated for significance using the National Register Criteria for Evaluation (36 CFR 60.4), and those meeting the criteria will be nominated for listing. Museum collections are inappropriate for listing and will not be evaluated using these criteria. Some collections in their original structures can be included as contributing elements to a listed structure. As appropriate, cultural resources will be categorized using other management categories established by the National Park Service and listed in the *Cultural Resource Management Handbook*.

Cultural resource professionals will evaluate cultural resources in consultation with the appropriate state and tribal historic preservation officers. Ethnographically meaningful cultural and natural resources, including traditional cultural properties, will be identified and evaluated in consultation with peoples having traditional associations to park resources. Examples of traditionally associated peoples include Acadians, African Americans, Hispanic Americans, and Native Americans. Some ethnographically meaningful resources do not meet the National Register Criteria for Evaluation, but will be inventoried in consultation with traditionally associated peoples and considered in management decisions about treatment and use.

(See Consultation 5.2.1. Also see Secretary of the Interior's Standards and Guidelines for Evaluation [48 FR 44723-726])

5.1.3.2.1 National Register Nomination

Park resources that appear to meet the criteria for the National Register of Historic Places will be nominated—either individually, as components of historic districts, or within multiple property nominations—for listing by the Keeper of the National Register. National historic sites, national historical parks, and other parks that are significant primarily for their cultural resources are entered automatically in the National Register upon establishment. However, nomination forms will be prepared and submitted to document the qualifying and contributing features of such parks and other National Register-eligible resources within them.

(Also see 36 CFR Parts 60 and 63; Secretary of the Interior's Standards and Guidelines for Registration [48 FR 44726-728]; National Register Bulletins 16A and 16B [Guidelines for Completing National Register of Historic Places Forms])

5.1.3.2.2 National Historic Landmark Designation

Historic and cultural units of the national park system are nationally significant by virtue of their authorizing legislation or presidential proclamation. National historic landmark designations are appropriate for park cultural resources that meet national historic landmark criteria if the national significance of those resources is not adequately recognized in the park's authorizing legislation or presidential proclamation. Cultural parks may warrant landmark designation as parts of larger areas encompassing resources associated with their primary themes. Modified National Register forms will be prepared and submitted to nominate such resources for landmark designation by the Secretary of the Interior.

(Also see 36 CFR Part 65)

5.1.3.2.3 Nominations for World Heritage List Designation

Park properties containing cultural features believed to possess outstanding universal value to humanity may qualify for placement on the World Heritage List under criteria described in the World Heritage Committee Operational Guidelines and in accordance with the World Heritage Convention. Before they can be nominated, all such properties must be assessed according to World Heritage criteria, and before the United States can submit a nomination to the World Heritage Committee the property must first be included on the U.S. Tentative List of Potential Future World Heritage Nominations.

Any park superintendent who believes that part or all of the park they manage should be considered for inscription on the World Heritage List must consult with the NPS Office of International Affairs, the NPS Director, and the Department of the Interior before proceeding. U.S. recommendations are approved by an interagency panel chaired by the Assistant Secretary for Fish and Wildlife and Parks, based on criteria promulgated by the World Heritage Committee. These criteria and the rules for U.S. participation in the Convention Concerning the Protection of World Cultural and Natural Heritage are published in 36 CFR Part 73.

Once a property is placed on the World Heritage List, the Park Service will recognize the designation in public information and interpretive programs. Where appropriate, superintendents should use a park's world heritage status to promote the park and encourage sustainable tourism (tourism that does not adversely impact park resources

EXHIBIT

29

1.0 Introduction

1.1 The DO-12 Handbook and Director's Order

A. NEPA and the Council on Environmental Quality

The National Environmental Policy Act (NEPA) was passed by Congress in 1969 and took effect on January 1, 1970. This landmark legislation established this country's environmental policies, including the goal of achieving productive harmony between human beings and the physical environment for present and future generations. It provided the tools to carry out these goals by mandating that every federal agency prepare an in-depth study of the impacts of "major federal actions having a significant effect on the environment" and alternatives to those actions, and requiring that each agency make that information an integral part of its decisions. NEPA also requires that agencies make a diligent effort to involve the interested and affected public before they make decisions affecting the environment.
Besides setting environmental planning policy goals, NEPA created the Council on Environmental Quality (CEQ), an agency of the President's office that would be the "caretaker" of NEPA. CEQ published NEPA regulations in 1978 (40 CFR 1500–1508) and added to them in 1981 with a guidance document titled "Forty Most Asked Questions Concerning CEQ's NEPA Regulations" (40 Most Asked Questions). These regulations apply to all federal agencies, and in them CEQ requires each federal agency to "implement procedures to make the NEPA process more useful to agency decision-makers and the public" (40 CFR 1500.2). Agencies are to review and update these regulations as necessary.

B. Interior/NPS NEPA guidance and this handbook

The Department of the Interior (Interior) produced its NEPA regulations as Part 516 of its departmental manual (DM), and the National Park Service (NPS) produced several NEPA handbooks. The last update, DO-12, was issued in 1982. Interior has also produced and continuously updates a series of environmental statement and compliance memoranda that further interpret Part 516 and need to be consulted in this process. This handbook is an update and revision of DO-12,

Organic Act, and it should be part of planning at all levels, even for goal-setting for broad park actions such as those in a general management plan or its equivalent.

You must begin the NEPA process whenever your park is in the proposal stage of any of the federal actions described in section 1.3 of this handbook. The proposal stage is defined as the feasibility stage (40 CFR 1502.5 (a)), or the point when your park "has a goal and is actively preparing to make a decision on one or more alternative means of accomplishing that goal and the effects can be meaningfully evaluated" (1508.23).

Knowing how early or how late to begin a NEPA analysis is often a difficult balancing act. You should try to start early, so that environmental information can be a valuable part of the decision-making criteria.

If your park intends to prepare a plan that would make decisions about resource uses, it may be particularly difficult to know when to begin NEPA. Two factors may be helpful in this decision. Because NEPA requires the creation and analysis of alternatives, one factor in deciding when to initiate NEPA may be when a range of options would be most useful for your decision-maker and the public. The other, and more important, factor to consider is whether the kinds of choices you will be making in the plan have the potential for impact to the human environment. If so, NEPA is required. Director's Order 2, the Park Service's planning guideline, has information about the integration of NEPA with all levels of park planning that may be useful if you are beginning a general management plan (GMP) or other plan.

Usually if a plan or project is so specific that it is the only reasonable option, this means you have waited too long to begin NEPA, because all of the important decisions have been made without benefit of environmental analysis. In this case, you may be violating NEPA by using the process "to rationalize or justify decisions already made" (1502.5).

Although **the timing** will vary on a case-by-case basis, two rules should guide you when you choose to begin a NEPA review and analysis:

- All of the steps necessary to complete the NEPA process are to be finished in time to be part of any recommendation or report on the proposal—that is, early enough so that the final document can "serve practically as an important contribution to the decision-making process."
- No action that is the subject of an ongoing NEPA analysis or that would limit the choice of alternatives undergoing NEPA scrutiny should be taken until the NEPA process is complete (1506.1). This includes design work, funding pieces of a project, choosing building contractors, and so forth.

A. NEPA and the project proposal/contracting process

Parks often develop project proposals to record the information that is necessary to justify, program, fund, and initiate specific tasks. When funding is requested for a construction or resource management action, the funding request cannot be approved until the NEPA process is complete or the need for environmental

analysis is adequately described and provided for within the request. This step is particularly important for those proposals where internal scoping has indicated that the potential for significant impact exists. In addition, you should not solicit bids or sign a contract for a proposal until the NEPA process is complete, or you will be in violation of the CEQ requirement that "Agencies shall not commit resources prejudicing selection of alternatives before making a final decision" (1506.1).

B. When to begin NEPA on plans

NEPA may be activated by many of the plans that NPS produces, including general management planning, certain types of strategic plans, wilderness and resource management actions, and implementation plans (see Director's Order 2 for information on some of these kinds of plans). If the plans are intended to make decisions that, if implemented, could have an impact on the human environment (see section 1.3), the NEPA process is triggered. Most NEPA requirements are compatible with or identical to requirements for sound management planning. In most cases, NEPA requirements are easily integrated into the planning process, and they provide the information that decision-makers need to make informed choices. Rather than create additional burdens in the planning process, following NEPA requirements should help expedite prompt and defensible decision-making.

1.6 Specificity of Data Needed—Plans and Projects

Because planning in the NPS includes several distinct stages and types of decisions that involve different scales, the levels of detail in each will vary. When plans are conceptual, such as in the general management plan, the NEPA analysis may be comparably conceptual. Ultimately, however, a decision-maker must have site-specific information before a plan can be implemented (e.g., the ground disturbed, the resource changed). The following are some options for collecting this site-specific information:

When plans are conceptual, such as the general management plan, the NEPA analysis may be comparably conceptual. However, a decision-maker must ultimately have site-specific information before a plan can be implemented.

- Collect it as part of the EIS on a general management or other large-scale plan. Because funding to implement the plan may be delayed, you may need to update site-specific analysis several times for the same proposal. The advantages of this approach are that decisions made at the planning stage will be more fully informed, and future NEPA work to implement the plan may be minimized, unless data and planning decisions have become outdated by the time the plan is implemented.

- Collect reconnaissance-level information to make broad policy and planning decisions. Collect site-specific information to

assess implementation options as funding becomes available. The site-specific NEPA document may then be "tiered" (see section 7.4) to the EIS for the broader plan.

- Identify zoned areas within the plan that are likely to be designated for visitor use facilities based on reconnaissance-level data. Collect site-specific data for the smaller developable areas as an element of the plan.

Always include data on impacts to the park's natural and cultural resources and values that have been specifically recognized in the park's enabling legislation; to interpretive, educational, and recreational opportunities; to resources protected by federal, state, or local laws; and to other relevant resources in your park or region. Also see DO-12 section IV (4.3 and 4.4) regarding integration of proper technical and scientific studies appropriate to the decisions under consideration, and taking action when complete information is unavailable.

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Management Policies 2006

2

Park System Planning

Public participation in planning and decision-making will ensure that the Park Service fully understands and considers the public's interests in the parks.

Park planning helps define the set of resource conditions, visitor experiences, and management actions that, taken as a whole, will best achieve the mandate to preserve resources unimpaired for the enjoyment of present and future generations. NPS planning processes will flow from broad-scale general management planning through progressively more specific strategic planning, implementation planning, and annual performance planning and reporting, all of which will be grounded in foundation statements.

2.1.1 Decision-making

The National Park Service will use planning to bring logic, analysis, public involvement, and accountability into the decision-making process. Park planning and decision-making will be conducted as a continuous, dynamic cycle, from broad visions shared with the public to individual, annual work assignments and evaluations. Each park will be able to demonstrate to decision-makers, staff, and the public how decisions relate to one another in terms of a comprehensive, logical, and trackable rationale.

2.1.2 Scientific, Technical, and Scholarly Analysis

Decision-makers and planners will use the best available scientific and technical information and scholarly analysis to identify appropriate management actions for protection and use of park resources. Analysis will be interdisciplinary and tiered. Tiering is a staged approach to environmental analysis that addresses broad programs and issues in initial or systems-level analyses. Site-specific proposals and impacts are analyzed in subsequent studies. The tiered process supports decision-making on issues that are ripe for decision and provides a means to sustain those decisions. The focus of analysis starts with the park as a whole (including its global, national, and regional contexts) and then moves to site-specific details. At key points of planning and decision-making, the Park Service will identify reasonable alternatives and analyze and compare their differences with respect to

- consistency with the park's purpose,
- the quality of visitor experiences,
- the impacts on park resources,
- short- and long-term costs, and
- environmental consequences that may extend beyond park boundaries.

2.1.3 Public Participation

Public participation in planning and decision-making will ensure that the Service fully understands and considers the public's interests in the parks, which are part of the public's national heritage, cultural traditions, and community surroundings. The Service will actively seek out and consult with existing and potential visitors, neighbors, American Indians, other people with traditional cultural ties to park lands, scientists and scholars, concessioners, cooperating associations, gateway communities, other partners, and government agencies. The Service will work cooperatively with others to improve the condition of parks; to enhance public service; and to integrate parks into sustainable ecological, cultural, and socioeconomic systems.

(See Cooperative Conservation Beyond Park Boundaries 1.6; Civic Engagement 1.7; Public Involvement 2.3.1.5; Consultation 5.2.1. Also see Director's Order #75A: Civic Engagement and Public Involvement)

2.1.4 Goal Orientation

Managers will be held accountable for identifying and accomplishing measurable long-term goals and annual goals that are incremental steps to carrying out the park mission. Such planning is a critical and essential part of the NPS performance management system that is designed to improve the Park Service's performance and results. Park staff will monitor resource conditions and visitor experiences and plan, track, and report performance. If goals are not being met, managers will seek to understand why and take appropriate action. The goals will be periodically reassessed, taking into account new knowledge or previously unforeseen circumstances, and then the planning cycle will be reinitiated at the appropriate point.

(See Park Management 1.4)

2.2 Major Elements of Park Planning and Decision-making

A documented, comprehensive, logical, trackable rationale for decisions will be created through several levels of planning that are complementary and become increasingly detailed. The process begins with determining why the park was established and what resource conditions and visitor experiences should exist there; the process will become increasingly focused on how resource conditions and visitor experiences should be achieved.

The following planning elements are part of an interrelated framework that will inform NPS decision-making:

- **Foundation Statement** — The planning process begins with the development of a foundation statement that is based on the park's enabling legislation or presidential proclamation and that documents the park purpose, significance, fundamental resources and values and primary interpretive themes. It also includes any relevant laws and executive orders that apply to the national park system or to the individual park unit. The foundation statement is generally developed (or reviewed and expanded or revised, if appropriate) early as part of the public and agency scoping and data collection for the general management plan (GMP). Once a park has developed a complete foundation statement, it should remain relatively stable from one GMP cycle to the next, although new scientific and scholarly information may require expansion and revision to reflect the most current knowledge about what is most important about the park. General management planning is the most appropriate context for developing or reviewing a foundation statement because of the comprehensive public involvement and NEPA analysis that occurs during general management planning. The foundation statement may be vetted within the agency and with the public, then formally adopted as part of the final general management plan, or may be produced as a stand-alone foundation document for the park unit.
- **General Management Plan** — This is a broad umbrella document that sets the long-term goals for the park based on the foundation statement. The general management plan (1) clearly defines the desired natural

and cultural resource conditions to be achieved and maintained over time; (2) clearly defines the necessary conditions for visitors to understand, enjoy, and appreciate the park's significant resources, and (3) identifies the kinds and levels of management activities, visitor use, and development that are appropriate for maintaining the desired conditions; and (4) identifies indicators and standards for maintaining the desired conditions. For wild and scenic rivers and national trails, the analogous documents are a comprehensive river management plan and comprehensive management plan, respectively. Each of these plans has requirements very similar to a general management plan, so units usually refer to these plans as GMPs. Additional requirements for river and trail studies are covered in the Wild and Scenic Rivers Act and the National Trails System Act.

- **Program Management Plans** — These more detailed documents follow the general management plan and provide program-specific information on strategies to achieve and maintain the desired resource conditions and visitor experiences, including identification of appropriate visitor use where applicable (for example, resource stewardship strategy and comprehensive interpretation plan).
- **Strategic Plans** — These plans provide 1- to 5-year direction and objective, measurable, long-term goals. The long-term goals will define the resource conditions and visitor experiences to be achieved in the near future, for which the superintendent will be held accountable. Results on progress towards these goals will be reported annually. These goals are based on the park's foundation statement; an assessment of the park's natural and cultural resources; park visitors' experiences; and the park's performance capability given available personnel, funding, and external factors.
- **Implementation Plans** — These plans provide project-specific details needed to implement an action in an area of a park and explain how the action(s) helps achieve long-term goals.
- **Annual Performance Plans** —Annual goals and an annual work plan that will guide park efforts for a fiscal year are in annual performance plans.
- **Annual Performance Reports** — These reports contain an accounting of annual results in relation to annual goals.

Park managers and regional directors are responsible for ensuring that planning is properly conducted within this planning framework and making management decisions that are supported by public involvement, the best available information, and analysis. However, many parks may initially lack one or more of these planning elements. In the interim, management will be guided by the park's foundation statement, strategic plan, and other current approved plans. No major new development or other major commitment of park land or natural or cultural resources will be authorized without an approved general management plan.

(See Visitor Use 8.2)

The order of plan development will generally flow from broad general management plans to progressively more specific implementation plans.

When determining a plan's scope, it will be important to distinguish which issues can most appropriately be addressed by general management planning, and which can be most appropriately addressed by more detailed strategic or implementation planning. Each level of planning has a distinct function, and all levels are designed to interrelate with a minimum of duplication and confusion. At each level, plans will be written to make the links and relationships among the planning levels apparent to readers.

Environmental analysis of alternatives and public involvement required under section 102(2)(C) of the National Environmental Policy Act (NEPA) (42 USC 4332(2)(C)) will be conducted at any level of planning in which the decisions to be made constitute a major federal action significantly affecting the quality of the human environment. Normally, NEPA analysis and public participation will be done at the general management planning level, when the overall direction for the park's future is decided, and again at the implementation planning level before funding and resources are committed to carry out specific actions (see 2.3.1 and 2.3.4, below). In keeping with the Council on Environmental Quality guidelines for NEPA compliance, environmental analysis for more specific programs or actions will follow, or flow from, earlier NEPA documents for the broader general management plan.

(See Civic Engagement 1.7. Also see Director's Orders #2: Park Planning, and #12: Conservation Planning, Environmental Impact Analysis, and Decision-making)

2.3.1 General Management Planning

The Park Service will maintain a general management plan for each unit of the national park system. The purpose of each general management plan, which will begin with the development of a foundation statement for the park unit, will be to ensure that the park has a clearly defined direction for resource preservation and visitor use. This basic foundation for decision-making will be developed by an interdisciplinary team, in consultation with relevant NPS offices, other federal and state agencies, local and tribal governments, other interested parties, and the general public. The management plans will be based on full and proper use of scientific and scholarly information related to existing and potential resource conditions, visitor experiences, environmental impacts, and relative costs of alternative courses of action.

The approved plan will create a realistic vision for the future, setting a direction for the park that takes into consideration the environmental and financial impact of proposed facilities and programs and ensures that the final plan is achievable and sustainable. The plan will take the long view, which may project many years into the future, when dealing with the time frames of natural and cultural

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In no case will an EIS be required for a river that has been determined ineligible for designation because it is not free-flowing or because it has no outstandingly remarkable values.

B. Proposals for legislative action to make additions to the National Trails system if the proposed trail meets eligibility criteria, even if the trail is not ultimately recommended for designation by the Secretary.

C. Special resource studies when the following conditions are met:

   (1) The resource being studied meets the criteria for inclusion in the National Park System (i.e., it is nationally significant and is deemed feasible and suitable for inclusion in the system).

   (2) One of the alternatives being considered is designation as a National Park System unit, even if that is ultimately not the recommendation of the Secretary.

D. A GMP or its equivalent. GMPs may need to be amended for various reasons. Amendments should follow the same procedures in determining the appropriate NEPA pathway on a case-by-case basis.

E. Wilderness proposals.

F. Grants, including multi-year grants, whose size or scope will result in major natural or physical changes, including interrelated social and economic changes and residential and land use changes within the project area or its immediate environs.

G. Parkwide oil and gas management plans.

In addition to the specific conditions listed, you must always prepare an EIS for any proposal that has the potential for significant impacts to the human environment. In rare circumstances, the Environmental Quality Division, through the Associate Director for Natural Resources Stewardship and Science, may grant an exception to the requirement that EISs be prepared for some of the above named actions on a case by case basis, when it is clear that site-specific data indicate that the potential for significant impact does not exist. This determination may only be made after public scoping, initial development of alternatives and impact analysis. In addition, the FONSI on such a document must be made available for public review for 30 days before the agency's final determination whether to prepare an EIS (Q37b).

4.5 EIS Format

Unless there is a "compelling reason to do otherwise" (CEQ 1502.10), CEQ requires that you follow its format (laid out in this section) for all EISs. Variations from the CEQ format described in this section must first be approved by the Environmental Quality Division (EQD) and the Department's OEPC.

(l) sacred sites (EO 13007).

(m) Indian Trust resources (ECM95–2).

If these are irrelevant issues in your EIS, include them in the discussion of issues and impact topics dropped from the analysis.

G. Impacts

Although alternatives are important, they are useless unless you clearly and correctly assess their impacts in an EIS or an EA. The prediction of impacts of each alternative is the basis of chapter 4 of an EIS.

This discussion must be accurate and focused. If it rambles on about non-issues, or if the data are wrong or mislead the reader, it wastes the reader's time and the park's money. The impacts discussion is not just a reiteration of the proposal or actions, but rather a discussion of the impact should the proposal and alternatives be implemented. For instance, instead of "there will be a bridge from A to B," the discussion will focus on "the impact of building a bridge from A to B" on each resource identified as an issue and impact topic.

Whereas issues describe the impact relationship between actions and resources, impact analysis predicts the magnitude of that relationship. For instance, "building a bridge will disrupt riverbank soils and make the water muddy" is an issue. "Suspended solids in the river will increase from its present 10–15 ppm to 1000 ppm for 2–3 weeks during construction" is the kind of information that belongs in the impact chapter.

CEQ requires that the impact analysis:

(a) be concise, clear, and to the point (1500.2 (b)).

(b) emphasize real environmental issues (1500.2 (b)).

(c) provide reasonable alternatives to the proposed action (or proposal, whether generally or specifically described) that minimize adverse impacts (1500.2 (d)).

(d) be of high quality, using accurate scientific analyses (1500.1 (b)).

(e) be scrutinized by other agencies and the public (1500.1 (b)).

(f) include direct, indirect, and cumulative impacts (1502.16).

You must analyze both beneficial and adverse impacts for the resource in question.

1. **Displaying impact information**—The role of NPS NEPA documents is to fairly, objectively, and candidly display the projected impacts of each alternative. If you can meaningfully and accurately quantify the magnitude of this impact, this is the best way to present the information. If you have little confidence in an absolute number, you may want to use a range of reasonable impacts; rather than conveying false confidence, docu-

You should give the public and the decision-maker a true picture of how well you can predict an impact.

ments should give the decision-maker and the public a true picture of how well you can predict an impact. You must support qualitative and quantitative impact analyses with the scientific literature and/or other experts' testimony. Such references should be cited liberally in the impact section. CEQ requires that impacts be quantified as much as possible and described in terms of their context, duration, and intensity (see below).

If impacts to a particular resource for one alternative are the same as for another alternative, making reference to that section in the EIS is preferable to repeating the information. You may briefly summarize information in the referenced section to help readers track impacts.

2. **Context**—You should analyze impacts in several contexts, if the severity varies geographically, over time, or in some other way (CEQ (1508.27 (a))). See section 4.2(a) for more information on context.

3. **Incomplete or unavailable information**—CEQ (1502.22) requires agencies to obtain information if it is "relevant to reasonably foreseeable significant adverse impacts," if it is "essential to a reasoned choice among alternatives," and if "the overall costs of obtaining it are not exorbitant." The costs are measured not only in money, but also in time (to complete a research study or survey, for instance). If such information is unavailable or if the costs of obtaining it are exorbitant, an EIS must include statements to let the public know this and its effect on NPS's ability to predict impacts to the particular resource. In addition, the proposal may need to be amended or adjusted to ensure that action is not initiated without proper resource information. Existing credible scientific evidence should then be summarized and the impact predicted based on this evidence. CEQ says that reasonably foreseeable impacts include those that have catastrophic consequences, even if their probability of occurrence is low (1502.22, modified in 1986). Also see Director Order 12, Section IV, regarding use of scientific data and information in making resource decisions.

EISs and EAs should routinely inform the public when data are lacking, models are error-prone, or insufficient research or experience is available for predicting impacts accurately.

Although the CEQ case applies only when the information is "essential" and the impacts significant, EISs and EAs should routinely inform the public when data are lacking, models are error-prone, or insufficient research or experience is available for predicting impacts accurately.

4. **Impact indicators**—The measurement of impact must be accurate, scientifically credible, and understandable to a lay readership. This is why it

is helpful to include a methodology section preceding the impact analysis for each topic. That section can lay out the criteria or thresholds used to draw a conclusion on the context, intensity, and duration of impact. Defining thresholds and impact indicators requires consultation with resource experts, literature searches in some cases, and best professional judgment. In the case of the suspended solids in the river, an impact topic might be the effect of the muddy water on visitor experience. This impact is more difficult to measure than turbidity itself, but not impossible. One indicator might be the number of visitors passing through the area in the context of the rest of the park—for instance, "Fewer than 2% of the total visitors to the park would be able to see the construction on the river."

5. **Impact thresholds**—Impacts must be quantified as much as possible and interpreted in terms of their context, duration, and intensity. For instance, in the example in section 4.5 (g), the impact is quantified as "suspended solids in the river would increase from its present 10–15 ppm to 1000 ppm for 2–3 weeks during construction." This is adequate for intensity and duration. However, the reader needs a context to understand the full extent and relative importance of the impact. This can be provided by comparing the impact to a relevant standard, such as the state's water quality standards for suspended solids. The methodology section would define the threshold as "any increases in suspended solids that violate the state's water quality standard for this parameter would be considered a 'major' impact." The analysis would follow with "the increase in suspended solids from 10–15 ppm to 1000 ppm is well below the state's water quality standard for this river (3000 ppm)." The analyst should also interpret the quantitative information for a lay audience. In this example, the specialist might conclude, "Because the impact would last only 2–3 weeks and be well below the standard, it would be a minor, short-term adverse impact to water quality."

   Notice that criteria were cited (state standards) in the determination of the intensity (in this case, minor) of the impact. Criteria, or thresholds, help to establish the sideboards for understanding the severity and magnitude of the impact. If the analysis simply stated that the suspended solids would increase from 10–15 ppm to 1000 ppm for 2–3 weeks, the public and the decision-maker would be unable to fully understand the extent of the impact.

6. **Mitigation**—In an EIS, you must develop and analyze mitigation "even for impacts that by themselves would not be considered significant" (Q19a). All "relevant, reasonable mitigation measures that could improve the project are to be identified," even if they are outside the jurisdiction of the agency (Q19b). You must also analyze the effectiveness of mitigation measures proposed, and the impacts if the project were to proceed without mitigation. For instance, it should be clear whether mitigation is integral to the project and therefore included as part of the alternative, or dependent on factors such as funding or permission from another agency.

CEQ (1508.20) defines mitigation measures as:

(a) avoiding the impact altogether by not taking a certain action or parts of an action.

(b) minimizing impacts by limiting the degree or magnitude of the action and its implementation.

(c) rectifying the impact by repairing, rehabilitating, or restoring the affected environment.

(d) reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.

(e) compensating for the impact by replacing or providing substitute resources or environments.

7. Organizing the impact chapter—The impact section can be organized by alternative, with impact topics as subheadings, or by impact topic, with alternatives as subheadings.

(a) Methodology section—You should begin the discussion of impacts by describing methods used to predict impact. As indicated above, if the methods used are the best available, but they require many assumptions that may not be correct or that have been criticized by other professionals, these assumptions should be explained in the methodology section.

This section is also a good place to define or explain how data were interpreted. In other words, you should define terms such as "minor" or "major" for a particular impact topic. If relevant, explain the reasoning behind this interpretation—why, say, 100 ppm is a "major" impact but 50 ppm is a "minor" impact (i.e., your methodology included relevant state water quality standards). This is a discussion of thresholds of impact.

(b) Regulations and policies section—Following the methodology section, you may include a separate section that details relevant laws, regulations, and/or park or other policies for each impact topic. This section may help clarify why a particular impact topic is important to discuss, or help support the reasoning for the impact threshold discussion in the methodology section. This section may be placed in the alternatives or purpose and need chapter if more appropriate.

(c) Cumulative impact section—CEQ requires the analysis of cumulative impacts to each resource and for each alternative. This discussion should be identified separately from, but follow the same order as the discussion of, direct or indirect impacts. It should precede the conclusions section (see 6 (d) below).

Cumulative impact information may be less exact than information on direct and indirect impacts of the alternatives, but a good faith

effort to accurately and completely assess major sources of impact and their contribution to resources affected by the proposal and alternatives should be part of any EIS or EA. For plans or other larger-scope federal actions, the analysis of cumulative effect may be a major focus of the NEPA document requiring regional resource data by which to analyze impacts.

(d) Conclusions—At the end of the discussion of impacts of each alternative on each impact topic (e.g., resource), a brief "conclusions" section should summarize all major findings, including whether or not an impairment of resources or values is likely or would occur. It should focus on those impacts that would be major, but include a statement that resources examined would experience less severe impacts as well (if this is true). The conclusions section should not contain information that is not already in the impact section.

8. Sustainability and long-term management—Considerations of long-term impact and the effect of foreclosing future options should pervade any EIS or EA, because these are ideas that Congress put forward as the purpose of both NEPA (sec. 101 (b)), and the NPS Organic Act. However, for each alternative no action, you must also include a separate section that focuses on the following required discussions:

"**Sustainable development** is that which meets the needs of the present without compromising the ability of future generations to meet their needs."
World Commission on Environment and Development

(a) The relationship between local short-term uses of the environment and the maintenance and enhancement of long-term productivity (Sec. 102 (c) (iv))—In other words, are any long-term management possibilities, or the productivity of park resources, being traded for the immediate use of land? Will taking action in this case in combination with other actions have an impact on a particular ecosystem? Is the action being taken something that will affect future generations—is it a sustainable action that can continue over the long term without environmental problems?

(b) Any irreversible or irretrievable commitments of resources that would be involved if the alternative were implemented (sec. 102(c)(v))—Irreversible impacts are those effects that cannot be changed over the long term or are permanent. An effect to a resource is irreversible if it (the resource) cannot be reclaimed, restored, or otherwise returned to its condition before the disturbance. For example, a proposal to restore a cultural feature (building) involving construction adjacent to habitat for nesting birds may have irreversible impacts on the birds if they abandon the nests and

do not return to nest. An irretrievable commitment of resources refers to the effects to resources that, once gone, cannot be replaced. In this construction example, if the park chose to avoid potential irreversible impacts to the birds, and deterioration of the building continued, the loss of the building's cultural significance and integrity may not be returned or retrieved in the future. It is important to not worry about the semantics of these terms and instead be thorough in the disclosure to the public of any long-term, permanent effects to park resources.

(c) Any adverse impacts that could not be avoided if the action were implemented (sec. 101(c) (ii))—If the action will result in impacts that cannot be fully mitigated or avoided, you should describe these impacts in this section. You should focus this section on "real" environmental issues, or those that would involve major impacts if action were taken.

H. Consultation and coordination

This section should include a brief history of public involvement, a list of preparers and their expertise, and a list of recipients of the EIS. If it is the final EIS, it must include a response to comments section.

1. **History of public involvement**—In this section you should briefly:

   (a) summarize important consultations that occurred during the evolution of the proposal, the alternatives, and the EIS.

   (b) describe any public scoping sessions or other public involvement efforts.

   (c) include names of any federal, state, or local agencies; major organizations; or experts consulted.

   (d) identify environmental issues or conflicts discussed during consultation that remain.

   (e) include a brief summary of major issues raised during scoping.

   (f) describe any relevant existing or proposed cooperative agency mechanisms, or consultation undertaken in compliance with other laws or regulations. (Memoranda of agreement, memoranda of understanding, formal agreements, major cooperative agreements, or documentation indicating final compliance with applicable laws or regulations, such as comments from the state historic preservation office, should be appendixes to the EIS or readily available for public inspection.)

   (g) summarize steps taken to identify and involve low-income and minority communities that would be affected by the proposal and alternatives.

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Environmental Action Committee of West Marin

~ Protecting West Marin Since 1971 ~

April 2, 2012

Dr. Ralph Morgenweck

Scientific Integrity Officer, U.S. Interior Department

1849 C Street, N.W. Washington, D.C. 20240

Re: Dr. Corey Goodman's Bogus Claims of Scientific Misconduct

Dear Dr. Morgenweck:

The Environmental Action Committee of West Marin (EAC) believes that truth and integrity must comprise the essential foundation for scientific inquiry and policy decisions. EAC reviewed Dr. Corey Goodman's most recent claims of scientific misconduct and bias by the National Park Service (NPS). We are particularly concerned about the recent claims both because of the manner in which they have been politicized by Senator Feinstein, and, like previous ones, are baseless, unscientific, and distract from the real issue facing Secretary Salazar: whether to uphold long-standing national park laws and policies, or roll them back to allow private industry to commercialize the heart of a national park.

Dr. Goodman recently alleged that the Draft Environmental Impact Statement (DEIS) fudged the sound level numbers in assessing human-created noise impacts made by the Drakes Bay Oyster Company (DBOC), and thus demonstrates that the NPS was biased. Our analysis shows that the opposite is true.

The NPS used best available data to represent the noise levels of DBOC's motor boats and other equipment. <u>These representative values are reasonable, understate the actual DBOC noise level impacts, and directly contradict Dr. Goodman and Senator Feinstein's unfounded allegations of NPS misconduct</u>.

Dr. Goodman's recent accusations are highly inflammatory and apparently designed to undermine the findings of the DEIS. For example, he alleges that the NPS used jet ski data

from a 2005 study to represent the noise level of DBOC motor boats. But, as our review shows, their claims overstate and misrepresent the easily obtainable facts that support the DEIS.

Overall, our analysis shows that the NPS's DEIS:

i. Produced a significantly conservative noise figure to represent DBOC's boats by using library data of a boat that most closely represents DBOC boats and then cut that library noise in half in the DEIS;
ii. Did not analyze several DBOC noise sources such as sewage pumps and delivery trucks because DBOC did not provide that information; and
iii. Used appropriate, standard terminology to describe the sources of sound data.

DBOC's international consultant, ENVIRON, seems to have designed an acoustic test and produced data to disguise DBOC's true noise impacts and violations. **The data choices of DBOC's consultants are unreasonable, violate standard testing procedures, and understate the significant DBOC-created noise impact on Drakes Estero wilderness**.

Overall, our analysis shows that virtually every one of the ENVIRON study report assertions understates DBOC's operational noise impacts on Drakes Estero.

ENVIRON:

1) Tested DBOC boats at docking speed instead of the full-throttle test for speeds actually used in the Estero. Even with this prejudice, both DBOC boats failed to meet NPS regulations that limit noise to 60 decibels;
2) Tested the DBOC Front-end Loader up-wind from the noise source, yet every test showed a decibel violation; its test of the DBOC impact tool showed repeated violations, one test being four times louder than NPS regulations allow;
3) Disguised these violations by "averaging" them down. According to the ENVIRON noise measurement methods, DBOC could be setting off dynamite once a day, and such short but brief violence could be "averaged away" in 24 hours so that the "average" remained below the NPS 60 decibel limit; and
4) Used a noise library data figure that almost doubles the natural background sounds against which the human-caused noise is measured, and then suggested adding airplane noise as a natural background sound to that inflated figure.

While it is unclear how he obtained a non-public, internal agency working draft of the DEIS, enough tax-payer money has already been wasted investigating false charges by Dr. Goodman against the NPS. EAC's analysis is intended to shine the light of day on the new round of specious assertions and bogus science used by those repeatedly making deceptive charges against the NPS in an effort to overturn the 1976 wilderness designation for Drakes Estero, the ecological heart of Point Reyes National Seashore.

We urge you, in reviewing Dr. Goodman's claims of scientific misconduct, also to consider the concerns we raise here regarding his and ENVIRON's representations.

Thank you very much for your consideration of our analysis, and for upholding scientific integrity throughout this public process.

Respectfully submitted,

Amy Trainer, Executive Director

Environmental Action Committee of West Marin

Cc: Honorable Ken Salazar, Secretary, U.S. Interior Department

Dr. Gary Machlis, Science Advisor to NPS

Honorable Dianne Feinstein, U.S. Senator for California

Honorable Barbara Boxer, U.S. Senator for California

Honorable Lynn Woolsey, U.S. Congresswoman for California's 6th District

Dr. Ralph J. Cicerone, President of the National Academy of Sciences and Chair of the National Research Council

Dr. Susan Hackwood, Executive Director, California Council on Science and Technology

DETAILED COMMENTS FOLLOW:

NPS'S DEIS ANALYSIS IS BIASED IN FAVOR OF DBOC BECAUSE IT DID NOT CONSIDER OR ANALYZE SIGNIFICANT SOURCES OF DBOC-MADE NOISE.

The NPS relied on DBOC providing information on all of their noise-inducing sources for analysis in the NPS DEIS. However, we have uncovered a significant DBOC-caused error: DBOC did not provide all the information necessary for the NPS analysis in the DEIS and thus the DEIS underestimates the amount of noise induced by DBOC's operations, creating a bias that benefits DBOC.

The DEIS did not include representative noise impacts from the DBOC air compressor, the refrigeration unit, the delivery trucks, the employees cars, the sewage pump, the well pump and the cars of DBOC's claimed 50,000 customers. At 2.5 people per car, that is the sound of 20,000 cars that is missing from the DEIS. It was incumbent on DBOC to provide the noise data on these significant sources of noise. However, DBOC did not provide these items as sources of noise, thus the NPS did not list or analyze these sources of DBOC-caused noise in the DEIS. These missing DBOC noise sources directly contradict Dr. Goodman's accusations of NPS bias and represent a DBOC-caused error in the DEIS that NPS should address in their Final EIS.

ENVIRON AND THE NPS USED THE SAME TERMINOLOGY, YET DR. GOODMAN CHARGED THE NPS COMMITTED SCIENTIFIC MISCONDUCT.

The core of Dr. Goodman's allegation of bias is the NPS use of the term "representative sound level" to describe DBOC noise, yet ENVIRON, DBOC's noise consultants, describe NPS as relying on "a library of sound level data to represent DBOC sources." How can the NPS use of this term represent bias, when the DBOC contractor uses the same term?

Dr. Goodman claims that the NPS should have retained the term "estimated" to describe sound level instead of "representative" ("estimated" is the term apparently used in an earlier draft version[1] of the DEIS. However, to retain the term "estimated" would be inappropriate and misleading because the term "estimated" implies that the sound was taken directly from the DBOC source, which it was not. The NPS change in words suggests an effort to make the document more accurate and to not mislead the public. Dr. Goodman creates a false argument that is not supported by logic or science, and has misled the public and Senator Feinstein to attack the NPS's good science.

Related, Dr. Goodman falsely accuses the NPS of misconduct for its use and display of sound library data. The DEIS Table 3-3 with its "*" marks beside the decibel numbers clearly indicates that the representative motorboat data came from the Noise Unlimited 1995 Study and that the

[1] It is unclear how Dr. Goodman obtained a non-public, internal working draft of the Draft EIS that to date has not been released to the public for review.

other representative DBOC tool data came from the Federal Highway Administration 2006 Study. Contrary to Dr. Goodman's false accusations, the data sources are listed and made clear. These were clearly references to representative sound from a sound library, which is standard practice.

DR. GOODMAN SUPPORTS ENVIRON'S FAULTY METHODS AND ANALYSIS THAT "DECIBELS" EQUAL "LOUDNESS".

Dr. Goodman, DBOC, and ENVIRON propose inappropriate and unscientific analysis in an effort to greatly inflate the magnitude of their unsupported claims of bias against NPS.

Contrary to what Dr. Goodman and the ENVIRON report claim, a ten-fold increase in the number of decibels do not equal a ten-fold increase in the human or wildlife perceived loudness. We humans (and other creatures) have evolved such that our ears can hear a wide range of sounds, from mosquitos to thunderclaps. Our ears do this by dampening the powerful sounds so that they do not harm our eardrums thus retaining our ability to hear quiet sounds. [2]

Decibels, in contrast, are a measure of the physical property (power) of a sound wave (e.g. watts per square meter). Because decibels are represented by a logarithmic scale, the difference between 60 decibels and 70 decibels is a difference of 10 times the physical power; similarly the difference the difference between 60 decibels and 80 decibels is a difference of 100 times the physical power. However, our ears dampen this power, so we perceive an increase of 10 decibels (10 times the sound-power) as being only two times as loud. Likewise an increase of 20 decibels (100 times the sound power) is perceived as only four times as loud[3].

The purpose of the soundscape section of the DEIS is to assess impacts to park visitors and wildlife. Those impacts are experienced through the ears of those visitors and wildlife and thus must be translated from the test instrument's "decibel scale" to the biological "loudness scale."

Thus throughout our analysis we have used the term "loudness" to represent the perceived differences in the measured decibels. In contrast, ENVIRON uses the raw physical sound power as measured in decibels on the test instrument to (mis)represent perceived impacts.

ENVIRON claims that the NPS figure of 71 decibels (which the DEIS represents as DBOC's boat noise) is **overstated by a factor of 12** [4] compared to ENVIRON's DBOC boat noise of 60.1 decibels (because $10^{(7.1-60.1)} = 12.3$). But even if the ENVIRON figure of 60.1 decibels for boat noise were correct (which it is not, as outlined below), then the increase from 60.1 to 71 decibels results in

[2] http://www.tonmeister.ca/main/textbook/intro_to_sound_recordingch6.html

3 http://www.newton.dep.anl.gov/askasci/eng99/eng99325.htm

[4] Environ Report page 36 Table H-1

an increase in loudness of only 2 times, not the 12 times that ENVIRON's decibel calculations imply.[5] ENVIRON has exaggerated its loudness claim by six times.

Dr. Goodman repeats the ENVIRON misstatement: *"an increase of 10 dB means that the sound is 10 times as loud; i.e.,* ***70 dB is 10 times as loud as 60 dB****."*[6] Dr. Goodman is similarly exaggerating his loudness claims by five times. Other similarly misleading statements are repeated throughout Dr. Goodman's letter and the ENVIRON DEIS comment. For example, the representative decibel number in the DEIS for the oyster tumbler is 79. ENVIRON claims that the number should be 49.8 and thus the DEIS has "Overstated Factor" of 825.[7] Even if ENVIRON's figure of 49.8 were correct (we believe it is not), the difference is 7.5 times in perceived loudness, not 825 times in sound power. ENVIRON and Dr. Goodman[8] have overstated this claim by over 100 times.

Such analyses based on decibel differences are misleading, contrary to psycho-acoustician standards, inconsistent with the purposes of the DEIS, and greatly inflate the magnitude of ENVIRON's and Dr. Goodman's misleading claims.

NPS'S DEIS ANALYSIS OF THE ESTERO'S AMBIENT NOISE LEVEL IS BIASED IN FAVOR OF DBOC .

The NPS Director's Order #47states (emphasis ours): ***"With respect to determinations related to the impacts of sound on the park soundscape, the natural soundscape is the 'affected environment'…. the natural soundscape…is comprised of the natural sound conditions in a park which exist in the absence of any human-produced noises."***

However, the DEIS sets the baseline ambient noise level at 34 decibels per the Ambient Noise Study's "Existing Ambient" Summer Daytime figure of 33.8 decibels[9], which includes (emphasis ours) *"The composite, all-inclusive sound associated with a given environment, excluding only the analysis system's electrical noise (i.e., aircraft-related sounds are included)."*[10]

Thus the DEIS overstated the baseline, which should have been the "Natural Ambient" figure of 32.[11] This DEIS error benefits DBOC whose noise impacts are thus compared to an inflated baseline. This wrongly inflated baseline measurement reduces the impact of DBOC-created noise.

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5 http://www.sengpielaudio.com/calculator-levelchange.htm

[6] http://oysterzone.wordpress.com/2012/03/27/03-26-12-nps-used-falsified-acoustic-data-to-deceive-public-an-peer-review-of-deis/

[7] Environ DEIS Comment page 36

[8] PPT Slide 27

[9] http://www.nps.gov/pore/parkmgmt/upload/planning_atmp_background_report_faa_baseline_ambient_sound_levels_1103.pdf Table 2 Page ES-23 Second decibel column fourth decibel line

[10] Ibid pg. Page ES-20

[11] Ibid Table 2 Page ES-23 Last decibel column; fourth decibel line

This directly contradicts Dr. Goodman's accusations of NPS bias and is a significant DEIS error that the NPS will need to correct or justify in its Final EIS. Correcting this will presumably significantly increase DBOC's noise impact on the natural soundscape.

DR. GOODMAN, DBOC, AND ENVIRON PROPOSES A BIASED AMBIENT NOISE LEVEL THUS PRODUCING A FAULTY IMPACTS ANALYSIS.

Dr. Goodman, DBOC, and ENVIRON propose faulty scientific analysis and methodologies that disguise DBOC's noise impacts to park visitors and wildlife. This is done by inappropriately inflating background noise levels so that when compared to DBOC's noise levels, the impacts are reduced. This approach to deceive the public is revealed and dissected here.

ENVIRON first asserts[12] that 40.3 decibels, which is the summer average (L_{eq}) daytime "existing ambient" sound level from Ambient Noise Study[13] is the proper metric, whereas the DEIS uses the median("$L_{50.}$"). ENVIRON then suggests (without any rationale) that the winter average of 41.6 is an even better metric. Although ENVIRON liberally quotes from the NPS Director's Order 47 when it believes the Order supports its rationalizations, here ENVIRON is strangely quiet when asserting baselines for ambient noise that are explicitly contradicted by the plain language of the NPS Director's Order. This is "baseline shopping" whose only (unstated) rationale is to benefit ENVIRON's client (by disguising DBOC's impacts to park visitors and wildlife).

The following example shows the importance of using the 32.2 decibel summer median "natural ambient" not the 41.6 winter average "existing ambient." Assume three tests in July produce "natural ambient" test results of 31, 31, and 32.2. Three tests In January produce test results of 32.2, 36, and 87.2 (the last because of storm conditions). The median (mid value of all 6 tests) is 32.2, but the average is 41.6 or about 75% louder.[14] Most visitation occurs when the howling wind is not blowing rain sideways.[15] But the ENVIRON method would average up (inflate) high-visitation times with a portion of those howling-storm events. So in this example, a visitor present during five of the six tests would hear a distant DBOC motor boat at 40 decibels above all the existing natural ambient sound levels of 31, 31, 32.2, 32.2, and 36. Yet ENVIRON de facto claims the preponderance of visitors in benign weather would not hear the boat at 40 decibels because ENVIRON's theoretical baseline (41.6) is louder than the boat noise (because ENVIRON's baseline is "averaged up" with the storm event when there is little visitation).

ENVIRON's attempt to minimize its client's impacts (by inflating the baseline by which those impacts are measured) is a variation of the strategy attempted by the U.S. Air Tour Association

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[12] ENVIRON DEIS Comment page 34 and 35

[13] http://www.nps.gov/pore/parkmgmt/upload/planning_atmp_background_report_faa_baseline_ambient_sound_levels_1103.pdf First decibel column, fourth decibel line

[14] http://www.sengpielaudio.com/calculator-levelchange.htm

[15] http://www.nps.gov/pore/parkmgmt/upload/planning_atmp_background_report_faa_baseline_ambient_sound_levels_1103.pdf page5

arguing against NPS proposed limitations on air tours over Parks. The Association argued that the impact of noise from air tours, which only occur during daylight hours, should nevertheless be measured over a 24-hour cycle (i.e. the impact should be "averaged down"). In 2002, the U.S. Circuit Court of Appeals denied the U.S. Air Tour Association's challenge to the Air Tour Limitation Rule. [16] ENVRON, as a claimed profession in this field, must surely know this case, yet it attempts the same unacceptable "averaging."

Furthermore, ENVIRON suggests that adding traffic noise from nearby Sir Francis Drakes into the background noise at the DBOC plant would be a better baseline from which to measure DBOC plant noise than the NBPS study site at the Estero bluff. [17] However, as noted, this suggestion is in direct violation of Director's Order 47 that mandates the "natural ambient noise" as the proper DEIS baseline. ENVIRON also presents no evidence to support its implied claim that the "natural ambient noise" at the DBOC plant location near Sir Francis Drakes would be higher than that at the Estero location of the DEIS. Contradicting this implication, the DEIS baseline Sound Study indicated that the "natural ambient" summer daylight sound level at the Bear Valley Visitor Center, which is about the same distance from a busier section of Sir France Drakes, is <u>less</u> (31.3)than that measured at the Estero bluff (32.2)[18]

ENVIRON's above actions are, of course, exactly what consultants do for their clients and we believe that it is fair to characterize ENVIRON's ambient noise analysis as biased in DBOC's favor.

The usefulness to DBOC from an inflated background noise baseline is clear from Dr. Goodman's theoretical calculation [19] that harbor seals cannot be flushed by DBOC boats because the seals cannot hear the motor above the background sounds when the boat is more than 400 feet away. He uses the underestimated (see later discussion)ENVIRON boat figure of 59 decibels at 50 feet and the inflated background <u>winter</u> <u>average</u> noise level of 42 decibels (that already includes human noises) and then uses the laboratory acoustic formula:

Boat @ 59 dBA – 20 X log (400 feet/50 feet) = 41 dBA (vs. ambient at 42 dBA)

Thus, Dr. Goodman concludes (incorrectly) that the seals cannot hear DBOC's (underestimated) motorboats at 400 feet (41 decibels) over the (inflated) background noise at 42 decibels. However, NPS has a video of seals flushed by DBOC boats at a distance of about 2400 feet. The Marine Mammal Commission confirms this disturbance in their report (pg. 27), stating "*The combination of video and still photography provides convincing evidence of seal disturbance that likely was caused by the sound of the boat as it left OB and moved up the west channel (a distance of hundreds of meters)"*. Dr. Goodman's calculation using ENVIRON's biased numbers is clearly wrong.

Conversely, using the NPS numbers of 71 decibels representing the boat noise and 32 decibels for the correct (natural) ambient noise, the laboratory calculation to estimate whether the seal could

[16] Washington, D.C. Circuit Court of Appeals in the case of United States Air Tour Association v. FAA, 298F.3d997
[17] ENVIRON DEIS Comment page 35
[18] DEIS Ambient Study pg. ES-23 last column
[19] 1/13/12 Dr. Goodman Letter to Supervisor Kinsey, page 23

theoretically hear the boat over the ambient noise is as follows: *Boat @ 71 dBA – 20 X lob (2400 feet/50 feet) = 37.4 dBA (vs. ambient at 32 dBA)* Thus the seals could indeed hear the boat noise.

NPS USED REASONABLE BOAT NOISE DATA, THUS PRODUCED A SCIENTIFICALLY SOUND IMPACT ANALYSIS.

Dr. Goodman claimed [20]that the NPS, in the absence of on-site test data, *"Included noise measurements from a 1995 Kawasaki 750 cc 2-stroke 70 HP Jet Ski at 2 ft as if the data came from a DBOC 4-stroke 20 HP oyster boat at 50 ft."*[21] However, the Noise Unlimited 1995 Study notes this Jet Ski measurement was taken in a stationary position at idle speed from 2 feet, whereas pass-by tests are done moving at full throttle at 50 feet. [22] If NPS were trying to bias the result, the choice of the stationary idling Jet Ski from the 1995 Study would make little sense because that test result is the <u>third lowest noise level</u> of the 18 tests in that 1995 Study.[23]

We don't know the NPS selection process, however, we suggest that a more likely process would have been for the DEIS to represent the DBOC boat noise by choosing the pass-by test in the Noise Unlimited Study for <u>the boat most like the DBOC boats</u>. The Noise Unlimited Study measured boat with a 175 horsepower outboard at 81 decibels. However, it appears that NPS chose **conservatively** to have the DEIS represent a sound level that was **half** that loud. That would be a reduction of 10 decibels, resulting in the 71 decibel figure in Figure 3-3 of the DEIS.

Notwithstanding Dr. Goodman's misleading Jet Ski photo, we believe that the NPS reducing by half the loudness of the most applicable library boat test is much more reasonable than Dr. Goodman's inflammatory choice (supported by Senator Feinstein) of an accidently equal decibel from completely different boat at a completely different distance at a completely different speed and throttle.

DR. GOODMAN, DBOC, AND ENVIRON ADVOCATE THAT A BIASED, FAULTY BOAT NOISE ANALYSIS SHOULD REPLACE THE SCIENTIFICALLY SOUND ANALYSIS IN THE DEIS.

1) ENVIRON's photo of its acoustic test [24] of the DBOC boat (below left) reveals that the DBOC boat is moving so slowly that its wake is hardly visible. Harbor seals flush from the

[20] Letter to Secretary Salazar page 2
[21] Letter to Secretary Salazar page 2
[22] Noise Unlimited page 1
[23] Noise Unlimited 1995
[24] Environ Noise Attachment page 4

noise of DBOC boats[25], which customarily move at high speeds in the Estero as seen in numerous NPS photos of DBOC boats in operation with broad white wakes (see below at right)[26]. ENVIRON's slow-speed sound test is not representative of actual DBOC boat impacts on wildlife and park visitors.

Photo 5. Boat Passby

Such a slow-speed test is <u>not</u> the standard pass-by test, which as the 1995 study indicates is typically done: "*with the boat operating at full throttle*." [27] Pass-by tests have shown that higher speeds significantly increase decibels.[28] ENVIRON should understand this standard pass-by testing procedure and thus we believe its non-representative slow speed boat test is attempt by either ENVIRON or DBOC or both to mislead NPS and the public.

2) ENVIRON Table H-1 Footnote [a] "interprets" the DEIS sound levels to be averages (L_{eqs}), when in fact, as is clear from the Noise Unlimited (#3 Discussion) and the FHWA Table 1 column 4 title, these DEIA sound levels are maximums(L_{max}). This "misinterpretation" (in the face of clear contrary evidence) then allows ENVIRON to make a misleading comparison. The "Overstated Factor" compares DEIS <u>maximum</u> levels to DBOC's <u>average</u> levels, an apples-to-oranges comparison that overstates the difference. For example, the Noise Unlimited maximum figure representing the DBOC boat is 71 decibels. The ENVIRON maximum for DBOC Boat 1 is 63.4 and the average is 60.1 decibels. ENVIRON calculated its "Overstated Factor" by falsely comparing 71 with 60.1 instead of with 63.4. Then ENVIRON compounds this misleading comparison by measuring the difference in sound power rather than perceived loudness. Comparing like-to-like (even assuming the ENVIRON boat test is correct, which it is not as already explained) , then the claimed "Overstated Factor" is 8+ decibels or an overstatement of 0.8 times in maximum perceived loudness, not ENVIRON's 12 times in unperceived equalized decibels.

[25] November 2011, U.S. Marine Mammal Commission Report on Drakes Estero Harbor Seals, pg. 27.
[26] http://www.nps.gov/pore/readingroom/Photos/2008/UEF/03_March/11/PM/2008-03-11%2003-19-13%20PM%20T.JPG
[27] Noise Unlimited 1995, page 1
[28] FHWA 1980 at http://www.nonoise.org/library/highway/traffic/traffic.htm

3) ENVIRON's photo of the boat test[29] shows that this test was at 90 degrees from the prevailing wind. Although the prevailing wind on a regional scale is from the northwest, the topography of the Estero traps the wind such that it blows down the Estero from north to south. The photos show the testing equipment roughly due east of the boat, which will understate the measured levels and understate the resulting impacts.

   Furthermore, the DEIS estimates of noise impact in the Estero (Figures 4-1 and 4-2) assume mathematically perfect spherical extent of DBOC noise that ignores the steady wind that blows from the top to the bottom of the Estero (north to south) and the topography of the Estero whose surrounding cliffs reflect and funnel noise. Accounting for the wind and topography would extend the impact from the oyster plant, including nearby boats, further down Schooner Bay.

   Lastly, the DEIS correctly points out that boat noise impacts measured underwater are likely to be much greater than boat noise impacts measured in the air, yet NPS has no underwater measures. This greatly understates DBOC boat noise impacts on harbor seals, whose underwater mating and feeding behaviors could be impacted by DBOC boat noise even if the impact from that noise may not be visible on harbor seals that are hauled out-of-the-water on sandbars.

4) ENVIRON's 62 data points [30] appears more of a small-sample estimate than a robust test, given that the NPS Ambient Study had two months of data vs. ENVIRON's 62 seconds of data. Additionally the ENVIRON test provides no data or description of the ambient tests that are supposed to precede and follow the test of the equipment. If, for example, one of the intermittent noise sources at the DBOC plant were off during the test of the target equipment, but then on during the test of the ambient noise, then this would result in an underestimate of the targeted equipment's noise impact.

5) ENVIRON's own data (63.4 and 61.7 Lmax for DBOC boats 1 and 2 respectively) demonstrate that both violate 36 CFR 2.12, which states: "*The following are prohibited…Operating motorized equipment…That exceeds a noise level of 60 decibels measured on the A-weighted scale at 50 feet."*[31]

6) ENVIRON's biased test builds the foundation for Dr. Goodman to mock the NPS by accusing that NPS *"Included noise measurements from a 1995 Kawasaki 750 cc 2-stroke 70 HP Jet Ski at 2 ft as if the data came from a DBOC 4-stroke 20 HP oyster boat at 50 ft."*[32] Dr. Goodman then quotes from the Noise Unlimited 1995 Study*: "That measurement of 71 dBA is at the 'static level dBA.'"*[33]

[29] ENVIRON DEIS Comment Attachment page 4
[30] ENVIRON Attachment page 6
[31] http://www.gpo.gov/fdsys/pkg/CFR-2010-title36-vol1/pdf/CFR-2010-title36-vol1-sec2-12.pdf
[32] Letter to Secretary Salazar page 2
[33] Letter to Secretary Salazar page 5

But, the purported quote *("static level dBA"*) does not exist in the 1995 study. Instead, the Study notes this measurement was taken at idle speed from 2 feet in accordance with the "Stationary Sound Level Measurement Procedure."[34] Contrary to Dr. Goodman purported quote, it is the boat that is "static" and "stationary" not the "dBA." But the word "stationary" never appears in Dr. Goodman's letter. Instead, "idle speed" is glossed over and the "2 feet" reference is repeated.

The photos below are from Dr. Goodman's power point. [35] The photo of the Jet Ski on the left depicts the condition that Dr. Goodman asserts the NPS test represented. The photo on the right depicts the condition that Dr. Goodman implies the DBOC boats actually represent. Neither of Dr. Goodman's representative photos is true Dr. Goodman's slight-of-hand deceived the local public radio news editor who stated, *"Dr. Goodman believes that the high oyster boat measurement of 71 decibels was based on a jet ski taken as a distance of only 2 feet."* [36] The Editor made no mention of "stationary" or "idle."

However, even the stationary figure for a Jet Ski would make no sense if NPS were trying to bias the result. The stationary idling Jet Ski tested the third lowest of the 18 boat tests in the 1995 Study.[37] Furthermore, the pass-by test is customarily done at full throttle, which almost always results in more noise than do static tests. This too contradicts Dr. Goodman's claims of NPS bias.

Acoustics is a complex scientific issue and the public's understanding of this complexity is steamrollered by Dr. Goodman's inflammatory and invalid use of pictures of full-throttle Jet Skis next to docked DBOC boats. Dr. Goodman claims to have reviewed 281,000 NPS Estero photos[38] so he surely knows that they contain numerous photos of DBOC boats

[34] Noise Unlimited page 1
[35] http://oysterzone.files.wordpress.com/2012/03/nps-deis-and-atkins-review-soundscape-deception-9-2mb.pdf
[36] http://kwmr.org/blog/show/2042 at
[37] Noise Unlimited 1995
[38] Dr. Goodman to Supervisor Kinsey page 8: *"281,000 photos over a three and a half year period show*

operating at high speed. Dr. Goodman did not disclose that information and instead offered the misleading photo of the docked DBOC boat. Ironically, Dr. Goodman's photo of the racing Jet Ski appears much more comparable to the photo we provided earlier in this document of a DBOC boat speeding through the Estero.

7) SUMMARY: As shown in the analysis above, Dr. Goodman's claims do not hold up under modest scrutiny. There is evidence that both ENVIRON and Dr. Goodman are attempting to mislead the NPS, Senator Feinstein, and the public that is unfamiliar with standard acoustic testing protocols.

DR. GOODMAN, DBOC, AND ENVIRON USE A FAULTY, BIASED FRONT END LOADER ANALYSIS TO CRITICIZE THE DEIS.

Our analysis of the front loader noise test contradicts Dr. Goodman's claims of NPS bias and shows how even ENVIRON's incorrect testing - biased in favor of DBOC by underestimating DBOC noise - produces noise levels that violate NPS regulations. In contrast, the analysis below provides sufficient evidence that both ENVIRON and Dr. Goodman are attempting to mislead NPS and the public that is unfamiliar with acoustic testing.

1) Front Loaders do not leave wakes like boats, so it impossible to tell if the ENVIRON pass-by test was done under normal operating conditions. Since the boat test was supposed to be done at full throttle, but was not, it may be reasonable to assume that the front loader was also not operating as it would normally.

2) ENVIRON compares DEIS <u>maximum</u> levels with ENVIRON <u>average</u> levels and then states that comparison in terms of sound power rather than perceived impact. ENVIRON Table H-1 states that the "Overstated Factor" for the Front Loader is 25. Comparing like-to-like (even assuming the ENVIRON test is correct, which we believe it is not), then the claimed overstated factor is 11 decibels or an overstatement of 2 times in maximum perceived loudness, not ENVIRON's 19 times in unperceived equalized decibels.

3) ENVIRON Photos of the front loader tests[39] show that the test was done up-wind. Although the prevailing wind on a regional scale is from the West or North West, the topography of the Estero traps the wind such that it blows down the Estero from north to south. The photos show the testing equipment north (upwind) from the front loader, which will understate the measured levels and understate the resulting impacts.

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hundreds of examples of DBOC boats coming and going, and not a single time…"

[39] ENVIRON DEIS Comment Attachment page 5

4) ENVIRON's 120 data points [40] appears more of a small-sample estimate than a robust test, given that the NPS Ambient Study had two months of data vs. ENVIRON's 120 seconds of data. The reference FHWA library notes its combined result is based on 96 different tests of front loaders.[41] Additionally the ENVIRON test provides no data or description of the ambient tests that are supposed to precede and follow the test of the equipment. If, for example, one of the intermittent noise sources at the DBOC plant were off during the test of the target equipment, but then on during the test of the ambient noise, then this would result in an underestimate of the targeted equipment's noise impact.

5) ENVIRON's own data (68 maximum decibels) demonstrate that the front loader violates 36 CFR 2.12's 60 decibel limit"[42]

6) ENVIRON's biased tests again lay the foundation for Dr. Goodman to mock NPS's choice from the FHWA noise library (emphasis ours): "*DBOC's Fork Lift at 79 dBA was presumably FHWA's Front End Loader at 79 dBA."*[43] To demonstrate the asserted validity of his mockery Dr. Goodman's PowerPoint shows the DBOC equipment with forks (below left). However, ENVIRON's photo shows the same DBOC equipment with a bucket (below right), which then allows ENVIRON to mock NPS because the DEIS described the DBOC equipment as a *"forklift."* This is same piece of DBOC equipment.

Yet when equipped with a bucket, it is mocked by ENVIRON as a NPS "forklift", then when equipped with forks, it is mocked by Dr. Goodman as a NPS "front loader." All of this mockery serves to distract the public from the conclusion that NPS use of a representative noise level from the FHWA noise "library" for a "front end Loader" is (contrary to the mockery) a reasonable and seemingly like-to-like comparison. .

7) SUMMARY: This analysis of the front loader test contradicts Dr. Goodman's claims of NPS bias and shows how even ENVIRON's incorrect testing to bias DBOC (by underestimating DBOC noise) produces noise levels that violate NPS policies. In contrast, we believe the

[40] ENVIRON Attachment page 7
[41] http://www.fhwa.dot.gov/environment/noise/construction_noise/handbook/handbook09.cfm
[42] http://www.gpo.gov/fdsys/pkg/CFR-2010-title36-vol1/pdf/CFR-2010-title36-vol1-sec2-12.pdf
[43] PPT Slide 26

above analysis provides sufficient evidence that both ENVIRON and Dr. Goodman are attempting to mislead NPS and the public that is unfamiliar with acoustic testing.

DR. GOODMAN, DBOC, AND ENVIRON PRESENT A BIASED AND FAULTY PNEUMATIC DRILL NOISE ANALYSIS.

The analysis below of the pneumatic drill noise test contradicts Dr. Goodman's claims of NPS bias and shows how even ENVIRON's incorrect testing to assist DBOC (by underestimating DBOC noise) produces noise levels that violate NPS regulations. In contrast, we believe the below analysis provides sufficient evidence that both ENVIRON and Dr. Goodman are attempting to mislead NPS and the public that is unfamiliar with acoustic testing.

1) ENVIRON supplies no photos of the drill noise test. We have no way of knowing whether the drill was operating in normal fashion, a possibility that (based on the low-speed boat test) cannot be discounted.

2) ENVIRON compares DEIS maximum levels with ENVIRON average levels and then states that comparison in terms of sound power rather than perceived impact. ENVIRON Table H-1 states that the "Overstated Factor" for the pneumatic drill is 29. Comparing like to like (even assuming the ENVIRON test is correct, which we believe it is not), then the claimed overstated factor is 5.3 decibels or an overstatement of 0.4 times in maximum perceived loudness, not ENVIRON's 29 times in unperceived equalized decibels.

3) ENVIRON supplies no photos, so we do not know the position of the test device and the pneumatic drill relative to the prevailing wind. Given that all the other photos show the device and the target equipment up wind or cross wind, we believe it likely to assume that the pneumatic test was done likewise. Such a test will understate the measured levels and the resulting impacts.

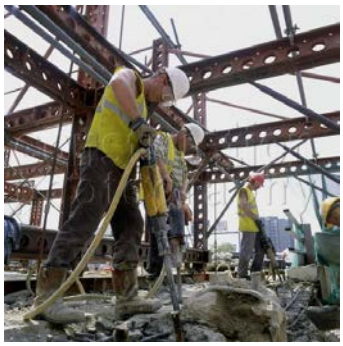
4) ENVIRON's 120 data points [44] appears more of a small-sample estimate than a robust test, given that the NPS Ambient Study had two months of data vs. ENVIRON's 120 seconds of data. The reference FHWA library notes its combined result is based on 90 different tests of pneumatic tools.[45] Additionally the ENVIRON test provides no data or description of the ambient tests that are supposed to precede and follow the test of the equipment. If, for example, one of the intermittent noise sources at the DBOC plant were off during the test of the target equipment, but then on during the test of the ambient noise, then this would result in an underestimate of the targeted equipment's noise impact.

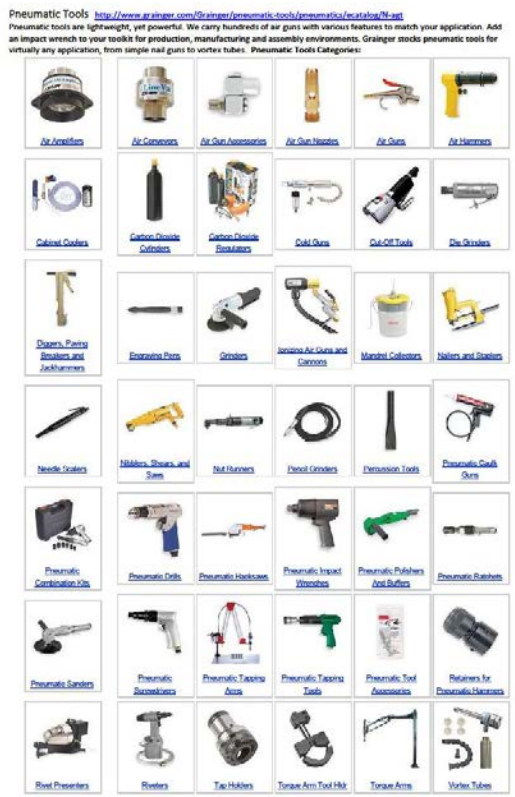
[44] ENVIRON Attachment page 9

[45]

5) ENVIRON's own data (68 maximum decibels) demonstrate that the DBOC pneumatic drill violates 36 CFR 2.12's 60 decibel limit"[46]

6) ENVIRON's biased tests again lay the foundation for Dr. Goodman to mock NPS 's choice from the FHWA noise library (emphasis ours): *"NPS DEIS used data from this …Federal highway construction pneumatic drills 85 dBA … to misrepresent this: oyster farm pneumatic tool 70 dBA."*[47] To demonstrate the asserted validity of his mockery, Dr. Goodman's PowerPoint shows the DBOC tool (left) with a photo of jack hammers.





However, the FHWA list distinguishes "jack hammers" (impact devices) from "pneumatic tools" (non-impact devices). These are different tools with different noise levels. Thus Dr. Goodman has no credible basis for mocking NPS with the claim that NPS demonstrated bias by treating the DBOC "pneumatic tool" as a "jack hammer."

In contrast, typical pneumatic tools such as represented in the FHWA reference library are like those show in the Granger catalog in the photo to the left, which are "lightweight" [48] handheld tools very similar to the DBOC tool.

Dr. Goodman's false claims distract the public from the correct conclusion that NPS use of a representative noise level from the FHWA noise "library" for a "pneumatic tool" is a reasonable and seemingly like-to-like comparison.

[46] http://www.gpo.gov/fdsys/pkg/CFR-2010-title36-vol1/pdf/CFR-2010-title36-vol1-sec2-12.pdf
[47] PPT Slide 4
[48] http://www.grainger.com/Grainger/pneumatic-tools/pneumatics/ecatalog/N-agt?Ndr=basedimid10071&contextPath=Grainger&sst=subset

7) SUMMARY: This analysis of the pneumatic drill test contradicts Dr. Goodman's claims of NPS bias and shows how even ENVIRON's incorrect testing to bias DBOC (by underestimating DBOC noise) produces noise levels that violate NPS policies. In contrast, we believe the above analysis provides evidence that both ENVIRON and Dr. Goodman are attempting to mislead NPS and the public that is unfamiliar with acoustic testing.

ENVIRON PRESENTED, AND DR. GOODMAN SUPPORTED, A BIASED AND FAULTY OYSTER TUMBLER ANALYSIS.

An analysis of the oyster tumbler noise test contradicts Dr. Goodman's claims of NPS bias. In contrast, the analysis below provides evidence that both ENVIRON and Dr. Goodman are attempting to mislead NPS and the public that is unfamiliar with acoustic testing.

1) ENVIRON supplied no photos of the oyster tumbler noise test. The ENVIRON photos do show the oyster tumbler motor which is asserted as the "*primary noise source."* [49] Maybe, but a significant amount of noise is generated by the oysters themselves that are being tumbled. Were there oysters in the tumbler during the test? It is unclear from the ENVIRON (lack of) photos. Neither NPS nor the public have any way of knowing whether the oyster tumbler was operating in normal fashion (full of tumbling oysters). The possibility of a non-representative test of the oyster tumbler, based on the low-speed boat test, cannot be discounted.

2) ENVIRON compares DEIS <u>maximum</u> levels with ENVIRON <u>average</u> levels and then stating that comparison in terms of sound power rather than perceived impact. ENVIRON Table H-1 states that the "Overstated Factor" for the oyster tumbler is 825 times. Comparing like-to-like (even assuming the ENVIRON test is correct, which we believe it is not), then the claimed overstated factor is 19.6 decibels or an overstatement of 3.9 times in maximum perceived loudness, not ENVIRON's 829 times in unperceived equalized decibels.

3) ENVIRON supplies no photos, so we do not know the position of the test device and the oyster tumbler relative to the prevailing wind. Given that all the other photos show the device and the target equipment up wind or cross wind, we believe it likely to assume that the oyster tumbler was done likewise. Such a test will understate the measured levels and understate the resulting impacts.

4) ENVIRON's 121 data points [50] appears more of a small-sample estimate than a robust test, given that the NPS Ambient Study had two months of data vs. ENVIRON's 120 seconds of data. Additionally the ENVIRON test provides no data or description of the ambient tests

[49] ENVIRON Attachment page 3
[50] ENVIRON Attachment page 9

that are supposed to precede and follow the test of the equipment. If, for example, one of the intermittent noise sources at the DBOC plant were off during the test of the target equipment, but then on during the test of the ambient noise, then this would result in an underestimate of the targeted equipment's noise impact.

5) ENVIRON's data (59.4 maximum decibels) demonstrate that the oyster tumbler comes very close to violating 36 CFR 2.12's 60 decibel limit"[51] If this test was done without oysters or below regular operating speed, then a test of normal operations would demonstrate a violation.

6) ENVIRON's biased tests again lay the foundation for Dr. Goodman to mock NPS 's choice from the FHWA noise library[52] To demonstrate the asserted validity of his mockery, Dr. Goodman's PowerPoint shows a photo of a "rivet buster" (middle) from FHWA list of equipment with the same 79 decibel count. The photo on the left is the ENIRON photo of the DBOC oyster tumbler. However, the FHWA authority chart makes clear that the "rivet-buster" is an "impact" device and thus is a <u>not</u> reasonable choice from the FHWA list. We don't know the NPS selection process, but we suggest that a slurry of cement rotating in a drum might be the most likely substitute for a machine that tumbles oysters. The FHWA figure for a cement mixer truck is 79. Alternately, NPS could have taken the 85 decibel figure for FHWA for "all other Equipment" and conservatively decided to reduce the loudness attributed to the oyster tumbler by a third (6 decibels) , resulting in the 79 decibels in the DEIS. In any case, however, Dr. Goodman attributing the NPS choice to a "rivet-buster" impact tool has no credible basis. All of this mockery serves to distract the public from the conclusion that NPS use of a representative noise level from the FHWA noise "library" for an "oyster tumbler" is a reasonable comparison.


7) SUMMARY: The analysis of the oyster tumbler test contradicts Dr. Goodman's claims of NPS bias. In contrast, we believe the above analysis provides evidence that both ENVIRON and Dr. Goodman are attempting to mislead NPS and the public that is unfamiliar with acoustic testing.

[51] http://www.gpo.gov/fdsys/pkg/CFR-2010-title36-vol1/pdf/CFR-2010-title36-vol1-sec2-12.pdf
[52] PPT Slide 4

EXHIBIT

33

Christopher W. Clark, Cornell University
February 23, 2012

Dr. Clark assumed the NPS data came from DBOC boats and equipment

specific DBOC noise sources. According to this table these data were collected by Noise Unlimited, Inc. (1995) and represent two types of relatively small motorboat engines (20 horse power [HP] and 40 HP), a diesel forklift, pneumatic drills and an oyster tumbler. Noise level values in dBA are given relative to 50 feet from each of these sources. The[illegible]sures are reasonable representations of the[illegible]o make comparisons. It could be argued tha[illegible] activities could have increased since 1995, but this [illegible] discussed.

This is what Dr. Clark was shown:
Table 3-3 in the September DEIS

TABLE 3-3. NOISE GENERATORS AT DBOC September 2011 version NPS DEIS

Equipment	Description†	Frequency of Use (Weather Permitting)†	Representative Sound Level at 50 Feet (dBA)[a]
Motorboat	20 HP, 4-cycle engine	Up to 12 40-minute trips/day	71*
Motorboat	40 HP, 4-cycle engine	Up to 12 40-minute trips/day	71*
Forklift	60 HP diesel engine	2 to 4 hours/day	79**
Pneumatic drills	Handheld hydraulic drills	Approximately 2 hours/day	85**
Oyster tumbler	Tube for sorting oysters by size, run by electric motor	Approximately 2 hours/day	79**

Sources: †DBOC [Lunny], pers. comm., 2011h; *Noise Unlimited, Inc, 1995; **FHWA 2006.

[a] Hourly values

June 2011 version NPS DEIS

Table 3-3. Noise Generators at DBOC

Equipment	Description	Frequency of Use (weather permitting)	Estimated dBA at 50 feet (Hourly Value)
Motor Boat	20 HP, 4 cycle engine	Up to 12 40-minute trips/day	71*
Motor Boat	40 HP, 4 cycle engine	Up to 12 40-minute trips/day	71*
Fork Lift	60 HP diesel engine	2 to 4 hours/day	79**
Pneumatic Drills	Handheld hydraulic drills	Approx 2 hours/day	85**
Oyster Tumbler	Rube for sorting oysters by size, run by electric motor	Approx 2 hours/day	79**

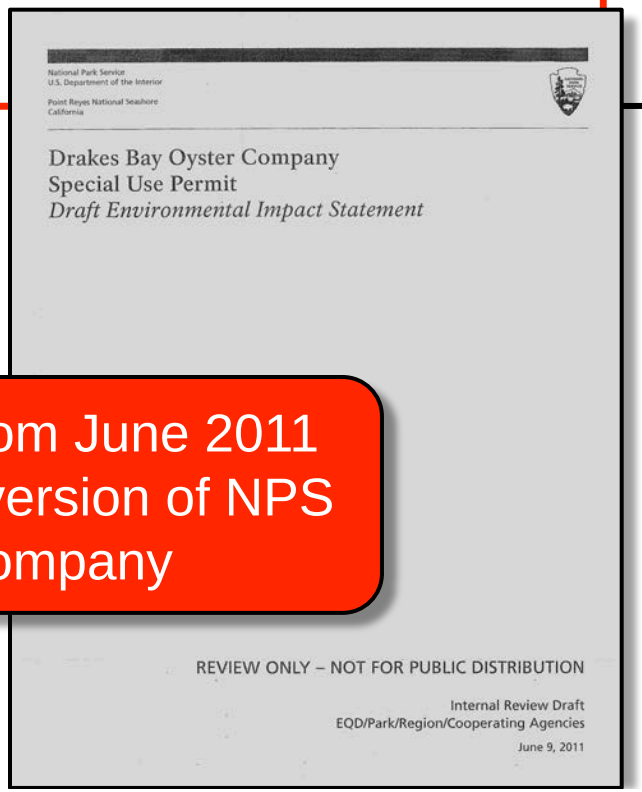
Source for equipment, descriptions, and frequency: DBOC, Lunny, pers. comm. 2011k

Source for sound estimates:

*Noise Unlimited, Inc. Boat Noise Tests Using Static and Full Throttle Measurement Methods for the New Jersey State Police (1995)

**FHWA Construction Noise User's Guide (2006)

This is what Dr. Clark presumably was NOT shown: Table 3-3 in the earlier June DEIS


National Park Service
U.S. Department of the Interior

Point Reyes National Seashore
California

Drakes Bay Oyster Company
Special Use Permit
Draft Environmental Impact Statement

REVIEW ONLY – NOT FOR PUBLIC DISTRIBUTION

Internal Review Draft
EQD/Park/Region/Cooperating Agencies
June 9, 2011

Table 3-3 "Noise Generators at DBOC" from June 2011 administrative (not for public distribution) version of NPS draft EIS for Drakes Bay Oyster Company

June 2011 version NPS DEIS

Table 3-3. Noise Generators at DBOC

Equipment	Description	Frequency of Use (weather permitting)	Estimated dBA at 50 feet (Hourly Value)
Motor Boat	20 HP, 4 cycle engine	Up to 12 40-minute trips/day	71*
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Pneumatic Drills	Handheld hydraulic drills	Approx 2 hours/day	85**
Oyster Tumbler	Rube for sorting oysters by size, run by electric motor	Approx 2 hours/day	79**

Source for equipment, descriptions, and frequency: DBOC, Lunny, pers. comm. 2011k

Source for sound estimates:

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**FHWA Construction Noise User's Guide (2006)

September 2011 version NPS DEIS

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Sources: †DBOC [Lunny], pers. comm., 2011h; *Noise Unlimited, Inc, 1995; **FHWA 2006.

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Source for equipment, descriptions, and frequency: DBOC, Lunny, pers. comm. 2011k

Source for sound estimates:

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Forklift	60		79**
Pneumatic drills	H		85**
Oyster tumbler	Tube for sorti … by size, run by electric … tor	Approximately 2 hours/day	79**

- "Estimated" became "Representative"
- Full citations to sources disappeared
- Sources appeared to be of DBOC

Sources: †DBOC [Lunny], pers. comm., 2011h; *Noise Unlimited, Inc, 1995; **FHWA 2006.

[a] Hourly values

June 2011 version NPS DEIS

Table 3-3. Noise Generators at DBOC

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Oyster Tumbler	Rube for sorting oysters by size, run by electric motor	Approx 2 hours/day	79**

Source for equipment, descriptions, and frequency: DBOC, Lunny, pers. comm. 2011k

Source for sound estimates:

*Noise Unlimited, Inc. Boat Noise Tests Using Static and Full Throttle Measurement Methods for the New Jersey State Police (1995)

**FHWA Construction Noise User's Guide (2006)

This is what Dr. Clark was NOT shown: Table 3-3 in the earlier June DEIS

PWIA Personal Watercraft Industry Association

How we found the Noise Unlimited 1995 study

* A-Scale Sound level (dBA) measurements at a distance of 50 feet. A-Scale approximates the sensitivity of the human ear and is used to note the intensity or annoyance level of sounds. Data from NUI Report No. 8077.1, New Jersey State Police-Marine Division. Nov. 1, 1995.

See the full study conducted for the New Jersey State Police by Noise Unlimited, Inc. Boat Noise Tests Using Static and Full-Throttle Measurement Methods (1995). Please keep in mind that this test was conducted in 1995, and personal watercraft manufacturers have achieved a 70% reduction in sound levels since 1998.

Dr. Clark's response when he learned NPS data were not from Drakes Estero

On March 21, 2012, Dr. Chris Clark acknowledged that:

(1)When he said NPS data were "***robust***" and "***compelling***," he believed the numbers were from oyster farm boats and equipment at Drakes Estero;

(2)He did not know the numbers for oyster boats came from New Jersey State Police 1995 measurement of **Kawasaki 750 cc, 2-stroke, 70 HP Jet Ski**;

(3) He did not know the numbers of oyster equipment came from Federal highway administration measurements of **construction equipment**;

(4)He believes the use of the measurements from other places was **"*inappropriate*"** and **"*misleading*"**;

(5)As a scientific reviewer of the dEIS, he believes that he was "***deceived***";

(6)The numbers in Table 3.3 are significantly higher noise levels that what would probably be found at Drakes Estero;

(7)He **was unaware of the ENVIRON report** with acoustic measurements taken of oyster boats and equipment at Drakes Estero;

(8)Scientifically, his opinion would change *"in the sense that acoustic footprints of individual anthropogenic activities would be significantly smaller than assessed from the values in Table 3.3 …"*

(9)He does "***not believe that these activities have a biologically significant impact on wildlife …***"

DEIS knowingly deceived public and peer reviewers in Tables 4-2 to 4-4

TABLE 4-2. ESTIMATED MOTORBOAT SOUND DISSIPATION

September 2011 public version NPS DEIS

Distance from Motorboat (feet)	Sound Energy (dBA)	Functional Consequence*
50	71	Vocal communication will be difficult at more than 4 feet[1]
435	52	Interferes with interpretive presentation communication[1]
1,048	44	Noise exceeds the median ambient so daily ambient level measured.
2,658	35	Background sound levels exceed desired le classrooms, bedrooms, auditoria, and other indoor space here quiet and good listening conditions are important.[2]
7,062	24	Noise exceeds the median ambient sound level from the lowest daily ambient level measured.

"*lowest daily ambient level*" is not typical measure in an EIS

Tables 4-3 to 4-5 changed from the June 2011 non-public version of the NPS DEIS to Tables 4-2 to 4-4 in the September 2011 public version of the NPS DEIS. The distances required for the noise from the DBOC boats and equipment to dissipate compared to ambient level significantly increased as the measure of ambient noise level changed from L_{50} to something not found in the VOLPE 2011 report, and not found in other EIS and EA reports: the "*lowest daily ambient level*"

The public version of the DEIS used "*lowest daily ambient level*" which is not a standard measure of ambient noise. The non-public June version used the standard L_{50} in the equivalent tables.

June 2011 non-public version NPS DEIS

Table 4-3. Estimated Motorboat Sound Dissipation

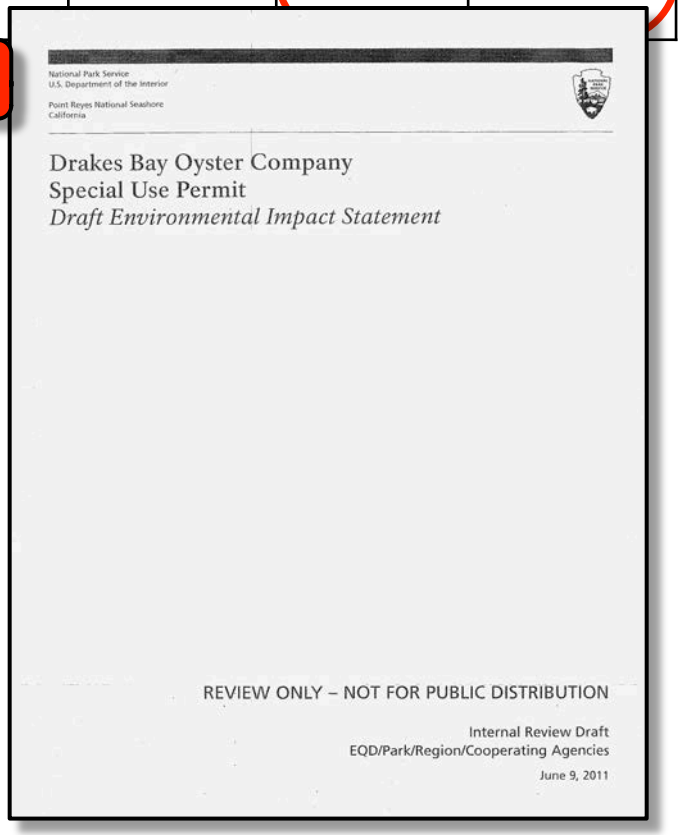
Distance From Motorboat (feet)	50	100	200	400	800	1,600	3,200
Sound energy (dBA)	71	65	59	33	47	41	35
Difference from Natural Soundscape (dBA)	37	31	25	19	13	7	1
Relative Loudness (compared to natural soundscape)	Almost 16 times as loud	Eight times as loud	Six times as loud	Four times as loud	Over twice as loud	Readily perceptible	Not perceptible

L_{eq}

L_{50}

L_{50} ambient level from VOLPE report.

Tables 4-3 to 4-5 changed from the June 2011 non-public version of the NPS DEIS to Tables 4-2 to 4-4 in the September 2011 public version of the NPS DEIS: the distances required for the noise from the DBOC boats and equipment to dissipate compared to ambient level significantly increased as the measure of ambient noise level changed from L_{50} to something not found in the VOLPE 2011 report, and not found in other EIS and EA reports: the "*lowest daily ambient level*"


National Park Service
U.S. Department of the Interior

Point Reyes National Seashore
California

Drakes Bay Oyster Company
Special Use Permit
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REVIEW ONLY – NOT FOR PUBLIC DISTRIBUTION

Internal Review Draft
EQD/Park/Region/Cooperating Agencies
June 9, 2011

June 2011 non-public version NPS DEIS

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Relative Loudness (compared to natural soundscape)	Almost 16 times as loud	Eight times as loud	Six times as loud	Four times as loud	Over twice as loud	Readily perceptible	Not perceptible

L_{eq} L_{50}

September 2011 public version NPS DEIS

TABLE 4-2. ESTIMATED MOTORBOAT SOUND DISSIPATION

Distance from Motorboat (feet)	Sound Energy (dBA)	Functional Consequence*
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1,048	44	Noise exceeds the median ambient so daily ambient level measured.
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7,062	24	Noise exceeds the median ambient sound level from the lowest daily ambient level measured.

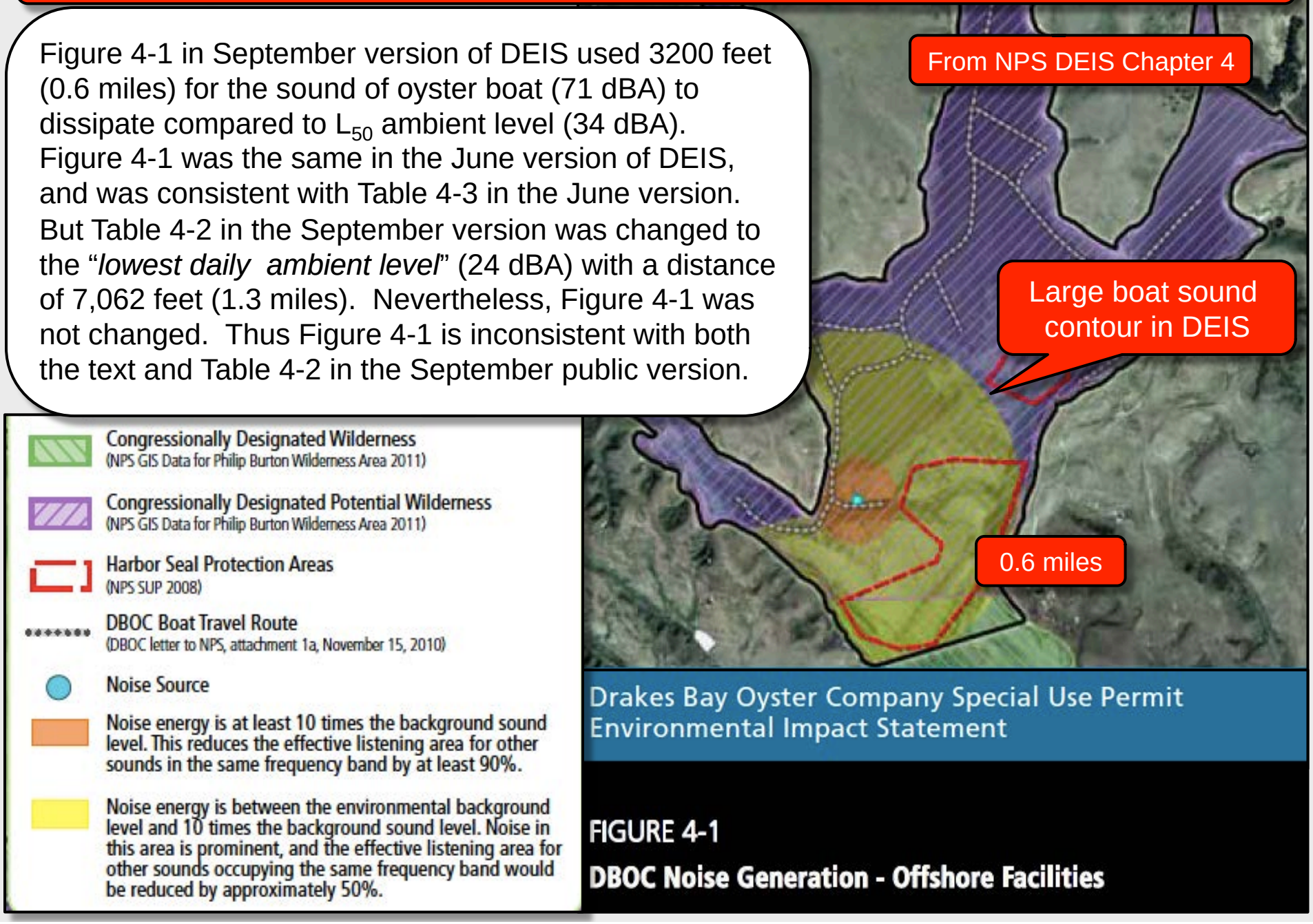
"*lowest daily ambient level*" is not typical measure in an EIS

Sources: [1]EPA 1981, [2]ANSI 2008

*Metrics are included for ease of comparison

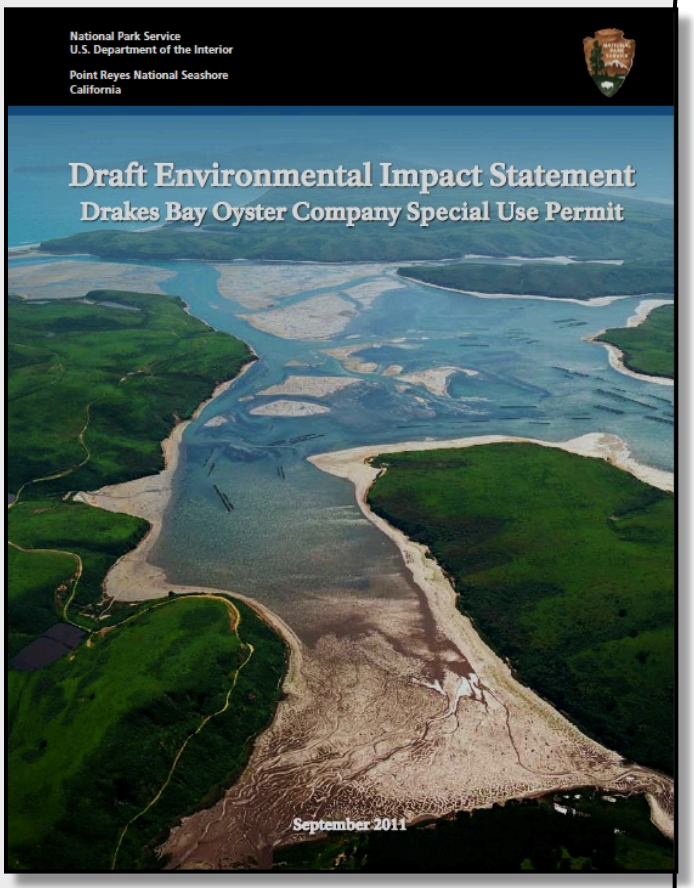
Figure 4-1 from September 2011 public version of NPS DEIS

Figure 4-1 in September version of DEIS used 3200 feet (0.6 miles) for the sound of oyster boat (71 dBA) to dissipate compared to L_{50} ambient level (34 dBA). Figure 4-1 was the same in the June version of DEIS, and was consistent with Table 4-3 in the June version. But Table 4-2 in the September version was changed to the "*lowest daily ambient level*" (24 dBA) with a distance of 7,062 feet (1.3 miles). Nevertheless, Figure 4-1 was not changed. Thus Figure 4-1 is inconsistent with both the text and Table 4-2 in the September public version.



A repeated pattern of NPS scientific claims that were knowingly deceptive

Conclusions



From 2007 to 2011, there is NPS pattern of false representations of data, suppression of data, and deception of the public:

- The suppression of key data that contradicted NPS claims in 2011 is similar to the suppression of the secret cameras, photos, and logs in 2010.
- The May 5, 2009 NAS report stated that time- and date-stamped photographed would help resolve the controversy. Unknown to NAS panel, NPS had such photographic data (showing no DBOC seal disturbances) since May 2007.
- The suppression of key data that contradicted NPS claims in 2011, and substitution with data from thousands of miles away and many years ago, is similar to how NPS dealt with oyster feces claims in 2007.

EXHIBIT

35

From: [redacted]
To: [redacted]
Subject: RE: Some Corey emails w/ Dr. Clark
Date: Wednesday, February 20, 2013 5:05:26 PM

From: [redacted] [mailto:[redacted]@gmail.com]
Sent: Thursday, February 14, 2013 8:04 PM
To: [redacted]
Cc: [redacted]; Corey Goodman
Subject: Some Corey emails w/ Dr. Clark

---------- Forwarded message ----------
From: **Corey Goodman** <corey.goodman@me.com>
Date: Wed, Mar 21, 2012 at 6:04 PM
Subject: Fwd: time sensitive request
To: [redacted] <[redacted]@erols.com>, [redacted]
<[redacted]@gmail.com>

Begin forwarded message:

From: Corey Goodman <corey.goodman@me.com>
Subject: Re: time sensitive request
Date: March 21, 2012 3:03:28 PM PDT
To: Christopher W Clark <cwc2@cornell.edu>

Hi Chris,

I think you're missing the point. The NPS clearly has a preferred alternative -- A -- they just didn't say so. Everyone involved knows what it is. You've missed many of their press releases and work via their surrogates. You shouldn't have any doubt. They have been trying for six years to convince the community and elected officials that they have scientific data to show environmental harm to wildlife, when they don't. In 2007, then Superintendent Neubacher (who reported to Jarvis) said to the County Supervisor that NPS had overwhelming data of harm to harbor seals. That is what triggered Kinsey calling in me and Senator Feinstein. Jarvis and Neubacher dug in rather than admit their mistake.

Their false claims have triggered reviews by the Interior IG, NAS, Solicitor's office, etc. They've been shown to have misrepresented their own data, to have used data from other places (Japan) as if it was data from Drakes Estero (sound familiar?), and to have been guilty of violating the NPS Code of Scientific and Scholarly Conduct. They've told Washington and the local community that they have scientific data. Their EIS actually has very little data.

About the only so-called data in the EIS are the acoustic data, and now you see that those are not Drakes Estero data, but rather New Jersey and Washington DC data of little relevance. You have inadvertently become involved in what is a metaphor for a big political mess -- NPS misuse of science. So you may think that this shouldn't be about scientific data, but in fact it is. They really don't have the legal basis to simply make the decision you think they can make -- they have been instructed to make it according to measures of environmental harm. There are numerous mandates from the Senate on this one.

You need to know about the Congressional mandates. Feinstein put into the Senate Appropriations Act in 2010 (I told you this has been going on for some time, and invoking many on both sides of the aisle in both houses of Congress) that they should extend the lease for 10 years after an EIS, and that the EIS should follow the NAS conclusions. The EIS did not follow the NAS study, but rather said it was not relevant in one sentence. That led to the Senate Interior Appropriations Act of 2012 (signed by the President right before Xmas) saying that the NAS should do a study of the science in the EIS (presumably paid for by Interior). Your peer-reviewed study is controversial because it is in place of the Congressionally mandated NAS study. So welcome to the politics.

My advice is that you should stay out of the politics, unless you want to learn more than you now know. It is complicated, and doesn't look good for NPS. Instead, to keep yourself clean, you should stick to the data. That is your expertise. That is what you were asked to review. You were deceived. You were shown data from other equipment and other places and told it was from Drakes Estero. The really numbers are apparently much lower. End of story. Of course, if asked, the acoustic numbers don't indicate any harm to wildlife.

All you need to do is tell the truth about the data, and let others worry about the politicals and legal situation. What seems simple or straight forward to you is much more complicated, and I do not profess to be a pro on it. I, like you, am a scientist, and simply look at data as asked by our elected officials.

Best,

Corey

On Mar 21, 2012, at 2:40 PM, Christopher W Clark wrote:

Corey,

Thanks for the ENVIRON info. This seems almost all about process and not about substance.

I know why one would use dBA for assessing noise effects and influences on humans. However, dBA should not be used when assessing potential effects and influences on non-humans: e.g., birds, marine mammals.

Neither the DEIS nor the ENVIRON material realistically deals with the actual sound fields experienced as a result of exposure to the different sources. The "overstated factor" column is cute, but pretty meaningless actually.

In any case, to me this is really not about the science of absolute or even relative sound fields generated by various machines and things that humans do. There are too many horror stories on that front, and even the blatant ones mostly go unmitigated, unless humans might be harmed (This one is trivial.) Rather, it's about whether or not and just how much society values wilderness. In this case, it really doesn't matter whether the DEIS incorrectly gives 79 dBA or 65 dBA as the sound value for a "Frontend Loader." The issue is really about whether we, or whomever, decide that there are places that should be left alone in avery way possible.

If the decision is to allow Drakes to continue operating, then one has to accept the fact that within that National Seashore there will be times and places when one will hear and experience things that are not natural. Furthermore, one also has to accept the fact that even if the decision was to close down the Drake operation, there would still be times and places in the Park when one would hear and experience things that were not natural - like planes from SFO, or the distant rumble of traffic.

So I'm not really sure what all the fuss is about, really. Was this deliberate, or just the result of someone cutting and pasting and not understanding sound, sound levels, dBA etc.? The DEIS did not choose a preferred alternative. What's next?

Cheers,

Chris

On 3/21/12 4:33 PM, "Corey Goodman" <corey.goodman@me.com> wrote:

Chris,

Take a look at this. I just included on pages 11-13 the report from ENVIRON. I've also included their entire report.

Corey

On Mar 21, 2012, at 1:05 PM, Christopher W Clark wrote:

I'll ask?

On 3/21/12 3:50 PM, "Corey Goodman" <corey.goodman@me.com> wrote:

Chris,

Why weren't you given the ENVIRON analysis submitted to NPS on December 9 showing the actual noise levels 12-825 fold lower than what you were given?

Interesting question.

Corey

On Mar 21, 2012, at 12:40 PM, Christopher W Clark wrote:

Corey,

Thanks for the informative and enlightening discussion. I've had three calls so far all asking the same basic question as to whether the reality of where the measurements came from or the inappropriate and significantly higher noise level values (from NJ!) change my opinion as to the fundamentals of the EIS. Scientifically they would in the sense that the acoustic footprints of individual anthropogenic activities would be significantly smaller than assessed from the values in Table 3.3, but not in terms of interpreting the report's overall presentation and conclusion, which is that DBOC activities do have a measurable acoustic influence on the acoustic scene in Drakes Estero. That said, I do not believe that these activities have a biologically significant impact on wildlife, but that was not something I was asked to comment on.

I did cross-check with one of my research scientists who received his phd from MIT on human acoustic perception, and he confirmed that 79 dBA at 50' (which is approximately 103 dBA re 1 microPascal at 1 meter) is an appropriate level for a the kinds of sources listed in the New Jersey table.

So for the two motorboat sound levels, they too seem to have arrived in the EIS table from the New Jersey shore - correct?

Cheers,

Chris

On 3/21/12 11:07 AM, "Corey Goodman" <corey.goodman@me.com> wrote:

Chris,

For our conversation, please take a look at this PDF and we can talk thru it page by page.

Thanks.

Best,

Corey

EXHIBIT

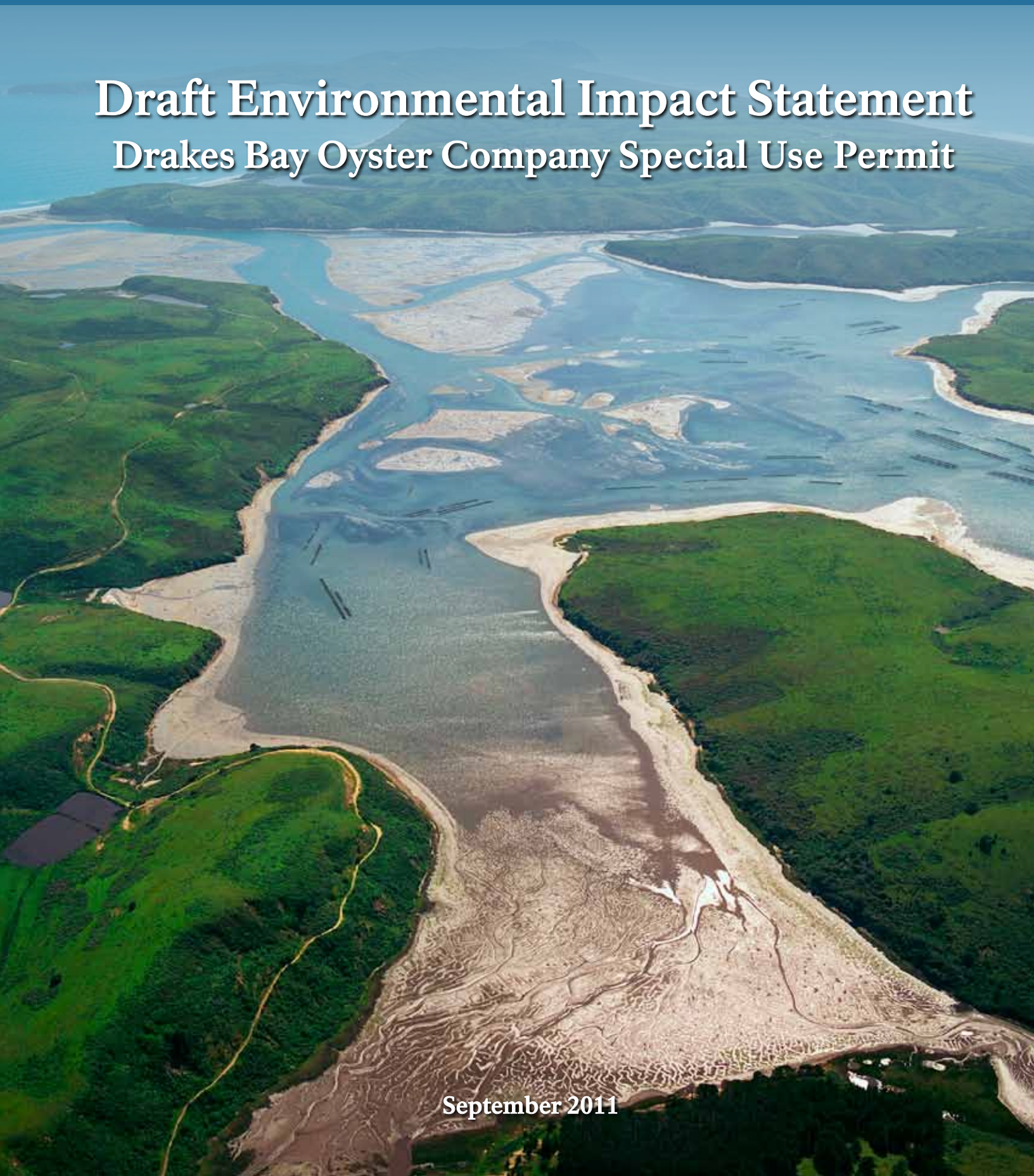
34

National Park Service
U.S. Department of the Interior

Point Reyes National Seashore
California

Draft Environmental Impact Statement

Drakes Bay Oyster Company Special Use Permit



September 2011

3

AFFECTED ENVIRONMENT

and they included natural sound energy from portions of the audio spectrum well above the noise energy generated by DBOC. Thus, these values overstate the natural background sound level in Drakes Estero relative to DBOC noise; however, it is the best available data and is a reasonable measurement of the existing soundscape against which comparisons can be made.

TABLE 3-2. INDOOR AND OUTDOOR SOUND LEVELS

Outdoor Sound Levels	Sound Level (dBA)	Indoor Sound Levels
	110	Rock band at 5 meters
Jet overflight at 300 meters	105	
	100	Inside New York subway train
Gas lawnmower at 1 meter	95	
	90	Food blender at 1 meter
Diesel truck at 15 meters	85	
Noisy urban area—daytime	80	Garbage disposal at 1 meter
	75	Shouting at 1 meter
Gas lawnmower at 30 meters	70	Vacuum cleaner at 3 meters
Suburban commercial area	65	Normal speech at 1 meter
	60	
Quiet urban area—daytime	55	Quiet conversation at 1 meter
	50	Dishwasher next room
Quiet urban area—nighttime	45	
	40	Empty theater or library
Quiet suburb—nighttime	35	
	30	Quiet bedroom at night
Quiet rural area—nighttime	25	Empty concert hall
Rustling leaves	20	
	15	Broadcast and recording studios
	10	
	5	
Reference pressure level	0	Threshold of hearing at 1 kHz

Source: Federal Highway Administration (FHWA) 1980.

Noise sources at DBOC are summarized in table 3-3. At 50 feet from the receptors, DBOC operations contribute between 71 and 85 dBA of noise to the natural soundscape within the study area. These dBA levels can be expressed in terms of NPS regulations regarding audio disturbances. The limit specified by NPS regulation is 60 dBA at 50 feet (36 CFR 2.12). A 71 dBA source (at 50 feet) has the same effect as more than 12 sources at the limit specified by NPS regulation. Additional perspective on how this sound is perceived and how it alters the soundscape of an area is discussed below.

The actual sound levels that would be experienced by a specific receptor would depend on the distance between that receptor and the noise source and the path noise would have to travel between the two points. In most environments, sound levels fall off with the square of distance from the source (spherical spreading loss), in addition to absorption and scattering losses that are directly proportional to distance. Spherical spreading loss alone causes a 20 dBA reduction in level with every tenfold increase in distance,

or an approximate 6 dBA reduction for every doubling of distance. Therefore, if a motorboat is measured to produce 71 dBA at 50 feet, a kayaker would experience approximately 51 dBA at a 500 foot distance. Note that the temperature inversions may form when the water of Drakes Estero is substantially colder than the ambient air. Under these conditions, sounds can travel much farther over water than would be predicted by spherical spreading loss.

TABLE 3-3. NOISE GENERATORS AT DBOC

Equipment	Description†	Frequency of Use (Weather Permitting)†	Representative Sound Level at 50 Feet (dBA)[a]
Motorboat	20 HP, 4-cycle engine	Up to 12 40-minute trips/day	71*
Motorboat	40 HP, 4-cycle engine	Up to 12 40-minute trips/day	71*
Forklift	60 HP diesel engine	2 to 4 hours/day	79**
Pneumatic drills	Handheld hydraulic drills	Approximately 2 hours/day	85**
Oyster tumbler	Tube for sorting oysters by size, run by electric motor	Approximately 2 hours/day	79**

Sources: †DBOC [Lunny], pers. comm., 2011h; *Noise Unlimited, Inc, 1995; **FHWA 2006.

[a] Hourly values

Topography can affect sound transmission through air. Steep topography such as the bluffs around some of Drakes Estero can block sound transmission. Because the 2009 sound measurements used in this EIS were taken on a bluff well above Drakes Estero, the measurements may have recorded limited mariculture-related noises.

Wind conditions also have the potential to impact noise levels. Wind can increase the natural background sound level. Wind also can cause sound to bend away from the ground in the upwind direction and towards the ground in the downwind direction. Therefore, sounds may carry farther downwind than would be predicted by spherical spreading and may carry less far upwind. Strong winds inhibit formation of the temperature inversions discussed in the previous paragraph. Because the project area is located near the ocean it is likely to experience frequent winds, capable of carrying sounds greater distances downwind and dissipating them in other directions.

The closest weather station to the project area is at the Point Reyes Light Station. Average wind speeds over the past year have ranged between 9 miles per hour on April 1, 2010, and 22 miles per hour on March 30, 2011. Over the course of the year, over 30 percent of days experienced an average wind speed of 10 miles per hour. This area is exposed along the coastline and is subject to high winds, with maximum wind gusts of 79 miles per hour on March 19, 2011 (Western Regional Climate Center 2011). Because of its exposed location, this weather station may experience more windy conditions than are experienced within the relatively sheltered Drakes Estero.

The hourly wind speed recorded at the bluff above Drakes Estero during the July/August 2009 sound monitoring varied between 1 and 9 miles per hour (Volpe 2011). For the sake of comparison, daily

average wind speed at the Point Reyes Light Station during the same period ranged between 2 and 25 miles per hour, with maximum gusts between 11 and 52 miles per hour (Western Regional Climate Center 2011). The actual sound levels at a particular receptor would be calculated based upon reference sound level data, the noise paths between the source and the receptor location, and the attenuation of sound levels over distance (FTA 2006). For instance, hikers along the Estero Trail would be unlikely to hear any of the noises associated with DBOC operations because of the noise attenuation associated with distance, wind, and topography.

Underwater sound levels at Drakes Estero have not been monitored by NPS, but several qualitative factors suggest that its natural sound levels would be unusually low. First, the relatively small expanse of Drakes Estero prevents generation of any substantial waves by wind. Second, this area is free from underwater sounds of breaking surf. Third, the narrow entrance and shallow bottom of Drakes Estero will prevent most sound originating outside of the system from intruding. Underwater soundscapes are generally more heavily affected by motorized boats than the above water environment. This is due to the capacity of sound to travel much farther in water than in air, the underwater exhaust systems of most boat engines, and the noise generated by cavitation from the propellers.

HUMAN AND WILDLIFE RESPONSE TO NOISE

The contribution of human-caused noise to the natural soundscape has the potential to impact wildlife and visitor use of the project area as well as the wilderness values of Drakes Estero. Noise has similar adverse effects on humans and wildlife. Noise interferes with sleep and communication, and it can present distraction or interference for other activities. Noise also interferes with hearing, preventing wildlife and humans from perceiving sounds they otherwise would have heard. Noise also causes physiological responses, and chronic exposure has been shown to elevate the risk of hypertension and stroke in humans (Jarup et al. 2008). Noise has been shown to annoy humans, though the degree of annoyance is idiosyncratic. Humans vary in their sensitivity to noise. Subjective responses to noise also depend upon the context. In the context of park noise management, it is important to characterize the resources and activities that are essential to the park's purpose (NPS 2000).

In the context of community noise management, some agencies have utilized laboratory studies of perceived loudness to interpret the effects of elevated levels of background sound. This practice has produced the generalization that a 10 dBA increase is perceived as roughly twice as loud. This subjective interpretation has several problems that discourage its application in national park settings. To illustrate its most serious defect, consider that a 10 dBA increase in noise exposure is produced when the number of noise sources is increased ten-fold. The subjective loudness interpretation asserts that ten times as many sources sound twice as loud, and one hundred times as many sources sound four times as loud. These assertions cannot be supported by science or everyday experience. In the dose-response studies where sound level is related to annoyance, the fraction of the community expressing annoyance roughly doubles with every 6 dBA of increase in noise level (ANSI 2008; ISO 2003).

EXHIBIT

36

Final Report on Peer Review of the Science Used in the National Park Service's Draft Environmental Impact Statement Drakes Bay Oyster Company Special Use Permit

March 2012

Atkins Project No.: 100025958

Given the length of the marine estuarine ecology and coastal zone management sections, the Atkins Team selected two reviewers with expertise in those fields and one reviewer for each of the other three subject areas. All candidates had advanced expertise (Ph.D. level) and a record of research and publication in their respective fields. The Atkins Team submitted the candidates to DOI representatives for approval. The reviewers are:

- Marine Estuarine Ecology and Coastal Zone Management: Dr. Ted Grosholz, University of California – Davis, and Dr. Dianna Padilla, Stony Brook University
- Water Quality: Dr. Charlie Wisdom, Parametrix
- Soundscapes: Dr. Christopher Clark, Cornell University
- Socioeconomics: Dr. James Wilen, University of California – Davis

The qualifications of each reviewer are included in this document as Appendix A.

2.2 Document Review and Report Development

Reviewers conducted their independent desk reviews of Chapters 3 and 4 of the DEIS (according to their respective areas of expertise) between January 27, 2012 and February 19, 2012. All comments were submitted to Atkins as individual memoranda and are included in this document as Appendix B.

The Atkins Team (Dr. Steven Courtney, Rebecca Burns) prepared a draft report that included: (1) the individual reviewers' comments including responses to the questions above; (2) a summary and analysis of the reviewers' responses; and (3) a recommendation as to whether the scientific information included in the DEIS is the product of appropriate scientific standards and approaches for using, interpreting and applying data and information to draw reasonable conclusions as it relates to the subject of the DEIS.

3.0 RESULTS

Summaries of the individual reviewers' comments on the five questions the reviewers were directed to address are presented below and organized by subject area.

3.1 Question 1: Are the scientific interpretations and analyses presented in the DEIS reasonable? If no, please identify those that are not and the specifics of each situation.

Marine Estuarine Ecology and Coastal Zone Management

Both reviewers agreed that, in general, the interpretations presented in the DEIS are reasonable, given the very limited data available for many of the topics. One reviewer (Grosholz) observed that impacts of oyster aquaculture on birds are speculative and unsupported by peer-reviewed publications, but noted that the report's authors cannot be faulted as there are no published data on these impacts. The other reviewer (Padilla) cautioned that "when there are no data to support or refute the notion that there is an impact, one cannot conclude that there is no impact" and noted that the National Research Council (NRC) report (NAS 2009) cited throughout the DEIS echoes that concept (Appendix B).

Both reviewers cited specific examples of interpretations in the DEIS that are not reasonable based on scientific evidence. Some comments were generally more minor (e.g., the DEIS ignores the potential for upward plant migration in response to sea level rise), whereas others were more significant. For example, the DEIS does not discuss the uncertainty associated with the estimates of eelgrass cover and damage due to boat propellers and does not include a citation for conclusions made about the most recent set of images (2010). Both reviewers commented that interpretation of oyster impacts could be significantly improved. Specifically, the DEIS bases interpretations of environmental impacts of *Crassostrea gigas* on studies conducted on *Crassostrea virginica*; however, the two species have very different biology and ecology. Much research has been published on environmental impacts of *C. gigas* in northern Europe, New Zealand and Australia that should be cited. The reviewers also noted other issues that are not fully discussed such as the risk of *C. gigas* and other cultivated species invasions to nearby areas, as well as several inaccuracies in the characterization of species as native vs. nonnative.

Water Quality

The water quality reviewer (Wisdom) found the analyses and interpretations of environmental impacts of oyster mariculture on marine water quality to be reasonable and appropriate in most aspects. One area of uncertainty was in the potential effects of chemicals leached from pressure-treated wood used by DBOC for docks and oyster cultivation racks. The reviewer cited National Oceanic and Atmospheric Association (NOAA) Fisheries guidelines for determining effects of chromate copper arsenate (CCA) leachate on juvenile coho salmon, which are known to be particularly sensitive to low levels of copper. The reviewer stated that the analysis does not provide sufficient detail to determine potential effects on this species.

Soundscapes

The soundscape reviewer (Clark) found the scientific interpretations and analyses in the DEIS to be reasonable and adherent to standard techniques and metrics. The reviewer noted several aspects that may require further examination, such as whether human noise footprints from DBOC activities have increased since 1995 when one of the two cited data sets was collected, as well as a working assumption related to nighttime versus daytime background sound levels and propagation that does not include supporting information.

Socioeconomics

The socioeconomics reviewer (Wilen) found that the methods used to conduct the economic assessment do not follow accepted economic impact analysis practice and the data required to conduct such an analysis (e.g., measures of value of gross sales, cost of labor and other materials for DBOC) missing from the DEIS. Economic impacts are assessed using qualitative judgments instead of quantitative measurements, leading to "unsubstantiated inferences and interpretations of impacts that are difficult to judge reasonable" (Appendix B).

3.2 Question 2: Do the authors of the DEIS draw reasonable and scientifically sound conclusions from the scientific information presented in the DEIS? Are there instances in the DEIS where a different but equally reasonable and scientifically sound scientific conclusion might be drawn that differs from the conclusion drawn by the NPS? If any instances are found where that is the case, please provide the specifics of that situation.

Marine Estuarine Ecology and Coastal Zone Management

The reviewers noted several exceptions where conclusions were not reasonable and/or scientifically sound, or other conclusions may be drawn. Both reviewers disagreed with the conclusion "Recreational take of clams would not interfere with preservation of wilderness characteristics in Drakes Estero," stating that recreational clamming causes significant disturbance to benthic habitats and eelgrass through digging and/or raking sediment. The reviewers also point out several instances where statements are made or alluded to without sufficient supporting information. For example, Padilla noted that positive effects of oyster culture on eelgrass (*Zostra marina*) are alluded to; however, there are no data to support this idea. She also stated that the DEIS assumes that the expansion of aquaculture activity will increase loss of eelgrass in linear fashion, but there are no data supporting that assumption. Grosholz commented that the DEIS states that the source of several species invasions in Drakes Bay was aquaculture, but this is a likelihood argument as the source of the primary invasion is unknown. Finally, Padilla observed that the relative impact of the two oyster culture methods (off-bottom racks versus on-bottom bags) was not consistently applied when assessing the impacts of the alternatives, affecting the DEIS conclusions.

Water Quality

Wisdom stated that the scientific information used in the analysis is adequate and appropriate for the types of disturbances and impacts under evaluation. He noted that alternate conclusions (direct adverse effect versus no direct adverse effect) could have been drawn with regard to the potential impacts of leachates from CCA-treated lumber on juvenile coho salmon. The flushing rate of Drakes Estero is likely to be high enough to dilute concentrations below fish thresholds; however, the amount of wood to be replaced annually exceeds NOAA Fisheries loading rates for coho salmon.

Soundscapes

Clark found the conclusions presented in the DEIS to be reasonable and supported by available data and scientific concepts.

Socioeconomics

As described in Question 1, Wilen found that the DEIS derives qualitative impact assessments with minimal comparative data and undefined criteria, leading to conclusions that are "vague at best, and misleading at worst" (Appendix B). He further noted that the conclusions seem to insinuate that a "small" impact is equivalent to no impact; however, this is a slippery slope because multiple small impacts could be seen as having no collective impact because they were each evaluated in isolation.

EXHIBIT

37

United States Department of the Interior

OFFICE OF THE SOLICITOR
Washington, D.C. 20240

March 22, 2011

MEMORANDUM

TO: Will Shafroth
Acting Assistant Secretary for Fish and Wildlife and Parks

THROUGH: Arthur E. Gary
Deputy Solicitor

FROM: Gavin M. Frost
Attorney-Advisor

SUBJECT: Public Report on Allegations of Scientific Misconduct at Point Reyes National Seashore, California

On November 22, 2010, an individual submitted information to Secretary Salazar and requested that the U.S. Department of the Interior (DOI) investigate whether "officials and scientists in the National Park Service violated a series of federal government rules, regulations, and codes, and in so doing committed scientific misconduct." The informant asserted that research misconduct occurred when NPS employees working in the Pacific West Region (PWR) allegedly "suppressed" or "failed to disclose" existing and available "NPS data in the form of over 250,000 digital photos...and detailed logs of those photos." The subject photographs and explanatory logs primarily involve anthropogenic activities and harbor seal populations/activities in the upper portion of Drakes Estero within Point Reyes National Seashore (PORE), California.

Wanting to conduct a careful examination of relevant events, DOI's Assistant Secretary for Fish and Wildlife and Parks immediately contacted the Office of the Solicitor (SOL). Consistent with a verbal petition for assistance made by the Assistant Secretary, SOL directed an attorney with substantial employment law experience to gather relevant information, make factual findings, and offer legal advice.

SOL reviewed relevant documents and interviewed the informant, the affected NPS employees, and twenty other individuals. The factual record firmly supports conclusions that there was no criminal violation or scientific misconduct, but that NPS, as an organization and through its employees, made mistakes which may have contributed to an erosion of public confidence. Specifically, several NPS employees mishandled research in the form of photographic images showing the activities of humans, birds, and harbor seals at upper Drakes Estero in PORE.

These errors made by NPS employees, and the circumstances that surround their actions, do not support inferences sufficient to prove the demanding element of intent associated with "scientific misconduct." That charge, which does not include "honest error or differences of opinion," requires, among other things, an intent to defraud, deceive, or mislead by "manipulating research materials,

or changing or omitting data or results such that the research is not accurately represented in the research record."

The following report summarizes the facts gathered, the conclusions drawn, and the counsel provided to the Assistant Secretary. SOL has separately provided the Assistant Secretary additional information that cannot be released publicly regarding the identities of the employees and legal advice. The withheld information that supplements this report is protected by applicable law, including the Privacy Act and applicable FOIA exemptions.

I. Submission Dated November 22, 2010

The submission to Secretary Salazar targets six NPS employees: two senior executives identified herein as SE1 and SE2; and four scientists identified herein as S1, S2, S3, and S4. The informant speculated, however, that other Agency employees may have knowingly advanced the research misconduct and encouraged DOI to identify and punish them as well. Facts gathered by the assigned SOL attorney do not support that speculation.

The informant claimed that the subject photographs and logs "refute[]" and contradict "false NPS claims" that shellfish mariculture[1] activities disturb and negatively impact harbor seal populations in upper Drakes Estero. According to the informant, the six NPS employees made the allegedly "false [] claims...in presentations, testimony, and publications during the period 2007-2010," knew that the photographs and logs (*i.e.*, research data) undermined their "false" disturbance claims, and consequently concealed the research data from the Marin County Board of Supervisors, U.S. Senator Dianne Feinstein (D-Calif.), the DOI Office of Inspector General (OIG), the National Academy of Sciences (NAS), the U.S. Marine Mammal Commission (MMC), and others, including the public generally. The informant opined that failure to disclose the research data represented criminal misconduct in violation of 18 U.S.C. 1001, research misconduct or "scientific misconduct" as defined by Federal policies, and administrative misconduct in violation of an applicable NPS Code of Scientific and Scholarly Conduct.

Convinced that the collective or individual research misconduct has "damaged, possibly fatally," the EIS process related to continuation of shellfish mariculture activities within PORE, the informant urged DOI to "re-establish scientific integrity within NPS." S/he maintains that DOI will achieve that end only by abandoning the "false science," taking "appropriate [disciplinary] actions" against all NPS employees who acted improperly, removing them from the EIS process, and restoring public confidence in the "ongoing EIS process."

II. Background

Pursuant to valid and binding legal agreements, the Drakes Bay Oyster Company (DBOC), owned by more than one individual, presently operates a private shellfish mariculture business within PORE

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[1] A specialized branch of aquaculture, "mariculture" involves the cultivation of marine organisms in the natural environment.

and may lawfully continue operations through November 2012. An EIS process, initiated in September 2010, will address DBOC's authority to continue operations after November 2012.

Anticipating the battle over termination/extension of DBOC mariculture operations after November 2012, the *Point Reyes Light* published, on May 18, 2006, a provocative article entitled, "Drakes Bay Oyster Company has little impact on estero." The first sentence asserted that a "century of oyster farming has had much less impact than scientists expected on the ecosystem of Drakes Estero in the Point Reyes National Seashore." Interpreting studies not only funded by the NPS but also developed or co-authored by NPS employees, including S1, S2, and S3, the article's author wrote that the "oyster operation has no statistically significant effects on the estuary's water quality, fish, and eelgrass." The article quoted several individuals, including S1, who claimed that shellfish mariculture does "negative[ly] impact" the ecosystem in Drakes Estero, and DBOC's principal owner, who "said that the studies confirmed [her/his] prior belief that [her/his] oyster farm plays a positive role in the estuary's ecosystem." Although silent as to the direct cause-effect relationship between DBOC mariculture operations and harbor seal disturbances, the article triggered various NPS responses and laid the foundation for present criticism of NPS employees.

From May 18, 2006 to approximately July 2007, NPS employees devoted significant time and energy to rebutting the claim that DBOC mariculture operations positively influenced Drakes Estero. The OIG thoroughly documented those extensive efforts in a report[2] issued to the NPS Director in July 2008. Facts referenced in that OIG report support many conclusions, including the following: 1) that verbal and written statements made in private and public by NPS employees, including comments found in various versions of the document entitled "Drakes Estero: A Sheltered Wilderness,"[3] reflect a lack of scientific objectivity; 2) that the "NPS perspective of 'pristine' wilderness" embraces the view that "somebody coming in and doing a harvesting operation [in Drakes Estero] just intuitively is negative"; and 3) that NPS employees, including SE2 and S1, believed "that activities associated with commercial shellfish operations (oyster farming)...disturb[] harbor seals at Drakes Estero."

Population statistics, from the harbor seal pupping and breeding seasons (March-May/June) in 2005 and 2006, led S1 to conclude that the subject pinnipeds were not hauling-out at subsites in upper Drakes Estero with the same frequency as during pupping and breeding seasons which preceded 2005, when DBOC took over operations from the declining Johnson Oyster Company. S1 attributed the decrease in harbor seals to factors and disturbances which s/he could not with certainty attach to DBOC mariculture operations because no objective, unequivocal evidence, in 2005 and 2006, revealed that DBOC had caused any disturbance(s). Although volunteer observers had seen and documented a motor boat disturbing harbor seals in upper Drakes Estero on May 6, 2006, DBOC denied, without rebuttal from NPS, ownership of the subject motor boat. Thus, the evidence

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[2]DOI Office of Inspector General, *Report of Investigation - Point Reyes National Seashore*, Case Number OI-CA-07-0297-I (July 21, 2008).

[3]With assistance and editorial review from several NPS employees, including S3, S1 wrote much of the "Sheltered Wilderness" document. The OIG report concluded that S1 "misrepresented research" in the initial versions of the "Sheltered Wilderness" document. However, the OIG report offered no definition of "misrepresent[ed]" and presented no careful, detailed analysis of facts regarding S1's intent.

insufficiently identified that disturbance, in the 2006 pupping season, as one caused by DBOC mariculture operations.

To understand the disturbance source(s) and the reason(s) for what s/he believed to be lower pinniped attendance at subsites in upper Drakes Estero, S1 decided, in late 2006 or early 2007, to purchase and install a remote, digital wildlife camera on land overlooking relevant subsites. S1 did not consult SE1, S2, S3, or S4; instead, s/he discussed the decision only with her/his direct supervisor at that time, SE2, who approved the expenditure but gave S1 no directions regarding camera purchase, installation, or use. Indeed, S1 takes full responsibility for all decisions related to the monitoring camera in 2007.

On or about April 20, 2007, Reconyx, an industry leader in the manufacture and sale of game cameras, processed S1's order for a Silent Image camera. Six days later, S1 visually observed DBOC mariculture operations cause three separate and distinct harbor seal disturbances in upper Drakes Estero on Thursday, April 26, 2007. S1 contemporaneously memorialized, in writing, her/his visual observations which directly linked, for the first time, DBOC mariculture operations to harbor seal disturbances during a pupping season.

On Sunday, April 29, 2007, three days after S1's visual observations and written documentation, which s/he labeled a "trip report," volunteer surveillants[4] at Drakes Estero witnessed and documented two additional harbor seal disturbances caused by DBOC mariculture operations. Details of these pinniped disturbances were written in field notes and eventually included in the relevant database for harbor seal monitoring activities at PORE.

Aware of all five disturbance events and personally convinced that DBOC mariculture operations had deterred harbor seals, especially in 2007, from hauling-out at subsites in upper Drakes Estero with the same frequency as during pupping seasons prior to 2005, S1 secured the Silent Image camera to land on the east side of Drakes Estero (opposite the volunteer monitoring site and closer to, but well above and more than 250 meters from, primary harbor seal haul-out subsites). Placement occurred without public announcement in early May 2007, and unbeknownst to the public, the informant, DBOC, and most NPS employees, the camera began taking digital photos on May 5, 2007.

On Tuesday, May 8, 2007, a volunteer observer witnessed another harbor seal disturbance directly caused by DBOC activities (*i.e.*, the sixth mariculture-related disturbance observed in less than two weeks) at Drakes Estero. However, S1 inexplicably failed to analyze the photographic images on

[4]PORE maintains a harbor seal monitoring program at Drakes Estero, through which NPS trains and mentors volunteer observers. The volunteers, who must commit to a minimum of two survey days per month for a total of ten survey days from March - July, hike to a designated spot in the southwest area of Drakes Estero, use binoculars and spotting scopes, conduct population surveys at medium to low tides, and take detailed field notes of harbor seal populations and disturbances. The notes become part of a monitoring database, which NPS employees, especially S1, S2, and S3, deem quite reliable. The trustworthiness of each human observation remains the subject of heated debate and provides the cornerstone for the present scientific quarrel.

that date (or soon thereafter)[5] for confirmation of the volunteer's visual observation, which was not followed by any other 2007 events or volunteer observations involving DBOC as the cause of harbor seal disturbances during the pupping/suckling/mating season in upper Drakes Estero.

Additionally, on Tuesday, May 8, 2007, S1 attended, with SE2 and an NPS wildlife biologist, a public meeting of the Marin County Board of Supervisors. During the public session that morning, S1 and SE2 uniformly expressed concern for the upper Drakes Estero harbor seal pupping areas, which the latter described as "seriously threatened right now." S/he also stated that "it's amazing how many [harbor seal] pups we have probably lost this year. So we've got a serious problem right now." S1 told attendees, including the informant, who first became involved in the upper Drakes Estero/harbor seal debate at the May 8 meeting, that "[o]ver the past few weeks, we have documented oyster operations disturbing mothers with pups, and oyster bags left on sandbars where seals would normally give birth and nurse their pups. The harm is resulting in abandonment of one area where more than 250 seals, including 100 pups two years ago [meaning 2004, not 2005], occurred in that spot. This year, chronic disturbance and the placement of bags on the nursery areas has caused an 80-percent reduction in the seals, dropping to around 35 this last Saturday. I was out there on Saturday, [May 5, 2007]."

Hearing comments from both S1 and SE2 and their uniform assertions that the "issue...has 'national' significance," the casual listener could easily, but incorrectly, have concluded that the harbor seal population at Drakes Estero might soon collapse due to DBOC's mariculture operations. Indeed, S1's inartful use of language and statistics, failure to note the possibility of normal fluctuations in harbor seal numbers, failure to emphasize the need for significantly more data from monitoring activities, and willingness to allow subjective beliefs and values to guide scientific conclusions needlessly raised alarms and forced immediate reactions from DBOC and the informant, who legitimately contested S1's subjective conclusions, vague temporal and geographic references, and questionable mathematic calculations.[6]

At the meeting on May 8, 2007, the informant broadly challenged the claims of "chronic disturbance" and "abandonment of one area" and "80-percent reduction," but because s/he had not received and reviewed the "scientific" monitoring data on which S1's comments relied, the informant's comments lacked specificity. To remedy that problem, the informant immediately requested, through FOIA, that PORE produce data supporting S1's claims of dramatic decreases in the harbor seal population(s) at upper Drakes Estero. Unaware of the monitoring camera, the

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[5]On or about September 30, 2010, S1, S2, and S3 did review the photographic images from May 8, 2007, and determined that the camera's limited field of view prevented confirmation of the visual observation made by the volunteer witness. However, the digital photos indirectly contradicted the human observation by showing seemingly undisturbed harbor seals near the location of the alleged harassment.

[6]S1's imprecise use of words and clumsy use of numbers, such as "abandonment of *one area* [no specifics] where more than 250 seals, including 100 pups *two years ago* [actually three years], occurred in that spot" and "*chronic* [on only two dates] disturbance and the placement of bags on the nursery areas has caused an *80-percent reduction* [significantly less than 80% depending on subsite(s)] in *the seals*, dropping to *around 35* [no subsite reference] this last Saturday," spawned much of informant's criticism after May 8, 2007, and fueled verbal and written assaults on NPS officials and scientists, whom the informant has repeatedly accused of misrepresentation and scientific misconduct.

informant did not specifically request any photographic images, and such data, the collection of which began only three days before the meeting date, was obviously not the scientific material that supported S1's statements made on May 8, 2007. It follows that NPS, which initially denied (as protected by FOIA's deliberative process exemption) part of the informant's FOIA requests in June 2007, could have properly responded to the subject FOIA requests without referencing the camera and photographic data. However, clearly afforded disclosure opportunities at the May 8 meeting and through the informant's subsequent FOIA requests, S1 failed to mention the camera which began taking photographs of and near the allegedly "abandon[ed]" haul-out "area" at upper Drakes Estero on May 5, 2007.

Defending her/his failure to disclose the camera's existence voluntarily to the informant, the Marin County Board of Supervisors, and DBOC, on and soon after May 8, 2007, S1 insists that the project (which s/he declined to call research) had just begun, and s/he intended for the camera to monitor and capture any and all harbor seal disturbances in upper Drakes Estero, not solely DBOC activities. However, substantial problems limited the camera's utility as described by S1, who never designed or established any scientific method(s), protocol(s), or process(es) to achieve intended results. Camera position and northwestern orientation, poor picture quality, blurry images, significant distances, the absence of sound, lack of a zoom lens, a narrow field of view, loss of approximately 59¾ seconds out of every minute from 0700 to 1900 hours daily, and the presence of wind, fog, and nearby foliage collectively interfered with the camera's ability to capture information other than sporadic but insignificant DBOC mariculture activities. The camera was not well-suited or positioned to assess the health of pinniped populations or marine mammalian use of haul-out subsites in upper Drakes Estero, or to document disturbances from avian sources such as turkey vultures; from terrestrial predators such as coyotes and bobcats; or from aircraft, hikers, recreational clammers, or many other anthropogenic activities. In addition, the camera did not produce photographic images when S1's duties prevented her/him from monitoring the device with sufficient frequency to remove and replace dead batteries and full memory cards.

Significantly, during the research process and after the camera stopped taking photographs on or about June 19, 2007, S1 did not carefully or completely analyze the photographic data gathered in May and June 2007. S/he did not examine, and still has not examined, all of the nearly 27,000 images to count pinnipeds in Drakes Estero or to identify disturbances and their sources or to measure the use of haul-out subsites by harbor seals within the camera's narrow field of view. Instead, s/he reviewed about 15-20% of the data (or approximately 5,000 images), found the evaluation process tedious and time-consuming, and failed to look carefully at images from May 8, 2007. Seeing no images that documented harbor seal disturbances or obvious deterrence caused by DBOC mariculture operations, S1 characterized the photographic images as largely inconclusive and as ancillary data to visual observations and surveys infrequently made or done by the volunteer witnesses (located some distance away, on the opposite side of Drakes Estero), and abandoned the photographic data without fully disclosing the existence thereof, without producing any report(s), without including or referencing photographic data in the harbor seal monitoring database, and without inviting independent analysis or peer review of the photos. In S1's scientific opinion, the photographic images did not merit close examination in 2007, including May 8, 2007, because the data did not represent scientific activity in the form of monitoring compatible with, or distinct from,

volunteer observations from the southwest corner of Drakes Estero. S1 placed a very high value on human observations and a very low value on the photographic data. S/he declined to speculate on whether and how that latter value would have changed if any photo(s) had clearly shown DBOC mariculture operations disturbing harbor seals in upper Drakes Estero.

From June 2007 through July 2008, S1 neither actively disclosed nor consciously concealed the photographic data, but rather, passively ignored the digital images while s/he responded to many relevant events which occurred in that period. For example, during that block of time, OIG investigators interviewed (June 2007) and re-interviewed (March 2008) S1, who openly and truthfully provided facts for the OIG report issued in July 2008. Specifically, the OIG investigators confined their questions regarding Drakes Estero harbor seals to DBOC's "complaint about NPS redrawing the boundaries of harbor seal sites," the "accuracy of statements that [SE2] and [S1] made before [the Marin County Board of Supervisors on May 8, 2007]," and the "veracity" of S1's disturbance observations made on April 26, 2007. The latter issue, on which the OIG report offered no opinion, derived from a claim presented by the informant, who not only insisted (and still insists) that DBOC could not and did not use, on that date, the "white boat" which allegedly created the pinniped disturbances, but also attached labels of "fabricated" and "false NPS science" to S1's observations made and documented on April 26, 2007.

Uninterested in "determin[ing] whether DBOC was disturbing seals or encroaching on their habitat in [upper Drakes Estero]," the OIG investigators did not ask S1 questions related to that issue and did not expressly welcome monitoring data, such as visual observations and photographic images, which pertained to pinniped disturbances on any date other than April 26, 2007, a date prior to camera installation. As a result, S1 had neither the obligation nor the invitation to disclose or produce data related to the camera. Nevertheless, in June and October 2007, when PORE, S1, SE2, and other NPS employees voluntarily granted OIG investigators unfettered access to their network, databases, and computers, which unquestionably included the photographic data gathered at Drakes Estero in May and June 2007, OIG personnel had access to scientific material that the informant asserts was hidden or suppressed by NPS employees. While passive in the manner of production, NPS employees, specifically S1, nevertheless made the photographic data available to OIG investigators.

On July 21, 2007, in Olema, California, Senator Feinstein met with DBOC's principal owner, SE1, SE2, the informant, the NPS Director, and several others, excluding S1. Those in attendance at the Olema meeting, to which the event is often referred, discussed, among other things, 1) denial of the informant's FOIA requests for data supporting claims that pinnipeds had abandoned haul-out subsites and that harbor seal numbers had dramatically decreased at upper Drakes Estero, and 2) analytic or scientific weaknesses found in the "Sheltered Wilderness" document written primarily by S1. Other than SE2, no meeting participant knew about the photographic data, and s/he had no scientific or administrative reason to believe the images, collected beginning May 5, 2007, responded to FOIA requests which sought data in support of S1's scientific conclusions communicated on May 8, 2007. In addition, neither the camera nor the photos related in any way to the "Sheltered Wilderness" document or its flaws. Equally significant, SE2 denied knowing, at the time, about the harbor seal disturbance observed by a volunteer at Drakes Estero on May 8, 2007. It follows that

the topics of the Olema meeting, combined with S1's absence and SE2's limited knowledge of disturbances and the photographic data, did not warrant any disclosure to those present that S1 might possess new, potentially inconclusive, information related to the harbor seal population(s), pinniped abandonment of haul-out subsites, and anthropogenic disturbances in upper Drakes Estero.

However, the Olema meeting did provide the informant a forum to launch an initial attack on S1, whom the informant accused of misrepresenting science in the "Sheltered Wilderness" document. Criticizing S1's scholarly analysis and calling S1's actions "scientific misconduct," the informant convinced participants at the Olema meeting to involve independent science experts for the purpose of examining data, including the "Sheltered Wilderness" document, and the effects of shellfish mariculture on the Drakes Estero ecosystem and harbor seal populations found therein.

Persuaded that an external review might allay public concerns regarding science at Drakes Estero, the Olema meeting attendees agreed that NPS officials would ask the NAS to convene an *ad hoc* committee which would issue reports, the first of which would assess the scientific basis for NPS presentations and for various revisions of "Sheltered Wilderness" regarding the ecological effects of DBOC's operations on Drakes Estero. NPS employees timely coordinated with the informant, jointly developed pertinent questions, and subsequently sought assistance from the NAS, which thereafter directed the request to the National Research Council's (NRC) Division on Earth and Life Studies, Ocean Studies Board, which convened the evaluation Committee on Best Practices for Shellfish Mariculture in Drakes Estero (Committee). This process took several months and seemingly redirected the analysis relevant to Agency evaluation of terminating/extending DBOC mariculture operations to one based primarily on science, not policy or property or law.

Within two weeks of the Olema meeting, as directed by Senator Feinstein and the NPS Director, PORE sent the informant scientific data responsive to FOIA requests which sought material supporting S1's claims, made on May 8, 2007, of dramatic decreases in harbor seal population(s) and pinniped abandonment of haul-out subsites in upper Drakes Estero. DOI and S1, who acknowledges that s/he had not comprehensively reviewed the digital photos, had not given them much weight, and had not relied on them when speaking to the Marin County Board of Supervisors, did not include or reference in the responsive data any of the digital photos taken by the Silent Image camera at Drakes Estero in May and June 2007.

The informant reviewed the data, unilaterally concluded that the provided information did not support comments made by NPS employees on May 8, 2007, rejected the possibility of honest but different scientific opinions, and immediately accused S1 and SE2 of scientific misconduct in the form of fabricated or falsified claims. The recent submission to Secretary Salazar alleges, in part, that failure to give informant the 2007 photos, which revealed no DBOC-caused disturbances of harbor seals in upper Drakes Estero, was intentional and designed to suppress data contradicting S1's and SE2's allegedly "false" claims, presented to the Marin County Board of Supervisors, that shellfish mariculture activities disturb and negatively impact harbor seal populations in upper Drakes

Estero. Both SE2 and S1 emphatically deny[7] omitting the photographic data, from the scientific information provided to the informant in August 2007, in an effort to deceive or to misrepresent the research record. As a factual matter, the decision to produce data without digital photos did not deceive or mislead the informant, who disagreed with S1's findings in the absence of photographic information. But the absence of photographic images from the scientific material sent to the informant arguably denied her/him additional evidence to discredit S1's scientific conclusions regarding pinniped harassment caused by DBOC mariculture operations at upper Drakes Estero during the 2007 pupping season.

In August 2007, the informant pressured SE1 to investigate claims of scientific misconduct that included S1's alleged misrepresentation of scholarly studies in the "Sheltered Wilderness" document and scientifically baseless conclusions presented in public with SE2 on May 8, 2007. When SE1 did not respond to that pressure and thus failed to produce results acceptable to the informant, the latter requested that the OIG (in November 2007), the NPS Director (in December 2007), and NAS/NRC (in December 2007) investigate said scientific misconduct, and SE1's or S4's attempt(s) to "cover-up" the problem(s) and prevent examination of the scientific misconduct allegations. Only the OIG, as evidenced by investigative questions posed to S1 and SE2 in March 2008, and language in the OIG report issued on July 21, 2008, accepted the informant's invitation and explored, albeit in a limited way, allegations of scientific misconduct.

In January 2008, consistent with agreements forged during the Olema meeting, and pursuant to joint efforts from the informant and NPS employees, the NRC's Division on Earth and Life Studies, Ocean Studies Board (OSB), convened the above-referenced evaluation Committee. On the Committee's behalf and to help the Committee produce its first report regarding DBOC and Drakes Estero, the OSB Director established and maintained contact with S4. However, neither the OSB Director nor any Committee member asked, in January 2008, that S1, S2, S3, or SE2 produce information regarding populations and disturbances of harbor seals in upper Drakes Estero. Like the informant, the OSB Director and the Committee members did not know about the digital photos taken at Drakes Estero in May and June 2007, and thus did not specifically ask NPS officials to produce such data.

On January 31, 2008, reacting quickly to renewed criticism from OIG, which questioned the lack of an applicable scientific integrity policy, the NPS issued an "Interim Guidance Document Governing Code of Conduct, Peer Review, and Information Quality Correction for National Park Service Cultural and Natural Resources Disciplines." The NPS Director attached the document to a memorandum, which was dated February 6, 2008, and sent specifically to members of the NPS National Leadership Council, including SE1, but not broadly to NPS employees. Only intended to

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[7]Supporting denials from S1 and SE2, the circumstances indicate that NPS withheld the digital photos simply because they did not represent the scientific basis for conclusions drawn on and before May 8, 2007, and public comments made by S1 and SE2 on that date. Hindsight confirms that NPS could have avoided the present controversy by voluntarily disclosing the camera and digital photos, which DOI now knows indirectly contradict NPS conclusions and comments relevant to the disturbance event observed on May 8, 2007, and indirectly support the informant's position. However, at the time, SE2 and S1, neither of whom anticipated subsequent problems, merely responded to information requests with existing facts and directly responsive data.

improve the internal management of NPS and primarily drafted to establish a peer review process, the Interim Guidance also set forth a "Code of Scientific and Scholarly Conduct,"[8] which obligated "all NPS employees working with scientific...information" to perform their duties in accordance with specific guidelines. The Code required NPS scientists, among other things, to "process data from, and communicate the results of scientific and scholarly activities honestly, objectively, thoroughly, and expeditiously" and to "fully disclose all research methods used [and] available data...in a timely manner and consistent with applicable laws and policy." Not a scientific integrity policy,[9] the Interim Guidance defined "research" as "[i]nvestigation aimed at the discovery and interpretation of facts...," and defined "scientific and scholarly activities" to include "monitoring," which involves the "systematic collection and analysis of natural and cultural resource data at regular intervals...to predict or detect natural and human-induced changes, and to provide the basis for appropriate management response." In addition, the Interim Guidance, which did not authorize personal or judicial enforcement against the NPS, offered no definition of the concept "research record," but did define the concept "research misconduct" to include "fabrication" and "falsification," and applied such terms through the Code of Conduct's reference to "scientific and scholarly misconduct."

S4, who became aware of the document in late February-early March 2008, S1, S2, and S3 uniformly deny receiving the Interim Guidance at the time of issuance and further deny that NPS senior executives and officials in the Pacific West Region or Washington, D.C., widely distributed the document or provided training or any explanation of its application to scientific activities. S3, who recalls learning of the document in May or June 2008, responded to a call for comments, but received no confirmation from NPS officials and no further communication on the document. All four acknowledge that the Interim Guidance, with the words "DRAFT DRAFT DRAFT" in the top left corner of each page, existed and arguably applied to their scientific actions through January 28, 2011, but they remain unclear as to its application and interpretation, with the exception of language related to peer review of proposals, studies, reports, and similar papers. Initially unaware of, but nevertheless required to follow, the Interim Guidance in and beyond February 2008, S1 prepared for the harbor seal pupping and breeding season in upper Drakes Estero.

Troubled by many aspects of the 2007 camera monitoring project, S1 significantly modified that research activity in February-March 2008, but did not terminate it. First, s/he secured, through the AmeriCorps program, the volunteer services of V1, now an NPS employee, who agreed to advance the research project with guidance from S1. Second, with approval from SE2, S1 purchased another

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[8]DOI never finalized, or formally applied to Agency employees, a draft "Code of Scientific Conduct" dated March 16, 2004.

[9]The Federal Policy on Research Misconduct, published by the Office of Science and Technology Policy in 2000, expressly noted that issuance of the policy alone neither created nor abridged any "rights, privileges, benefits, or obligations." 65 Fed. Reg. 76260, 76262 n.1 (December 6, 2000). DOI did not implement that Federal Policy. Accordingly, that Federal Policy, which defines "research misconduct" and addresses the process of finding and taking administrative actions related to that concept, has never applied to NPS employees. However, DOI recently proposed and adopted a Scientific Integrity Policy with a conduct code, procedures, and definitions applicable to all Agency employees who engage in scientific activities. 75 Fed. Reg. 53325-53328 (August 31, 2010); *see* Secretary's Order No. 3305, *Ensuring Scientific Integrity within the Department of the Interior* (Sept. 29, 2010). The DOI approved and incorporated, effective January 28, 2011, the Scientific Integrity Policy into the Departmental Manual at 305 DM 3.

monitoring camera (the PC85), which had zoom capabilities unmatched by the Silent Image camera used the previous year. Third, s/he decided to activate both cameras, to position them approximately 500 meters north of the spot used in 2007, and to orient the PC85 camera in a slight southwesterly direction and the Silent Image camera in a northwesterly direction (different from the northwesterly direction in 2007) at upper Drakes Estero.

On or about March 6, 2008, Reconyx processed S1's order for the additional camera. That same day, V1 retrieved and reviewed initial data from the Silent Image camera. After receipt and installation, the PC85 camera began taking digital photos on March 13, 2008. Like the process employed in 2007, placement occurred without public announcement, and relevant images were captured unbeknownst to SE1, S4, the informant, DBOC, most NPS employees, and the public generally. However, by this time, S2 and S3 knew of the cameras but offered no advice to S1, who takes full responsibility for all decisions related to the cameras in 2008.

S1 also takes full responsibility for the 2008 actions of, and data gathered by V1, whom S1 had instructed to attend the cameras three to four times each week from March-June 2008, to replace batteries and memory cards as needed, to adjust the focus and angle of the cameras as needed, to review the photographic images collected, and to prepare a written log of that review, through which V1 strictly confined her/his attention to DBOC mariculture activities, disturbances, and potential disturbances of harbor seals in upper Drakes Estero. As part of a now discontinued pilot study, S1 further directed V1 to monitor (while at, approaching, and departing the cameras) the harbor seals visually for population increases and decreases at favored haul-out subsites, to document observations, to monitor and memorialize all visible DBOC mariculture operations, and to record, in writing and with still camera and video equipment, all pinniped disturbances that V1 observed in upper Drakes Estero.

V1, complying with directions from S1, completed twenty-one handwritten disturbance surveys from March 6 to May 27, 2008; took nineteen videos in March 2008, twelve videos in April 2008, eleven videos in May 2008, and one video in June 2008; took still photos of harbor seals and anthropogenic activity in upper Drakes Estero; and generated worksheets for videos and photos, harbor seal counts generally, harbor seal counts of sub-groups, and surveillance of DBOC mariculture operations in upper Drakes Estero. V1 also reviewed about 60% of the nearly 69,000 digital photos taken by the Silent Image camera from March 6 to June 23, 2008; reviewed about 60% of the nearly 65,000 digital photos taken by the PC85 camera from March 13 to June 19, 2008; and sent to S1, on June 6, 2008, handwritten logs of all noteworthy DBOC mariculture activities, disturbances, and potential disturbance events seen in the photographic images from both cameras in March through May 2008. No evidence from V1 established that from March to May 2008, specifically including March 14, 2008, DBOC mariculture operations had harassed any harbor seals in upper Drakes Estero, had displaced the pinnipeds from any subsites in upper Drakes Estero, or had contributed to any reduction in the Drakes Estero harbor seal populations, which did not significantly decline in 2008. However, V1 did describe, as "images...of interest" and as potential DBOC disturbance documentation, digital photos taken by the PC85 camera on April 4 and May 15, 2008. A video taken by V1 on the latter date also supports a "potential" DBOC disturbance of harbor seals.

Notably, the absence of any mariculture-caused disturbances observed or documented by V1 and the cameras applies to March 14, 2008, the date on which a volunteer observer, standing a significant distance away from the camera locations on the opposite side of Drakes Estero, witnessed a DBOC boat disturb four seals from a group of nineteen in upper Drakes Estero. Without question, V1 was present at the camera locations on that date, at the exact time, and was closer to the disturbance site than the volunteer observer, but s/he neither saw nor documented or filmed any compatible anthropogenic disturbance. The PC85 camera, aimed at the area of alleged pinniped disturbance, confirmed the presence of a DBOC boat at the relevant time, but photos did not confirm any harassment of harbor seals on that date. With regard to the harbor seal disturbance on March 14, 2008, the only date during that pupping season when DBOC activities allegedly harassed pinnipeds, S1 relied heavily, but without clear explanation, on the volunteer observer's report and completely dismissed, without timely analysis or review,[10] the direct or indirect contradiction of that data as presented by the negative implications of V1's observations, the photographic images, and the video clips.

Indeed, much like the approach to digital photos taken in 2007, S1 accorded little weight to the 2008 photographic data and related information gathered by V1. Deemed "incompatible" with the long term data collected from the traditional visual monitoring site in the southwest corner of Drakes Estero, the 2008 camera project and information associated therewith received little scientific attention from S1 and did not alter S1's subjective belief that DBOC mariculture operations either disturb harbor seals in upper Drakes Estero or dissuade the marine mammals from using established haul-out subsites.

Disinclined to test the reasonableness of that belief, S1 did not carefully and thoroughly analyze the new scientific material; instead, she relied on informal summaries of V1's observations, written surveys, and cursory data review. Both V1 and S1 agreed that the 2008 photographic data, while substantially greater in volume than the previous year, was only marginally better in quality. The PC85 camera produced images clearer and somewhat closer than the Silent Image camera, but all the photographic data remained blurry, with varying degrees of murk. In addition, much like the year before, camera positions, poor resolution, significant distances, the absence of sound, narrow fields of view, loss of approximately 59¾ seconds out of every minute from 0700 to 1900 hours daily, and the presence of wind, fog, and nearby foliage collectively interfered with both cameras' abilities to capture information other than intermittent, benign DBOC mariculture activities and a rogue kayaker who disobeyed closure orders and vexed pinnipeds in upper Drakes Estero on April 13, 2008. And once again, the cameras were not well-suited or positioned to assess the health of marine mammal populations or their use of specific subsites in upper Drakes Estero, or to document annoyances/perceived danger from avian sources, from terrestrial predators, or from anthropogenic activities.

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[10]On or about September 30, 2010, S1, S2, and S3 did review the photographic images from March 14, 2008, but did not review V1's relevant research from that date. The NPS scientists noted that, consistent with the disturbance survey, the digital photos showed a DBOC boat present in upper Drakes Estero near the recorded time. Importantly though, the camera's limited field of view prevented confirmation of the visual observation made by the volunteer witness. Instead, the digital photos indirectly contradicted the human observation by showing seemingly undisturbed harbor seals near the location of the alleged harassment.

S1 did not examine, and still has not examined, that portion of the 2008 photographic data which V1 was unable to review (*i.e.*, about 40% of the photographic data or approximately 55,000 images). In addition, S1 has never developed any protocol(s) for extracting, from the 2008 digital photo set, information related to scientific goals of assessing the health of harbor seal populations in Drakes Estero, identifying pinniped disturbances and their sources, and measuring marine mammalian use/abandonment of haul-out subsites in upper Drakes Estero. Stating that the 2008 information gathered by the cameras and V1 did not produce "scientifically sound samples," S1 shelved the 2008 photographic data without fully disclosing the existence thereof, without producing any report(s), without including or referencing the photographic data in the harbor seal monitoring database, and without inviting independent analysis or peer review.

On July 31, 2008, ten days after issuance of the OIG report that formally, but without detailed analysis, condemned S1 for "misrepresent[ing] research" and for the manner in which she wrote the "Sheltered Wilderness" document, the informant served PORE with a FOIA request seeking 2007 and 2008 data on harbor seal counts and pinniped disturbances in upper Drakes Estero. S3, as manager of the harbor seal monitoring program database in 2008, became aware of the new FOIA request and spoke with S1 and S2 about the scope of responsive data. S/he specifically recalls questioning whether NPS should produce the 2007 and 2008 digital photos from the PC85 and Silent Image cameras. S3 also recalls discussing concerns with S1, who consulted a PWR employee (retired in December 2009) with expertise in FOIA matters. Dialogue between S1 and NPS employees at PWR resulted in an Agency decision to send the informant all handwritten and digital population and disturbance surveys of harbor seals in and near upper Drakes Estero. Responsive data included 2008 information from volunteer observers located in the southwest part of Drakes Estero and from V1 located on the eastern side of Drakes Estero, near the cameras.

NPS did not, however, produce for informant the following data: photographic images from, and reference to, the PC85 and Silent Image cameras; all handwritten logs from V1's partial review of the digital photos; the still photos and videos taken by V1 in April, May, and June 2008; and the worksheets that s/he generated for photos and videos, harbor seal counts of sub-groups, and surveillance of DBOC mariculture operations in upper Drakes Estero. The retired PWR employee with expertise in FOIA matters vaguely remembers speaking with S1 and advising that PORE need not produce such information absent specific reference by the informant, who had no knowledge that such data existed, and absent explicit use of the information to count seals or to document disturbances of marine mammals in upper Drakes Estero. NPS did not solicit legal counsel from any SOL attorney(s) regarding non-production of the photographic data or advice related thereto.

When asked whether they followed such guidance, which the retired PWR employee could not recall with precision, S1 and S3 replied affirmatively and denied having any conscious thoughts that the withheld data directly or indirectly contradicted all harbor seal disturbance information, including the volunteer's observations on March 14, 2008. As a result, the NPS scientists--without cognizance of the Interim Guidance language requiring full disclosure of all research methods used and all available data, and the appearance of cherry-picking information, and the value of promoting external analysis of all research, including data which could arguably be interpreted as showing that DBOC mariculture operations do not disturb harbor seals or deter them from using traditional

subsites in upper Drakes Estero--did not send the photographic research to the informant. The circumstances suggest that their failure to disclose the information derived from acceptance of advice, from narrowing the scope of said FOIA request, from poor understanding of scientific obligations, from sloppiness, from a protective approach to data, from a lack of vision, and from an insensitivity to the growing controversy, but not from any obvious intent to deceive, defraud, or mislead the informant or to falsify the research record, which, as noted above, S1 believed at the time to exclude the "incompatible" and "scientifically [un]sound" photographic data and related information.

On September 4, 2008, the *ad hoc* Committee formed by the NRC's Ocean Studies Board held a public meeting in Mill Valley, California, and took comments from SE1, S2, the informant, and others with knowledge relevant to the "scientific basis for [NPS] presentations and the report (including revisions), 'Drakes Estero: A Sheltered Wilderness Estuary,' on the ecological effects of [DBOC] on Drakes Estero."[11] For approximately one year prior to that date, S2, assisted by S1 and S3, had devoted substantial time and effort to researching and writing a scholarly paper which, intended for publication in *Marine Mammal Science*, studied the harbor seal colony located near DBOC mariculture operations in upper Drakes Estero and sought to explain the "patterns of [harbor] seal haul-out use during the breeding/pupping season at the seal haul-out sites closest to oyster activities." Quite familiar with information that s/he believed the Committee would find useful for its first report, S2 had previously shared with its members, in June 2008, the research s/he had conducted and the data s/he had analyzed.

To establish a statistical correlation between an increase in shellfish mariculture activities and the displacement of harbor seals, S2's paper carefully evaluated harbor seal population counts and subsite attendance and analyzed mariculture-related disturbances in 1996, 2003, and 2006, none of which related to DBOC operations; along with the three DBOC-caused disturbances witnessed by S1 on April 26, 2007; the two DBOC-caused disturbances witnessed by volunteer observers on April 29, 2007; and the DBOC-caused disturbance witnessed by a volunteer observer on May 8, 2007. A revised, final version of the subject paper included analysis of the DBOC-caused disturbance witnessed by a volunteer observer on March 14, 2008, and attempted to harmonize the significant decrease in 2008 disturbance data points with the statistical correlation. For the purposes of this public report, only the six disturbances in 2007, and the single disturbance in 2008 are relevant.

While speaking to the Committee members on September 4, 2008, S2 emphasized the importance of the 2007 disturbances, which s/he asserted were directly attributable to DBOC mariculture operations. According to S2's verbal and written analysis, DBOC mariculture operations had grown steadily from 2005 through 2008, harbor seal populations had changed in upper Drakes Estero, and pinniped attendance at previously popular haul-out subsites had diminished, thus providing a

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[11]To complete its assigned task, the Committee sought to answer several questions that extended beyond the scope of the "Sheltered Wilderness" document. Among other things, the Committee wanted to identify "the body of [all] scientific studies on the impact of the oyster farm on Drakes Estero," the "effects...directly demonstrated by research in Drakes Estero itself," and the "conclusions [that] can be drawn from...scientific studies...." The informant insists, with reference to applicable definitions in the Interim Guidance, that the digital photos and accompanying logs qualified as "scientific studies" and "research" which NPS scientists had an obligation to share with Committee members.

foundation to show "how chronic disturbance activities, in this case associated with a mariculture operation, can lead to displacement of seals at haul-out sites, resulting in animals either shifting to alternates sites or leaving the area."

Data related to the disturbance events intrigued Committee members, and they asked S2 questions related to, among other things, collection of the disturbance information. S2 explained, verbally and in writing, that "[t]rained volunteers and NPS staff conducted surveys at medium to low tides" from "one survey location" on a "bluff on the western edge of Drakes Estero" by using "binoculars and a 40-50X spotting scope" to count and "record[] the total number of...seals...present" and "[d]isturbances of the seals...during each survey." Indeed, those surveys represented the exclusive harbor seal population and disturbance data, or the research record, upon which S2 based the statistical correlation and scientific analyses and conclusions. Having ignored the 2007 and 2008 photographic images when developing the scholarly paper and verbal comments, S2 did not tell Committee members (or the informant, SE1, S4, DBOC, or the public generally) about the cameras placed on the east side of Drakes Estero in 2007 and 2008, the associated digital photos, or the data collected by V1 in 2008, none of which evidenced any pinniped disturbance(s) and all of which either directly or indirectly conflicted with harbor seal disturbances observed by volunteers from the southwest corner of Drakes Estero in 2007 and 2008. In addition, S1, S2, and S3, who had not throughly examined the photographic images and data gathered by V1, did not think that such information fell within the ambit of "scientific studies" or "research" subject to disclosure to the Committee.

While presenting information to Committee members on September 4, the informant perpetuated claims that NPS senior executives and scientists had committed scientific misconduct by fabricating and falsifying data. For example, s/he reiterated the belief, unsupported by the "results" section of the OIG report issued in July 2008, that S1 had lied about harbor seal disturbances in upper Drakes Estero on April 26, 2007. The informant also renewed an assertion that a volunteer observer had lied about the harbor seal disturbance in upper Drakes Estero on May 8, 2007. The informant restated the claim that NPS assertions, originally made by S1 on May 8, 2007, of "*chronic* disturbance" and "abandonment of *one area*" and "*80-percent* reduction" constituted "false science" and intentionally misled the public. The informant, who immediately attached labels of "false" and "misrepresentation" and "misleading" to every scientific assertion with which s/he disagreed, accordingly sent the Committee, from September 2008 to January 2009, numerous submissions uniformly accusing S1, S2, S3, S4, SE1, and SE2 of serious wrongdoing in the form of scientific misrepresentation and research misconduct.

On September 8, 2008, the informant also urged *Marine Mammal Science* "to hold and not publish" the print-ready S2 paper on the basis that 2007 disturbance data referenced therein had allegedly been fabricated or falsified; thus, s/he asserted that both the data and the article belonged in the category of scientific misconduct. The editor of *Marine Mammal Science* expressed his opinion, on October 18, 2008, that "there is no basis for considering pulling [S2's] paper...for ethical grounds (scientific misconduct)" and promptly published the scholarly article regarding the effects of El Niño, density-dependence, and disturbance on harbor seal counts in Drakes Estero from 1997 to 2007, hereinafter referenced as the 2009 paper. The informant continued (and presently continues) to assail the

analyses and conclusions found therein, and more specifically, the harbor seal disturbance data upon which the authors' reasoning relies.

In January 2009, the informant and DBOC's principal owner directed their attention to that "false" data, with primary focus on the alleged falsity of pinniped disturbance observations made by volunteers at Drakes Estero on April 29, 2007. They submitted separate, but substantively similar, documents to the OSB Director and posited that volunteer observers had lied about and falsified data regarding harbor seal disturbances in upper Drakes Estero on that date.[12] The informant's submission to the OSB Director declared that tide charts, along with DBOC payroll records showing that personnel did not work (and do not typically work) on Sunday, made it "physically impossible for the disturbance events to have taken place as described" on Sunday, April 29, 2007. On the tidal issue, the informant referred to a 2009 experiment which purportedly indicated that sandbars in upper Drakes Estero would not have been exposed at the time of the alleged disturbances and thus not available for pinnipeds to be resting/pupping/suckling at the time of alleged harassment by DBOC operations.

Consistent with her/his previous analysis, the informant characterized the subject disturbance data on April 29, 2007, as "false science," and equated it to the allegedly "false science" which appeared as S1's observations on April 26, 2007, and a volunteer's observations on May 8, 2007. The informant further maintained that because the 2009 paper, and S2's comments to the Committee members on September 4, hinged on said "false" data, specifically including the data points from April 29, 2007, "NPS officials and scientists...presented [the Committee] with false science, including false explanations, false data, and false analysis." The informant submitted arguments in an effort to destroy the credibility of all 2007 disturbance data, and to flatline that year's data, which would negate any statistical correlation between or among an increase in mariculture activities, evidence of pinniped harassment, and displacement of marine mammals in upper Drakes Estero. Admittedly driven by these thoughts and goals, the informant and DBOC's principal owner demanded that the OSB Director and NAS "investigate whether the NPS presented the NRC [and the Committee] with intentionally false and misleading scientific information to influence [] deliberations."

On February 3, 2009, the OSB Director sent both letters to Secretary Salazar with an explanation that the NAS, the NRC, and the Committee were "not in a position to evaluate the charges" made by the informant and DBOC's owner. S/he "therefore forward[ed the submissions] to [Secretary Salazar] as the cabinet officer responsible for the Park Service for such action as [he] may think appropriate." DOI did not conduct any investigation in accordance with the referred claims, which the NPS Deputy Director contemporaneously described in writing as already "investigated by the OIG."

The OSB Director's decision, on the Committee's behalf, to disregard criticism from the informant and DBOC's principal owner could have motivated similar reactions from NPS employees. Unfortunately, but perhaps understandably, S1, S2, and S3 refused to ignore the informant's written

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[12]With few changes, the informant also sent the document, on April 28, 2010, to the Executive Director of the U.S. Marine Mammal Commission (MMC). NPS employees ignored service on the MMC.

comments and prepared an immediate rebuttal. Initial drafts of the rebuttal, however, failed to clarify who or what organization would or should receive the document, which neither Secretary Salazar nor the Committee members had requested or invited.

On February 5, 2009, S1 sent to S4, SE2, and another NPS employee[13] a draft response designed to refute the informant's assertion, among others, that tide charts made it "physically impossible for the disturbance events to have taken place as described" on Sunday, April 29, 2007. SE1 also received a copy of the proposed reply but could not recall how, from whom, or when s/he obtained it, and neither SE1 nor SE2 carefully reviewed or suggested changes to the proposed language. To avoid premature refutation, the NPS scientists did not give their initial reply to the informant.

The draft response compared tidal activity from April 29, 2007, with dates in April and May 2008, on which the PC85 and Silent Image cameras had taken digital photos. Emphasizing that tidal activity in upper Drakes Estero on April 29, 2007, was similar to tidal activity on 2008 dates for which "NPS ha[d] time stamped images of seals on the sandbars," the NPS employees attached three digital photos taken by the PC85 camera (on April 17 and 19, 2008, and May 2, 2008), and argued that the disturbance events could indeed have occurred as witnessed by the volunteers on April 29, 2007.

The rebuttal document, developed in February 2009, represents the first time that the NPS scientists, presumably for some person or entity outside the Agency, had reviewed the photographic images and referenced them in writing. Oddly, the NPS scientists, who scrutinized the photos solely for the purpose of showing the tidal level(s) at which harbor seals haul-out on sandbars in upper Drakes Estero, cited the data outside the context of assessing the health of harbor seal populations, documenting sources of pinniped disturbances, and measuring displacement of marine mammals from traditional haul-out subsites. It follows that the NPS scientists, having previously placed little or no value on the 2007 and 2008 data, and having repeatedly declined to use the research in a manner consistent with S1's original goal (*i.e.*, installation of cameras to gather information about harbor seal populations, disturbances, and displacement), now eagerly and actively used the scientific material to challenge the informant's claim that tidal activity made "physically impossible" the disturbances observed by volunteers at Drakes Estero on Sunday, April 29, 2007. The internal NPS process, though, did not solicit comment from the informant and did not afford her/him any opportunity to review and contest the data or evidence or research used by the NPS scientists, and the informant recently referred to that process as "sleazy."

S4's responsive comments and suggested revisions, sent to S1 on February 5, 2009, raised no questions or concerns about reference to, and dependence on, the photographic images, of which he knew nothing prior to that date. Not discouraged from using the data, the NPS scientists expanded their reliance on the digital photos in subsequent versions of the unnecessary rebuttal.

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[13]Duty-stationed in Fort Collins, Colorado, the NPS employee served (and continues to serve) the Agency in the Water Resources Division, Natural Resource Program Center. Having no previous or subsequent involvement in the rebuttal effort, the NPS employee lacked a contextual knowledge of the photographic data issue and could not be expected to question or contest any aspect of scientific research gathered by the cameras.

Between February 5 and May 1, 2009, the date on which the NPS scientists completed their "Response to [Informant's] January 18, 2009 Letter to NRC," V1 reviewed, at the request of S1 and S3, the handwritten logs associated with the 2008 photographic images. V1's mission was to identify digital photos showing DBOC boats present in Drakes Estero on Sundays in 2008. V1's efforts, guided by S1 and S3, related to the informant's statements which asserted that DBOC records and typical routines, evidencing no Sunday work, made "physically impossible" (not suspicious or questionable or debatable) the disturbances observed by volunteers at Drakes Estero on Sunday, April 29, 2007. V1 found what s/he thought to be a DBOC boat operating on Sunday, March 23, 2008, and that discovery resulted in modifications to the rebuttal document originally drafted in February 2009. No longer "ancillary" or "incompatible" or "scientifically [un]sound," the photographic data now proved handy for the NPS scientists' attempts to puncture every assertion made by the informant in January 2009.

The final version of the "NPS Response"(with a one-page briefing statement, eight substantive pages of text, and an additional seventeen pages divided among six appendices) fully addressed the informant's written comments dated January 18, 2009, and retained the tidal activity comments and all three photos described above. An attachment, identified in the finished product as Appendix A, included the photos and clarified that "NPS examined date and time stamped photographs taken of Drakes Estero by remote camera. The remote camera was on-site at Drakes Estero for the majority of the 2008 breeding season, capturing images every minute from 7:00 AM to 7:00 PM. The camera view encompassed the 'lateral' channel with sandbar OB in the foreground." These statements illustrated the NPS scientists' willingness to disclose the existence of cameras and photographic data. In addition, the text of the finished product addressed the Sunday issue by not only arguing that DBOC boats do operate on that day of the week but also explaining that "NPS has time stamped images of a DBOC boat present on Drakes Estero on March 23, 2008, also a Sunday." However, subsequent review of the murky images, as explained by S1, S2, and S3 in a document sent to the U.S. Marine Mammal Commission on September 30, 2010, evinced the inaccuracy of the quoted words and revealed the "DBOC boat" to be a log, a bird, or some object that "cannot be definitively identified as a DBOC motorboat."

On or about May 1, 2009, the NPS scientists knew that the Committee had completed or would soon complete its first report, and further understood that the OSB Director and Committee members intended to give NPS senior executives an advance briefing of the Committee's report. Accordingly, on May 1, 2009, the NPS scientists sent the final "NPS Response" to SE1, SE2, and S4, invited last minute editing, and anticipated that the NPS senior executives would deliver it, as modified, to the OSB Director and Committee members during the advance briefing. The three recipients uniformly deny that they carefully reviewed, or proposed to revise, the final "NPS Response," and S4 confessed that by early May 2009, he had stopped looking closely at any document about, to, or from the informant.

On May 4, 2009, the OSB Director communicated the contents of the Committee's report to various NPS senior executives and officials, who participated in person and by telephone. Those NPS employees in attendance, shocked by, and singularly focused on, that portion of the Committee's report which opined, without careful analysis, that "native Olympia oysters probably played an

important role in structuring the estuary's ecosystem for millennia until human exploitation eliminated them," did not give the "NPS Response" to the OSB Director, the Committee members, or the NAS/NRC during the advance briefing. Although service of the document during the advance briefing, which occurred only one day before public distribution of the Committee's report, would not have resulted in any revision(s) to the completed report, delivery would have publicly announced that the cameras and accompanying data existed. Because the NRC did not receive copies of the "NPS Response" in May 2009, a fact unknown to S1, S2, and S3 until late 2010, the public remained unaware of the data, and the data remained unavailable to the informant and many others.

On May 5, 2009, the Committee publicly issued a 100-page report entitled "Shellfish Mariculture in Drakes Estero, Point Reyes National Seashore, California." The document included a "Summary" section, which noted, with many other statements, that "NPS has recently released documents to inform the public about the impacts of oyster mariculture on the Drakes Estero ecosystem." However, the "limited scientific literature on Drakes Estero," obviously exclusive of the 2007 and 2008 photographic data and the 2008 information gathered by V1, led the Committee to find "that there is a lack of strong scientific evidence that shellfish farming has major adverse ecological effects on Drakes Estero at the current levels of production and under current operational practices." Arriving at that conclusion, which the 2007 and 2008 photographic data might have strengthened in favor of DBOC operations, the Committee recognized the need for more research and implicitly questioned the scientific value of the 2009 paper, through which "NPS selectively present[ed] harbor seal survey data in Drakes Estero and over-interpret[ed] the disturbance data which are incomplete and non-representative of the full spectrum of disturbance activities in the estero."

In the body of its report,[14] the Committee wrote that "[h]arbor seal research and monitoring projects have been conducted within Drakes Estero over the past 30 years, but none of this research was designed specifically to assess the impacts of mariculture operations." The informant recently asserted that existence of the 2007 and 2008 camera monitoring project makes this latter statement inaccurate. However, as evidenced by other comments from the Committee, the report's statement regarding no "research [] designed specifically to assess the impacts of mariculture operations" would likely have remained, even if the Committee had known about the distant, blurry photographic images of harbor seals with narrow fields of view in upper Drakes Estero. The Committee's comments recognized the complete absence, critical importance, and extreme difficulty of designing any "study that could demonstrate whether or not short-term responses to disturbances [from activities such as DBOC's mariculture operations (*i.e.*, oyster bags on sandbars, human voices, and engine noises)] have long-term population consequences for harbor seals." Such a study, the

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[14]Deviating from the "scientific" analysis found in the OIG report issued on July 21, 2008, the Committee's report stated that "[w]hile NPS in all versions of *Drakes Estero: A Sheltered Wilderness Estuary* accurately depicted the ecological significance and conservation value of Drakes Estero, in several instances the agency selectively presented, over-interpreted, *or misrepresented* the available scientific information on potential impacts of the oyster mariculture operation. Consequently, *Drakes Estero: A Sheltered Wilderness Estuary* did not present a rigorous and balanced synthesis of the mariculture impacts. Overall, the report gave an interpretation of the science that exaggerated the negative and overlooked potentially beneficial effects of the oyster culture operation" (emphasis added). Unimpressed by S1's effort, the Committee nevertheless found that the document, as understood through associated facts, may have, but did not necessarily, "misrepresent[] available scientific" studies.

Committee observed, "would require long-term study of known individuals, and high quality data on those individuals' exposure both to disturbances and to other potential environmental stressors." Clearly, the 2007 and 2008 camera monitoring project produced no such "high quality data," and contrary to the informant's reading of the Committee's report, nothing therein suggested or contemplated that information gathered pursuant to the 2007 and 2008 camera project would have helped the Committee perform its duties and answer questions raised. But the Committee would likely have found the photographic research interesting.

The Committee, having no relevant and reliable studies from which to draw conclusions, instead focused on, and harshly criticized, available data: the monitoring database which, "staffed by volunteers," had the "potential for simple recording errors, such as date, time, or tide level." The Committee found that the volunteer observer data, shockingly inferior to information which might be collected from preferred studies of "known individuals" in a harbor seal colony, "cannot be reliably used to infer impacts of mariculture, relative importance of different sources of disturbance, or impacts on seal fitness." In the Committee's opinion, the volunteer observer data serves only "to demonstrate that there are multiple sources of human and natural disturbances to seals hauled-out on sand bars in Drakes Estero," and does "not permit rigorous determination of which sources of disturbance, if any, have greater population-level consequences." These substantive data deficiencies, as identified by the Committee, could only be cured by overhauling the scientific research process, not simply by eliminating the potential for human mistakes through "a data collection system that could be independently verified, such as time and date stamped photographs." The Committee merely suggested that a photographic data collection system, while not useful for assessing direct cause and effect between types of pinniped harassment and population changes at subsites, might help "to reconstruct the exact events recorded during any individual survey" and to verify "circumstances where there is an indication of a source of disturbance that could lead to a regulatory action." S1, S2, and S3 recall considering the Committee's recommendations and collectively agreeing that the existing camera project, if further developed and refined, could assist in the manner described, but in their unanimous view, the existing camera project would never satisfy the Committee's description of, and demand for, "data" of much "high[er] quality."

Knowing that the Committee had finished its work on the first report, the NPS scientists returned to pending projects, including the collection of harbor seal information during the 2009 pupping season in upper Drakes Estero. S1, S2, and S3 uniformly deny that they interpreted the Committee's report to request any digital images or photographic data, and further deny that they attempted to hide any aspect of the 2007 and 2008 camera monitoring project from the Committee, its members, the NAS, the NRC, the informant, or any other person or organization.

Prior to and soon after issuance of the Committee report on May 5, 2009, the informant, who still did not know the photographic evidence existed, focused attention on, and argued against, SE1's nomination for a high-ranking DOI position. In rancorous submissions sent to Secretary Salazar on April 27, 2009, and May 10, 2009, and to the White House Science Advisor on May 16, 2009, and to the OIG on July 8, 2009, the informant "strongly encourage[d]... reject[ion of SE1] as a candidate for [a high-ranking DOI position]" and alleged that SE1 had "repeatedly violated the NPS Code of Scientific Conduct (January 2008); sanctioned, defended, and promoted false science to the [NAS];

and fully participated in the misrepresentation of science that violated the Federal Policy of Scientific Misconduct established by the White House Office of Science and Technology Policy (Federal Register, December 2000)." Responding to the informant's claims occupied much of SE1's time and prevented SE1, who had been instructed to avoid PORE issues by DOI senior executives on or about May 12, 2009, from further analyzing the photographic research.

While these events were occurring in April and May 2009, S1 busied herself/himself with restructuring the Drakes Estero camera project for the third pupping season. Changes included replacement of V1 with another volunteer, V2; disuse of the Silent Image camera and the northwesterly orientation/field of view; and activation of the PC85 camera in April rather than March.

Similar to 2008, S1, who takes full responsibility for the 2009 camera monitoring project, instructed V2 to attend the cameras three to four times each week, to replace batteries and memory cards as needed, to adjust the focus and angle of the cameras as needed, to review the photographic images collected, and to prepare a written log of that review, through which V2, with some guidance from V1, strictly confined attention to DBOC mariculture activities, disturbances, and potential disturbances of harbor seals in upper Drakes Estero. In addition, S1 directed V2 to monitor (while at, approaching, and departing the cameras) the harbor seals visually for population increases and decreases at favored haul-out subsites, to document observations, to monitor all visible DBOC mariculture operations, and to record, in writing but without still camera and video equipment, all pinniped disturbances observed in upper Drakes Estero.

Complying with directions from S1, V2 completed two handwritten disturbance surveys, dated April 29 and June 11, 2009. S/he also reviewed most or all of more than 75,000 digital photos taken by the PC85 camera from April 17 to August 4, 2009; and sent to S1, on November 9, 2009, a handwritten log of all noteworthy DBOC mariculture activities, harbor seal disturbances and potential disturbance events seen in the photographic images from the PC85 camera. No evidence gathered by V2 established that from April to August 2009, DBOC mariculture operations had harassed any harbor seals in upper Drakes Estero, had displaced the pinnipeds from any subsites in upper Drakes Estero, or had contributed to any reduction in the Drakes Estero harbor seal population, which did not significantly decline in 2009.

Consistent with actions taken in 2007 and 2008, S1 did not examine, and still has not examined, most of the 2009 photographic images that V2 reviewed when preparing the handwritten log. In addition, S1 has never developed any protocol(s) for extracting, from the 2009 digital photo set, information related to scientific goals of assessing the health of harbor seal populations in Drakes Estero, identifying pinniped disturbances and their sources, and measuring marine mammalian use/abandonment of haul-out subsites in upper Drakes Estero. S1 recently and verbally maintained the position that information gathered by the PC85 camera in 2009, did not produce "scientifically sound samples." Therefore, s/he electronically stored the 2009 photographic data without fully disclosing the existence thereof, without producing any report(s), without including or referencing the photographic data in the harbor seal monitoring database, and without inviting timely peer review

or independent analysis from any person or organization, including the U.S. Marine Mammal Commission (MMC), an independent agency of the federal government.

Unhappy with the Committee's report "which has led to conclusions of many, including some decision makers, that there is nothing to be concerned about regarding commercial oyster operations in/around seal habitat," the National Parks Conservation Association and the Sierra Club Marin Group, on June 9, 2009, jointly "urge[d] the [Marine Mammal] Commission to provide input into this matter." Within weeks of receiving that request, the MMC's Executive Director explained that the MMC "[f]or some time...has been aware of the controversy regarding potential effects of oyster farming in Drake's Estero on harbor seals" and announced MMC's decision "to conduct an independent review."

In November 2009, the MMC invited the informant, PORE, and other individuals and organizations to forward relevant documents and to identify "datasets," and "other sources of data" that would "enable the [MMC] members to complete a thorough scientific review." NPS and PORE employees responded by sharing many documents, including the "NPS Response" finalized on May 1, 2009, and by describing the harbor seal monitoring database, without reference to the photographic data and related information gathered by and near the cameras during pupping seasons in 2007-2009.

In December 2009 and January 2010, the MMC uploaded documents, including the NPS Response, to an electronic index, received and distributed data, and developed Terms of Reference, which informed the public that the "purpose of [the MMC] review is to conduct a detailed assessment of the sources of disturbance in and around Drake's Estero and, where such [mariculture] effects cannot be ruled out, recommend scientific study and management measures to clarify and/or avoid such effects" caused by mariculture operations. That assessment presently continues.

On or about February 21-24, 2010, the MMC conducted an on-site review, and during that period, held a public meeting near PORE and heard testimony from SE2, S1, S2, S3, the informant, and others with pertinent knowledge. Similar to procedures followed for the *ad hoc* NRC Committee in 2008, S2 offered to the MMC verbal and written statements which, drafted with S1 and S3 on and before February 6, 2010, studied the "spatial use of Drakes Estero by harbor seals correlated to anthropogenic disturbance and natural variation during 1982-2009." The volunteer surveys and accompanying data collected from the southwest corner of Drakes Estero represented the exclusive harbor seal population and disturbance data upon which the NPS scientists based their scientific analyses and conclusions, pursuant to which they found that "[e]ncroachment of mariculture or other persistent activities on preferred pupping sandbars may displace seals but not have a detectable effect on the colony or the region until natural fluctuations occur which further limit habitat, and cause additional competition for limited space resources."

Because the protocols, which S3 described to the MMC, for monitoring harbor seals and for observing pinniped disturbances had not changed, S2 discussed the surveys with the MMC in much the same way s/he had spoken with the Committee in September 2008. Having ignored the 2007, 2008, and 2009 photographic images when developing the new scientific paper and verbal comments to the MMC, S2 did not tell the MMC (or the informant, DBOC, or the public generally) about the

cameras placed on the east side of Drakes Estero in 2007, 2008, and 2009, the associated digital photos, the data collected by V1 in 2008, or the data collected by V2 in 2009, none of which evidenced any pinniped disturbance(s) and all of which either directly or indirectly conflicted with harbor seal disturbances observed by volunteers from the southwest corner of Drakes Estero in April and May 2007 and March 2008.

In remarks made to the NRC Committee, the informant's verbal statement and 129-page powerpoint presentation to the MMC referred to "false" science used by NPS senior executives and scientists and to S1's alleged misrepresentation in the "Sheltered Wilderness" document, but the informant did not repeatedly reference "scientific misconduct." However, s/he did reiterate, among other things, the opinion that the NPS claim, originally made by S1 on May 8, 2007, of an "80-percent reduction" at a subsite in Drakes Estero, was false and misleading. The informant also insisted that all DBOC-caused disturbances observed either by S1 or volunteers at Drakes Estero in 2007 and 2008, lacked credibility.

One day after taking statements from concerned and knowledgeable parties, the MMC toured Drakes Estero and visited the exact location from which volunteers, and S1 on April 26, 2007, have historically surveyed the harbor seal population in Drakes Estero and documented pinniped disturbances and potential disturbance activities. The MMC Executive Director and DBOC's principal owner recall, separately but consistently, that while there, an unidentified MMC member pointed to the eastern part of Drakes Estero (near the locations where S1 had secured the camera or cameras in 2007, 2008, 2009, and 2010) and recommended that NPS install "wildlife" cameras on "that side" to gather data "continuously." The MMC Executive Director and DBOC's principal owner further recall that S1 said nothing in response, but neither could state unequivocally that S1 heard the suggestion, which s/he emphatically denies hearing.

On June 6, 2010, while preparing to discuss, the following day, disturbance data points with the MMC Executive Director, NPS senior executives and scientists, and other invitees, the informant read the "NPS Response," with appendices, and the attached briefing statement dated May 1, 2009. NPS had sent the complete Response document, as discussed above, to MMC in November 2009, and had notified readers, through the Response, that the "remote camera was on-site at Drakes Estero for the majority of the 2008 breeding season, capturing images every minute from 7:00 AM to 7:00 PM." The informant shared the information with DBOC's principal owner, who examined the attached pictures, learned of the camera's approximate location, and successfully sent her/his son to the area with instructions to find and photograph the "hidden" camera.

On June 7, 2010, the informant confronted the PORE Superintendent and the NPS scientists present for the meeting with questions regarding the existence of cameras and photographic images, to which the NPS employees responded affirmatively and truthfully. Being unprepared for the informant's inquiry, the responding NPS employees could not provide specific details of the camera project, which had recently produced an additional 54,000 images from February 12 to June 6, 2010. Thereafter, NPS/PORE employees, other than those individuals mentioned in this background section, learned of the issue. NPS/PORE employees also responded to many FOIA requests, through which the informant sought to prove that NPS employees had committed scientific misconduct. The

informant's recent submission to Secretary Salazar encourages removal of several NPS employees from the pending EIS process and returns the analytic focus of terminating or extending DBOC mariculture operations to scientific issues, rather than policy or property or legal concerns. Quite recently, PORE created an electronic reading room for the EIS process and uploaded to that site all information associated with the harbor seal camera monitoring research project at upper Drakes Estero from 2007 to 2010.

From June 7, 2010, to and beyond November 22, 2010, the date of the informant's request to Secretary Salazar, the MMC, through its Executive Director, has asked questions, evaluated data (including all information associated with the camera monitoring project from 2007-2010), communicated frequently with the informant and PORE officials, mediated disputes over data and science between the informant and NPS employees, and established credibility with all involved. Although the MMC has not yet reported any findings and conclusions, its Executive Director has assured stakeholders that the Drakes Estero harbor seal assessment will issue soon.

After petitioning the MMC to find that DBOC operations have not harassed, and do not harass, harbor seals in upper Drakes Estero, the informant turned her/his attention to NPS employees and filed with Secretary Salazar the subject request on November 22, 2010. The informant's submission relies on the foregoing background facts, necessitates the following analysis, and demands careful examination of claims alleging employee misconduct.

III. Discussion

The informant makes three fundamental assertions: 1) NPS senior executives and scientists have publicly expressed opinions, verbally and in writing, that DBOC mariculture operations negatively impact harbor seals in upper Drakes Estero; 2) covert research materials, in the form of nearly 300,000 photographic images and accompanying handwritten logs, evidence no DBOC-caused disturbance(s) of harbor seals at upper Drakes Estero during the pupping/mating seasons in 2007-2010; and 3) knowing that the photographic data existed and "refuted" their opinions, NPS senior executives and scientists buried that secret research and continued to express opinions hostile to DBOC mariculture operations. Strengthening those basic contentions, the informant submits that a harmful objective--terminating DBOC mariculture operations--motivated the NPS senior executives and scientists, whose opinions have always depended upon false and extremely limited disturbance data from April 26, 2007; April 29, 2007; May 8, 2007; and March 14, 2008.

Thorough analysis of the facts confirms that NPS employees erred, but not to the degree set forth by the informant. Rather, the mistakes stem from the refusal, by some NPS employees, to modify their intuitive, but statistically and scientifically unproven, belief that DBOC mariculture activities either disturb harbor seals in upper Drakes Estero or deter pinnipeds from hauling-out at historically preferred subsites there.

To aid in review at the decision-making level, SOL has supplied DOI officials with legal analysis dependent upon a variety of factors, including (1) each person's opportunity and capacity to observe the event or act in question; (2) each person's character; (3) any prior inconsistent statement made

by each person; (4) each person's bias, or lack of bias; (5) the contradiction of each person's version of events by other evidence or the consistency with other evidence; (6) the inherent improbability of each person's version of events; and (7) each person's demeanor. *See Hillen v. Department of the Army*, 35 M.S.P.R. 453, 458 (1987).

A. No Criminal Violation

The most serious allegation from the informant relates to the claim that NPS senior executives and scientists violated 18 U.S.C. § 1001, which covers and criminalizes offenses in three broad categories. The statute proscribes, "in any matter within the jurisdiction" of the federal government, conduct from "whoever...knowingly and willfully (1) falsifies, conceals, or covers-up by any trick, scheme, or device a material fact; (2) makes any materially false, fictitious, or fraudulent statement or representation; or (3) makes or uses any false writing or document knowing the same to contain any materially false, fictitious, or fraudulent statement or entry." 18 U.S.C. § 1001.

A conviction under that criminal statute requires proof beyond a reasonable doubt that the defendant made a false statement or concealed information; that the statement or concealment was material and made knowingly and willfully; and that the deceptive act fell within executive, legislative, or judicial branch jurisdiction. *Brogan v. United States*, 522 U.S. 398, 400 (1998). However, concealment of a material fact violates § 1001 only if a legal duty compels the defendant to disclose the withheld information. *Hubbard v. United States*, 514 U.S. 695, 716-17 (1995) (Scalia, J., concurring); *but see* H.R. Rep. No. 104-680 (1996), at 2-6, *reprinted in* 1996 U.S.C.C.A.N. 3935, 3936-39. And the majority of circuits require that the disclosure duty be rooted in a "statute, governmental regulation, or form" independent of § 1001. *See, e.g., United States v. Safavian*, 528 F.3d 957, 964 (D.C. Cir. 2008); *United States v. Moore*, 446 F.3d 671, 678 (7th Cir. 2006); *United States v. Calhoon*, 97 F.3d 518, 526 (11th Cir. 1996); *United States v. Curran*, 20 F.3d 560, 566 (3d Cir. 1994); *but see, e.g., United States v. Stewart*, 433 F.3d 273, 318 (2d Cir. 2006); *United States v. Austin*, 817 F.2d 1352, 1354 (9th Cir. 1987).

Neither the language of § 1001, on which federal prosecutors in California may arguably rely to establish a disclosure duty, nor any statute, governmental regulation, or form independent of § 1001 mandated revelation of the inconclusive photographic data and accompanying logs to Senator Feinstein, the OIG, the *ad hoc* NRC Committee funded by the NPS, or the MMC. It follows that referral of the alleged crime(s) to the appropriate U.S. Attorney or federal investigative agency is not warranted. Moreover, the passive disclosure of the 2007 digital photos to the OIG, which had not requested such information, intended disclosure to the OSB Director and the *ad hoc* NRC Committee, and active disclosure of all photographic data to the MMC further justify a decision against referral of the informant's accusations to the appropriate U.S. Attorney or federal investigative agency.

On the other hand, a plausible interpretation of the facts supports a conclusion that NPS employees offered their opinions, and intentionally omitted the photographic research, in an effort to manipulate the outcome of the *ad hoc* Committee's report issued on May 5, 2009. *See United States v. Gaudin*, 515 U.S. 506, 509 (1995); *but see United States v. Wheeler*, 247 F.App'x. 558, 559 n.1 (5th Cir.

2007); *see also United States v. Gonsalves*, 435 F.3d 64, 71-72 (1st Cir. 2006); *United States v. Blankenship*, 382 F.3d 1110, 1136-37 (4th Cir. 2004). However, this factual interpretation overlooks the significance of passive disclosure to the OIG in 2007, and the importance of disclosure language in the NPS Response first drafted in February 2009, and made final in May 2009. In addition, this approach seemingly ignores legal reality and the Due Process Clause of the Fifth Amendment, which prohibits punishing a criminal defendant for conduct "which he could not reasonably understand to be proscribed." *United States v. Harris*, 347 U.S. 612, 614 (1954).

For any prosecutor to succeed in criminal litigation, the defendant(s) must have "fair notice...of what conduct is forbidden.... [T]his 'fair warning' requirement prohibits application of a criminal statute to a defendant unless it was reasonably clear at the time of the alleged action that defendants' actions were criminal." *United States v. Kanchanalak*, 192 F.3d 1037, 1046 (D.C. Cir. 1999). The statutory text of § 1001, even with reference to concealing or covering-up a material fact by trick, scheme, or device, fails to indicate the particular facts or information that NPS employees were obligated to disclose during scientific conversations with representatives of the federal government. These prosecutorial problems appear fatal to any criminal litigation and counsel against referral to the appropriate U.S. Attorney or federal investigative agency.

The weight of relevant facts and law supports a finding that there exists insufficient evidence of NPS employees' criminal intent to conceal material information from the executive and legislative branches. Accordingly, the present record discourages a referral of this matter for prosecution, but encourages full discussion and potential referral with OIG representatives.

B. No Scientific Misconduct or Research Misconduct

When S1 initially purchased and installed the Silent Image camera in 2007, no definition of "scientific misconduct" or "research misconduct" applied to her/his employment activities through any express scientific integrity policy. DOI had not implemented the Federal Policy on Research Misconduct, which, issued by the Office of Science and Technology Policy (OSTP) and published in the *Federal Register* on December 6, 2000, defined relevant terms and concepts, including but not limited to, "research," "research record," and "research misconduct." Absence of an applicable policy, though, does not administratively impede Agency efforts to correct misbehavior that falls within the ambit of "scientific misconduct." *See Wiley v. U.S. Postal Service*, 102 M.S.P.R. 535, 540 (2006); *King v. Nazelrod,* 43 F.3d 663, 665 (Fed. Cir. 1994); *Lockett v. U.S. Marine Corps,* 37 M.S.P.R. 427, 429 (1988).

Any charge that an employee specifically committed "scientific misconduct" or "research misconduct," in or after 2007, must exclude "honest error or differences of opinion" and must include "fabrication, falsification, or plagiarism in proposing, performing, or reviewing research or in reporting research results." Further, DOI officials must define the term "falsification" to mean "manipulating research materials, equipment, or processes or changing or omitting data or results such that the research is not accurately represented in the research record," which DOI officials must define as the "record of data or results that embody the facts resulting from scientific inquiry," an equivalent to "scientific method," and thus defined as a "systematic pursuit" of knowledge through

"testing and confirmation." *See Webster's Third New International Dictionary* 2033 (Merriam-Webster 1993); *see also Daubert v. Merrell Dow Pharms.*, 509 U.S. 579, 593 (1993). These definitions, which involve falsifying and misrepresenting information through omission of data or research, appear consistently in dictionaries, the OSTP Policy, the NPS Interim Guidance, and DOI's present policy on scientific integrity.

Success in charging an employee with "scientific misconduct," and by definition falsification and misrepresentation of research through manipulation or omission, demands proof by preponderant evidence that the NPS employee(s) knowingly supplied incorrect information with the specific intent to defraud, deceive, or mislead. *Christopher v. Department of the Army*, 107 M.S.P.R. 580, 586 (2008); *Delancy v. U.S. Postal Service,* 88 M.S.P.R. 129, 131-32 (2001); *Reed v. Office of Personnel Management*, 74 M.S.P.R. 616, 620 (1997); *Naekel v. Department of Transportation*, 782 F.2d 975, 977 (Fed. Cir. 1986); *see also Guerrero v. Department of Veterans Affairs*, 105 M.S.P.R. 617, 622 (2007); *Bryant v. Department of the Army*, 84 M.S.P.R. 202, ¶ 11 (1999), *aff'd* 243 F.3d 559 (Fed. Cir. 2000); *McClain v. Office of Personnel Management*, 76 M.S.P.R. 230, 236 (1997). Guided by circumstantial evidence, DOI officials may find the requisite intent, a state of mind, through inference when the incorrect information is supplied with a reckless disregard for the truth or with a conscious purpose to avoid learning the truth. *See Gager v. Department of Commerce*, 99 M.S.P.R. 216, ¶ 7 (2005); *Gustave-Schmidt v. Department of Labor*, 87 M.S.P.R. 667, ¶ 9 (2001); *see also Harmon v. General Services Administration*, 61 M.S.P.R. 327, 330 (1994), *aff'd* 47 F.3d 1181 (Fed. Cir. 1995) (Table); *Pappas v. Office of Personnel Management*, 76 M.S.P.R. 152, 156 (1997), *aff'd*, 155 F.3d 565 (Fed. Cir. 1998) (Table). DOI officials may also infer intent from an employee's explanatory statements that lack credibility. *Kumferman v. Department of the Navy*, 785 F.2d 286, 290 (Fed. Cir. 1986). However, mere inaccuracy or omission, standing alone, will not meet the demanding element of intent, and DOI officials must consider plausible explanations for any data omitted and incorrect statements made by NPS employees. *See Kuhn v. Federal Deposit Insurance Corporation,* 48 M.S.P.R. 393, 395-96 (1991), *aff'd,* 954 F.2d 734 (Fed. Cir. 1992) (Table).

1. Defining Terms - "Research" and "Data"

When applied to the facts of record, the foregoing definitions and legal concepts offer insufficient proof that any NPS employee committed scientific misconduct by knowingly supplying incorrect information with the specific intent to defraud, deceive, or mislead the Marin County Board of Supervisors, Senator Feinstein, the OIG, the NAS and the *ad hoc* NRC Committee, the MMC, the informant, DBOC, or the public generally. Instead, persuasive evidence shows that no desire to delude motivated or influenced any NPS employee's actions with regard to the photographic data.

As an initial matter and as firmly supported by the record, the words "research" and "data" cast definitional nets sufficient to capture all the photographic images from both cameras and the information gathered by V1 in 2008, and by V2 in 2009. *See Interim Guidance Document Governing Code of Conduct...* (January 31, 2008) (defining "research" as "[i]nvestigation aimed at the discovery and interpretation of facts..."); *accord Webster's Ninth New Collegiate Dictionary* 1002 (Merriam-Webster1986) (defining "research" as "studious inquiry or examination; *esp:*

investigation...aimed at the discovery and interpretation of facts..."); *see also Webster's Ninth New Collegiate Dictionary* 325 (defining "data" as "factual information (as measurements or statistics) used as a basis for reasoning, discussion, or calculation"). Properly defining the contours of "research" and "data" and "research record," referenced in the first part of this section, is necessary to avoid the analytic pitfalls created by arguments from both the informant and NPS employees.

For example, the informant's assertions invite the Agency to conclude that all digital photos and the 2008 and 2009 handwritten logs, as research, belong in the research record. That argument presupposes that only the blurry photos and accompanying logs can "accurately represent[]" their contents, which evidence no instances of harbor seal disturbance(s) caused by DBOC mariculture operations at upper Drakes Estero during the pupping seasons in 2007-2010. Contrary to the informant's contentions, any and all research record materials that reveal no instances of DBOC-caused pinniped disturbances in those seasons "accurately represent[]" the substance of said photographic data in the research record. Even without the photos and accompanying logs, the research record accurately represents their content (*i.e.*, no DBOC-caused disturbances) for most of 2007 and 2008, and for all of 2009 and 2010.

With the exception of disturbance surveys generated by S1 on April 26, 2007, and by volunteers on April 29, 2007, May 8, 2007, and March 14, 2008, the research record contains no data which demonstrates that DBOC mariculture operations harassed any marine mammals in the relevant location at the relevant time. Because the Silent Image camera first snapped digital photos on May 5, 2007, the research record lacks an accurate representation of the photographic images for only the latter two dates.

Such analysis specifically rejects the informant's claim that all DBOC-caused disturbance observations, even the harassment of harbor seals witnessed before installation of the camera in 2007, are discredited by the overwhelming and negative implications of the digital photos and handwritten logs, which show no marine mammals being disturbed by DBOC mariculture operations. In short, the limited information found in the inconclusive photographic research neither trumps nor disproves all 2007 and 2008 DBOC-caused disturbances observed by volunteers and included in the research record. Confining attention solely to the differences between the research record and the photographic materials, an objective eye focuses solely on the adequacy of the research record for May 8, 2007, and March 14, 2008.

Facts and logic also contradict assertions made by NPS senior executives and scientists, who object to the inclusion of any digital photo and any information collected by V1 and V2 within the definitions of "research," "data," and "research record." S1, S2, and S3 genuinely and forcefully assert, but without reference to any source, that lack of scientific methodology, strict protocols, and scholarly analysis removes the cameras and related materials from the scope of research and data. Their position in that regard leads to the unacceptable conclusion, discussed below, that NPS scientists may withhold, from the research record, any information obtained through any investigative method, so long as the scientific inquiry remains loose and informal, and the collected information is not subjected to close scrutiny. The apparent honesty with which the NPS scientists offer such pinched meanings illustrates a lack of intent to defraud, deceive, or mislead; however,

because no definition of those words shelters the NPS officials' narrow interpretation, their constricted understanding of such important concepts must be rejected. Although squeezing the terms "research," "data," and "research record" so tightly could signal mendacity and corrupt the truth of words spoken and thoughts professed by the NPS scientists, the factual record inadequately supports such negative inferences.

Having defined "research" to include the digital photos and related information, an objective analysis must proceed to a determination of whether NPS senior executives or scientists manipulated, changed, or omitted the data so that the information was "not accurately represented in the research record." It follows that scientific or research misconduct would arise in the following situation: intentional acts produced a research record that did not accurately represent information found in the photographic data on May 8, 2007, and March 14, 2008. No scientific or research misconduct would exist if unintentional, negligent mishandling of the photographic data on and after those dates resulted in a research record that inaccurately represented the digital photos and related information.

2. No Specific Intent to Deceive the Marin County Board of Supervisors in May 2007

Sound factual interpretation confirms that in 2007, S1 and SE2, the only NPS employees with knowledge of the photos, spoke imprecisely when addressing the Marin County Board of Supervisors, but both credibly explained that visual observations, on and before May 5, 2007, and wholly unrelated to the camera, supported their verbal, unscientific opinions on May 8, 2007. Neither S1 nor SE2 knew of the DBOC-caused disturbance observed simultaneously by a volunteer on that date. Therefore, given a research record, on the morning of May 8, 2007, that did not yet include the disturbance survey generated that day, S1 and SE2 had no reason to reference the camera, or possible photographic contradiction of that visual observation, or the accuracy of photographic content represented in the research record. Although suspicion now surrounds the volunteer's visual observation of a harbor seal disturbance allegedly caused by DBOC mariculture operations in upper Drakes Estero on May 8, 2007, concerns about the accuracy and weight of that observation remained wholly unknown to S1 and SE2 on that date. Thus, when expressing their opinions to the Marin County Board of Supervisors on May 8, 2007, S1 and SE2 properly relied on research and data gathered days before their appearance, and accordingly made no comments with any intent to defraud, deceive, or mislead anyone present at that meeting relevant to the research record or representation therein of the photographic data. Public comments made by S1 and SE2 on May 8, 2007, do not contribute to a finding of scientific misconduct.

3. No Specific Intent to Deceive Senator Feinstein in July 2007

Similarly, SE2's communication with Senator Feinstein, on July 21, 2007, does not support any charge of scientific misconduct. During and prior to the Olema meeting, SE2 recalls knowing of the DBOC-caused disturbances observed in April 2007, but s/he does not specifically recall having knowledge of the pinniped harassment event witnessed by a volunteer on May 8, 2007. Conceding, however, the possibility that s/he may have known of that event and admitting that s/he possessed casual knowledge of the camera project, SE2 vigorously denies any concealment of the photographic research when speaking with Senator Feinstein and others in July 2007. S/he submits, with

corroboration from the informant, that obvious tension among the attendees and the Olema meeting topics (*i.e.*, analytic or scientific weaknesses found in S1's "Sheltered Wilderness" document and the Agency's denial of the informant's FOIA requests for data that supported claims, verbally made on May 8, 2007, of pinnipeds abandoning haul-out subsites and of dramatic decreases in harbor seal counts at upper Drakes Estero) discouraged conversation on marginally related issues. Digressive discussion included the existing research record and data, gathered from May 6, 2007 to the end of the pupping season, that positively and negatively evidenced DBOC mariculture operations as the cause of harbor seal disturbances.

The facts encourage a finding that no person in SE2's position, aware of the situation and circumstances as s/he understood them at the time, could have or should have announced during the Olema meeting that the existing research record contained not only a new harbor seal disturbance observed by a volunteer on May 8, 2007, but also numerous, largely inconclusive digital photos from a remote wildlife camera showing nothing more than benign DBOC mariculture operations around harbor seals at upper Drakes Estero. Indeed, persuasive evidence leads to the conclusion that SE2's silence on the issue was not borne from any conscious purpose to avoid learning about the photos, any willful disregard for the photographic research, or any express intent to defraud, deceive, or mislead Senator Feinstein. Rather, SE2's muteness derived from no opportunity or reason to raise that matter during the meeting and from a superficial understanding, as a supervisor, of what the research record actually held.

4. No Specific Intent to Deceive the OIG in 2007 or 2008

With regard to the OIG investigation, which was not designed to elicit any facts about the camera or associated photos, NPS employees, including S1 and SE2, nevertheless passively disclosed the data by voluntarily granting OIG investigators unfettered access to the PORE network, databases, and computers, which unquestionably included the 2007 research. Notwithstanding their disregard for the photographic data, the OIG's opportunity to review that research clearly shows that NPS employee(s) never intended to dupe Agency investigators or to lure them away from the digital photos. To the contrary, the voluntary actions of S1 and SE2 in response to the OIG investigation permanently and persuasively belie any intent to falsify research or to misrepresent the research record through manipulation or omission of photographic data. Even if passive disclosure to the OIG produced a less powerful inference of no deceitful intent and compelled further analysis, evaluation of subsequent events, related to intent regarding disclosure of the research, leads to findings of no falsification and thus no scientific misconduct.

5. No Specific Intent to Deceive the NRC Committee in 2008

In 2008, S1, S2, S3, and SE2 knew of the data gathered by the cameras and V1, yet did not disclose the information openly and fully in the FOIA response to the informant and in written and verbal statements made to the OSB Director and Committee members. The referenced NPS employees, especially the three scientists, explain their rationale as follows. They understood that the informant, through a FOIA request, and the *ad hoc* Committee, pursuant to its statement of task, wanted data and research relevant to the total number of harbor seals historically and presently located at upper

Drakes Estero in 2008, the number of harbor seals historically and presently associated with haul-out subsites there, and the historical and present number of pinniped disturbances attributed to DBOC (and its predecessor's) mariculture operations. The research record provided the requested information through harbor seal surveys (count data) from 1997-2007 and disturbance surveys (harassment data) from 1996-2008. Information contained in the research record revealed that volunteers and NPS employees conducted a total of 56 surveys in 2007, and a total of 40 surveys in 2008. During the 56 surveys conducted in 2007, witnesses observed only six harbor seal disturbances caused by DBOC mariculture operations on April 26, 2007 (three disturbances); April 29, 2007 (two disturbances); and May 8, 2007 (one disturbance). During the 40 surveys conducted in 2008, only one volunteer witnessed a DBOC-caused disturbance on March 14, 2008.

The NPS scientists believed that the count and harassment surveys were scientifically sound and based their unanimous belief on factors including, but not limited to, instructions provided to volunteers, strict protocols associated with the surveys, confidence in the historical testing of surveys, and scientific confirmation of survey accuracy. The scientific methods and protocols used, according to the NPS scientists, reduced or eliminated problems caused by the limited number of surveys each year, by human error, such as recording and mathematical mistakes, and by subjectively inaccurate interpretation of facts, such as incorrectly attributing the source of disturbance to DBOC mariculture operations.

The NPS scientists ensured that in 2008, the informant and the *ad hoc* Committee timely received, verbally and writing, all contents of the research record (as the NPS Scientists understood that concept at the time), which did not include any photographic materials from 2007 and 2008. Insisting that they properly omitted that research from FOIA responses to the informant and from verbal/written statements made to the Committee, the referenced NPS employees adamantly refused to characterize the photographic research as scientifically sound, as the subject of careful scientific analysis, as the product of scientific inquiry, or as the result of any systematic pursuit of knowledge through testing and confirmation. Unlike the visual research done by volunteers standing in the southwestern corner of Drakes Estero, data from the cameras and V1, in the collective view of the NPS employees, had not been carefully analyzed by scientists, had no established research methodology and no quality controls, and was either not compatible with, or simply ancillary to, the volunteer observations. This characterization of the photographic data begs the question as to why S1 continued the research program after the 2007 pupping season, without making the data compatible, without making the research more than ancillary, without improving research quality, without setting aside time for close scientific scrutiny, and without developing any scientific research plan or methods for using the photographic data.

When tested on this latter issue, the NPS employees, especially S1, appeared genuinely puzzled. Similarly, the NPS employees seemed honestly confused when asked to explain why they had not, at a minimum, timely inspected (or compared with, or analyzed alongside, or separately from, but contemporaneously with, the volunteers' visual research) and disclosed photographic images from May 8, 2007, and information gathered by the cameras and V1 on March 14, 2008. Their seemingly truthful answers signaled an inability to understand the relevance and materiality of V1's research and the grainy, inconclusive, and seemingly unhelpful (to NPS) photographic images. The NPS

employees showed no appreciation for the fact that the research record did not accurately represent available information which indirectly exonerated DBOC mariculture operations as the cause of harbor seal disturbances visually observed by the same volunteer on May 8, 2007, and March 14, 2008. Indeed, the NPS employees should have, but did not, attach evidential value to research which failed to confirm, directly and specifically, visual observations made by a volunteer on those two dates. The subject photographic research, though poor in quality and low in value, undeniably bolstered DBOC arguments that no mariculture operations harassed any harbor seals in upper Drakes Estero either in May 2007, or in March 2008. It follows that notwithstanding contrary perceptions from the NPS officials, such data was material and relevant.

However, without more, the materiality and relevance of that research does not prove deceitful intent, even when combined with facts which show that NPS employees knew the research existed. *Cf. Cancer Research Technology Ltd. v. Barr Laboratories, Inc.*, 625 F.3d 724 (Fed. Cir. 2010). Insufficiently evidencing an intent to defraud, deceive, or mislead the Committee, apparently truthful responses from the NPS employees reveal a collective but troubling mind-set that S1 enjoyed the unrestricted freedom to research harbor seals at upper Drakes Estero in any manner s/he deemed fit, without the corresponding need to share any data generated, so long as the research was not closely evaluated and the research method(s) remained, in the NPS employees' unilateral view, inferior or ancillary to other research, such as volunteer observations. That questionable state of mind, even if analyzed in conjunction with speculation that digital photos showing DBOC-caused disturbance(s) of harbor seals would have magically become "sound" science and "compatible" research, and thus would have been immediately used and disclosed, fails to meet the demanding standard of intent needed to prove falsification and misrepresentation. The evidence instead confirms that the NPS employees needed better instruction and more effective supervision; someone in their chain-of-command should have recognized the errors, sounded the alarm, and demanded disclosure of all research which a reasonable, objective scientist could interpret as data suggesting that DBOC mariculture operations did not disturb harbor seals at upper Drakes Estero on May 8, 2007, or March 14, 2008.

Help from superiors did not arrive for several reasons, none of which justify an inference of intent to defraud, deceive, or mislead. Those reasons include the failure of NPS scientists to seek supervisory assistance, and the informant's 2008 and 2009 verbal and written attacks on SE1, who had disqualified herself/himself from PORE issues on and after May 12, 2009, and on SE2 and S4, both of whom had other distractions, professional responsibilities, and competing supervisory duties which lessened or eliminated attention to the specifics of photographic research.

6. No Specific Intent to Deceive the NRC Committee in 2009, or the MMC in 2009/2010

In 2009, S1, S2, and S3 unquestionably attempted to inform the OSB Director and the Committee of the cameras and photographic data, albeit for reasons (*i.e.*, tidal activity and Sunday employment) unrelated to harbor seal populations or pinniped disturbances in upper Drakes Estero. Although unsuccessful in their efforts, from February through October 2009, to disclose the photographic data by rebutting the informant's assertions in the NPS Response, the NPS scientists clearly intended to notify the NRC and the Committee of the subject research. Those disclosure efforts do not foreclose

a finding of specific intent to defraud, deceive, or mislead; however, description of the cameras and digital photos in the NPS Response is inconsistent with the goal of falsifying and misrepresenting the accuracy of the research record on May 8, 2007, and March 14, 2008. Had the NPS scientists truly wanted to achieve that end, they would never have utilized and described the camera research in such detail from February through May 2009.

The facts also contradict any conclusion that SE1 (distracted by the informant's personal and professional attacks and disqualified from PORE issues), SE2 (focused, with other NPS employees, on analytical errors contained in the Committee's report), and S4 (disengaged from issues involving the informant) intentionally withheld the NPS Report, in May 2009, and its specific, unequivocal disclosure of the cameras and photographic data. Unrelated to any openly deceitful intent (or any conscious purpose to avoid learning the truth or any willful disregard for the truth), failure to give that NPS Report to the OSB Director and the Committee, on May 4, 2009, was simply the result of inadequate attention from NPS supervisors.

Factual confirmation of an incontestable intent to announce the existence of camera research came in November 2009, when the NPS scientists sent the NPS Response to the MMC for inclusion in the record of relevant documents. Even though the informant failed to read the document on or before June 6, 2010, the facts preclude a finding of specific intent to manipulate or intentionally omit the photographic research, or to falsify and misrepresent the accuracy of the research record, after service of the NPS Response on the MMC in late 2009.

7. Publication Not Scientific Misconduct

A final, related issue raised by the informant involves the article primarily written and revised by S2, with assistance from S1 and S3, throughout 2008, presented to the Committee in September 2008, and published in early 2009. Because the 2009 paper refers to the specific disturbance data from 2007 and 2008, without mentioning the photographic research from 2007 and 2008, the informant characterizes that article as scientific misconduct and insists that the "false" publication be retracted or withdrawn. S/he supports that demand for retraction or withdrawal by alluding to organizations, such as the California Coastal Commission, which antagonize DBOC by improperly citing the 2009 paper to support flawed assertions--particularly, that "[mariculture operations], if carried out in close proximity to harbor seal haul-out sites and intertidal sandbars, may cause seals in these areas to alter their behavior, flush towards the water, and/or flush into the water." The informant fears that refusal or failure to rescind the 2009 paper will promote widespread acceptance of that "misleading" article. Informant's invitation to interfere with said publication, and any subsequent publication(s) properly submitted for peer review by NPS scientists, must be declined.

The record, supported by the foregoing discussion relevant to the issue of deceitful intent, and lack thereof, leads to the conclusion that the 2009 paper neither represents nor evidences scientific misconduct. More specifically, reasonable findings lead to the determination that said publication does not rely on any fabricated or falsified disturbance data.

In addition, addressing the informant's other concern, the U.S. Supreme Court has held that "[p]ublication (which is but one element of peer review)...does not necessarily correlate with reliability," and exposing articles to "scrutiny of the scientific community is a component of 'good science,' in part because it increases the likelihood that substantive flaws in methodology will be detected." *Daubert*, 509 U.S. at 593-94 (citations omitted). The informant accordingly remains free to challenge the scientific validity of the 2009 paper as published, or any other articles submitted by NPS scientists for peer review. The informant's dispute, though, with any particular technique, theory, research, data, or methodology relied upon by the authors should not extend to issues of scientific misconduct, but rather, should be confined to scholarly disagreement.

An unbiased analysis of relevant facts and law leads to the conclusion that no NPS employee manipulated or intentionally omitted the photographic research in an effort to defraud, deceive, or mislead any person or organization. Objective findings further demonstrate that no NPS senior executive or scientist intentionally manipulated, changed, or omitted research so that data was inaccurately represented in the research record. Accordingly, the preceding discussion confirms that SE2, S1, S2, S3, and S4 made mistakes in the process but did not commit scientific misconduct as alleged by the informant. The decision to disqualify SE1 from PORE issues, on and after May 12, 2009, shields SE1 from any findings of error and attachment of blame.

C. Alternative Charge - No Lack of Candor

Going beyond the boundaries of the submission to Secretary Salazar on November 22, 2010, we weighed the facts to determine whether they evince a lack of candor by any NPS senior executive or scientist. Lack of candor exists when an employee breaches her or his duty "to be fully forthcoming as to all facts and information relevant to a matter...whether or not such information is particularly elicited." *Ludlum v. Department of Justice*, 87 M.S.P.R. 56, 62 (2000), *aff'd*, 278 F.3d 1280 (Fed Cir. 2002). Unlike falsification, which requires misrepresentation and a specific intent to defraud, deceive, or mislead, *Naekel*, 782 F.2d at 977, lack of candor "is a broader and more flexible concept whose contours and elements depend upon the particular context and conduct involved. It may involve a failure to disclose something that, in the circumstances, should have been disclosed in order to make the statement more complete." *Ludlum*, 278 F.3d at 1284.

The preceding discussion in this document demonstrates that the NPS employees, all of whom fully cooperated with the informant, DBOC, Senator Feinstein, the OIG, the NRC Committee, and the MMC, provided information which the NPS senior executives and scientists believed to be truthful, complete, and entirely frank. Absent any element of deception, fraud, double-dealing, subterfuge, or trickery, their actions do not support a lack of candor charge. It follows that disciplining the NPS employees for misconduct identified as a lack of candor is not warranted.

D. Failure to Satisfy NPS Interim Code of Scientific and Scholarly Conduct

Even though no "element of deception" existed and they had no intent to defraud, deceive, or mislead, most of the NPS employees targeted by the informant seemingly erred and appear to have acted improperly under the circumstances. Accordingly, DOI, through proposing/deciding officials whose

independent analyses this document cannot supply or replace, may consider addressing said misconduct and modifying future behavior through corrective action(s).

Carefully examining the failure to analyze all camera research from 2007 to the present, DOI officials may conclude that, contrary to the NPS Code of Scientific and Scholarly Conduct set forth by the Interim Guidance, S1 did not thoroughly and expeditiously "process data from...scientific...activities," such as "monitoring," (*i.e.*, the "systematic collection and analysis of natural...resource data...to detect natural-induced changes, and to provide the basis for appropriate management response"). Boredom with, or insufficient time for, the labor-intensive analytic review process does not excuse any failure to scrutinize all of the research, which S1 voluntarily initiated to "detect natural and human-induced changes" in the harbor seal populations. Quite possibly, digital photos from the monitoring cameras definitively prove or disprove that DBOC mariculture operations negatively impact harbor seals at upper Drakes Estero. As a direct consequence of S1's failure to process the data completely and speedily, potentially powerful evidence remains unknown. This misconduct arose from incomplete and biased evaluation and from blurring the line between exploration and advocacy through research.

Further, SE2, S1, S2, S3, and S4 violated NPS Code of Scientific and Scholarly Conduct language, from the Interim Guidance, that not only required timely and "full[] disclos[ure of] all research methods used [and] available data," but also obligated the NPS employees to "communicate the results of scientific...activities, [], objectively, thoroughly, and expeditiously." *Accord*, 305 DM 3.7(A)(2) and (B)(3) (effective January 28, 2011). On and before May 1, 2009, these NPS employees, all of whom "work[ed] with scientific...information [] in performing their duties," knew about the camera research project, and partial results associated therewith, yet failed to notify the informant, DBOC, the NAS, and the NRC Committee. Especially with regard to alleged pinniped disturbances observed on May 8, 2007, and March 14, 2008, this information was relevant, material, and necessary for the informant and DBOC to discredit or disprove the volunteer research and data, on which NPS employees heavily relied. The research also related directly to the NRC Committee's task statement. Verbal and written omission of the photographic research thus "hinder[ed]," albeit unintentionally, the "scientific activities of others," and potentially represents another violation the NPS Interim Code. *But see*, 305 DM 3.7(A)(6).

Finally, the decision made by S3, S2, and S1, who collectively but covertly used the photographic research to refute arguments unrelated to the information's specific scientific purpose, was arguably inappropriate and violative of the NPS Interim Code provision requiring "full[] disclos[ure]." The NPS scientists referenced the "ancillary" or "incompatible" digital data, which rebutted the informant's assertions regarding tidal activity and Sunday employment, in an uncontested, and seemingly improper, effort to shield their own scientific findings and to defend the reputation/reliability of volunteers who allegedly observed pinniped disturbances on April 29, 2007.

Conclusion

NPS employees erred but did not misstep in any manner defined as criminal misconduct or scientific misconduct for which the Agency could impose and successfully defend disciplinary actions. Accordingly, DOI may address the mistakes and restore public trust by concluding that several NPS

employees could and should have handled research differently and by modifying the future behavior of NPS employees with education and corrective action as deemed appropriate.

EXHIBIT

38

OFFICE OF
INSPECTOR GENERAL
U.S. DEPARTMENT OF THE INTERIOR

NOV - 9 2010

Mr. Corey Goodman
5610 Golden Gate Avenue
Oakland, CA 94618

Dear Mr. Goodman:

The Office of Inspector General received a copy of your October 18, 2010 letter to the California Council on Science and Technology in which you alleged the National Park Service (NPS) misused science by claiming that Drakes Bay Oyster Company disturbed seals in Drakes Estero.

Our office is charged with addressing allegations of fraud, waste, and mismanagement in the U.S. Department of the Interior (DOI) and its programs. However, allegations are sometimes referred to the responsible DOI bureaus for review and appropriate action. Review by senior management officials of the Office of Investigations have determined that the issues raised would be better addressed by the NPS; therefore, your complaint has been referred to them for review and appropriate action. Upon completion, the NPS will respond to our office regarding action they have taken and then we will evaluate their response to determine whether or not appropriate action was taken or further involvement by our office appears warranted.

We appreciate you communicating this matter to us. Your commitment in helping the DOI improve the effectiveness of its programs and operations benefits not only the Department but also the public we serve. If you need additional information about our referral, please contact Special Agent Edward Woo, who is a member of my staff, at (703) 487-5425.

Sincerely,

for Scott L. Culver
Deputy Assistant Inspector General
for Investigations

EXHIBIT

39

From: Chris_Lehnertz@nps.gov
Date: November 24, 2010 2:56:11 PM PST
To: corey.goodman@me.com
Cc: George_Turnbull@nps.gov, gavin.frost@sol.doi.gov
Subject: Point Reyes National Seashore Review

Dr. Goodman,

During the period from November 29 to December 15, 2010, the U.S. Department of the Interior (DOI) will be conducting a fact-finding review of the harbor seal wildlife camera monitoring program at Point Reyes National Seashore, in Marin County, California. In particular, the review will focus on gathering information regarding the wildlife camera system which took photographs of the Drakes Estero as part of the harbor seal monitoring program. The DOI Office of the Solicitor will be conducting the review, which will be lead by Mr. Gavin Frost.

Recent concerns have been raised regarding the harbor seal wildlife camera monitoring program at Point Reyes National Seashore. A specific complaint has been referred from the DOI Office of the Inspector General (OIG) to the National Park Service (NPS). In order to ensure a complete and appropriate level of review, in consultation with the DOI Assistant Secretary, Fish, Wildlife and Parks, the NPS requested that the Office of the Solicitor determine the facts surrounding the information provided in the complaint.

As part of this review, you are invited to participate in a fact finding interview with Mr. Frost. He will be contacting you directly at the above email address, or by telephone, to arrange a time and logistics for an interview to be conducted between November 29 and December 15, 2010. Mr. Frost can be contacted at:

gavin.frost@sol.doi.gov
work phone: 406-247-7590

NPS has requested that this review be done as expeditiously as possible, and I apologize for the short advance notice to you.

Thank you for your time and attention.

Sincerely,

Chris Lehnertz

~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

Chris Lehnertz
National Park Service
Pacific West Region
510-817-1304

Never Give Safety a Day Off ~
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

EXHIBIT

40

POINT REYES LIGHT

Did Frost find scientific misconduct

by Tess Elliott

4/7/11

A recent report from the Interior Department found government officials not guilty of charges of scientific misconduct, but two men claim that the author of the report had a very different finding—and told them so days before he finalized it.

According to Kevin Lunny, owner of Drakes Bay Oyster Company, and Dr. Corey Goodman, who brought the charges that sparked the fact-finding investigation, Interior Solicitor Gavin Frost said in private phone calls that he had found scientific misconduct, and would recommend personnel actions. Frost was not permitted to comment on the alleged conversations.

The March 22 report was the culmination of a months-long investigation Frost conducted for the Interior Department's Office of the Solicitor. In it, Frost concludes that five National Park Service (NPS) employees were guilty of "administrative misconduct," but not of scientific misconduct.

The report exonerated those employees, including three local scientists, the chief regional scientist, and former Point Reyes National Seashore Superintendent Don Neubacher, from the heavier charges levied by Goodman, who charged NPS Director Jon Jarvis with the same breaches of integrity.

The misconduct, Frost wrote, "arose from incomplete and biased evaluation and from blurring the line between exploration and advocacy through research."

Both Lunny and Goodman are baffled by the report, given their separate conversations with the solicitor.

In a phone call on January 24, Goodman claims Frost declared finding multiple NPS employees guilty of scientific misconduct. "I did not ask, and he did not volunteer, the names of the people," Goodman said, adding that the solicitor agreed with his own conclusion that the Environmental Impact Statement (EIS) process for the oyster company was "tainted" with bad science.

Goodman's charges related to a large set of photographs of areas within Drakes Estero where scientists claimed oyster workers were disrupting harbor seals. The photos, which were hidden from federal agencies investigating those claims since 2007, surfaced last summer. They show no disturbances of harbor seals.

Among the laws, rules and policies that Goodman cited in his charges, the only one Frost found to have been violated was the National Park Service Code of Scientific and Scholarly Conduct. Frost concluded that there was insufficient evidence for a criminal finding, and that the federal policy on research misconduct did not apply to NPS employees.

He did not address two other policies that Goodman raised—the Data Quality Act and NPS Director's Order 11B, both of which govern the dissemination of information by federal agencies.

Two days after Frost called Goodman, on January 26, he telephoned Lunny. According to Lunny, Frost said he was days away from submitting his report, and that he had found scientific misconduct. When Lunny asked if he could read the report, Frost said that only the Secretary of the Interior would be able to release it, but that he would likely not, since it would contain his personnel recommendations.

It was not until late March that the Interior Department released Frost's report, along with a press release announcing "Interior Report Finds Mistakes Made, But No Scientific Misconduct at Point Reyes National Seashore." Lunny and Goodman, along with those who have sought clarity in the long debate about the environmental effects and future of the Drakes Bay Oyster Company—including Senator Dianne Feinstein—were disappointed.

Lunny sent Frost a letter this week, asking him to explain the contradiction between his verbal statements and his report, requesting a copy of the original draft. "With your help, we can better understand why and how the Frost Report conclusion changed between the day you told me you found scientific misconduct, and the day the public report was issued stating there was no scientific misconduct," he wrote.

Frost replied that he would send a complete response to Lunny's letter by the end of the week, and added that he took full responsibility for all statements in his report.

"Our goal has never been personnel action," said Lunny, a longtime Point Reyes rancher who has been the target of unsubstantiated claims of harm to wildlife since he bought the oyster farm in 2005. "It all boils down to something fundamental for us. The science has been tainted by bias and needs to be removed from the EIS process, and the biased personnel removed from the process as well. We haven't accomplished anything until that happens."

EXHIBIT

41

From: [redacted]
To: [redacted]
Subject: FW: Question about Gavin Frost
Date: Sunday, March 03, 2013 2:57:44 PM

From: Tess Elliott [mailto:editor@ptreyeslight.com]
Sent: Tuesday, February 26, 2013 10:57 AM
To: [redacted]
Subject: Re: Question about Gavin Frost

Dear [redacted], here is a link to the story Corey is referring to.

http://ptreyeslight.com/Point_Reyes_Light/News_2011/Entries/2011/4/7_Did_Frost_find_scientific_misconduct.html

I did speak with Gavin by phone and, from what I remember, he had an intense wish to explain the claims by Corey and Kevin (and I believe he confirmed those phone calls); however, he pleaded with his department to allow him to comment, but was ultimately directed to remain silent. He called back a couple days after our initial conversation to say that he was not permitted to comment. I found him to be very personable and I sincerely believe he wanted to explain something; my impression was that he felt that the final report did not fully represent his findings. But that's just an impression.

Does that help?

Tess

Tess Elliott
editor@ptreyeslight.com
(415) 669.1200

EXHIBIT

42

NATIONAL PARK SERVICE

U.S. DEPARTMENT OF THE INTERIOR

Interim Guidance Document Governing Code of Conduct, Peer Review, and Information Quality Correction for National Park Service Cultural and Natural Resource Disciplines

/s/ Herbert C. Frost
Herbert C. Frost
Acting Associate Director
Natural Resource Stewardship and Science

January 31, 2008

This guidance document will remain in effect until amended or superseded.

- 43 CFR 20.502 states that employees are required to carry out the announced policies and programs of the Department;

- 43 CFR 20.502(a) states that an employee is subject to appropriate disciplinary action if he or she fails to comply with any lawful regulations, orders, or policies;

- Federal Policy on Research Misconduct, 65 FR 76260-76264, December 6, 2000; and

- Standards of Ethical Conduct for Employees of the Executive Branch, 5 CFR 2635.

II.c. General Authority

- 16 U.S.C. 1 through 4 (the National Park Service Organic Act).

II.d. Other Relevant Policy and Guidance

- NPS Management Policies 2006

  Chapter 1, The Foundation, Sections 1.8 (Managing Excellence); 1.9.4 (Public Information and Media Relations);

  Chapter 2, Park System Planning, Sections 2.1.2 (Scientific, Technical, and Scholarly Analysis), 2.1.3 (Public Participation); 2.3.1.4 (Science and Scholarship);

  Chapter 4, Natural Resource Management, Sections 4.1.2 (Natural Resource Information); 4.2 (Studies and Collection); 4.8.2.1 (Paleontological Resources and Their Contexts); 4.8.2.2 (Caves);

  Chapter 5, Cultural Resource Management, Sections 5.1.1 (National Park Service Research); 5.2.3 (Confidentiality); 5.3.5.3.2 (Sacred Sites); 5.3.5.5.4 (Acquisition, Management, Disposition, and Use); 5.3.5.5.6 (Archives and Manuscripts);

  Chapter 7, Requirements for All Interpretive and Educational Services, Section 7.5.4 (Research and Scholarship);

  Chapter 8, Use of the Parks, Sections 8.5 (Use by American Indians and Other Traditionally Associated Groups); 8.11 (Social Science Studies);

  Chapter 10, Commercial Visitor Services, Section 10.2.4.9 (Natural and Cultural Resource Management Requirements).

- DO #11B Ensuring Quality of Information Disseminated by the National Park Service;

- DO #12 Environmental Impact Analysis;

- DO #19 Records Management; and

- DO #78 Social Science, Section III.I (Peer Review).

III. CODE OF SCIENTIFIC AND SCHOLARLY CONDUCT

To enhance their contribution to quality, objectivity, utility, and integrity of such information, all NPS employees working with scientific and scholarly information will, in performing their duties:

- act in the interest of the advancement of knowledge and contribute the best, highest quality scientific and scholarly information for the NPS;
- conduct, process data from, and communicate the results of scientific and scholarly activities honestly, objectively, thoroughly, and expeditiously;
- be responsible for the entrusted resources, including equipment, funds, work time, employee work time, and prompt and accurate use and reporting of financial resources and scientific and scholarly work;
- fully disclose all research methods used, available data, and final reports and publications in a timely manner and consistent with applicable laws and policy;
- respect, to the fullest extent permitted by law, confidential and proprietary information regarding interests and resources that are studied or affected by scientific or scholarly activities or the resulting information;
- neither hinder the scientific or scholarly activities of others nor engage in dishonesty, fraud, deceit, misrepresentation, coercive manipulation, or other scientific or scholarly misconduct;
- welcome constructive criticism of scientific and scholarly activities, welcome and participate in appropriate peer reviews, critique others' work respectfully and objectively, and substantiate comments with care;
- be diligent in creating, using, preserving, documenting, and maintaining collections and data, ensuring established quality assurance and quality control programs, follow the NPS's records retention policies, and comply with Federal law and agreements related to use, security, and release of confidential and proprietary data;
- adhere to appropriate standards for reporting the results of scientific and scholarly activities, including respecting the intellectual property rights of others;
- to the extent possible and practical, differentiate among facts, opinions, hypotheses, and professional judgment in reporting the results of scientific and scholarly activities to others, including scientists, decision makers, and the public;
- be responsible for the quality of collected data and interpretations, and for the integrity of conclusions drawn in the course of scientific and scholarly activities; and
- place integrity, utility, and objectivity of scientific and scholarly activities and reporting of their results ahead of personal gain or allegiance to individuals or organizations.

IV. INFORMATION QUALITY

IV.a. Administrative Record

Whenever the NPS relies on **influential** scientific information (including a **highly influential** scientific assessment) to support a regulatory action or policy decision, it shall include in the administrative record for that action a certification explaining how the NPS has complied with the requirements of the OMB Peer Review Bulletin and the Information Quality Act.

IV.b. Information Quality Correction Procedures

IV.b.1. Complaints About Quality of Scientific and Scholarly Information

Persons who have complaints about NPS-provided scientific and scholarly information may avail themselves of any of the four methods outlined in D.O. 11B for notifying the NPS of their complaints. These four methods include informally discussing their complaint in person with park or program office staff, informally directing complaints about the quality of disseminated information to the superintendent of the park or manager of the program office responsible for disseminating the information, formally directing complaints about the quality of disseminated information by mail to the NPS Washington Administrative Program Center, or formally directing complaints to the Correspondence Control Unit by e-mail.

Persons submitting a formal request for correction of such information must submit all information identified in D.O. 11B, the technical components of which include the specific reasons for believing the information fails to meet OMB, DOI, or NPS standards, along with any supporting documentation; a detailed description of the specific material in question, including where the material is located (that is, publication title, date, and publication number, if any; the website and web page address; or other source where the material exists); and the specific recommendations for corrective action.

Upon receipt of a formal request for correction of information**,** NPS shall post the request on the appropriate park or program office Information Quality web page with a link to the NPS web page (www.nps.gov/notices.htm). All interim and final responses also shall be posted on the appropriate web page at the time they are sent to the complainant.

IV.b.2. Processing Complaints

The CCU will route formal complaints it receives regarding scientific or scholarly information to the park or office that disseminated the information and track response to assure that the response complies with the requirements of Director's Order 11B. The park or office receiving the complaint, regardless of the manner of receipt, will notify the complainant of receipt within 10 working days. The disseminating office will evaluate the complaint within 60 calendar days of the day it is received by the NPS, in accordance with the OMB guidelines, and notify the complainant as to whether the information has been corrected, deleted, or confirmed to be accurate. The Service will respond to additional complaints on the same subject according to the processes delineated in D.O. 11B.

IV.b.3. Appeals Process

If a complainant does not receive the notice or the response within the time frames described above, or wishes to appeal a determination of merit, or wishes to appeal the proposed correction of information, the complainant may appeal to the Director, National Park Service. Appeals must follow the requirements in D.O. 11B. All appeal requests shall be posted on the park or program office Information Quality web page upon receipt, with a link to the NPS Information Quality web page.

If the Director determines that an appeal of a determination has merit or the proposed correction of information has merit, the affected program office or park will be notified. The challenged information will be withdrawn, to the extent practicable, from the public domain and will not be used in any NPS decision-making process until it is corrected. The Director will make a decision on the final appeal within 60 calendar days.

EXHIBIT

43

Drakes Bay Oyster Company

17171 Sir Francis Drake Boulevard
Inverness, CA 94937
(415) 669-1149
kevin@drakesbayoyster.com
nancy@drakesbayoyster.com

April 7, 2011

Gavin,

In response to your email on Tuesday, several things. Beyond the issue of access to your interview of us, you ask that we detail your Report's errors and now, submit them to you by Friday.

Frost Fails to Provide Digital Recording of Lunny Interview as Promised

You asked that we chronicle and submit to you errors in your Report. A review of your report -- or the errors contained in it -- cannot be concluded without the digital recording of your December 10 interview.

As you know, you promised to share with us the digital recording you made of our interview in early December, and because of your assurances, we did not record the interview ourselves. It is now April and it has not been provided. And now, since we asked again, the Solicitor's office in Washington decided to treat it as a new FOIA request. If history is a guide, a response will take months and months and we don't have confidence that we'll receive it. We ask you to please arrange to have it sent promptly.

Most importantly, Gavin, you also made a promise to us, at our kitchen table, that you would share with us what you were told by the NPS so that we could provide timely comments. Had you followed through with your promise, it would have avoided many of the inaccuracies in the Report.

Lunny Fact-Finding

Between the date of our "fact-finding" interview (December 10) and the date of your Report's public release (March 22), I never heard from you again (except the morning of January 26 after I contacted you incorrectly assuming your Report was, in fact, already released).

During the 102 intervening days, you did not:

* ask us a single question;

* clarify with us a single issue;

* follow-up with us on a single issue; and/or

* provide us a single opportunity to rebut or comment on any matter under your review.

When you interviewed us at our home, you said you would provide that opportunity and then elected not to do so.

Frost Report Released, Lunny Discovers Frost Overturned Frost

Notwithstanding our central involvement in the matter, neither you nor anyone at NPS sent us a copy of your Report when released. No matter. I downloaded it. While reading your Report, I learned that the conclusion of scientific misconduct you shared with me on January 26 was either reversed or overturned. On January 26, you told me that you found "scientific misconduct." Your March 22 Report says you did not.

102 Days of Silence, Then Back-to-Back Frost Emails

You failed to communicate for 102 days. After your Report was released, I wrote to you on April 4th and said, "*We are asking you to help us understand why and how your conclusion changed*." In response, you sent not one, but two emails in two days expressing concern and requesting an itemization of those errors. You didn't offer to correct the record. It seems to me that if you had been concerned about avoiding errors in your Report, you would have -- at some point in those 102 days -- asked me questions before you finalized it.

Drakes Estero -- A Policy-Free Zone

Our family and many friends and neighbors have read your Report. Our reading of it is simple. Drakes Estero became a "policy-free zone," a place where laws and policies, rules and regulations do not apply. It became a location where common sense became uncommon. Any sense of appropriate accountability and responsibility was lost. We were told this would be a fact-finding investigation. But instead, your Report recites a laundry list of why laws, policies, rules and regulations written in black and white on paper with the Interior Department's seal or the Park Service's logo really don't apply at Drakes Estero.

After we receive the audio recording and after we receive your explanation for deleting the finding of scientific misconduct, we will be able to complete our review. At that time, we'll be prepared to discuss these matters with you further.

Sincerely,

Kevin

EXHIBIT

44

From: [redacted]
To: [redacted]
Subject: FW: Lunny letter to Frost (Apr 5 2011)
Date: Saturday, March 02, 2013 5:43:24 PM

From: [redacted] [mailto:[redacted]@gmail.com]
Sent: Thursday, February 28, 2013 1:22 PM
To: [redacted]
Cc: David Weiman; Corey Goodman
Subject: Lunny letter to Frost (Apr 5 2011)

As promised -

On Tue, Apr 5, 2011 at 5:47 PM, [redacted] <[redacted]@erols.com> wrote:

From: Kevin Lunny [mailto:kevin@drakesbayoyster.com]
Sent: Tuesday, April 05, 2011 2:28 PM
To: 'Frost, Gavin'
Cc: 'Nancy Lunny'
Subject: RE: Frost Report

Dear Gavin,

Thanks for your email yesterday. We believe many of the errors in your report could have been avoided had you come back to us for fact-checking after the December 10 interview, as you indicated you would but chose not to do so.

During that December interview, you repeatedly told us that issue-after-issue was beyond the scope of your investigation and would not be addressed. Turns out, that was not accurate. Had those issues been included in our interview, your report and its conclusions would have been fundamentally different.

Your report, as released on March 22, 2011, contradicted your statement to me back in late January when you told me that your report contained a finding of scientific misconduct. You indicated that you would respond by the end of this week. We await your response.

Thank you,

Kevin Lunny

From: Frost, Gavin [mailto:Gavin.Frost@sol.doi.gov]
Sent: Monday, April 04, 2011 2:02 PM
To: Kevin Lunny
Cc: 'Nancy Lunny'
Subject: RE: Frost Report

Hello Nancy and Kevin,

Thanks for sending me the attachments, to which I'll promptly reply. I hope to get my response out no later than Friday, April 8, 2011. In the interim, please know that I take ownership and full responsibility for all statements made in the memorandum dated March 22, 2011. Your reference to a "series of factual errors" and "many factual errors" in that document concerns me. Please identify all factual errors contained in the subject memorandum, so that I may understand and, if necessary, address them in my substantive communication to you. Thanks again.

Respectfully,

Gavin M. Frost, Attorney
Rocky Mountain Region-Billings Field Office
Office of the Solicitor
U.S. Department of the Interior
316 North 26th Street, Room 3005
Billings, MT 59101
phone: (406) 247-7590
fax: (406) 247-7587
gavin.frost@sol.doi.gov

From: Kevin Lunny [mailto:kevin@drakesbayoyster.com]
Sent: Monday, April 04, 2011 9:59 AM
To: Frost, Gavin
Cc: 'Nancy Lunny'
Subject: Frost Report

Dear Gavin,

Please review the attached letter.

Thank you,

Kevin

EXHIBIT

45

OFFICE OF
INSPECTOR GENERAL
U.S.DEPARTMENT OF THE INTERIOR

2012
OIG ANNUAL SURVEY RESULTS

Note: Please refrain from printing, or coordinate to print one copy per office, due to the size of the document.

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Background

- 82% of employees completed the survey (228/ 276)
  - In 2010, 88% of employees completed the survey (238/ 270)
  - -In 2011, 85% of employees completed the survey (225/264)

- Responses were, in general, on a five point scale from “strongly disagree” to “strongly agree”. Results are reported by the average score (mean) as well as the frequency distribution.

- For comparison purposes, 2010 and 2011 means are included in the data that follows. We indicated where question wording differed.

- This year, we grouped questions by strategic objective. We also aligned the open-ended comments with the strategic objectives.

- The majority of questions were asked to both supervisors and non-supervisors. We indicate where the question was asked to only one group or the other.

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A Note on Comments

- We had four open ended questions. Two pertained to SharePoint, one to communication, and one was open-ended.

- We grouped comments by objective and with related questions.

- The comments are quoted verbatim, with few exceptions. We removed two comments aimed at individuals who are not part of the Leadership Team and redacted names and identifying information from other comments targeted at individuals.

OIG STRATEGY

MISSION: To provide independent oversight and promote excellence, integrity, and accountability within the programs, operations, and management of the Department of the Interior

CUSTOMER

U.S. Public
Congress
DOJ
DOI

- C1: "Provide accurate and actionable information that is relevant and timely"
- C2: "Be responsive in an open and accountable manner"

...in order to provide top quality products and services to our customers and fulfill our mission.

INTERNAL PROCESSES

- I1: Focus on prevention
- I2: Focus on targeted categories
- I3: Follow standard approaches to efficient work processes
- I4: Improve communication

...and achieve operational excellence

PEOPLE, LEARNING, GROWTH

- P1: Foster collaboration, continuous improvement, and innovation
- P2: Improve workforce planning
- P3: Recruit, develop, and retain a quality workforce

...develop our people and expertise

FINANCIAL RESOURCES

- F1: Efficiently plan, manage, and use resources according to the strategic plan

...obtain and manage financial resources

WE WILL

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C1: "Provide accurate and actionable information that is relevant and timely" C2: "Be responsive in an open and accountable manner" Value: We place the highest value on objectivity and independence to ensure integrity in our workforce and products	Means			2012 Question Asked To:	
	2012	2011	2010	Both	Supervisor only
1. The OIG's products and services are objective	3.75	3.82	3.75 [1]	●	
2. The OIG conducts its work in a manner that is independent (free from improper influence) from Congress.	3.69	3.81	3.75 [1]	●	
3. The OIG conducts its work in a manner that is independent (free from improper influence) from the Department.	3.60	3.76	3.75 [1]	●	

[1] 2010 question was "The OIG produces work that is objective and independent."

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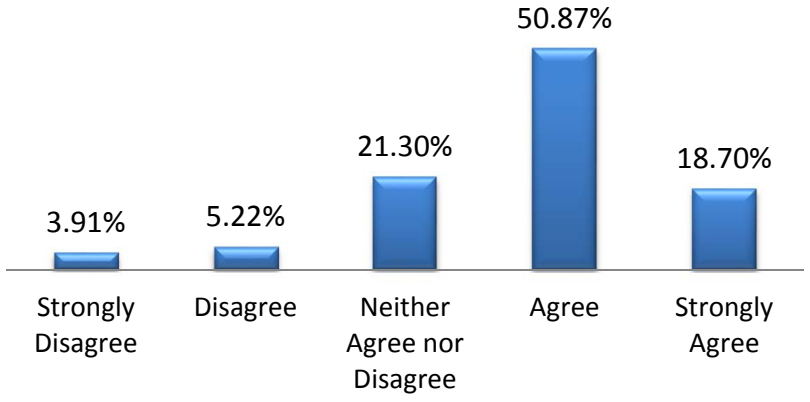
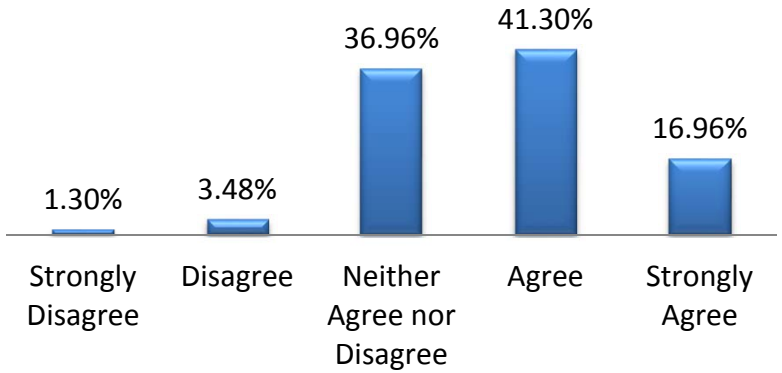
1. The OIG's products and services are objective.

2012 Mean = 3.75
2011 Mean = 3.82
2010 Mean= 3.75*

2. The OIG conducts its work in a manner that is independent (free from improper influence) from Congress.

2012 Mean = 3.69
2011 Mean =3.81
2010 Mean=3.75*





* 2010 question was "The OIG produces work that is objective and independent."

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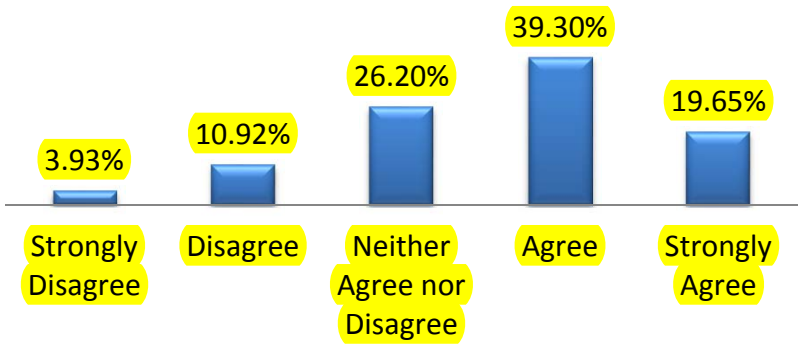
3. The OIG conducts its work in a manner that is independent (free from improper influence) from the Department.

2012 Mean = 3.60
2011 Mean = 3.76
2010 Mean= 3.75*



* 2010 question was “The OIG produces work that is objective and independent.”

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Customer Comments

- I've become very concerned of late with the OIG's independence and honesty. We go after people who ignore subpenoa's and stretch the truth (to put it nicely). Seems like our mission statement and vision are just words on paper and not something we should live by. We should refocus the effort on independence and honesty, rather than who is using or not using Sharepoint.

- What is up with asking the Department if they are okay with OIG looking at programs and areas and not looking when DOI says they would prefer we don't. That is clearly against the independence model. You have experts SME's within and you don't take the word of them but do the DOI. That is crap!

- Wake up and quit trying to to 'get approval' from DOI...we have job to do. The balance and independence model seems to be missing....the 'appearance' is there that the OIG has to ask the DOI is they can and actulally...us SES'r's know it is the truth because you do ask DOI if it is 'okay to look at things'... enough is enough. Get back to being independent and lets get ourselves some respect and demonstrate to the tax payers why we were hired.

- Good luck....there is a balance which I know is tried here....but it seems the scales have shifted too far into the non-independent world that we need to review ourselves again and get it back to being balance.

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I2: Focus on targeted categories	Means			2012 Question Asked To:	
	2012	2011	2010	Both	Supervisor Only
4. I am aware of how the targeted categories impact work in my unit (AI&E,OI or ROO).	3.82	3.80	N/A [1]	•	
5. I can explain to my employees how the targeted categories impact work in our unit (AI&E, OI or ROO)	4.15	4.10	3.53 [2]		•

[1]2010 question was "I am aware of the areas the OIG considers high risk and high impact." Question is different enough to limit comparison. Mean was 2.57 on a 5-point Likert scale.

[2] 2010 question was "I understand what a focus on high risk and high impact means to the OIG well enough to convey it to my office."

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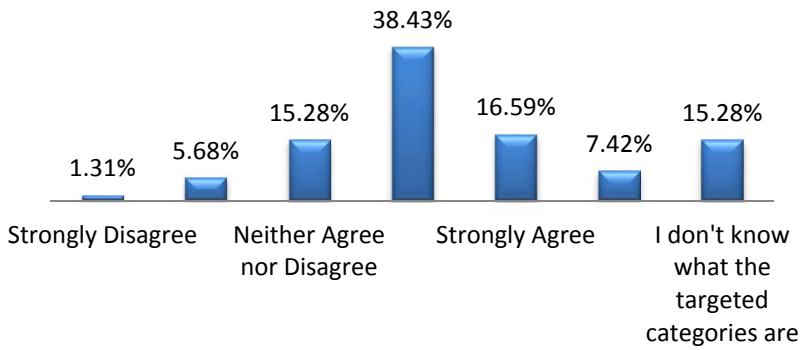
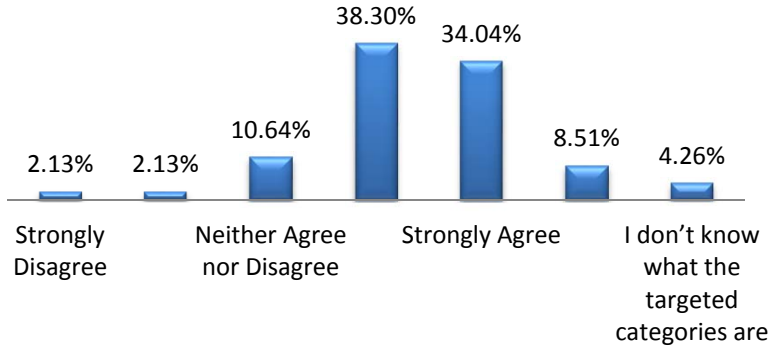
4. I am aware of how the targeted categories impact work in my unit (AI&E, OI, or ROO).

2012 Mean = 3.82
2011 Mean =3.80
2010 Mean= N/A*



5. I can explain to my employees how the targeted categories impact work in our unit (AI&E, OI, or ROO).

2012 Mean = 4.15
2011 Mean = 4.10
2010 Mean= 3.53**
(Asked to supervisors only)



*2010 question was "I am aware of the areas the OIG considers high risk and high impact." Question is different enough to limit comparison. Mean was 2.57 on a 5-point scale.
**2010 question was "I understand what a focus on high risk and high impact means to the OIG well enough to convey it to my office."

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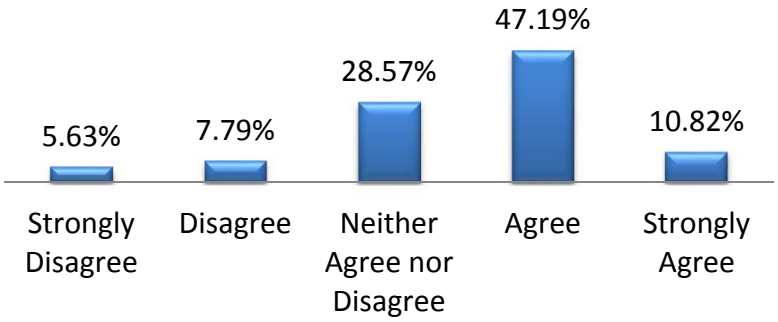
I3: Follow standard approaches to efficient work processes	Means			2012 Question Asked To:	
	2012	2011	2010	Both	Supervisor Only
6. Work processes in my unit (AI&E, ROO, OM, etc.) are consistently applied or executed	3.50	3.69	3.02	•	



Comment:

Many suggestions of process improvement are not taking seriously. Often times suggestions that negatively affect the productivity as a whole are blindly followed, even with a majority of objection from peers.

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I4: Improve communication	Means			2012 Question Asked To:	
	2012	2011	2010	Both	Supervisor
7. Communication within the OIG is open and honest	3.25	3.33	2.71	•	
8. Overall, communication within the OIG is effective.	3.23	3.37	2.77[1]	•	
9. Communication from senior leadership (SES) has helped me to understand the goals and priorities of the organization.	3.41	3.62[2]	2.91[2]	•	
10. I can contact and speak openly to senior leaders (SES) if I want to. ["openly "added in 2012]	3.56	3.97	3.31	•	
11. My immediate supervisor communicates effectively.	3.93	4.08	3.79	•	
12. My immediate supervisor keeps me informed of OIG-wide issues.	3.88	4.02	N/A[3]	•	
13. My immediate supervisor discusses the relevance of OIG-wide issues to my job.	3.73	N/A	N/A	•	
14. I get the information I need to communicate OIG-wide issues to my staff.	4.02	4.23	N/A[4]		•

[1] 2010 question was "Overall, the OIG communicates effectively."
[2] 2010 and 2011 question was "Senior leaders (SES) communicate the goals and priorities of the organization."
[3]2010 question was "My immediate supervisor keeps me informed of issues affecting my job." Question different enough to limit direct comparison. Mean on a 5 point likert scale was 3.76.
[4]2010 question was "I receive the information I need to effectively interpret and transmit organization-wide communications to my office." Question different enough to limit direct comparison. Mean on a 5 point likert scale was 3.22.

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I4: Improve communication (cont'd)	Means			2012 Question Asked To:	
	2012	2011	2010	Both	Supervisor Only
15. When I receive "manager talking points," I am more prepared to respond to employees' questions or concerns.	4.13	4.21	N/A[1]		•
16. Senior leaders (SES) clearly explain the rationale for organizational decisions made in the OIG.	3.25	N/A	N/A	•	
17. Senior leaders (SES) clearly explain the rationale for decisions made in my unit (AI&E, ROO, OM, OI, etc.)	3.37	N/A	N/A	•	
18. One-on-one meetings have helped me to develop and/or maintain an effective relationship with my immediate supervisor. ["or" added in 2012]	3.59	N/A	3.16	•	
19. The use of one-on-ones has helped me to develop and/or maintain an effective relationship with my employees. ["or added in 2012)	3.93	N/A	3.60	•	

	Yes	No		
20. My immediate supervisor and I have a weekly one on one meeting.	60%	40%	•	

[1]2010 question was "I receive the information I need to effectively interpret and transmit organization-wide communications to my office." Question is different enough to limit direct comparison. Mean on a 5 point likert scale was 3.22.

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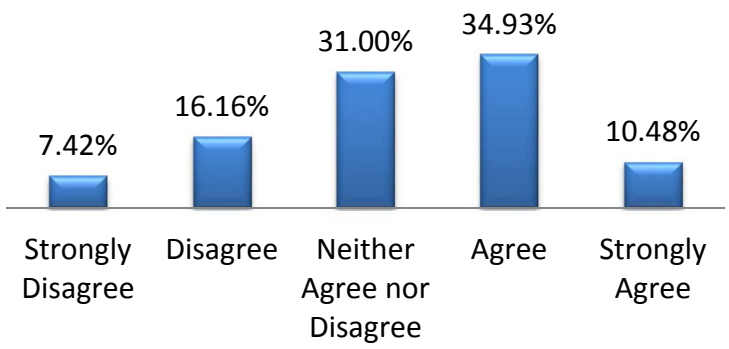
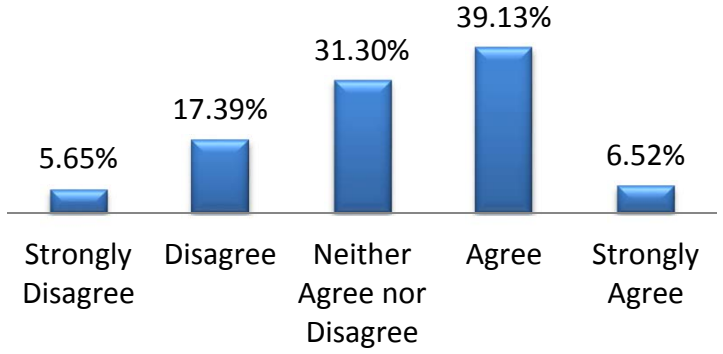
7. Communication within the OIG is open and honest.

2012 Mean = 3.25
2011 Mean = 3.33
2010 Mean= 2.71



8. Overall, communication within the OIG is effective.

2012 Mean = 3.23
2011 Mean = 3.37
2010 Mean= 2.77*



* 2010 question was “Overall, the OIG communicates effectively.”

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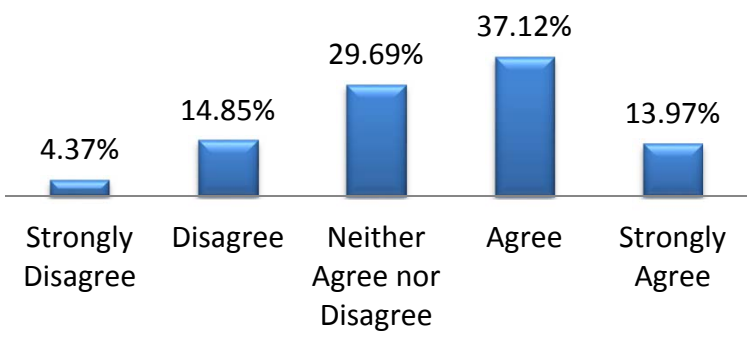
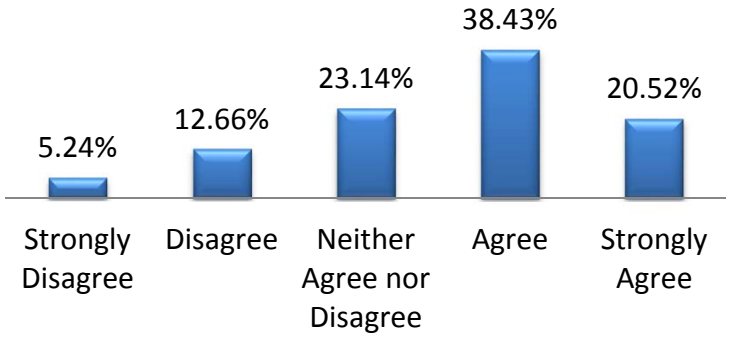
9. Communication from senior leadership (SES) has helped me to understand the goals and priorities of the organization.

2012 Mean = 3.41
2011 Mean = 3.62*
2010 Mean= 2.91*



10. I can contact and speak openly to senior leaders (SES) if I want to.

2012 Mean = 3.56
2011 Mean = 3.97**
2010 Mean= 3.31**



*2010 and 2011 question was "Senior leaders (SES) communicate the goals and priorities of the organization."
**2010 and 2011 question was "I can contact and speak to senior leaders (SES) if I want to"

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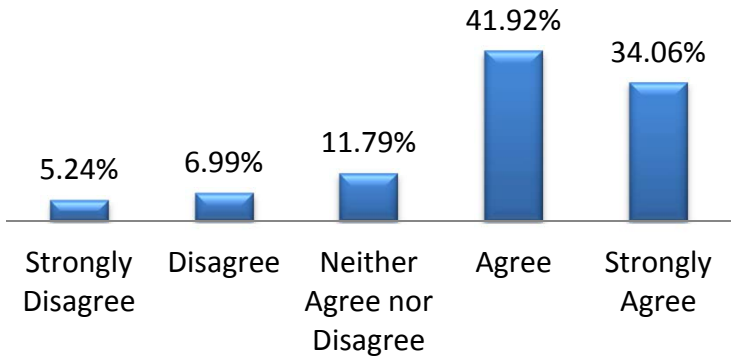
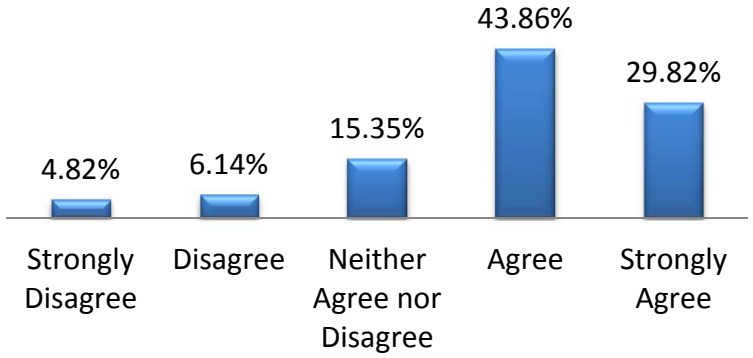
11. My immediate supervisor communicates effectively.

2012 Mean = 3.93
2011 Mean = 4.08
2010 Mean= 3.79



12. My immediate supervisor keeps me informed of OIG-wide issues.

2012 Mean = 3.88
2011 Mean = 4.02
2010 Mean= N/A*



*2010 question was "My immediate supervisor keeps me informed of issues affecting my job." Question different enough to limit direct comparison. Mean on a 5 point likert scale was 3.76.

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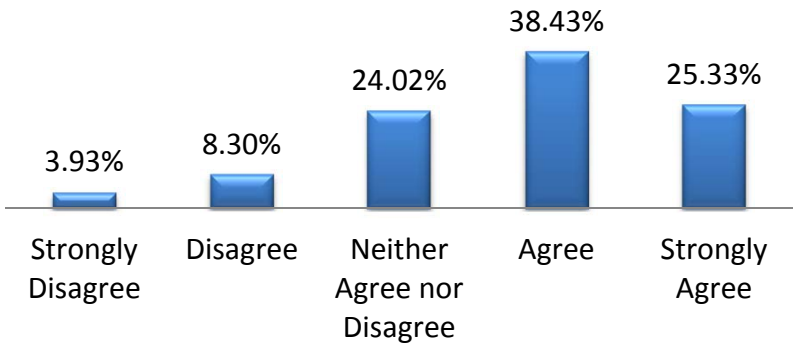
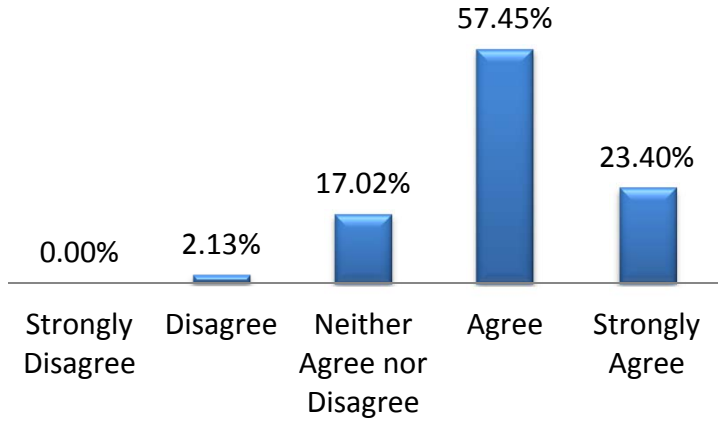
13. My immediate supervisor discusses the relevance of OIG-wide issues to my job.

2012 Mean = 3.73
2011 Mean = N/A
2010 Mean = N/A



14. I get the information I need to communicate OIG-wide issues to my staff.

2012 Mean = 4.02
2011 Mean = 4.23
2010 Mean = N/A
(Asked to supervisors only)



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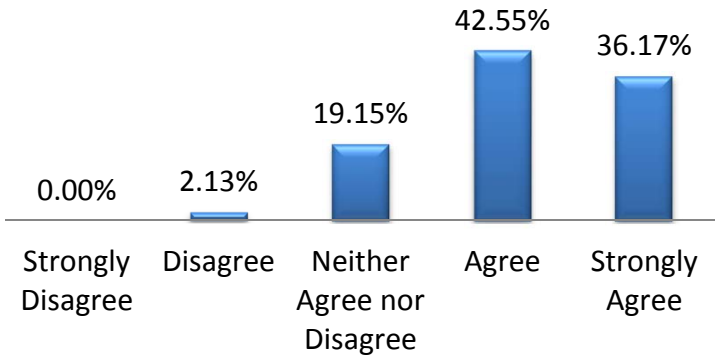
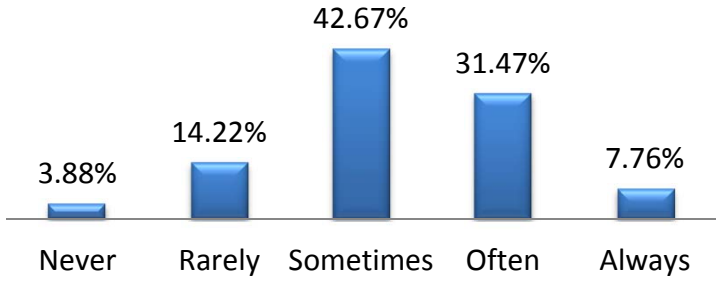
15. When I receive "manager talking points," I am more prepared to respond to employees' questions or concerns.

2012 Mean = 4.13
2011 Mean = 4.21
2010 Mean = N/A*
(Asked to supervisors only)



16. Senior Leaders clearly explain the rationale for organizational decisions made in the OIG.

2012 Mean = 3.25
2011 Mean = N/A
2010 Mean = N/A



*2010 question was "I receive the information I need to effectively interpret and transmit organization-wide communications to my office." Question is different enough to limit direct comparison. Mean on a 5 point likert scale was 3.22.

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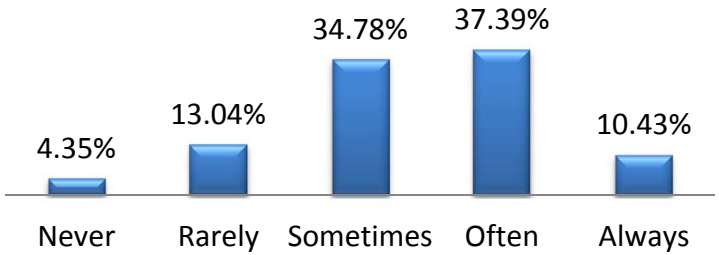
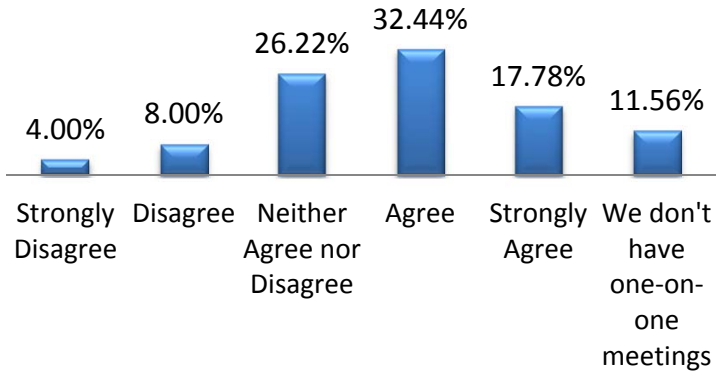
17. Senior Leaders clearly explain the rationale for decisions made in my unit (AIE, ROO, OM, OI, etc.).

2012 Mean = 3.37
2011 Mean = N/A
2010 Mean = N/A



18. One on one meetings have helped me to develop and/or maintain an effective relationship with my immediate supervisor.

2012 Mean = 3.59
2011 Mean = N/A
2010 Mean = 3.16*



*2010 question was:" One-on-one meetings have helped me to develop and maintain an effective relationship with my immediate supervisor.

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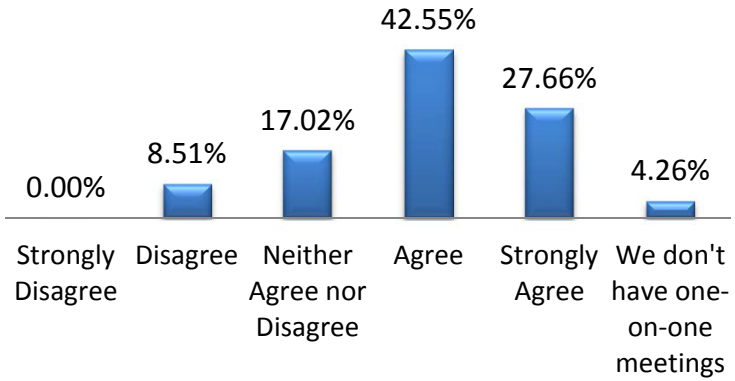
19. The use of one-on-ones has helped me to develop and/or maintain an effective relationship with my employees.

2012 Mean = 3.93
2011 Mean = N/A
2010 Mean = 3.60*



*2010 question was:" The use of one-on-ones has helped me to develop and maintain an effective relationship with my employees.

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Communication Comments

- I think more of what Leadership is doing (Sharepoint blog, slider stories, manager meetings, talking points, etc.) I also think we need to put some of the responsibility on employees to raise concerns in a constructive manner, with suggestions on ways to address their concerns and an understanding that our SES are still ultimately our decision-makers--they are the ones accountable for actions taken. And I think we all have a great opportunity to use sharepoint to improve communication from the bottom up -- asking questions, sharing information, etc.
- I read the communication toolkit and it has some really good things. Management needs to follow what they publish.
- Management needs to be more involved in the upper level. If employees are discontent and see no way to change things because their manager doesn't have their back, that's a problem.
- Work on timeliness of communication
- lateral communication
- Eliminate the duplicate communication. I don't need an email to tell me something has been posted on Sharepoint, when the whole point of Sharepoint was to eliminate the OIG-wide emails. Either say it in an email, or post it on Sharepoint. Doing both will eventually make people deaf to OIG announcements.
- Have an all employee conference. I felt that meeting others and attending and hearing the same information given out kept the gossip mongers at bay.
- Allow a pause for stability.
- Senior Leaders, please continue your efforts to include the rationale when you communicate decisions, and to communicate to all parties--not just those you feel are immediately affected.

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Communication Comments

- more consistent structured method for 'the message' to disseminate from supervisors to their team. Our division has bi-weekly meetings, which is not frequent enough to maintain a team effort. short frequent meetings are beneficial to daily operations. Also, regularly scheduled feedback sessions with supervisors would help.

- Honesty, honesty, honesty; openness, openness, openness. We need to get rid of the 'us' and 'them' mentality demonstrated by upper management. OIG employees are intelligent, highly educated, and intuitive. They are not easily fooled - it's part of why they are so good at what they do.

- I have recently realized that the communication issues that have arisen haven't usually been within my region or unit, but with another unit. While the helpdesk ticket process is effective and has pros, it reduces collaboration between actual people and doesn't provide a forum in which to ask questions or open a dialog before the ticket is closed. It's also ripe with cons. A couple of people won't speak to us or return calls/e-mails unless a ticket has been opened; this changes the overall image and opinion of communication within the OIG. I normally suggest resolutions when I constructively point out problems, but I'm not sure what to suggest. In the past when regional managers learn results of survey communication problems, they try to make their good communication even better because there's a feeling that they aren't doing enough. In reality, the issue isn't within the region, but between the region and other units (OM, IT, HR, etc.). Coincidentally, these are the units that have gone from open communication/collaboration to a helpdesk (which isn't always available to those in the field or TDY, via Blackberry, or to those unable to log on and in need of assistance). And while the helpdesk process provides an immediate survey, no one is confident that it's anonymous, so true thoughts probably aren't conveyed. I hope this helps in some way, sorry to be so wordy!

- Timely release of information with a uniformed message.

- When decisions are made, stick to them. Second, when a decision in made, show how that relates to the mission.

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Communication Comments

- Provide consistent, honest, fact-based information regarding its decisions. Provide the rationale as to why decisions are necessary. Inform the agency in a timely manner.

- People communicate not Sharepoint. Sharepoint is yet another tool and not the answer to be a better communicator. It's the message not the media format that matters. Be clear on the message first, then use various media outlets to get the word out. Communication is a 2-way street up and down the chain of command.

- Communicate! Every time a decision is made management should tell everyone WHY the decision was made. So many times have decisions been made and the workers are only left to ponder 'why did they make that decision?'... Even if the truth is hard to come by, tell us, WE ARE ADULTS we can handle it. For example, we had the OIG conference canceled this summer, all we got was an email from Hardgrove saying it's canceled and ask your supervisors if you have any questions about why...That was it. Couldn't he have just said we are cancelling it because of this or that… Cause then rumors start like it was canceled cause of the GSA conference scandal in Las Vegas and management is scared to have any conferences now… If it's just put out there with the methodology on how decisions are made, then we wont have these problems. It's like an audit workpaper, we have to write a methodology section so reviewers know how we came to our conclusions, management should be held to the same level of competence

- Supervisors who do not communicate need training.

- Administrative/Human Resource related issues particularly regarding new hires could be more streamlined if a checklist were provided to offices. The checklist could prioritize the paperwork and processes that must be completed for new personnel.

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Communication Comments

- Managers emphasizing the need to work as a team, which involves sharing information that is beneficial to the group rather than hoarding information for the sake of pumping one individual's importance.
- Management stress OIG mission to investigate and audit Interior programs rather than administrative activities.
- Can we de-clutter SharePoint and not send out notices, when employees tag that they like something?
- Improving communication depends on what people think they need or want to know. My supervisor keeps us informed of impending changes, new information, etc. I think we still need improvement on the listening and dialogue aspects of communication. Communication tends to be a one-way activity. The discussions around the senior leadership blogs have been a welcome change. I'd love to see more of those occur on topics that address some of the OIG's major challenges.
- Share more information when it becomes available.
- I think it is pretty good, better than most places. SharePoint helps too.
- Start the lines of communication early. A bad example of communication is the impending move of the Central Region to a new office. We were originally told that the new office would have plenty of space and that most employees would have their own office. Only recently were we informed this would not be the case. The new office will have far less space than the current one. I expect our productivity will be less because we will have to look for an available room whenever we need to hold a team meeting.

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Communication Comments

- I think communication is fine. There will always be some who complain or want to be informed about every single management decision.
- discuss reasons and rationale for decisions
- We should offer customer service and communication courses at our own Herndon Training Center. And everyone within OIG should be required to take both courses each year. We should never stop looking for ways to communicate effectively throughout the organization. Communication is such a big part of everyone day-to-day job. So, the more we discuss it and have training in that area the better our communication skills will be for the organization.
- communicate honestly and when it happens not weeks later
- Some issues seem to be communicated very well, but others are not. Everyone was waiting for Mary to address the allegations for quite some time before we received her memo. It would have been better to get that sooner rather than later since it was such a big issue on people's minds. Other issues have been communicated quite well, including the car situation. We didn't have to listen to rumors; we knew the situation immediately. I think one improvement would be to have management communicate issues as soon as they can rather than wait and have the 'rumor mills' spinning.
- SharePoint has helped but could address more all the changes that are happening around OIG and with the CIGIE investigation in the news.
- NA/ none/ don’t know/ ? / no ideas/ I don’t know (8 responses)

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Communication Comments

- At least as far as supervisor is concerned, less running from one task to the next and more consistency in whom the supervisor communicates with on things. A supervisor should not be a super-worker but a manager of workers.

- Communication is often subordinate-led, which leads to confusion and gaps in information. Supervisor also needs to be better at realizing what others within the unit are doing, as these things may relate to one another without the unit members knowing it. In general, supervisor needs to promote more communication across the unit and less siloing into discrete projects, and also inform all members of the team of noteworthy things others are doing, places they are going, etc. Better delegation of tasks would likely help, so that the supervisor is not expending all energy on running from one thing to the next, and is able to see the bigger picture and understand what subordinates are doing and communicate what the supervisor uniquely knows to members of the team who may not.

- The communication in the field is great. The communication from the top down needs improvement.

- Focus communication on mission related elements ONLY. Use available technologies when they make SENSE, not just to keep UP with the Joneses. Communication should be valued by its effectiveness ONLY (not whether or not you used Sharepoint). NARROW the audience to a need to know basis! Let the mission oriented offices do WORK and management oriented entities focus on their initiatives to do their job better, always with the intent to leave a small foot print on the mission offices.

- More direct communication to the affected employees, rather than a communication 'chain' through the managers to the affected employees. Sr. Mgrs believe that notifying their middle managers will get the information to the masses, but this doesn't always occur. And sometimes, when it does, it is subject to interpretation that may not be the intent of the Sr. Manager.

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Communication Comments

- There needs to be much better rationale for the large decisions. The leadership simply does not come across as credible, honest, or open. I'll use the vehicles as an example. Mary has previous said that the vehicles cost the organization about $300,000. I have heard that each employee on average costs $135,000. So, cutting the fleet in half will save approximately one employee. That's all fine and good, although this only came out well after the decision was made, with no input from the field. The real problem is that it does not strike anyone as credible that this move will actually benefit the organization in any way. It saves one employee, but OI is not being backfilled as people leave. So who is being 'saved?' One of the five members of the non-mission critical strategy management office? One of the full-time ROO employees that were supposed to only be term? One of the GS-15s in OM with very little responsibility? I only use the vehicles as an example, there are many more. Forced transfers of [name redacted] and of another unspecified person, no backfilling, no travel money, etc. It makes no sense. Maybe it does to HQ, maybe there's a wonderful rationale for keeping non-mission critical employees while destroying OI's ability to function, but thus far I haven't seen it.

- It's not that there's zero communication within the OIG, but that what is being communicated makes no sense to the field. It screams, loud and clear, that this organization's priorities are not achieving our mission, which is still to prevent, police, and correct fraud, waste, abuse, mismanagement, and corruption, but rather to ensure that everyone who currently has a job continues to have one.

- Unless what I described truly is no longer our mission, but is actually that vague phrase about 'promoting' excellence, integrity, and accountability (whatever that means), senior leadership needs to make some hard choices about people. That's why you guys get paid as much as you do, to achieve the mission with whatever resources Congrees gives you. Even if that means cutting people in non mission critical areas.

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Communication Comments

- Stop saying one thing and doing another thing.
- If it is affecting someone's position, they should know about it. Communication needs to be opened wider.
- additional training for managers and employees
- Communication in the field offices is great, but between the field offices and Headquarters?
- Use communication planning techniques and practices to deliver the proper messages to employees and to motivate them to take action.
- Stop trying to give too much information too soon! We appreciate the transparency, but too much can scare people and impact productivity. The right info at the right time using the right communication method is what people need.
- Sharepoint is a good tool.
- Quarterly telecons or meetings
- If we get back to the basics of an OIG (performing the mission)and spend less resources on extra activities such as Strategy and work groups communication will improve.

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Communication Comments

- In my opinion, poor communication is a symptom, but is not the main problem we face as an organization. It seems to me that our managers are not trusted to make basic decisions on day to day issues, and everything is decided at the AIG level or higher. As a result, our problem isn't with communication as much as it is with distance from the decision makers, and with the amount of time it takes to resolve the simplest of issues. I think this appears to be a communication problem, but is really something more serious.

- Full transparency with all issues affecting the organization, including potential moves or issues with Congress, the Department, etc.

- Post leadership team meetings and any related decisions on Sharepoint.

- Communication has definitely improved, but there is still a distinct lack of communication across units. And decisions by senior management are presented as if made based on input from others, when in reality the decisions were already made and the input is a waste of time and effort for those providing it.

- You have to have communications passed down from managers/supervisors. Information gathered from other divisions because of this!

- starting at the top levels, not telling people what they think the people want to hear or doing or saying things that make themselves look good

- Keep up the good job with using Sharepoint to share information. By checking the site daily, I am able to keep informed through the articles, executive blogs and posts. OM is doing a great job with sharing information on their site such as the OM meeting minutes, the announcements, the training division page, etc. I'd like to hear more information about the I.T Transformation.

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Communication Comments

- There is such a thing as too much information. The problem with the OIG trying to keep the employee informed is the information provided is always in bits and pieces. This causes employees to speculate and spread rumors. It is OK not to share information until it is complete. OIG tries so hard to keep its staff informed that it has become over kill. It's like the various news channels competing to be first with the "breaking news" story that information delivered is partial and the majority of the time inaccurate because it changes, daily. Just give the information when the decision is final.

- None...I believe OIG management has far exceeded most in attempting to improve internal communications.

- Discuss thinking about upcoming changes.

- Ensure that senior leaders (SES members) communicate all needed information downward, particularly to those who have a need to know. I think the communication at the higher level is open and complete. However, information seems filtered or piecemeal when relayed to staff.

- Even if we cannot afford an all-hands conference, we should try to do all-hands meetings via teleconference to the extent possible to encourage cohesion in the organization.

- Listen to what the worker bees are telling you when making OIG-wide decisions. We say something will not work for the job we need to get done but we proceed with it anyway hoping to MAKE it work. There are simpler solutions to some problems if you listen to those who deal with the situations daily.

- No change. Maintain willingness to communicate openly and honestly.

- Once a decision is made communicate it immediately, so we don't have to hear about it through rumors.

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Communication Comments

- Actually communicate about the budget. Seriously. I know Congress isn't making it easy, but there is no reason why we shouldn't have any idea what our travel budget is 3 months into the fiscal year, then 3 months before the next fiscal year be completely out of travel money. Did we not plan? Was this the plan? I know we're still operating at levels that somehow sustained us in years past, why are we out this early? Travel for audit site visits wasn't subject to the cuts outlined in the recent Executive Order, so why are dozens of people taking trips to Hawaii while our actual work is being constrained to desk audits?
- the Key to better communication relies in the integrity of immediate supervisors and managers. Communication is getting better, slowly but surely.
- Schedule mandatory OIG wide teleconference once a month
- Continue to hold joint conferences with the overall organization
- It would be nice if there were a completely anonymous way to post questions to upper management.
- no changes at this time.
- In my opinion, I don't believe there are real communication issues at this point.
- Having the Communication Toolkit available to (me) all employees has helped me improve on my communication skills - thank you.
- Have regular meetings to share information, send emails of new policies, keep staff informed of what is going on and what future plans are.

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Communication Comments

- Currently we have many groups working on strategy, plans, etc. Yet, in looking at past decisions, it would appear that many times Leadership, including the COS and Acting IG, have a direction in mind that they want a particular strategy or plan to go, yet fail to directly inform these groups of their desired outcome. This leaves these groups working to come up with alternatives and a suggested course of action, when leadership already has, at least tentatively, made a decision. When these decisions are then communicated to the planning team, many times they feel disenfranchised by the process since it appears that the work performed was but an 'exercise' to provide cover for a decision already made. Providing planning and strategy groups with leadership thoughts and desired goals and objectives as soon as they are known by leadership would go along way toward building trust in the process and reducing planning 'fatigue' within the organization.

- Always explain the rationale for changes being considered or made by HQ to the troops to stop speculation.

- Major changes that will ensure the organization that they are totally clear about working on communication. As it stands now, we are just doing the minimum to get by

- More common sense approach

- Be as open and honest as possible. I know it isn't always easy, but we are adults. We see things for what they are. It is always said, rumors shouldn't be taken seriously. But, when those rumors become real!!!...it makes people discredit those that should of been straight up with us.

- Not sure. One change could be that one office or only designated persons deliver timely and consistently all OIG-wide communication.

- With the federal budget under greater pressure, it would be helpful if budget status updates are regularly communicated to everyone.

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Communication Comments

- SES leadership could do a better job informing field management of why certain decisions have been made. If for no other reason, field management needs to be able to adequately answer questions received in the field that directly affects peoples' lives. Carrying forward leadership's message is a whole lot easier when field management understands why decisions are being made.

- Senior leaders need to be more blunt w/their subordinates. Tell us like it is, don't 'water it down' because your scared of hurting someone's feelings.

- Be open and honest

- I think being more transparent is a huge part in improving communication. This is also something that needs to be done in a timely manner. More often than not the rumor mill regarding a decision starts up way before any information gets communicated and employees spend way too much time second guessing and assuming things that are not even relevant.
- Managers can post more content on SharePoint to make access to information available to employees

- The regional management has trouble communicating with their staff and may act as a barrier between the staff and senior level management. Senior staff or head quarters can try the best they can to improve communication, collaboration, policies and procedures, and unfair treatment when it comes to training or hiring practices, but if the middle level management does not implement it or respect it, it does not get reflected down to the staff.

- Earlier communication for starters, before the rumor mill goes around. I hear about most things in various bits and pieces long before a formal announcement comes out.

- Also, when an employee changes units (OI to OM or IAE to OM), I would conduct a exit debriefing. Find out what they thought of the unit and why did they request or apply for a transfer (I'm sort of assuming that this is done when an employee is leaves the organization).

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Communication Comments

- Again, (think I suggested this before) : I would have senior leadership 'walk the floor.' Have them take the initiative and give me a call and ask me how my job is going. Have them ask me what I am working on. Have someone in senior leadership randomly choose one or two employees to talk to for a half hour once a month (i.e. conduct a one-one one style meeting with them) I can think of two instances in which senior management had an understanding of a process taking place that was entirely different from what was actually taking place. It 'appeared' to me that middle managers were not effectively communicating the facts on the ground accurately or completely.

- Senior management needs to improve in open communication.

- I'm not certain if communication is the issue or if it's personalities and an overall lack of established and enforced expectations? I feel that we allow people to behave and communicate poorly. Managers rarely correct behaviors or actions. Instead, we reassign employees, give them special tasks, move them to positions where they're likely to have less impact or interaction with others. We don't address the snarkiness, ill tempers, or short and curt emails, conversations, or phone calls. In fact, we let people ignore outreach and choose not to communicate with other employees. We brush off hostility and permit people to act unprofessional because of their title. I think that we need to start with the executives examining themselves so that they can truly understand their shortcomings and communication challenges (no one is perfect, and pay grade certainly doesn't equate to mastering communication skills). Once they appear unified and are consistent in their communication approaches, and they've set a quality example, then they can establish an expectation that can be enforced with the next level managers and so forth. We also have to remember that communication is an everyday evolving skill. We need to recognize that it's never a one-size-fits-all situation, and honestly, many of our employees need to be a bit more adaptable to other people, changing circumstances, and show a bit more patience. We need to start with questions rather than assumptions and accusations, regional bias, or preconceived notions. And we need to let the past go and drop some of the grudges. We won't improve our communication until we improve our culture, and ourselves.

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Communication Comments

- Conduct periodic (bi-weekly?) staff meetings with regional management and (monthly?) OIG-wide VTC meetings with HQ leadership.

- Stop being so vague and be more transparent. For instance, in central region Charles Haman recently put out an email updating the staff on a recent managers meeting. In this email his listed a number of topics with a brief vague statement for each of them. One in particular that comes in mind was “we ran out of travel funding...due, largely, to some unexpected 'bills' being charged to AIE's account”… WHAT DOES THIS MEAN? What are the unexpected “bills”? Why is he leaving this for the staff to ponder. The only reasonable explanation anyone can come up with is that these bills are the PCS costs for [names redacted] to relocate to take their GS-14 [positions] (which is contradictory to S. Hardgroves message this spring that no more PCS costs will be authorized for hiring) But the point is this vagueness just leads to rumors and staff scratching their head on what the heck is going on? As for more transparency, I would like to see how much money is being appropriated to each area/office/group, so we all know what the situation on spending is. If these numbers were published (say on sharepoint) everyone would know what the actual budget situation was and less rumors and misunderstandings could be prevented. We are the IG right? So everything should be legit, so we shouldn't have to hide these budget numbers right?

- Provide information to the entire OIG or an entire unit when it is relevant.

- Honest, upfront, and timely communication from the HQ level would be appreciated in whatever form.

- Less focus on being positive, more on telling the truth.

- Have regularly scheduled meetings, perhaps weekly or every two weeks.

- Post OI manager discussion points made during telecons on SharePoint

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Communication Comments

- Need to assure that Senior Level communication trickles down to the field and regional managers and staff. This is not always the case.

- I think we are doing pretty well. The organization cannot change personalities.

- Be honest with people. If there is an issue or problem, address it frankly and quickly, with the people involved. Spread the word throughout the organization to those things that affect others. Respond to inquiries and complaints.

- continue to provide updated IT communication, such as cell phone upgrades and laptop connectability to the IG server.

1.Communication is more than words in an email or on SharePoint. Communication is also action. In fact, the action component of communication is more important that the spoken or written component. In many cases, the actions don't support the words communicated, thereby creating a disconnect and the impression of hypocrisy.
2. In many cases, senior management speaks before getting the facts. So those who know the facts are left sitting and wondering what is going on.
3. We have gone absolutely overboard with SharePoint. A post on SharePoint by a senior manager is not an effective way of communicating with the entire OIG organization. SharePoint is just one method of communicating with the organization and must be supplemented with other communications techniques and media.

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P1: Foster collaboration, continuous improvement, and innovation	Means			2011 Question Asked To:	
Continuous Improvement Questions	**2012**	**2011**	**2010**	**Both**	**Supervisor Only**
21. Continuous improvement is valued at OIG.	3.78	3.97	3.61	•	
22. My immediate supervisor encourages me to suggest and/or try new ways of doing business.	3.74	3.94	3.67	•	
23. My immediate supervisor allows employees to participate in OIG improvement efforts, even if it impacts short term operational activities.	3.89	4.08	4.09	•	

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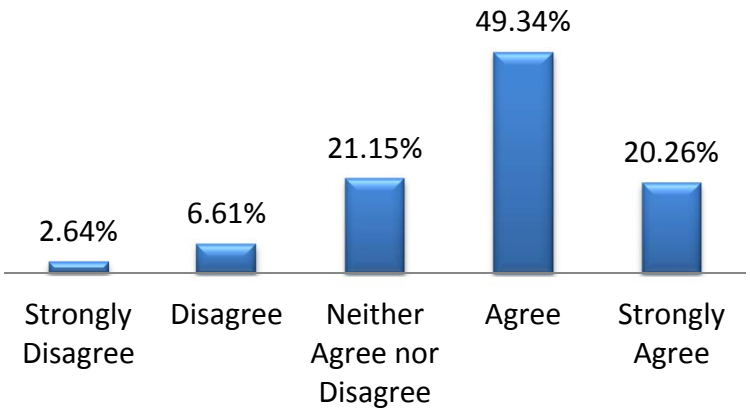
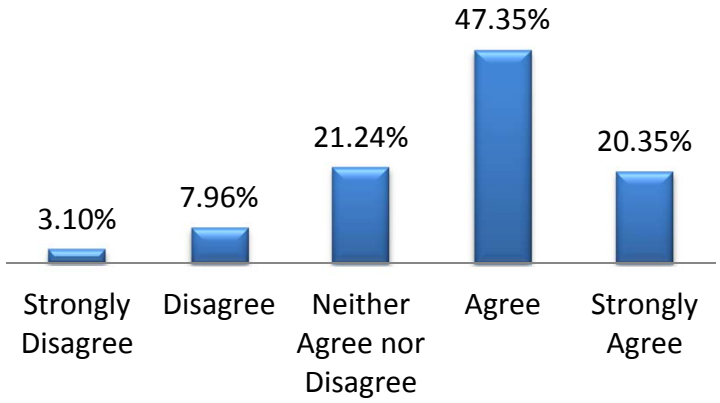
21. Continuous improvement is valued at OIG.

2012 Mean = 3.78
2011 Mean = 3.97
2010 Mean = 3.61



22. My immediate supervisor encourages me to suggest and/or try new ways of doing business.

2012 Mean = 3.74
2011 Mean = 3.94
2010 Mean =3.67



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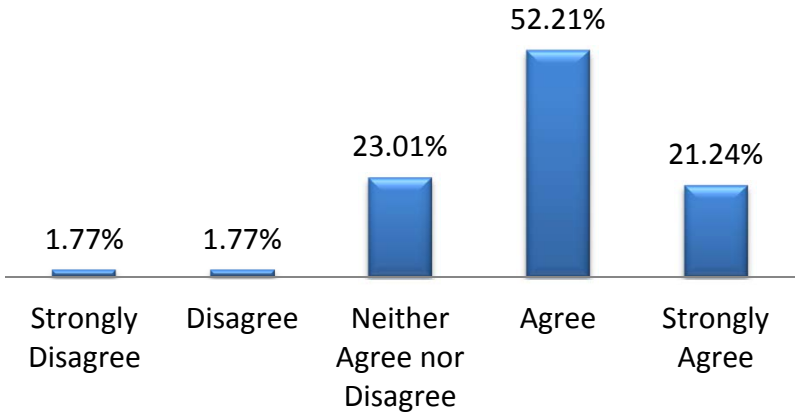
23. My immediate supervisor allows employees to participate in OIG improvement efforts, even if it impacts short term operational activities.

2012 Mean = 3.89
2011 Mean = 4.08
2010 Mean = 4.09



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P1: Foster collaboration, continuous improvement, and innovation	Means			2012 Question Asked To:	
Collaboration Questions	**2012**	**2011**	**2010**	**Both**	**Supervisor Only**
24. Senior leaders (SES) encourage collaboration among different work units (AI&E, OI, ROO, etc.)	3.77	3.83	4.04	•	
25. My immediate supervisor encourages collaboration between my work unit (AI&E, ROO, OM, etc.) and other OIG work units.	4.00	4.05	4.39	•	
26. My immediate supervisor encourages collaboration with different components (e.g., HR, OSD, CRU, FOIA, ISD) or regions (e.g., Eastern Region, Central Region, Western Region) within my unit (AI&E, OI, ROO, OM, OGC, IT)	4.06	4.06	N/A	•	

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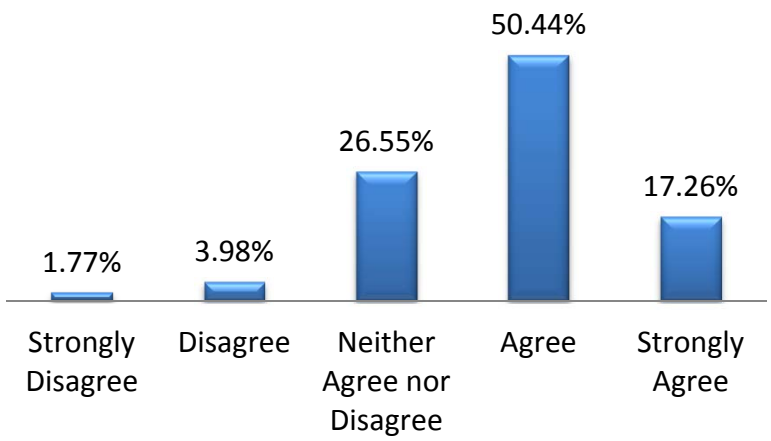
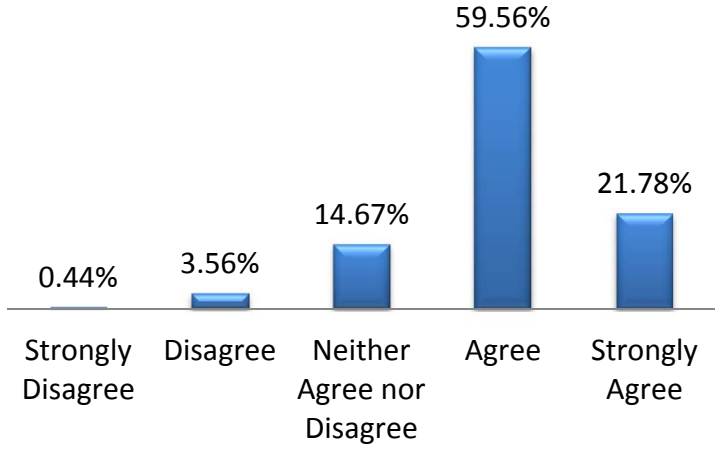
24. Senior leaders (SES) encourage collaboration among different work units (AI&E, OI, ROO, etc.).

2012 Mean = 3.77
2011 Mean = 3.83
2010 Mean = 4.04



25. My immediate supervisor encourages collaboration between my work unit (AI&E, ROO, OM, etc.) and other OIG work units.

2012 Mean = 4.00
2011 Mean = 4.05
2010 Mean =4.39



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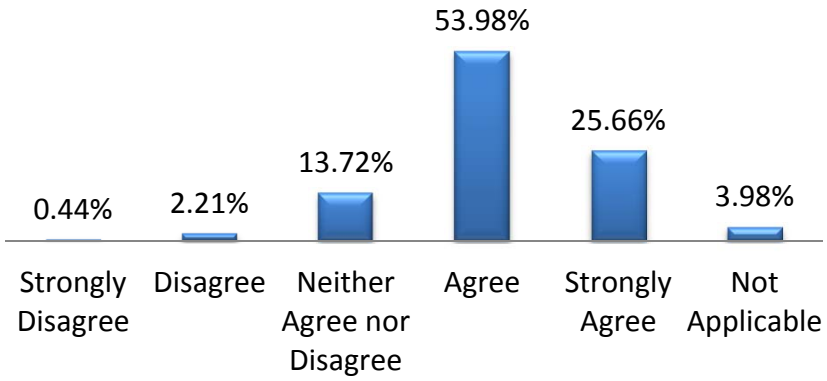
26. My immediate supervisor encourages collaboration with different components (e.g., HR, OSD, CRU, FOIA, ISD) or regions (e.g., Eastern Region, Central Region, Western Region) within my unit (AI&E, OI, ROO, OM, OGC, IT).

2012 Mean = 4.06
2011 Mean = 4.06
2010 Mean = N/A



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Collaboration Comments

- Don't force collaboration just to be able to state OIG supports collaboration.
- Control from the top on every issue does not encourage employees to collaborate. It causes the opposite effect, because employees game the system and go to the top to get what they want.

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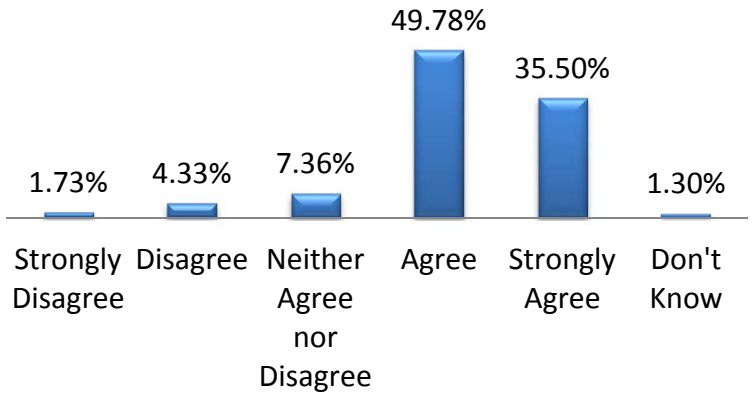
P2: Improve workforce planning	Means			2011 Question Asked To:	
	2012	2011	2010	Both	Supervisor Only
27. Employees in my work unit (AI&E, ROO, OM, etc.) have the knowledge, skills, and experience necessary to accomplish our organizational goals.	4.14	4.11	3.91	•	



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P3: Recruit, develop, and retain a quality workforce	Means			2012 Question Asked To:	
Motivation/ Employee Engagement	**2012**	**2011**	**2010**	**Both**	**Supervisor Only**
28. Overall, I am satisfied in my job.	3.90	4.04	3.67 [1]	•	
29. I have an effective relationship with my direct supervisor	4.06	4.28[2]	N/A	•	
30. My direct supervisor is an effective manager	3.91	4.08	3.87 [3]	•	
31. Overall, I have an effective relationship with my employees	4.30	4.48	N/A		•
32. In the OIG, similarly situation people in similar circumstances receive the same treatment free from favoritism.	3.05	N/A	N/A		
33. Personnel decisions (e.g., hiring, promotions) in the OIG are based on merit.	3.13	N/A	N/A		

[1] 2010 question was "Overall, I am satisfied with my work environment."
[2] 2011 question was "I have an effective relationship with my immediate supervisor"
[3] 2010 question was "My immediate supervisor is an effective supervisor."

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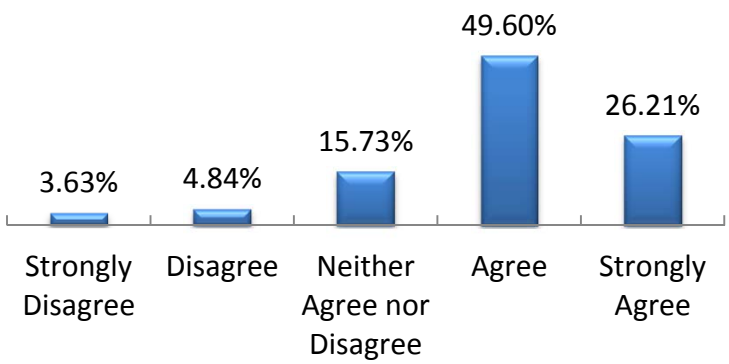
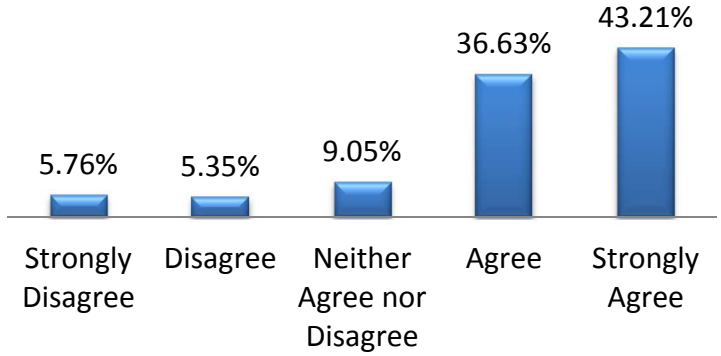
28. Overall, I am satisfied in my job.

2012 Mean = 3.90
2011 Mean = 4.04
2010 Mean = 3.67*



29. I have an effective relationship with my direct supervisor.

2012 Mean = 4.06
2011 Mean = 4.28**
2010 Mean =N/A



*2010 question was "Overall, I am satisfied with my work environment."
**2011 question was "I have an effective relationship with my immediate supervisor"

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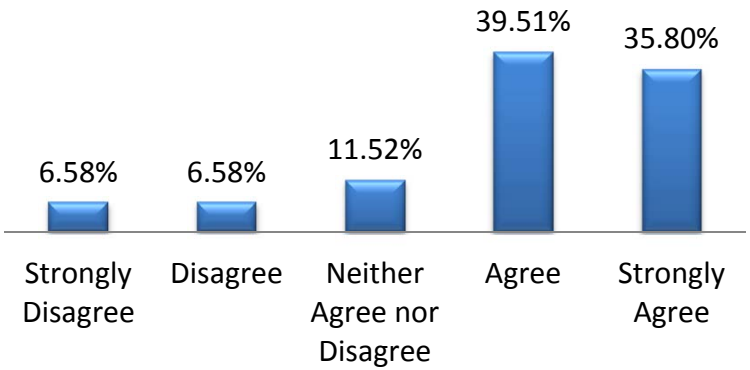
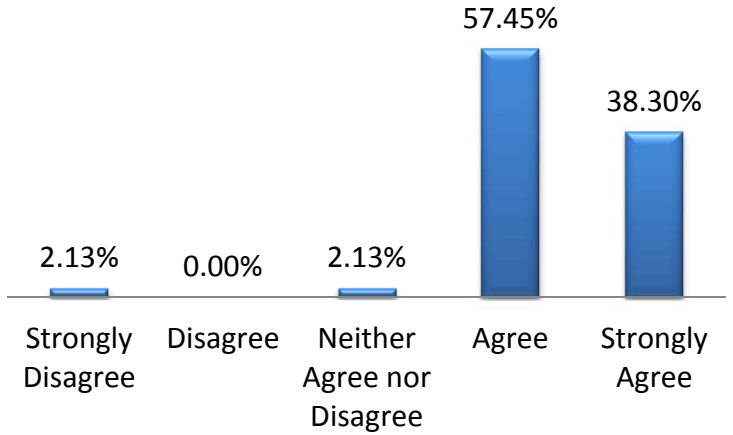
30. My direct supervisor is an effective manager.

2012 Mean = 3.91
2011 Mean = 4.08
2010 Mean = 3.87*



31. Overall, I have an effective relationship with my employees.

2012 Mean = 4.30
2011 Mean = 4.48
2010 Mean =N/A
(Asked to supervisors only)



*2010 question was "My immediate supervisor is an effective supervisor."

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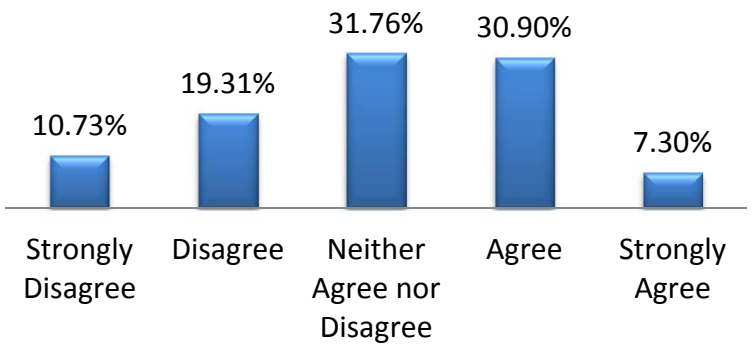
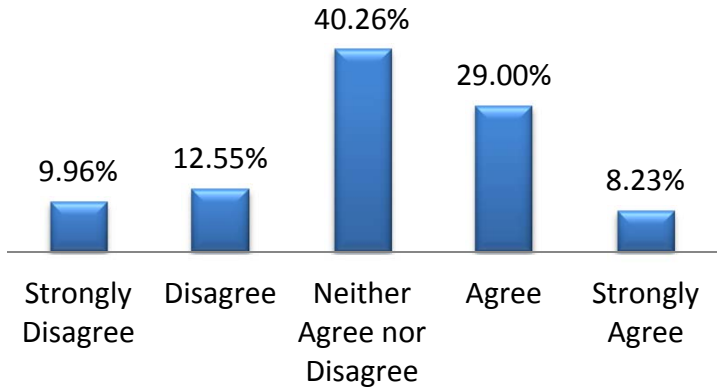
32. In the OIG, similarly situation people in similar circumstances receive the same treatment free from favoritism.

2012 Mean = 3.05
2011 Mean = N/A
2010 Mean = N/A



33. Personnel decisions (e.g., hiring, promotions) in the OIG are based on merit.

2012 Mean = 3.13
2011 Mean = N/A
2010 Mean = N/A



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Motivation/ Employee Engagement Comments

- Rumors of forced moves and RIF impact the morale of the workforce. Depending upon individual supervisors to explain the rationale or reasons for exploring the options is not working, they just blame it on HQ.

- I would like to say - with the greatest respect possible - that assets in the field possess great knowledge, skills and abilities just as metro-DC assets do; without much opportunity for individual face-time with HQ managers that DC staff have (in passing, lunch, etc.), we sometimes feel we have a slower career growth/development, and feel a little overlooked as a result. We see a much higher rate of DC staff promoted and moving faster along their career path than some of us in the field despite good performance ratings. Again, I hesitated to say anything, but it's honest and with the highest respect that I answer your questions honestly as encouraged. Thank you for receiving these comments in the spirit in which they are intended.

- I am very happy working at the OIG. I feel that leadership does really care about its employees and puts forth a great effort to make this a fair and superior workplace.

- NA

- Focus on important issues as opposed to minor details, e.g. AIE overview and QA reviews focusing on minor details versus larger picture.

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Motivation/ Employee Engagement Comments

- Favoritism and hiring practices are a huge issue here at the OIG. Recently in audits and investigations, hiring decisions were made completely on favoritism. It would be impossible to say that some of the hiring was done whatsoever based on merit. If I knew how, and thought it would actually make a difference, I would put a complaint in to have the recent (past couple years) hiring actions investigated by OPM again. The OIG may be "following the correct procedures" now, but supervisors are still hiring based on who they are buddies with, not what is best for the organization. This is disgusting and makes working here embarrassing. An example would be the recent Audit GS-14 supervisor positions. In [AIE] there were way more qualified and experienced candidates then one of the ones that was chosen. But based on the questioned asked in the interview, they purposely avoided any questions even remotely related to past experience in leadership… most of them were all hypothetical "what if" or "what would you do" questions. These questions were obviously so vague and discretionary so that the hiring official could easily support his favorites if a complaint was ever filed. Another example is also in [Investigations]. They had [another individual in OI] that recently was just giving a full time 1811 position, [information redacted] .. no job announcement on USA Jobs, no announcement OIG wide, NOTHING. There are auditors/evaluators that have been waiting for years to get the foot in door as an 1811. HOW DID THIS EVEN HAPPEN? Talk about being sneaky and devious hiring practices. Also another issues with OI is that they mostly do fraud investigations, which they need people with financial backgrounds (ie accountants). But when they recently had an opportunity to hire journeyman 1811's, they do the opposite, and hire people with psychology or marketing backgrounds … then they come back down to audits and steal our real auditors to do investigative assists cause they can't figure out the financial parts of most investigations… Seems like if they just hired 1811's with financial background in the first place they would have agents that wouldn't have to rely on audit support, and let audits do their own stuff. Maybe OI should take a look at a real investigative organization like the FBI or Secret Service and they will realize the push in those organizations for hiring accountants and the importance of CPA's. Or then again, maybe those journeyman 1811's were hired strictly based off of favoritism, cause there is definitely support to back that up if it was ever investigated.

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Motivation/ Employee Engagement Comments (cont.)

- Morale in AI&E is low due to unnecessary standards being enforced by individuals largely uninvolved with the projects intent. It seems more of a value is put on dates and color schemes as opposed to quality work.

- OIG is a great organization and the leadership values the effort of the employees.

- I love working here and am happy to see the continued interest and dedication toward constant overall improvement.

- A good place to work. Rewarding with good results.

- Training is not fairly distributed or given the opportunity to everyone in my region. Some individuals received multiple training opportunities, which were costly, while others, such as myself, received no opportunity after many requests and a completed IDP. It is very frustrating. Now the region is stating that they no longer have travel funds. I had plans to attend training, but that now looks like it will not happen. So I will receive no training for this year. My concerns were raised to the SES level and I was chastised for raising the issue to that level as if I was being extremely insubordinate. At this region, there has been fear under some managers, past and present, to not communicate any concerns beyond their level of management. I understand the importance of the chain of command, but there comes a point when management does not listen to the staff or is being unreasonable and the issues have to be raised to a higher level for SES input and/or involvement. We should not feel ashamed or made to feel insubordinate to talk to senior management on issues in my opinion. This type of management style creates poor morale. Communication needs to be improved at the regional level, within the units and between the different components. It is not just an issue that involves head quarters. Middle level management needs to be held accountable for their communication within their unit and with the others components. They also should be held accountable for evenly distributing the same benefits (i.e. - training, time off, etc.) to all of their staff members unless the staff member's level of performance dictates otherwise.

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Motivation/ Employee Engagement Comments (cont.)

- Hiring fairness, and process, is a huge issue here in the IG. Both in AI&E and OI. Most of the harm is already done (as you can't really get rid of those already hired) but the people we have hired in the past couple years are counterintuitive to providing any skills to this organization and most have been hired based on other factors besides actually experience or skills. For AI&E, I can understand the idea of having "evaluators" hired to provide a specific skill, but if we are going to keep hiring so many evaluators make sure they have a skill that would help out in an area RELATED to the Dept of Interior. Marketing, psychology, ceramic arts, and history majors are not areas we are evaluating, yet these are the skills a lot of these evaluators are hired with. It seems like the idea of having true Auditors is fading away (look at how many auditors are even left, with a number retiring in the next year or two, it's going to be almost none) which is sad cause I think most of the SES management thinks auditors are just trained to look at numbers and excel spreadsheets, and don't understand that auditing is a science which you need to be trained in. And this expertise is soon going to fade away and we are going to be the laughing stock of the IG community for our audit work. For OI, most of their cases are fraud cases, yet when it comes to hiring agents with the skills necessary to do a fraud case (financial background) they hire those with advertising, engineering, IT, or phycology backgrounds (this isn't the FBI, we aren't working murder cases, we don't need a psychologist to get in the mind of a serial killer!). And what was up with the recent specialized GS-14's they gave in EIU? So the government paid for all their specialized energy training, and they did their job and worked cases, and a couple of them got nonsupervisory 14's for that? How unfair is that? I'll sit through some free classes for a free promotion to a 14, sign me up! Its not like these agents went and paid themselves to get a petrolumn engineering degree at night school. This was all part of the job, what a joke. Another issue with hiring, is all the GS-14 and 15's in the organization that are promoted to a supervisory positions, then screw up (or can't take the heat), and then get moved to a non-supervisory position for "special projects" but keep their 14/15. If they can't do their jobs demote them. Basically it seems like management is oblivious to the future harm they are doing by hiring their "buddies" and "friends", soon this agency will be run by people that got promoted based on how many times they log into sharepoint per day, not based on the results of actual work.

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P3: Recruit, develop, and retain a quality workforce	Means			2012 Question Asked To:	
Develop-oriented questions	**2012**	**2011**	**2010**	**Both**	**Supervisor Only**
34. My supervisor provides opportunities for me to maximize my professional potential.	3.97	4.11[2]	3.82 [1]	•	
35. I receive the training I need, including on-the-job-training, to perform my job effectively.	3.85	3.93	3.63 [3]	•	
36. Completing my Individual Development Plan helps me to meet my professional development goals.	3.06	3.13	3.07[4]	•	
37. I have found Individual Development Plans useful as a tool to make improvements in the areas targeted for development in my unit.	3.59	3.52	N/A		•

[1] 2010 question was "My supervisor enables me to maximize my potential."
[2] 2011 question was "My supervisor provides opportunities for me to maximize my potential."
[3] 2010 question was "I receive the subject matter training I need, including on the job training, to perform my work assignment effectively." Question was asked only to non-supervisors.
[4] 2010 question was "Completing my Individual Development Plan helps me identify training and learning opportunities to meet my professional development goals."

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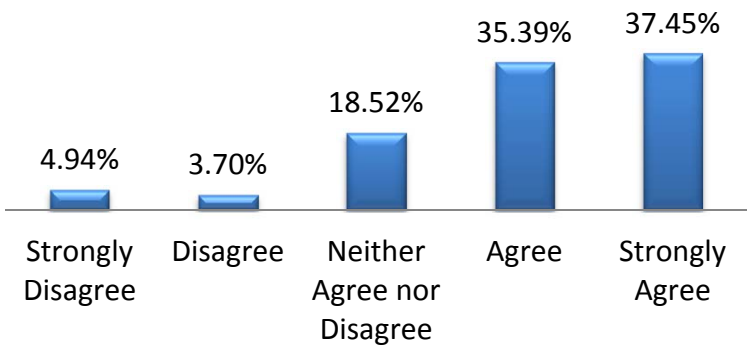
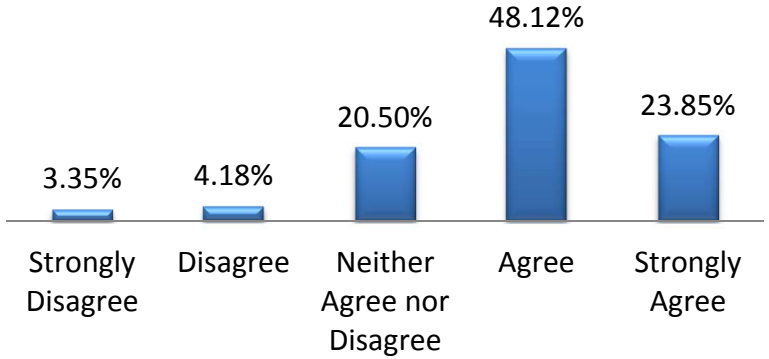
34. My supervisor provides opportunities for me to maximize my professional potential.

2012 Mean = 3.97
2011 Mean = 4.11**
2010 Mean = 3.82*



35. I receive the training I need, including on-the-job-training, to perform my job effectively.

2012 Mean = 3.85
2011 Mean = 3.93
2010 Mean = 3.63***



*2010 question was "My supervisor enables me to maximize my potential."
**2011 question was "My supervisor provides opportunities for me to maximize my potential."
***2010 question was "I receive the subject matter training I need, including on the job training, to perform my work assignment effectively." Question was asked only to non-supervisors.

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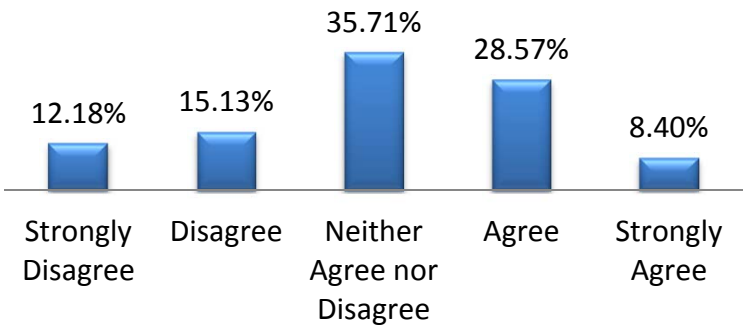
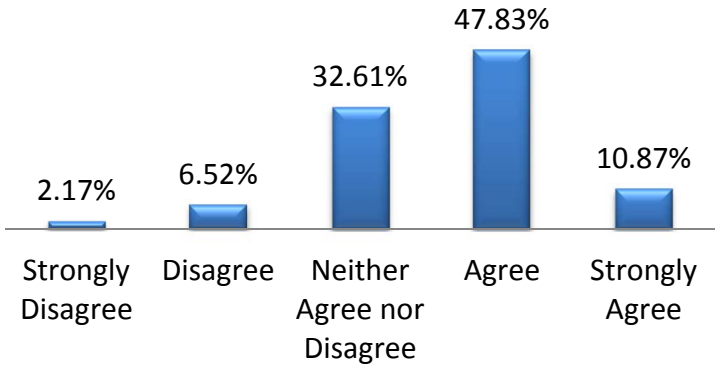
36. Completing my Individual Development Plan helps me to meet my professional development goals.

2012 Mean = 3.06
2011 Mean = 3.13
2010 Mean = 3.07*



37. I have found Individual Development Plans useful as a tool to make improvements in the areas targeted for development in my unit.

2012 Mean = 3.59
2011 Mean = 3.52
2010 Mean =N/A
(Asked to supervisors only)



*2010 question was "completing my Individual Development Plan helps me identify training and learning opportunities to meet my professional development goals."

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Develop-oriented Comments

- I also think the IDPs are a waste of my time and energy. I feel like no one looks at them. The training I get selected for is nothing that is on my IDP. I feel that training should be for what we each want that year, not what funds allow and who is available to go that week.

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P3: Recruit, develop, and retain a quality workforce	Means			2012 Question Asked To:	
Workplace flexibilities	**2012**	**2011**	**2010**	**Both**	**Supervisor Only**
38. Taking advantage of work-life balance programs (e.g., telework, flex time, fit time) [does not] hurt my career opportunities.	4.08[1]	4.12[1]	3.88[2]	•	
39. Telework opportunities within the OIG contribute to my ability to balance personal scheduling needs while meeting my work commitments.	4.43	4.38	4.22	•	
40. My supervisor allows me to telework	4.39	4.49	4.40[3]	•	

[1] In 2011 and 2012 the question was asked as: "Taking advantage of work-life balance programs (e.g., telework, flex time, fit time) hurts my career opportunities." We reversed the question and re-calculated the mean and frequency distribution accordingly for comparison purposes.
[2]2010 question was ""Employees who take advantage of work-life balance policies do not hurt their career opportunities"
[3]2010 question was "My supervisor provides me with the opportunity to telework in accordance with OIG policy."

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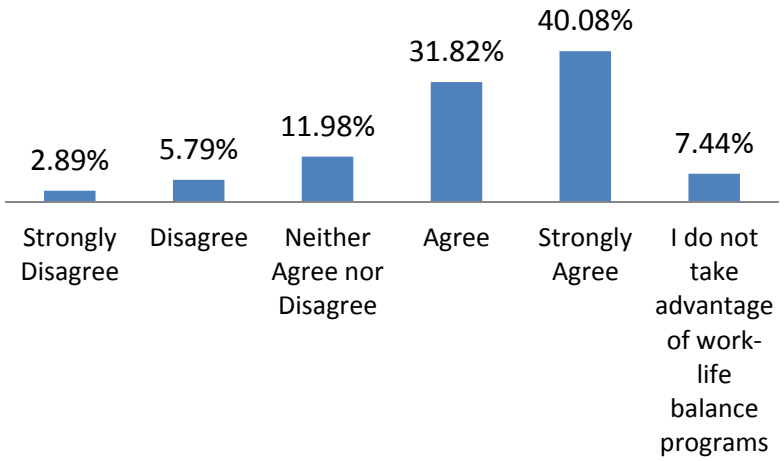
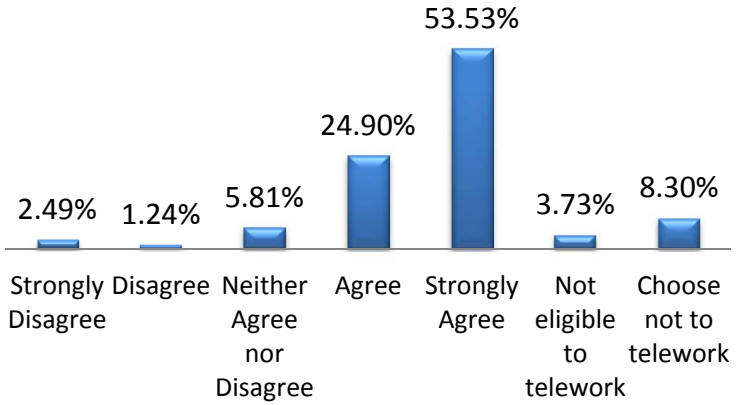
38. Taking advantage of work-life balance programs (e.g., telework, flex time, fit time) [does not] hurt my career opportunities.

2012 Mean = 4.08*
2011 Mean = 4.12*
2010 Mean = 3.88**



39. Telework opportunities within the OIG contribute to my ability to balance personal scheduling needs while meeting my work commitments.

2012 Mean = 4.43
2011 Mean = 4.38
2010 Mean =4.22



*In 2011 and 2012 the question was asked as: "Taking advantage of work-life balance programs (e.g., telework, flex time, fit time) hurts my career opportunities." We reversed the question and re-calculated the mean and frequency distribution accordingly for comparison purposes.
**2010 question was "Employees who take advantage of work-life balance policies do not hurt their career opportunities"

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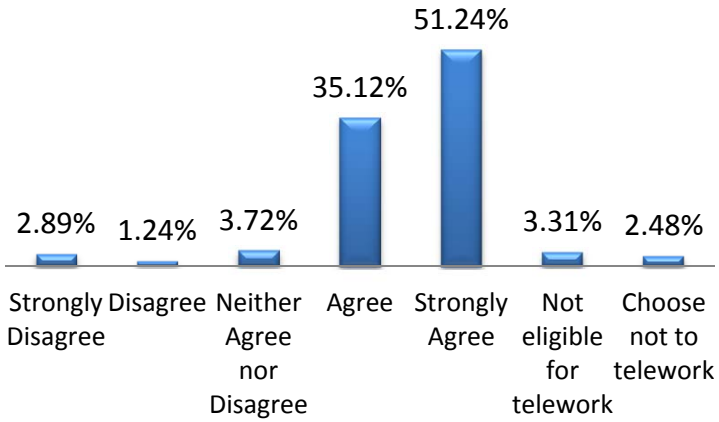
40. My supervisor allows me to telework.

2012 Mean = 4.39
2011 Mean = 4.49
2010 Mean = 4.40*



*2010 question was "My supervisor provides me with the opportunity to telework in accordance with OIG policy."

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P3: Recruit, develop, and retain a quality workforce	Means			2012 Question Asked To:	
Awards and Recognition	**2012**	**2011**	**2010**	**Both**	**Supervisor Only**
41. OIG employees receive recognition for helping to ensure the success of others in the organization.	3.62	3.92	N/A	•	
42. I receive recognition for my contributions to the OIG.	3.76	3.92	N/A	•	
43. OIG employees receive recognition for improving work processes.	3.69	3.92	2.85[1]	•	
44. I am satisfied with the options provided by the awards and recognition program to acknowledge the work of my employees.	3.72	N/A	N/A		•
45. I feel the awards and recognition program offers effective options to acknowledge my accomplishments.	3.50	N/A	N/A		

[1]2010 question was "OIG employees receive recognition for their individual efforts to improve work processes."

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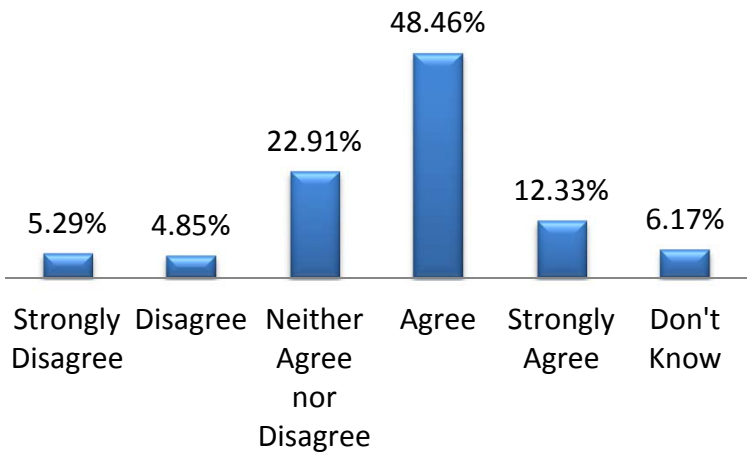
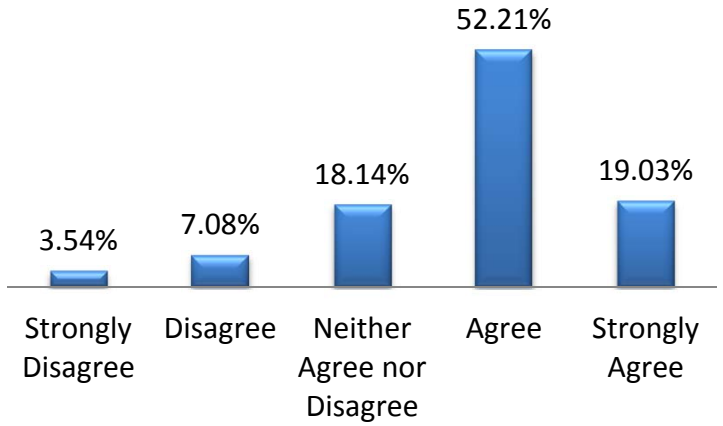
41. OIG employees receive recognition for helping to ensure the success of others in the organization.

2012 Mean = 3.62
2011 Mean = 3.92
2010 Mean = N/A



42. I receive recognition for my contributions to the OIG.

2012 Mean = 3.76
2011 Mean = 3.92
2010 Mean =N/A



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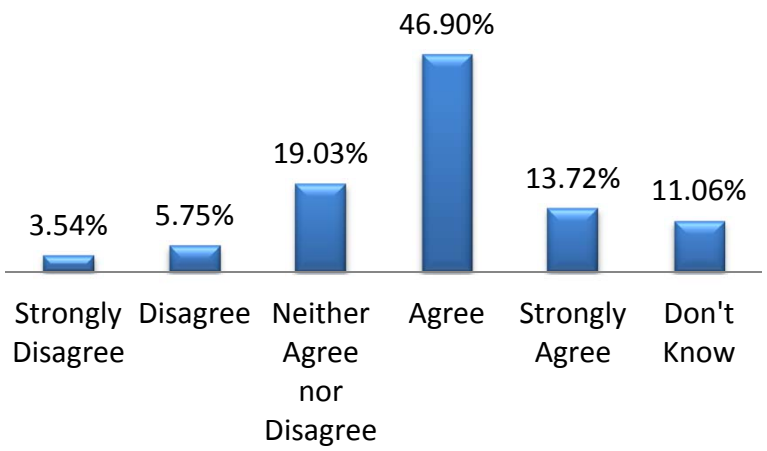
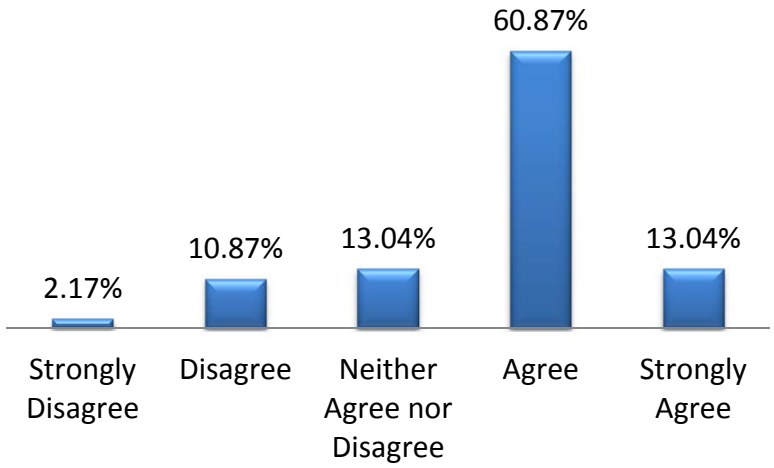
43. OIG employees receive recognition for improving work processes.

2012 Mean = 3.69
2011 Mean = 3.92
2010 Mean = 2.85*

44. I am satisfied with the options provided by the awards and recognition program to acknowledge the work of my employees.

2012 Mean = 3.72
2011 Mean = N/A
2010 Mean = N/A





*2010 question was "OIG employees receive recognition for their individual efforts to improve work processes."

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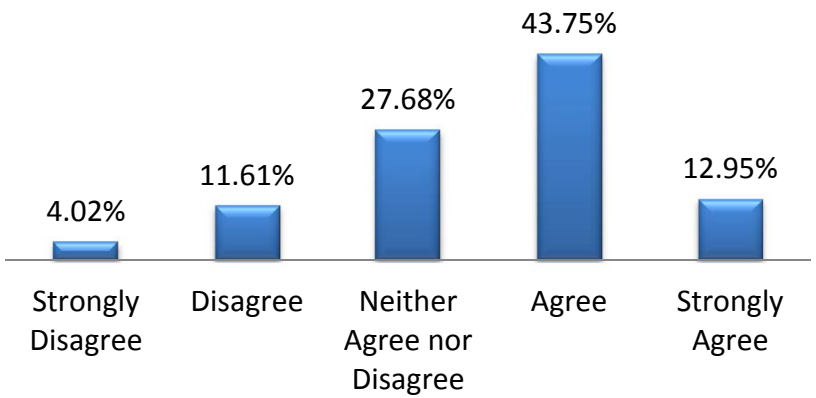
45. I feel the awards and recognition program offers effective means to acknowledge my accomplishments.

2012 Mean = 3.50
2011 Mean = N/A
2010 Mean = N/A



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Awards and Recognition Comments

- Given that the annual performance monetary awards were greatly reduced and gift cards were instituted, I would like to suggest that the OIG consider also adding the issuance of time-off awards in four- or eight-hour increments depending on the significance of the work performed. This used to be a well-liked manager tool that somehow fell by the wayside. Thanks.

- change the award program back to how it was - based on performance appraisals

- I don't believe our awards system sufficiently allows recognition of continued/sustained high level performance. There is no performance award tied to that. I advocate for both on the spot and annual performance awards.

- What awards recognition program? I thought that went away? In my opinion, the performance appraisal awards should come back, like they are in every other agency. That sort of took away any incentive to excel or do above the minimum required.

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Technology Questions	Means			2012 Question Asked To:	
	2012	2011	2010	Both	Supervisor Only
46. I have the technology necessary to perform my job efficiently.	4.09	4.10	3.96 [1]	•	
47. I receive the training I need, including on-the-job training, to effectively use new and existing technologies, systems, and software.	3.74	3.71	3.33	•	
48. I receive the IT support I need to address the IT issues I encounter at work.	3.82	N/A	N/A	•	
49. I receive the training I need to use SharePoint.	3.37	N/A	N/A		
50. I receive the support I need to use SharePoint (e.g., timely responses when I encounter a problem, assistance setting up workflows, etc.)	3.45	N/A	N/A	•	
51. SharePoint has helped me to learn about what others are working on in the organization.	3.41	N/A	N/A	•	

[1] 2010 question was "I have access to the technology necessary to perform my job efficiently."

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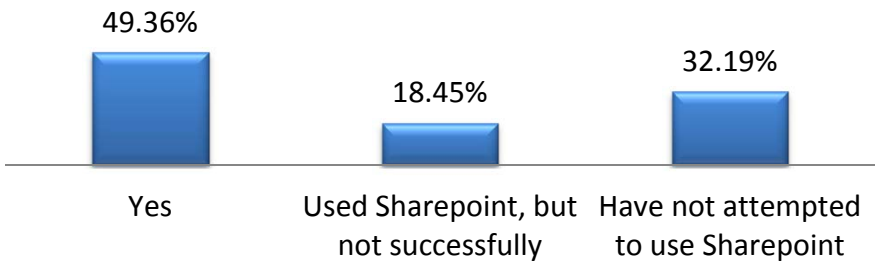
Technology Questions (cont'd)	Yes	Used SharePoint, but not successfully	Have not attempted to use SharePoint
52. I have used SharePoint successfully to collaborate with others outside my unit or region.	49%	18%	32%



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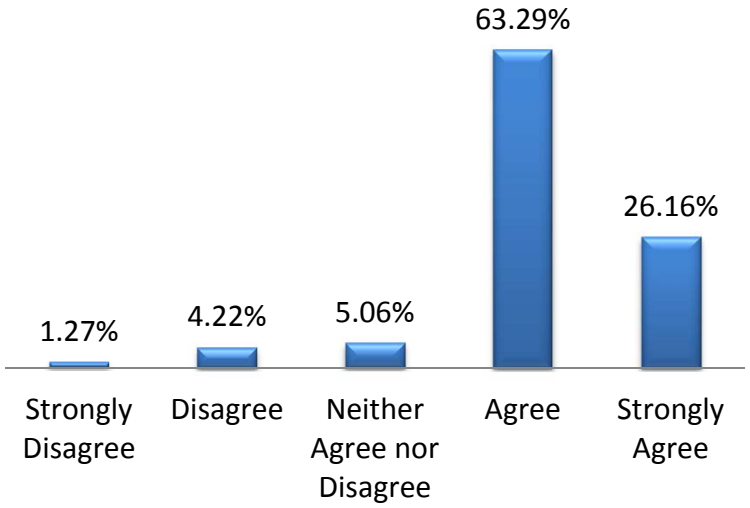
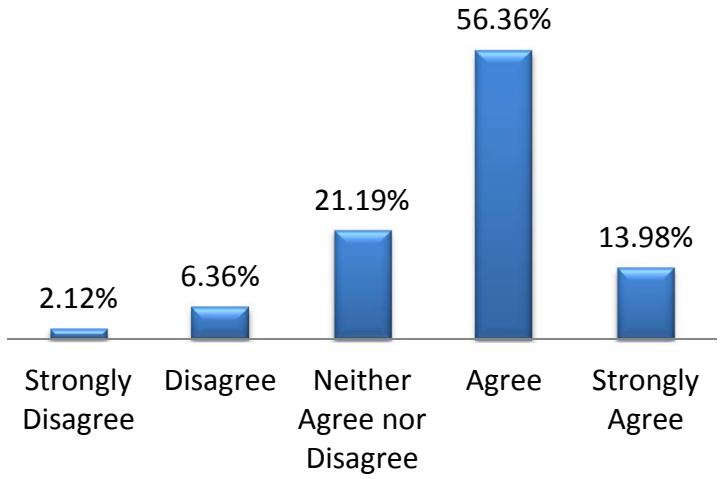
46. I have the technology necessary to perform my job efficiently.

2012 Mean = 4.09
2011 Mean = 4.10
2010 Mean = 3.96*



47. I receive the training I need, including on-the-job training, to effectively use new and existing technologies, systems, and software.

2012 Mean = 3.74
2011 Mean = 3.71
2010 Mean =3.33



*2010 question was "I have access to the technology necessary to perform my job efficiently."

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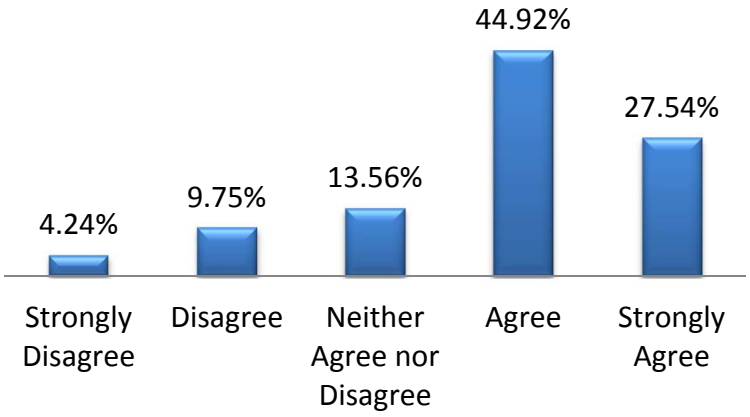
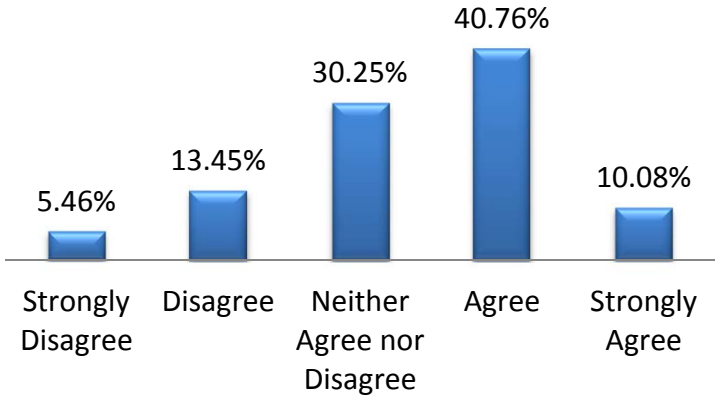
48. I receive the IT support I need to address the IT issues I encounter at work.

2012 Mean = 3.82
2011 Mean = N/A
2010 Mean = N/A



49. I receive the training I need to use SharePoint.

2012 Mean = 3.37
2011 Mean = N/A
2010 Mean = N/A



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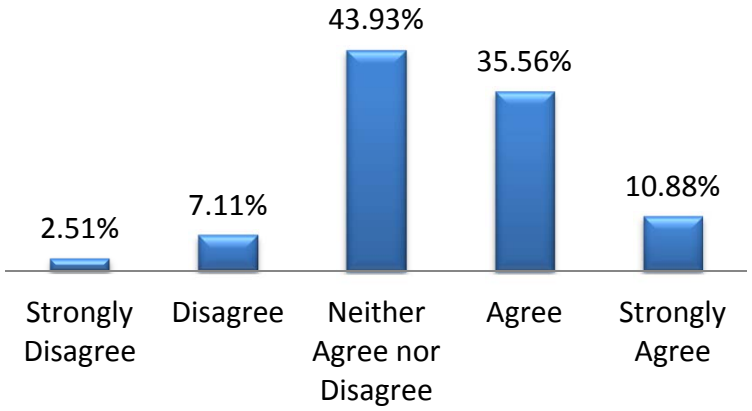
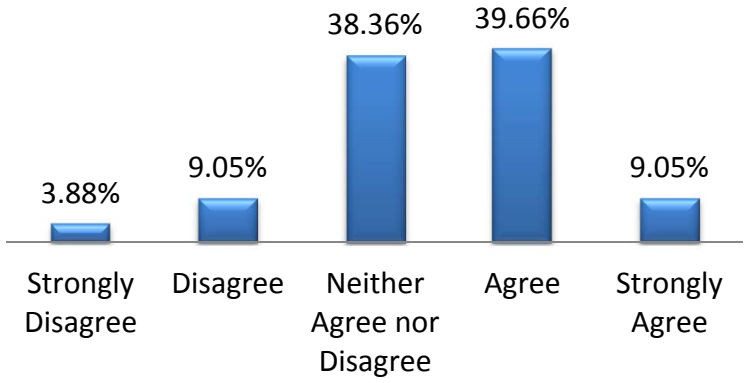
50. I receive the support I need to use SharePoint (e.g., timely responses when I encounter a problem, assistance setting up workflows, etc.)

2012 Mean = 3.45
2011 Mean = N/A
2010 Mean = N/A



51. SharePoint has helped me to learn about what others are working on in the organization.

2012 Mean = 3.41
2011 Mean = N/A
2010 Mean = N/A



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Please comment on what additional training or support you would like to receive to better enable you to use Sharepoint:

Speed

- Page load speed needs to be vastly improved.
- The response time for Sharepoint is still too slow, which invites comparisons to other methods and software which are perceived as faster and more efficient, slowing adoption of Sharepoint. Increasing system response time so that Sharepoint emulates the speed of response previously provided to staff will go along way in encouraging use of Sharepoint and its use.
- Sharepoint will never be user-friendly enough to enhance productivity if it is sluggish and unresponsive. People won't spend the time to learn how to use it if it is a stress-inducing task due to its speed.
- Improving SP processing speed would facilitate greater use.
- None. I am often one of the first to adopt new technology but I find no operational benefit to Sharepoint. It is too slow to be useful and is nothing more than OIG's 'social media' or 'Facebook'. This is a work environment and wasting my time with posts such as 'its hot in the office', 'I am working on ____ today' and other nonsense that is posted has no operational value and does not help the OIG to meet its mission goals. Work related news items and personnel related info is worthwhile.
- It's way too slow. It can't compete with using our current methods of communicating and collaborating due to this slowness and clunkiness. Without speed, there is no reason to use it and generally I do not use it.

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Please comment on what additional training or support you would like to receive to better enable you to use Sharepoint:

Speed (cont'd)

- As I'm sure many other commenters are pointing out, it's absurd that we are expected to adopt a system that is slower than my cellphone's data connection for daily activities. IT systems in this organization are already outdated; Lotus Notes looks and feels like it was written for Windows 3.1, our VPN crawls along at a snail's pace, and the vendor for AutoAudit doesn't even support it anymore because it's so old. Then add on top of that a remarkably slow and clunky implementation of a potentially wonderful piece of software, and I'm at my limit.

- Not a training issue. Sharepoint load times are too long to allow for effective use. Can't take the time to learn and explore when it takes 15 - 30 seconds for the next page to load.

Documents

- Sharing documents

- I think IMD has done a fantastic job with Sharepoint rollout. I would like training on managing documents effectively in Sharepoint and on the capabilities that workflows might allow.

- It may already be in the works, but when we migrate to storing all of our network files and documents on SharePoint, I will need some familiarization with that aspect.

- more information on sharing and editing documents

- more training as an office on how we will be migrating files over and how it will be used once shared drives are removed

- We need a place to share larger documents. Emailing 5MB+ files to all of the OIG on how to use sharepoint is not effective, and, if teleworking, clogs up our email as the VPN can be dropped or very slow while trying to download large documents.

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Please comment on what additional training or support you would like to receive to better enable you to use Sharepoint:

Email/ Future Phases

- The final date of sharepoint implementation process, and when the sharepoint will be able to run in full capacity.
- Email integration is needed. Badly!
- Right now, it's just 'interesting'. The capabilities that will truly make the platform 'useful' are in the next phase.
- Will not be able to comment until full migration takes place
- Better understanding of how we will use features in OIG.

Help Desk

- Responses after a request has been submitted so we know they received the request and are working on it
- I had previously asked for assistance to set up a blog and it fell in a black hole. I did receive a response that they would get back to me but it did not happen
- Timely responses to HelpDesk tickets.
- Timely responses to helpdesk tickets would be great. Or fixing things that are broken within 3 weeks of them breaking.

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Please comment on what additional training or support you would like to receive to better enable you to use Sharepoint:

Help desk (cont'd)

- I submitted a help ticket a while ago because I was one that never received the initial training on sharepoint. I know there was a group of us, but we never heard back.
- Faster response to helpdesk tickets

Power User Training

- Need effective Power User training. Previous training did nothing to advance skills.
- Receive additional SharePoint training to know more the ends and outs as a power user. Give us the opportunity to obtain external training outside of our internal resources.
- As a Power User I requested for additional training - SharePoint Power User (Wizard) Training. And I received positive feedback that I will be a participating July 23-27, 2012. Thank you to all appropriate approving officials!

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Please comment on what additional training or support you would like to receive to better enable you to use Sharepoint:

Training Geared Toward Common as Well as Specific Uses

- The sharepoint tip pages are a great idea, but they often address tasks that most of us are not using yet. I'm not sure the SP team understands the needs of the OIG staff person working on a team or trying to manage one's personal page. I won't communicate through SP because I don't trust that my message will go to only the person I think I'm sending it to. I've seen what appear to be personal messages go out to all OIG. I feel like what I've used on a regular basis, I've learned through the microsoft training rather than through the SP staff or their tips. How many of us are going to write a survey or develop a workflow? I want to know how to collaborate and communicate with my teammates more effectively and efficiently. How to use lists effectively -- and what they are -- was something I learned by googling rather than through our OIG support.
  Moving documents around was another skill that seemed to be overlooked.

- more individual training on useful functions

- Really need specific training on how to do things in SharePoint - work flows, etc.

- I think small groups or teams should be taught the benefits of project collaboration, document review and editing, and other similar work activities. It should be taught to them at the same time so that everyone can really understand the potential Sharepoint offers, aside from being a social medium. Also, by training in teams, the Sharepoint instruction could be tailored to meet the specific needs of that group, consequently making Sharepoint more relevant to them. In short, currently it primarily seems like a social communication medium that is not particularly valuable to our work in the OIG.

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Please comment on what additional training or support you would like to receive to better enable you to use Sharepoint:

Training Geared Toward Common as Well as Specific Uses (cont'd)

- Building templates
-
- More direct support would be good. Optional one on ones should be suggested for a full understanding.
-
- Information specific to our individual work, which I think will come from Pam Busch when we start using SharePoint for our documentation.

Team/ Collaboration

- Training on creating a page for my team.
-
- team sites training

Functionality-related

- Sharepoint is not necessary and should not be the focal point of communication and collaboration.

- The non-power-user training I received in the beginning was inadequate. I have the most basic ability to use Sharepoint, but feel like I do not understand much beyond the homepage, profile pages, and message boards. Much of its functionality is a mystery to me, but I don't have the time or energy to read through the constant pointer emails on how to do a given thing (I sometimes don't even understand what it is the email is trying to tell me how to do). There needs to be follow-up training, I suppose, but some of the problem seems to be rooted in Sharepoint's complexity itself.

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Please comment on what additional training or support you would like to receive to better enable you to use Sharepoint:

Functionality-related (cont'd)

- In addition, some of the most useful functions of sharepoint have fatal flaws, i.e. the calendar is visible to all. Why does someone in another part of the country, and for that matter HQ, need to know when and what I am doing on my cases? It makes no sense.
- Change homepage top allow for more info. and notices on what info. and contents has been posted on interior pages.
- Given the confidential nature of most, if not all OI cases (particularly if the case involves 6(e) information), I am not clear on how Sharepoint would be or is useful to conducting OI-related cases.
- I could use more training in document sharing techniques.
- Sharepoint was launched impractically. There were no critical features attached and the hardware required for the program to run efficiently is not available. People are not going to use Sharepoint because it is too slow and at this point, unneccessary.
- Until I am required to use Sharepoint 100% of the time to perform my work, I do not use Sharepont for my daily work activities. At this point, Sharepoint to me, is like Facebook.

Comments on Initial Training

- The initial training was of no value. More detailed training now that the system is live would be beneficial.
- Training that isn't the history of Sharepoint. How to actually use it effectively.
- I need EFFECTIVE training. SharePoint training for general users has been a waste of time up to this point

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Please comment on what additional training or support you would like to receive to better enable you to use Sharepoint:

Comments on Initial training (con't).

- I believe the initial Sharepoint training we received early on would be more beneficial now it has been up and running for a few months. I now have a frame of reference that I did not have during the initial training.
- I think the training has been sufficient. Maybe an online course would help, but I'm not sure if something like that is available specific to the OIG.
- Users need to be taught the basics of using sharepoint and its features. The training by the contractor was inadequate.
- N/A. Need more experience in Sharepoint before commenting further.

Need more time

- Just need the time to do it.
- I just need to make time to use Sharepoint more. The more I use it, the more familiar and comfortable I will be and the more efficient I will be with Sharepoint.
- I have the training I need... however, I don't have the time to peruse and populate Sharepoint as much as I'd like.
- More time to explore the site and learn how to set up a workflow in the areas that are needed.
- I will know more once I use it more & more. I will ask for training as I see the need.
- More time to use Sharepoint more.

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Please comment on what additional training or support you would like to receive to better enable you to use Sharepoint:

General/ Multiple Aspects Addressed

- None/ no comment/ can't think of any (7 responses)
- More training
- Have not encounter[ed] needing technical support.
- More mandatory training.
- I don't use Sharepoint.
- Sharepoint contributes very little to the success of the type of work we encounter. No additional training needed.
- ok
- Sharepoint training was totally inadequate. It was too superficial. Even power user training just glossed over the details. About all power user training did was show you how to update a profile. The written how-to guides are inadequate. They leave out steps and don't explain the entire process. Accurate and thorough written instructions and comprehensive training sessions based on the how-to guides would have been helpful.
- More training and tips that use less Sharepoint jargon. More shortcuts.
- i'm good.
- i don't know.

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Please comment on what additional training or support you would like to receive to better enable you to use Sharepoint:

General/ Multiple Aspects Addressed (cont'd)

- First of all a help desk is good for areas where the problems can be identified with a high degree of specificity. However, when it comes to a new system such as Sharepoint, the user needs to develop informal contacts to verbally ask a quick question and get a quick response. For example, if I have a question about an application program, I would first call Jacob Newall (One of my people!). However, with SharePoint I haven't developed those contacts yet so in some respects I feel isolated in trying to use the program successfully. The SharePpoint helpdesk is such that I feel a little like a burden to those folks. This is a slow process that will take time as each person's knowledge of the program grows. At one point I got all excited about setting up an assignment library for our audit team, but I found out I would have to transfer each file into the library one at a time versus transfering entire folders with the documents organized as I had already done on the J Drive. This seems like a basic thing that SharePoint should be able to handle. By not doing it, the functionality and usefulness of SharePoint as a whole is diminished.

- A hands on block of instruction, can be web based. The initial training I received did not have enough hands on supervised practice

- I'm on limited use and mostly solve most issue; not sure how to better enable me.

- The tools to effectively utilize Sharepoint need to be trained. We need to learn to share files, edit the files, post properly, learn to organize data, etc. Our calendars are not yet integrated. There is so much more to learn. I say this not to complain but to answer the question honestly.

- Better response time from SharePoint admins with problems, make it less cluttered and complicated, and make it faster. In my opinion, it is too slow to be an effective tool.

- Besides the initial training, the general population hasn't received any hands on training. It's needed! The emails and online tools don't work for everyone.

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Please comment on what additional training or support you would like to receive to better enable you to use Sharepoint:

General/ Multiple Aspects Addressed (cont'd)

- a dictionary of SharePoint terms so we can understand all the written instructions

I have used Sharepoint but unless the people you are trying to communicate with are using it as well, there is no communication. Once everyone has no option but to use Sharepoint, that may change, but for now some people are avoiding it like the plague.

- I receive plenty of instructions via email (IMD site) to practice on my own.
- more hands on training
- model uses or scenarios with step by step instruction
- I would like a refresher, now that SP is up. I feel like it has been so long since I took the training that I don't really know what I am doing.
- Refresher training
- The training has been overwhelmingly fine. The Sharepoint team is extremely attentive to any support issues.
- More training to teach us how Sharepoint can help us to better perform our jobs.
- Hands-on training
- We need to have monthly trainings for the users to become more familiar with SharePoint and what it can do.
- A refresher training class since the original class was so long ago.

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Please comment on what additional training or support you would like to receive to better enable you to use Sharepoint:

General/ Multiple Aspects Addressed (cont'd)

- Make it easier to find help on SharePoint
- We only had one training class and it is all new to me and seems very difficult to navigate.
- Now that we have had opportunities to use Sharepoint a refresher course would be very useful.
- I need more practical training. As far as I know, they don't have a plan for putting auto-audit on sharepoint at this point. When are they going to have a plan for doing that? As far as other files are concerned, I don't remember from the class how to save a file to share-point or how to access files on sharepoint. Maybe it is a case of receiving the training too early. All I remember of the class (months later) is I worked on setting up my profile. Maybe I need to take the class again, so I can learn to do things more related to my job, such as creating and retrieving files and setting up work folder type structures.
- I would like to have people who are good trainers train us in SharePoint. Good trainer does not equate to SharePoint expert or SharePoint knowledgeable, or even necessarily a SharePoint/OIG employee. We may have SharePoint employees who are good trainers, but let's not make the assumption, like we do for so much other OIG training, that the people doing the job can train the job/skill.
- Training provided in a classroom-type environment to set up, operate, and monitor an entire audit or evaluation using Sharepoint.
- Not sure what additional training I need
- I still do not understand how it works. I have had training, but the training is not structured effectively to where I understand how to maximize the use of it.

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Please comment on what additional training or support you would like to receive to better enable you to use Sharepoint:

General/ Multiple Aspects Addressed (cont'd)

- I think we need LESS training on sharepoint... We spend so much time getting emails on sharepoint I doubt any audits or investigations are even getting done... ENOUGH with bombarding us with sharepoint, doesnt the IG act say we have to do actual work? It seems like SES managment cares more about how much time we log into sharepoint than how many actual 'fraud, waste, and abuse' reports we get out.
- Sharepoint remains unintuitive to me. I am not sure if this is a training or programming difficulty.
- In person training on something beyond the bare bones basics. Also of note--At training I attended, the response for the system was very slow and many things the instructor tried to show didn't work. Did not give a good impression of sharepoint.
- past presentations via powerpoint available on sharepoint.
- I honestly don't use sharepoint for much more than contact information and very basically. I find it a bit confusing to navigate.
- None. Sharepoint feels like a duplication of work. My focus is on getting work done not being sidetracked and doing extra work.

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What would you like to see done differently in SharePoint?

Speed

- needs to be faster!
- Don't make Sharepoint necessary for users productivity if it is painfully slow.
- More Bandwidth
- I would like to see SP speeded up. The slowness of SP makes me not want to use it.
- Also, unless band width is increased to speed Sharepoint up, it has no hope of being adopted as an operational tool.
- I would like to see the loading speed increased. It takes an incredibly long time for it to load pages. With today's technology it should go much faster. At this point I click on something and go get coffee or something waiting for it to come up.
- SharePoint is a little slow. We've been told that it would get better, but it has not.
- Increase speed
- Take steps to make SP faster.
- Faster Speeds
- improve speed
- I would like to see it work faster with less timeouts.
- I really like SharePoint, but in order for it to work better, it has got to be made faster. Right now it is too slow.

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What would you like to see done differently in SharePoint?

Speed (cont)

- Faster speed
- SharePoint is too slow to effectively use
- speed it up, sometimes it takes forever to get to the page you want and for a document to open
- Sharepoint is too slow to be able to surf around and learn what others are doing.
- Entire page reloading is annoying and time consuming. Finding a document on a team site is terrible as each time you click on a folder the entire page needs to reload and reset which, if a document is several folders down, becomes aggravating and disorientating. If you are truly looking for a document navigating through various folders is a nightmare.

Documents

- I have been having trouble with the document management -- I get locked out, for example, when I try to load documents. I would also like to see more ideas on how to create a useful 'my content' page.
- The drive migration. Most offices have chosen to simply archive all documents because the IMD requires that the office list each and every file in a spreadsheet along with attributes before it can be migrated to Sharepoint. There are thousands of files on the shared drive! Also, this is a great opportunity to not repeat the same mistakes that occurred with the file shares and implement a plan for naming conventions, standardization across the offices along with retention periords ect. We are missing an opportunity here to do things better.
- Let us know more options in utilizing SharePoint for our staff working documents.
- More information on how the content migration will occur and how it will affect everyone on day-to-day basis.
- Sharing larger documents or a share drive link.

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What would you like to see done differently in SharePoint?

Future Phases (including email and calendar)

- Implement the next phase.
- Waiting till it is in full operation and everything has been migrated
- Would like to see Sharepoint calendar functions and the blackberry functions integrated whenever possible.
- The fact that the calendar does not sync up with any of our other systems has creates a situation where I am updating sveral times for one event.
- I am unclear on how to create a meeting and send out invitations as in Lotus notes, or if this is even possible.

Social Networking

- Less social and more work related?
- Take out the social networking aspect, it has no reason to be there.
- Less focus on 'social' aspect. additionally, the infrastructure should be reconfigured to boost performance.
- Cut out all of the non work related chatter. Why do I need to know about [text redacted] or what they did on summer vacation. Since Sharepoint is so sloooow and bandwidth is a problem, cutting out all the noise might improve speed.
- get rid of the social networking aspects

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What would you like to see done differently in SharePoint?

Social Networking (cont'd)

- Cut out the social media nonsense and establish a policy for operational, mission oriented posts only. It is tiresome to wade through posts about office temperatures, what person __ is doing that day in an effort to be sure not to miss something important.
- I would also like to see it used less as a popularity contest of who is profiled this week or whose profile is 'the most viewed.' That information is meaningless to my job.
- Sharepoint seems to be like Facebook. I don't particularly care for it.
- Educate employees that it is not a social media but a business media--a way to communicate about work, not personal issues.
- Too many non-work related articles. This is not a magazine.
- Uncertain. I am not comfortable with social media and find the blogging, linking, liking, etc. of Sharepoint to be more a burden than an asset. Also, it seems that the constant need for the production of 'content' articles will be a long-term drain on OIG resources. We could live with less articles!
- It's too personal. I don't feel comfortable putting all my information out there. I don't even like facebook.
- too many stories are fluff, stories on cru's field trips and summer safety?? seems more like facebook sometimes

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What would you like to see done differently in SharePoint?

Collaboration

- I use Sharepoint to collaborate internally with team members. So far that has been the most effective contribution of Sharepoint to my work.
- How do I use it to find out what others are doing or projects they are working on?
- Also, the question not just prior but prior to that one (with 3 selections) -- working with others -- while we have tried, the attempts were awakard and not successful. I did not exactly know how to answer the question since the choices were limited.
- Use it for actual collaboration.
- More and better work collaboration.

Multiple Suggestions/ General

- A bulletin board of trending topics on the home page, consolidate the comings and goings section to a scrolling feed on the trending topics board, eliminate long posts in the activity stream (especially from managers and IMD because they're supposed to be setting an example), stop sending emails that duplicate information.
- I would like to see it rolled out in a less dictatorial manner so that everyone has the opportunity to invest themselves in it. I get lost in there and can't find my way out.
- Offer modules of hands on training based on the How To's that Prasad has already started to deliver.

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What would you like to see done differently in SharePoint?

Multiple comments/ general (cont'd)

- Get rid of all the crap on the front page of sharepoint. There is to much stuff going on. For example, no one cares about 'Exernal news'... I can go to a news website if I want that. And 'featured profiles' what a waste of space, if I want to read someones profile I will search for it. And 'most viewed profiles'...what is this a popularity contest, COME ON!!! We are clouding up this page with so much stuff it makes it overwhelming to look at, simpler is better... And make things easier to find if I do want to look at articles and stuff written in the past. So many times I have gone back to find an article written months ago only to search for hours to find it.
- N/A, nothing/ not sure/ I don't know/ still in the "feel it out period"/ don't know enough to comment (15 comments)
- I do not find any value in SharePoint.
- larger font
- I think it's being used to the best of its ability at this point. I am excited to begin using it to edit documents as a group.
- There needs to be more buy-in from management. The higher the food chain you go the less willing they seem to be to actually use the system (Save for Steve Hardgrove)
- It works well for me at this time.
- Not entirely sure. It needs to be simplified, but that doesn't seem possible. The complexity seems intrinsic to the platform itself.
- A little better at being user friendly.
- Get rid of it or use it like the intranet; the tools in Sharepoint are useless for effective mission related work products and/or programs with the exception of perhaps the HQ/Reston environments.

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What would you like to see done differently in SharePoint?

Multiple comments/ general (cont'd)

- As I said before, it has to be faster, and the calendar function needs a lot more tailoring - no need for it to be visible to everyone. I have been told not to put Grand Jury information on sharepoint, which makes sense, but then it kills my ability to use it for collaboration when doing a grand jury investigation. I should have put this in the last box, but some additional training on setting up meetings, inviting people, getting those meetings to automatically update the individual's calendars and the group calendar, would be nice. Synchronization between sharepoint and email (for example, notifications of documents uploaded that need revision or meeting invitations), customized by the user.

- Speaking openly, I also have to comment that it seems a little crazy to have a pretty large team devoted to sharepoint. We are under a hiring freeze, have no travel money, are cutting OI vehicles, offices are being closed and agents are being force transferred, ostensibly to save money, but we devote large resources to sharepoint? Something that isn't mission critical? It just doesn't make a lot of sense to me.

- For right now it has all that is needed, with time there may be other suggestions but it really is great to see this with OIG.

- I would like to see: A hot button for AutoAudit that logs me in directly from SharePoint with no additional passwords on the SharePoint home page; A search engine where all I do is type in a person's name and I go directly to their biographical information, not some meandering path through the organization.

- Some of the slider features don't seem like they belong there. Maybe there could be another section on the home page for administrative announcements and the slider could be for big news.

- No comment (3 responses)

- It is way too slow, and too difficult to find what I am looking for. Searches for documents usually don't find relevant documents. There is too much emphasis on material that has no value toward completing our mission.

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What would you like to see done differently in SharePoint?

Multiple comments/ general (cont'd)

- 1. I think it should be more business-like, with less personality and personal focus. 'What are your vacation plans?' How would that look on the front page of the Post?
  2. The executive blogs are a little preachy. Not good.

- Less email notifications about what was just posted in my Community. I usually will look at my community each morning for information.

* I would like for all PII (personally identifiable information) to be strictly banned from being posted on Sharepoint;
* I have significant concerns regarding the OIG's COOP (Continuity of Operations Plan) should SharePoint ever become non-operational.

- I feel like I am getting inundated with Sharepoint messages. for example I have been receiving Daily Activity Stream Summary reports that I don't need. Also, I responded to a poll that Steve Hardgrove put out on Blackberry usage and I get everybody's comments.

- Add more work relevant tasks. Integrate with email and calendars. Increase speed.

- Less emphasis on it. It is one of many resources that enable employees to work more effectively.

- Improve speed-drastically, improve security, hire staff with more experience in running the program. Prasad is the only one with adequate sharepoint experience. Critical features- especially email, should have been migrated immediately, Lotus Notes is not a good excuse. Sharepoint is a twofold problem- A. People don't need to use it, and B. people who need to use it for their job hate it because its way too slow.

- birthday alerts.

- Have another hands on training.

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What would you like to see done differently in SharePoint?

Multiple comments/ general (cont'd)

- Stop posting things to SharePoint that would have been sent via email in the past, at least until you have fixed the speed issue. If you have slow software that we aren't required to use, people just avoid using it. If you have slow software that we are forced to use, people go from indifference to downright hate for it very quickly, which is the easiest way to ruin the possibility of long-term user adoption. Seriously, make it faster.

- I wish there was 'note pad' or something equivalent for individuals to be able to quickly post info for others to see immediately when they viewed that person's site...for example, to add 'Out all week on AL or for training, call xxx in my absence'...or post upcoming events so others know to go elsewhere due to scheduling conflicts. I know about schedules for groups, but that takes extra steps to go find and to enter the info...just a little space on individual pages would be very quick and convenient to keep others posted.

- for some reason it appears more complicated than it needs to be.

- Part of my lack of positive experience with Sharepoint relates to (1) lack of familiarity with the software and (2) system response speed. As I have used Sharepoint, I have been able to determine where I have made mistakes which hindered my collaboration efforts and have then been able to fix them. Thus my experience with Sharepoint is improving as I learn the system. However, system speed and response time needs to be improved.

- Important information from the Chief of Staff or other managers should not be buried on their personal pages. It should be up front on

- SharePoint like the OIG News, External News, or Executive's Corner blog. Meeting notifications should also be there. I don't think anyone is going digging into the specific components if they don't have to.

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What would you like to see done differently in SharePoint?

Multiple comments/ general (cont'd)

- Before we post forms and such on SharePoint we should review them for accuracy and make sure that they work. For example the Continuity of Operations plans is way out dated, and the Workschedule Request form does not work correctly. If we expect employees to use SharePoint we should have the correct forms and current materials posted.

- More participation from other co-workers

- Information on what we are supposed to be doing with it. I feel out of the loop since I don't spend much time on it while it seems everyone else is constantly on it. I don't know what it's purpose really is and it seems really slow to load pages. I can't imagine how slow it will be once auto audit and our share drives are all on it.

- I thought that the peer to peer on SharePoint was a great idea, but like most things, it's buried. I'd rather see OIG-specific things that like, or at least the two most recent with a link to 'read more...', than DOI news stories. Internal OIG info is what's critical for the homepage, not links to external sites or non OIG-specific news. The executive blogs are great - when they are relevant to the OIG. I enjoy hearing SES perspectives on things that affect us, but like any blog, frequency is key to engagement. You can't go weeks or a month between posts (this is blogging 101). Comings and Goings was a great addition. The pictures are a nice personal touch to the homepage; but how does one, or to whom does one, submit pictures? It would be great if we could intercept the ridiculous number of DOI emails (generic all DOI employee emails) and instead post those as notifications maybe in a DOI NEWS category (again, internal news not public external). Would love to see my inbox saved from the hoards of spam the department sends.

- Tone it down, stop using it for everything. For example we dont need external news on there, that is what external news sources like NBC or CBS are for.

- I would like to see SharePoint used as a basic communications tool only. Using it as the main means of accessing and storing my Unit's information seems a step backwards and mostly redundant since I already can access files quickly on the existing shared drives.

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What would you like to see done differently in SharePoint?

Multiple comments/ general (cont'd)

- Periodic OI related updates from HQ
- It needs to be faster and the training needs to be more clear with tip sheets.
- Have the system be much faster and more responsive. Have an easier process to enter the indexing type stuff when put in a document. Have a search feature that works to find what you. need. Don't ram a system down our throats that doesn't proved good functionality to help achieve the mission. Many see it as a waste of time and resources--don't see usefulness to there jobs.
- Scale back SharePoint to a basic communication and collaboration tool for employees and stop trying to turn it into the only available means to accomplish tasks. [taken from "any other comments" box]
- it's fine.
- SP tips should be organized in categories to facilitate searches.
- Training - more please!

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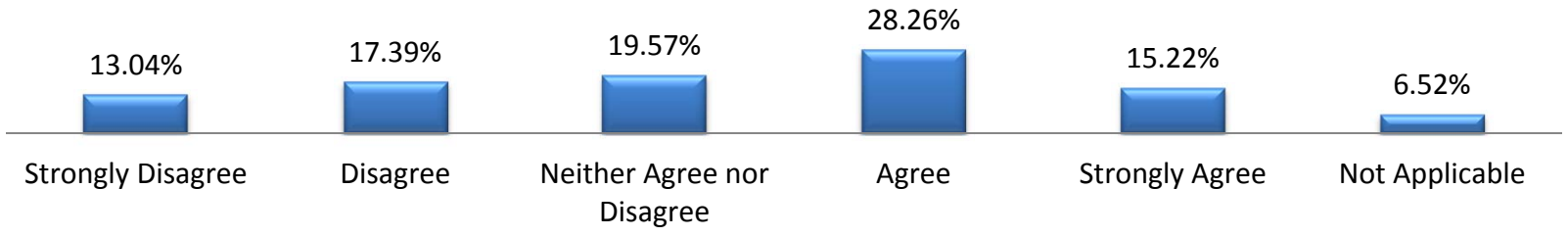
F1: Efficiently plan, manage, and use resources according to the strategic plan	Means			2012 Question Asked To:	
	2012	2011	2010	Both	Supervisor Only
53. I have adequate financial management information and/or indicators at my disposal to determine whether I use my budgetary resources efficiently.	3.16	3.49[1]	2.52[1]		•



[1]2010 and 2011 question was "I have adequate financial management tools and/or indicators at my disposal to determine whether I use my budgetary resources efficiently."

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OVERALL	Means			2011 Question Asked To:	
	2012	2011	2010	Both	Supervisor Only
54. I understand how my day-to-day work activities relate to the OIG's strategic objectives.	4.07	4.02	3.51	•	
55. I understand how the OIG's strategic objectives will help to achieve its mission	3.76	3.85	3.24	•	
56. I understand how my work impacts the Department's mission: To protect America's natural resources and heritage, honor our cultures and tribal communities, and supply the energy to power our future.	4.11	4.11	4.19	•	

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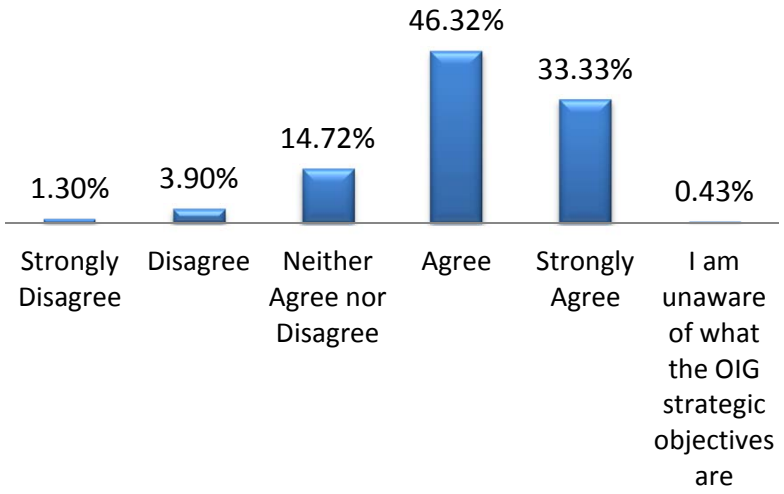
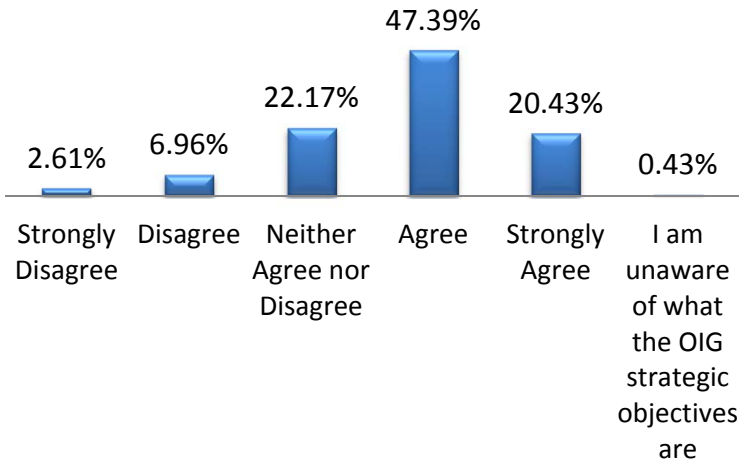
54. I understand how my day-to-day work activities relate to the OIG's strategic objectives.

2012 Mean = 4.07
2011 Mean = 4.02
2010 Mean = 3.51



55. I understand how the OIG's strategic objectives will help to achieve it's mission.

2012 Mean = 3.76
2011 Mean = 3.85
2010 Mean = 3.24



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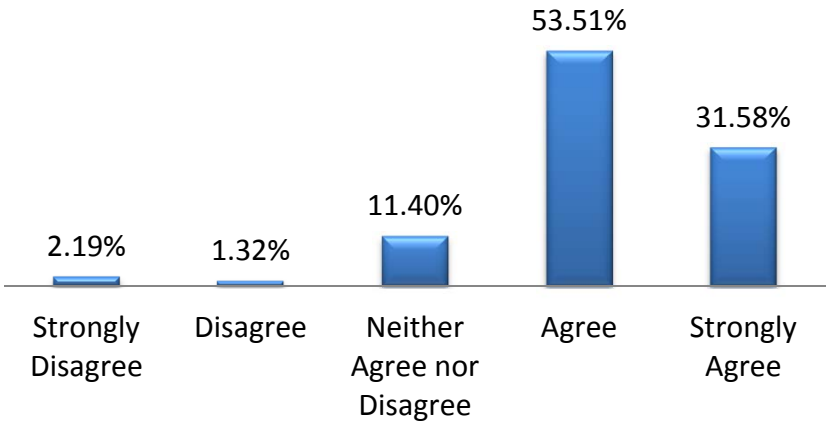
56. I understand how my work impacts the Department's mission: To protect America's natural resources and heritage, honor our cultures and tribal communities, and supply the energy to power our future.

2012 Mean = 4.11

2011 Mean = 4.11

2010 Mean =4.19



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Overall Comments

- NA / none (7 comments)
- What is the purpose of the survey? The canned questions are becoming more and more tiresome. Perhaps all questions should include a remarks section. Another comment/suggestion is 'process improvement initiatives' etc be more thoroughly vetted before implementation.
- The DOI OIG workplace is really a great place to be a part of, I feel truly blessed despite tough economic times. I am grateful for our leaders in this organization for they really do care and as they continue to find ways to make it a better place they are perhaps challenged with making some difficult decisions at times, but at the end of the day, I can only be thankful for still having a job, having great people to work with, and being in a work environments (OIG-wide) that is safe and protects our well-being. Thank you so much for this opportunity.
- There should be no permanent positions within the SMO. It existence should be on an ad hoc basis as a collateral duty. Those people within SMO now should be reassigned to AIE and work in the field. Furthermore, membership in this group should be opened-up to the entire organization on a rotational basis based on the assignments given to the group.
- Thank you for continued efforts to improve our working environment. I know there are a lot of returning Vets who need work and would love to be a part of our organization.
- Thanks, seriously not complaining and I understand.
- Good Place to work :-)

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Overall Comments

- We should continue to do these surveys. OIG is always looking at different ways to improve our work processes. Thanks for allowing me to have some input.

- Overall, there seems to be a big push for people getting involved in side projects like Sharepoint and focus groups. You can see it in who gets awards, mostly support personnel and those on the side projects. There doesn't seem to be much recognition for those performing the core mission -- auditors, evaluators, and investigators -- or much interest in their projects. The numbers on both sides keep dwindling, but we continue to hire positions like writer-editors, some of whom seem to focus mostly on writing articles on Sharepoint. We also don't seem to communicate much of what we're doing to anyone outside our agency, including Congress and the media, unless we're asked. We tend to shy away from creating any sort of controversy and worry most about what the department thinks, which calls into question our entire mission. Overall, I don't think the leadership at the OIG has ill intensions or motives, but these are just my personal observations.

- Quite a few questions in the survey should be revised/redesigned. As written, they dance around certain key issues and result in many instances where the participant can only choose 'neither agree nor disagree' whereas if they were properly focused, a negative response would be given. As a result, the survey fails to identify the causes and origins of some problems within OIG.

- I would not use the descriptor 'always' to survey the effectiveness of senior level communications. I believe it will skew results. The word 'always' may require perfection, which is unreasonable. I recommend that you use the phrase 'almost always' to fairly assess their communications. I recommend that you allow the employee to go back during the initial survey to adjust their responses. It does not allow one to change an answer upon further reflection. I recognize that it was done to preclude multiple responses from one individual, but I would hope there is another more effective way for the survey software to address that concern.

OFFICE OF
INSPECTOR GENERAL
U.S.DEPARTMENT OF THE INTERIOR

Overall Comments

- I am not satisfied with this survey. Many of the questions are very vague. It would help if we had comment boxes for the majority of the questions. I don't feel like I was able to give my full opinion.
- Customer productivity/experience not major concern of the division. Customers are unnecessarily interrupted and inconvenienced for the ease and convenience/simplicity of managing sources.
- Despite the occasional frustrations, still a great mission and great place to work!
- After answering the first 10 or so questions without the ability to comment I became frustrated by the survey and went through the rest without answering.
- The senior leadership in the field is stale and does not display any leadership or inspiration. They do not care about agents that earn their pay putting forth meaningful effort to achieve meaningful results for OIG. A select few agents are allowed to prosper by simply processing cases, i.e... go through the motions, instead of actually investigating cases. Very disappointing.
- Make sharepoint faster. What a peice of junk. Seriously....telework is super slow for it and at work it is even slow....don't expect a lame horse to be riddin....in other words....it is not getting used because of the delay. Good Grief.
- Keep staff informed on thinking on upcoming changes - office location, IT etc. Plans do not need to be finalized before communicating what upper management is considering.

OFFICE OF
INSPECTOR GENERAL
U.S.DEPARTMENT OF THE INTERIOR

Overall Comments

- Thank you for providing an opportunity for input.
- the survey questions continue to improve and I look forward to seeing the results and a response from leadership on the results
- This survey is very limiting because you have to choose a canned answer that may not fit every question. I think a more effective way to handle the gathering of information from the masses is to hold meetings with smaller groups (not the all hands approach) and determine what areas of concern are for each group. The way it is working now is a one size fits all approach that may not work for all groups. The groups have different missions and should have different ways of effectively getting that mission accomplished and should not be lumped into the same way of doing things as all other groups.
- Thank you for the opportunity to communicate views.
- If the survey is completely anonymous, why are the first two questions concerned with what office I work in and whether or not I am a supervisor?
- I feel uncomfortable about approaching senior management directly because I don't know these people. Their busy and have more important things to do. And can you imagine ehat my supervisor would think if I initiated a conversation with senior mamnagement about things I thought were wrong. And if senior mamnagement does initiate conversations with me am I going to feel the unspoken presure of only reporting the good things?
- why are we still defrauding the public by paying federal employees to exercise on the government dollar? shame on us.

OFFICE OF
INSPECTOR GENERAL
U.S.DEPARTMENT OF THE INTERIOR

Overall Comments

- 1) Make it so I can go backward in questions on these surveys. It's absurd that I can't think about the questions that I'm unsure of while I fill out the easier ones.
  2) Find a way to improve SharePoint speed. It's embarrassing.
  3) The SharePoint training we got initially was borderline useless. I don't care what the history of the product is, tell me how to use it, how to set up component/project pages, etc.
  4) Why did we hire people to work in our SharePoint department that have no prior experience with the software?
  5) Next time you decide to hire new supervisors, you should probably work out their roles BEFORE selecting them. 3+ months after the selection and the meetings to work out those roles just happened last week?
  6) What is it with all the Hawaii trips?
  7) Be careful with how much reports get softened to avoid 'slamming' the Department in the interest of maintaining a good relationship. If they did something horribly wrong, it isn't our job to soften the blow.
  8) Same goes for OGC. Relying on SOL to make all the big decisions is like the prosecutor resting without arguing its case.
  9) Why do I have to call Vera in Hawaii when I want training? We have 3 training staff in Herndon and I don't use them to register for training? What do they do?
  10) Who is writing all of these crazy policies for AIE? I'm sorry if I put my referencer comments in red instead of 'deep magenta,' but come on. I understand and deeply agree with the drive to ensure quality, correct products leave this office. I don't agree with arbitrarily slapping people on the wrist by making them 'in the yellow' or 'in the red' because an individual largely detached from the projects themselves seems to think that project is at risk of slipping a day past their deadline.
  11) Find a way to improve SharePoint speed. And this isn't a software 'accelerator'; something is deeply wrong with our hardware or implementation. Forcing people to use it isn't user adoption, it's torture. User adoption will start gaining ground when something critical (like autoaudit) is moved into SharePoint IF it isn't annoying to use. Current speeds will just be strained further when there is more use; set up the infrastructure, and the users will be there eventually. If it's still painfully slow when autoaudit is migrated over, expect a mutiny.

OFFICE OF
INSPECTOR GENERAL
U.S.DEPARTMENT OF THE INTERIOR

Overall Comments

- 1) Required one on one meetings when not needed are a waste of time. An open door policy, where the employee or manager can step in the other's office or call anytime on the phone is what we do (usually several times per week) and it works very well.
  2) The decision such as whether the Serpa holster can be used (by OI) was a knee jerk reaction by people who were probably unfamiliar with it. Experienced Firearms Instructors (FIs) should have been given the authority to make that determination as the incident at FLETC was clearly user error and not a problem with the holster design. That is just one example of some decisions being made at a level higher than necessary with a poor result.

- use OGC for more than just legal opinions. OGC employees can conduct peer reviews of draft OI documents, review collected documents/data, provide input on potential investigative approaches.

- Burrito breakfast with coffee once a month in each office

- Poll employees before major changes are made that will affect OIG employees.

- Please make a decision concerning arming 1810's. It's been more than a year since we turned in our resume's. We don't care if you make us 1811's or just arm us as 1810's, it's a safety issue.

- I have too many ideas that are job specific to detail them here. It would be great if someone gave me a call, but I don't know who that would be.

- I was not always sure of the difference between direct and immediate supervisors. I have two supervisors, one helps me with my day to day work and the other is above him but is also my supervisor and also signs my evaluation.

OFFICE OF
INSPECTOR GENERAL
U.S.DEPARTMENT OF THE INTERIOR

Overall Comments

- I think there is widespread distrust and low morale in the organization right now. There are at least perceptions the acting IG and COS did not do the right thing,ie, improperly quashed investigations, and have not been forthright with Congress. These may not be accurate, but are perceptions nonetheless, and I think very demoralizing for this organization and has resulted in loss of faith and trust in them as leaders. Despite the many good things they have done and may continue to do, its hard to get past this issue.

- 1. SharePoint: poorly planned, very poor and inadequate training, poor communication, inability to adequately answer questions, moving too fast. Makes one wonder what the real objective is. Looks like the objective is to check off a block and say "look what I did" whether it is working well or not.
  2. A lot of what we do makes one think that the media is more important than the message.
  3. Actions speak louder than words, however, in many cases actions don't back up the words.
  4. Travel and training dollars do not appear to be equitably distributed.
  5. We spend more on 1 week of training for some senior people (AIGs, DAIGs and above) than my work unit has for the year.
  6. This organization has work horses, who pull the heavy loads, and show horses, who get taken care of.
  7. In my opinion, senior management is sometimes more interested in what they want to hear, not what is really happening.
  8. In my opinion, senior management is too often inclined to do what they want, rather than listen to the advise of staff experts.

EXHIBIT

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U. S. House of Representatives
Committee on Natural Resources
Office of Oversight and Investigations

HOLDING INTERIOR WATCHDOG ACCOUNTABLE

Oversight of the Department of the Interior's Office of Inspector General

A Report by the Majority Staff

Office of Oversight and Investigations

Committee on Natural Resources

February 21, 2013

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EXECUTIVE SUMMARY

Since taking over as Acting Inspector General for the Department of the Interior ("Department") in February 2009, Mary Kendall has sought to establish a more accommodating and cooperative approach for engaging with the Department, which was a distinct departure from the assertive, public calling to account style practiced previously by the Office of Inspector General ("IG") during prior Administrations.

However, this approach has raised significant concerns, including among the IG's professional career staff who are dedicated to performing objective and independent oversight of the Department, that Ms. Kendall has gone too far and has undermined the independence of the IG as envisioned under the Inspector General Act of 1978. Further complicating the matter is Ms. Kendall's stated interest in being nominated for the permanent Inspector General position, which appears to have compromised her ability to be independent in holding the Department accountable.

For more than two years, the Committee on Natural Resources ("Committee") has been conducting oversight of the IG, focusing initially on the IG's 2010 investigation into the editing of a Department report by political appointees at the White House that incorrectly implied a moratorium on deepwater oil and gas drilling in the Gulf of Mexico was supported by peer reviewers. More recently, the Committee has expanded its oversight to include other matters handled during the time the IG has been without a permanent Inspector General.

The Committee has held a specific oversight hearing focused on the activities of the IG during Ms. Kendall's tenure as Acting Inspector General, and the Committee's majority oversight staff have reviewed thousands of internal IG and Department documents, spoken with several current and former IG staff, including the Acting Inspector General, and reviewed specific IG case files in preparation of this report.

This Majority Staff Report examines the IG's handling of the moratorium report investigation and details several other examples where the IG, under Ms. Kendall's and Chief of Staff Stephen Hardgrove's leadership, has not pursued investigations involving political appointees or Administration priorities; has sought to handle problems within the Department quietly through informal means rather than formal investigations and reports issued to Congress and the public; and has not adequately documented the management of the IG's investigations and operations.

The Committee's oversight of the IG's moratorium investigation has uncovered allegations that Ms. Kendall and Mr. Hardgrove directed staff not to obtain documents from or conduct interviews with all relevant witnesses, as had been done in other high-profile investigations. The Committee's investigation has also obtained documents suggesting the appearance that IG management has attempted to

retaliate against the lead investigator who oversaw the IG's investigation into the editing of the moratorium report, either by involuntarily transferring him to another duty station or terminating his employment altogether.

The Majority Staff Report also describes how the Acting Inspector General, after several meetings with Deputy Secretary of the Interior David Hayes and other senior Department officials, initially softened a draft report critical of how the Department had established and operated several renewable energy programs before she decided not to finalize and publicly issue the report.

The Majority Staff Report also describes how IG management stopped short of investigating a scientific integrity matter that IG staff thought merited further inquiry, and did not pursue an investigation of potential ethics violations by a senior political appointee that had been publicized in a national newspaper.

Particularly troubling, the Majority Staff Report also describes two situations where Ms. Kendall appears to have given inaccurate and misleading answers at Committee hearings. The Committee's oversight has identified several troubling examples where the IG's actions and the Department's problems may not have been sufficiently documented.

In sum, Ms. Kendall's actions and approach for addressing Department problems, often through informal communications with senior Department officials, may be removing the deterrent effect formal IG investigations and reports have in preventing future fraud, waste, and abuse, while frustrating Congressional oversight of the Department and the IG itself.

PART 1 – HELP WANTED: Independence Required for an Inspector General

Acting Inspector General Mary Kendall[1] has sought to establish a more cooperative and accommodating working relationship with the Department of the Interior that stands in contrast to the more assertive oversight role performed during prior Administrations. The findings of this Majority Staff Report raise important questions about whether the Acting Inspector General's approach has been too one sided in favor of the Administration, has been influenced by her interest in being nominated for the permanent Inspector General position, and has been inconsistent with the role of independent watchdog envisioned by Congress when it enacted the Inspector General Act almost 35 years ago and with how the job has historically been performed.

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BACKGROUND: The Inspector General Act ("IG Act") was enacted in 1978,[2] requiring the establishment of an independent watchdog function within federal departments and agencies, including the Department of the Interior. An Office of Inspector General is expected to conduct and supervise audits and investigations of the programs and activities of its respective department or agency; to provide leadership and recommendations to promote operational efficiency and effectiveness and to prevent fraud, waste, and abuse; and to inform the department or agency head and Congress of any problems related to the administration of such programs.[3]

The hallmark of an Inspector General is independence. Although the legislative history recognizes that an Inspector General and agency need to work closely and cooperatively toward the shared goal of efficient and effective government operation and management,[4] the IG Act is designed to ensure an Inspector General

[1] Due to the constraints imposed by the Federal Vacancies Reform Act, 5 U.S.C. §§ 3345-3349d, on the time period for which an individual can serve in an acting capacity for a Presidential appointed, Senate confirmed position, Ms. Kendall is no longer serving as "Acting Inspector General" but has continued to lead the IG while continuing to serve in her permanent position as Deputy Inspector General. This Majority Staff Report refers to Ms. Kendall as "Acting Inspector General" for consistency and to avoid confusion.

[2] The Inspector General Act of 1978, Public Law 95-452, October 12, 1978.

[3] Section 2 of the IG Act.

[4] "To be truly effective, the Inspector General must have a close relationship with the Secretary, enjoy his confidence and respect, and be responsive to his concerns, both as to his specific assignments and as to the Inspector General's overall function in the Agency. If the Agency head is committed to running and managing the Agency effectively and to rooting out fraud, abuse and waste at all levels, the Inspector and Auditor General can be

can operate with independence and objectivity separate from a department or agency's policymaking[5] functions. The position of Inspector General is appointed by the President, subject to Senate confirmation, and is filled "without regard to political affiliation and solely on the basis of integrity and demonstrated ability" in several areas.[6] An agency or department head is prohibited from interfering with the work of an Inspector General,[7] and an Inspector General may be removed only by the President with notification to Congress.[8]

Under the IG Act, an Inspector General is authorized "to have access to all records, reports, audits, reviews, documents, papers, recommendations, or other material available to the applicable establishment which relate to programs and operations with respect to which that Inspector General has responsibilities under this Act."[9] An Inspector General is expected to keep the department head and Congress "fully and currently informed" of serious problems, abuses, and deficiencies related to department activities.[10] In order to fulfill its mission, an Inspector General is authorized to request information and assistance from any Federal, state, or local agency, [11] and the head of the other Federal agency is expected to furnish such information and assistance insofar as it is practicable and allowable under the law.[12]

The Department of the Interior policy requires all Department employees to cooperate with Inspector General investigations and audits, including providing documents and other evidentiary material, or face disciplinary action.[13] Furthermore, Secretary Salazar also issued a directive on April 20, 2010 to senior staff instructing them to cooperate with Inspector General investigations, including making available documents that may be covered by a privilege or protected from public disclosure by another law.

ACTING IG HAS SOUGHT ACCOMMODATION AND COLLABORATION

The Department's Office of Inspector General has been led by Deputy Inspector General Mary Kendall and Chief of Staff Stephen Hardgrove since February 2009, when President Obama appointed the Department's longstanding Inspector

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his strong right arm in doing so, while maintaining the independence needed to honor his reporting obligations to Congress," S. Rept. 95-1071 (1978), at 9.

[5] "Additionally, the legislation gives the Inspector and Auditor General no conflicting policy responsibilities which could divert his attention or divide his time; his sole responsibility is to coordinate auditing and investigating efforts and other policy initiatives designed to promote the economy; efficiency and effectiveness of the programs of the establishment," S. Rept. 95-1071 (1978), at 7.

[6] Section 3(a) of the IG Act.

[7] Id.

[8] Section 3(b) of the IG Act.

[9] Section 6(a)(1) of the IG Act.

[10] Section 4(a)(5) of the Act.

[11] Section 6(a)(3) of the Act.

[12] Section 6(b)(1) of the Act.

[13] Department Manual 355 DM 1 (09/28/07).

General, Earl Devaney, to serve as chairman of the Recovery, Accountability, and Transparency Board.[14] Mr. Devaney retired in December 2011. Ms. Kendall has publicly expressed an interest in being nominated for the permanent Inspector General position.[15]

Whereas the IG historically was known for its assertive style in investigating prior administrations,[16] Acting Inspector General Kendall has sought to establish a more collegial relationship with the Department.[17] In describing her philosophy for dealing with the Department, Acting Inspector General Kendall has stated:

> I have exercised all the independence and objectivity necessary to meet the OIG mission. I have elected to exercise this independence and objectivity in a way that maintains a healthy tension between the OIG and the Department we oversee. I believe, however, that independence and objectivity are not compromised by a respectful relationship with both the Department and the Congress, the two entities we are charged with keeping fully informed, pursuant to the IG Act. As a result, we have affected a great deal of positive change over the past three years, by working with the Department in a spirit of respect to achieve such change.[18]

This approach has not gone unnoticed at the Department. In testifying before the Committee on May 26, 2010, about the Department's response to the Deepwater Horizon incident, Deputy Secretary David Hayes applauded the approach taken by Acting Inspector General Kendall:

> I will say that we have really enjoyed a very good professional relationship with the Acting Inspector General, and we in fact—she is working with us on a special safety oversight committee function moving forward for precisely this reason. It is very instructive to get reports of the Inspector General's office. **It is even, I think, more helpful to get the**

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[14] Greenwire, "IG expects the unexpected – and is rarely disappointed," June 21, 2011; available at http://www.eenews.net/public/Greenwire/2011/06/21/2 (last accessed November 20, 2012).

[15] Testimony of Mary Kendall, Committee of Natural Resources, Oversight Hearing on" Oversight of the Actions, Independence, and Accountability of the Acting Inspector General of the Department of the Interior, August 2, 2012, Unofficial Transcript at page 43. See also, USA Today, "Interior inspector defends impartiality in report probe," May 22, 2012; available at http://usatoday30.usatoday.com/news/washington/story/2012-05-22/deepwater-drilling-report/55143864/1 (last accessed December 3, 2012).

[16] New York Times, "A Zealous Watchman to Follow the Money," March 9, 2009; available at http://www.nytimes.com/2009/03/10/us/politics/10devaney.html (last accessed December 5, 2012).

[17] Interview with senior manager in the IG's Office of Investigations, December 4, 2012; interview with senior office within the IG, November 14, 2012; interview with the team leader for the Office of Inspector General's renewable energy evaluation study (WR-EV-MOA-0017-2009), December 20, 2012.

[18] Testimony of Mary Kendall, Oversight Hearing of the full Committee on Natural Resources on "Oversight of the Actions, Independence, and Accountability of the Acting Inspector General of the Department of the Interior," August 2, 2012, Unofficial Transcript, Pages 15-16.

input and experience of the Inspector General as we look going forward at new things we can do to avoid the problem so that we do not have those reports.[19]

The statement by the Deputy Secretary, who executes the President's policies as the second-ranking political appointee at the Department, is a reminder that the Acting Inspector General's more accommodating and cooperative approach may lead to some problems being addressed without formal IG investigative reports being issued, resulting in less transparency about potential problems within the Department and decreased accountability for both the Department and the IG. It is an approach that can benefit an Administration but not the Congress or the public they serve.

This approach also has not gone unnoticed by Ms. Kendall's own staff. One IG staff member summed up the problem with the Acting Inspector General's collaborative approach the following way: "[I]f we find problems and don't report them, we are not doing our job." [20]

IG EMPLOYEE CONCERNS ABOUT INDEPENDENCE

As discussed elsewhere in this Majority Staff Report in more detail, the approach taken by Acting Inspector General Kendall and Chief of Staff Hardgrove has sometimes caused confusion and raised questions about the IG's role and independence among its own staff and outside of the Department. For example, Ms. Kendall agreed to serve, along with two senior political appointees, on the Outer Continental Shelf Oversight Safety Board, a body created by Secretary of the Interior Salazar in the days after the Deepwater Horizon accident to recommend policy "recommendations regarding interim measures that may enhance OCS safety and recommendations for improving and strengthening the Department's overall management, regulation and oversight of OCS operations."[21] The Board was also responsible for providing oversight of the Minerals Management Service as it conducted a joint investigation with the Coast Guard into the Deepwater Horizon accident.[22]

Ms. Kendall tasked the IG Office of Investigation's Central Region to assist the efforts of the OCS Safety Oversight Board, which issued recommended safety

[19] Report No. 111-54, Oversight Hearing of the Committee on Natural Resources, "Outer Continental Shelf Oil and Gas Strategy and Implications of the Deepwater Horizon Rig Explosion: Parts 1 and 2," May 26-27, 2010, at page 58.

[20] See also, "Our former IG was not necessarily opposed to taking the Department to task on problems we found. My personal view … our current head does not feel the same way." Interview with the team leader for the Office of Inspector General's renewable energy evaluation study (WR-EV-MOA-0017-2009), December 20, 2012.

[21] April 30, 2010 Department of the Interior Press Release; http://www.doi.gov/news/pressreleases/Salazar-Launches-Full-Review-of-Offshore-Drilling-Safety-Issues-during-Visit-to-Oil-Spill-Command-Centers-on-Gulf-Coast.cfm (last accessed on December 5, 2012).

[22] Id.

improvements on September 9, 2010. However, IG staff seemed unclear about their role in providing assistance to the OCS Safety Oversight Board.[23] During the time Ms. Kendall was serving on the OCS Safety Oversight Board and tasking IG staff to assist, the IG was also investigating edits made to a Department report issued May 27, 2010 that recommended a six-month offshore drilling moratorium and that suggested the moratorium had been reviewed and supported by peer reviewers when in fact it had not. Meanwhile, the IG was preparing its own report of recommendations to improve the safety of offshore drilling that was issued in December 2010.

In a June 13, 2010 email to Assistant Secretary Wilma Lewis, Acting Inspector General Kendall acknowledged the difficulties IG staff were having with the IG's involvement: "The circumstances certainly call for a coordinated, cooperative effort, and we are fully prepared to work closely with the Dept on this matter. While it is still a somewhat foreign concept to our staff, Steve [Hardgrove] and I are committed to making this work as smoothly and effectively as possible."[24]

Ms. Kendall herself has recognized the apparent conflict in serving on the OCS Safety Oversight Board, while also overseeing the IG's investigation into the editing of the drilling moratorium language and development of its own offshore safety recommendations, but did not think it warranted recusing herself. Ms. Kendall testified before the Committee that, "I recognize the potential for an apparent conflict of interest at the outset of my acceptance as a member of the Safety Oversight Board. But the Department was responding to a crisis. I did not think it appropriate for me to say, 'no, you go ahead and deal with this crisis, and I will just stand by and critique you if things go wrong.'"[25] However, under the IG Act, the Inspector General is expected to do just that: identify management problems and investigate fraud, waste, and abuse and report the IG's findings to the head of the Department *and* Congress.

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[23] Interview with senior manager in the IG's Office of Investigations, December 4, 2012.

[24] June 13, 2010 10:34 am email from Mary Kendal to Wilma Lewis (CCs sent to Rhea Suh and Steve Hardgrove), Subject re: Memo to Secretary on Work of Safety Oversight Board. This sentiment is similar to one expressed in an June 12, 2010 8:40 pm email from Steve Hardgrove to Mary Kendall:

> I understand the dynamics and that we did in fact agree to take the general topic areas identified by the Board to look at and to provide them with results of our collection as we progressed. … The spirit of cooperation will remain, but perhaps this will clarify that we are providing assistance to the Board but not working for the Board. This point hits home throughout our organization and we need to be careful how our combined effort is articulated. **… I have no problem working closely with the Dept [sic] on this or other issues. I probably did not realize that a majority of our staff is not yet prepared for it nor understands it.** (emphasis added)

[25] Testimony of Mary Kendall, Oversight Hearing of the full Committee on Natural Resources on "Oversight of the Actions, Independence, and Accountability of the Acting Inspector General of the Department of the Interior," August 2, 2012, Unofficial Transcript, Page 19.

According to the IG's employee satisfaction survey for 2012, only 59 percent of IG employees agreed or strongly agreed that "[t]he OIG conducts its work in a manner that is independent (free from improper influence) from the Department."[26] According to the same survey results, a number of employees have raised questions about the IG's independence and whether the IG has become overly deferential to the Department.

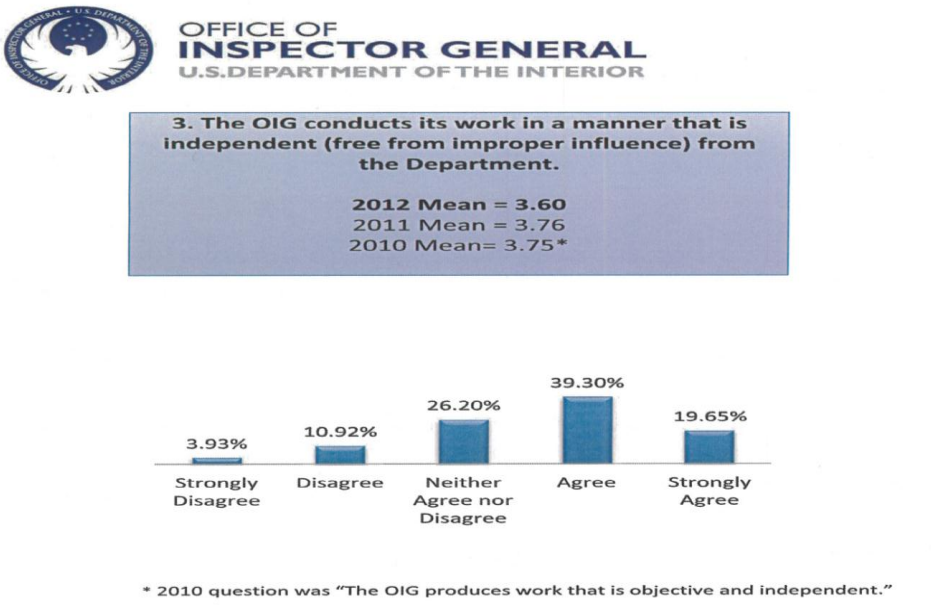

Image 1: IG Employee Satisfaction Survey

For example, one employee commented during the survey that, "I've become very concerned of late with the OIG's independence and honesty. We go after people who ignore subpenoa's [sic] and stretch the truth (to put it nicely). Seems like our mission statement and vision are just words on paper and not something we should live by."[27] In one troubling comment, an apparent member of the IG senior executive corps stated that the IG does seek permission from the Department on investigations: "Wake up and quit trying to to [sic] 'get approval' from DOI...we have job to do. The balance and independence model seems to be missing....the 'appearance' is there that the OIG has to ask the DOI is [sic] they can and actulally [sic] ...us SES'r's [sic] know it is the truth because you do ask DOI if it is 'okay to look at things'... enough is enough. Get back to being independent and lets get ourselves some respect and demonstrate to the tax payers why we were hired."[28]

[26] IG 2012 Annual Survey Results, page 8; available at http://www.peer.org/assets/docs/doi/10_9_12_IG_Survey_Results.pdf (last accessed on December 5, 2012).
[27] IG 2012 Annual Survey Results, page 9; available at http://www.peer.org/assets/docs/doi/10_9_12_IG_Survey_Results.pdf (last accessed on December 5, 2012).
[28] Id.

Another employee commented, "Good luck....there is a balance which I know is tried here....but it seems the scales have shifted too far into the non independent world that we need to review ourselves again and get it back to being balance."[29] Another employee admonished that the IG should be more willing to criticize the Department when needed: "Be careful with how much reports get softened to avoid 'slamming' the Department in the interest of maintaining a good relationship. If they did something horribly wrong, it isn't our job to soften the blow."[30]

Ms. Kendall seems to have attributed the negative survey results and comments to the scrutiny from the Committee's oversight of the IG, rather than genuine concerns held by employees that the IG's independence has been compromised.[31]

MS. KENDALL'S INTEREST IN PERMANENT IG POSITION

On a number of occasions, Ms. Kendall has publicly expressed interest in being appointed by the President to serve as the permanent Inspector General for the Department. At the Committee's August 2, 2012 oversight hearing, several members of the Committee expressed concern whether someone in Ms. Kendall's position – who had expressed interest in the permanent IG position – could ever truly be independent in investigating the Administration in general or even the President in particular when that person would be dependent on the very same President for the nomination. For example, Representative Landry asked, "I believe that your testimony has impeached you, has impeached your character. Because earlier you said that, sure, you know, you are interested in the job of the Inspector General, because you are an interim, and you need the President to appoint you if you want to get to that job. Why simply did you not just say, 'You know what? I am interested in taking this job, Mr. President. Maybe you should appoint someone in the interim, while I go out and I lobby for that job?'"[32]

In response to these questions, Acting Inspector General Kendall sought to minimize any concerns about the inherent potential for a conflict of interest resulting from an acting Inspector General also wanting to be considered for the permanent position. Ms. Kendall testified that she wanted to be appointed to the permanent Inspector General position because she wanted "to do this for the OIG, as an organization,

[29] Id.

[30] IG 2012 Annual Survey Results, page 103; available at http://www.peer.org/assets/docs/doi/10_9_12_IG_Survey_Results.pdf (last accessed on December 5, 2012).

[31] September 19, 2012, memorandum from Ms. Kendall to All IG Employees regarding "OIG Employee Survey – 2012"; available at http://www.peer.org/assets/docs/doi/10_9_12_Memo_from_IG.pdf (last accessed on December 5, 2012).

[32] Questions from Representative Landry, Oversight Hearing of the full Committee on Natural Resources on "Oversight of the Actions, Independence, and Accountability of the Acting Inspector General of the Department of the Interior," August 2, 2012, Unofficial Transcript, Page 75; see also questions from Representative Fleming, Id. at pages 43-46.

certainly not because I am having a really great time."[33] She added that, "You know, there is a potential for conflict of interest, perhaps, here. But I have seen many of my colleagues rise from the Deputy IG to the position of IG without conflict."[34]

Ms. Kendall's decision to serve on the OCS Safety Oversight Board and the other actions described elsewhere in this report have raised important questions about her judgment and suitability to serve as the permanent Inspector General. For example, Chairman Hastings has stated:

> It is very difficult to understand how you cannot see how the dual roles are in conflict. You are supposed to be the independent and objective investigator. You stated that in your statement. But when you are participating in meetings or conference calls, and receiving draft documents on these very same issues that your office may be asked to investigate – and, of course, then did investigate – it is clear your primary function was compromised. That you did not see this participation is an apparent conflict of interest, or something that would raise questions about your independence, it is that actions or those actions that trouble me the most.[35]

In addition, the environmental whistleblower advocacy group Public Employees for Environmental Responsibility ("PEER") has expressed concern about the independence of Ms. Kendall in particular and her suitability for the permanent Inspector General position. In commenting on the IG employee survey results, PEER Executive Director Jeff Ruch stated, "As an acting IG, Mary Kendall's tenure depends upon pleasing the very people she is supposed to investigate. As a result, this watchdog is not just on a very tight leash, it is on a choke chain. To be effective and remain independent, an IG must be willing on a daily basis to get canned or resign if the mission is compromised."[36] A former official with the Project on Government Oversight also told *USA Today*, "It raises the potential for conflict, especially if she would put her name in for IG. Her job prospects are captive to the goodwill of the

[33] Testimony of Mary Kendall, Oversight Hearing of the full Committee on Natural Resources on "Oversight of the Actions, Independence, and Accountability of the Acting Inspector General of the Department of the Interior," August 2, 2012, Unofficial Transcript, Page 44.

[34] Id.

[35] Chairman Hastings, Mary Kendall, Oversight Hearing of the full Committee on Natural Resources on "Oversight of the Actions, Independence, and Accountability of the Acting Inspector General of the Department of the Interior," August 2, 2012, Unofficial Transcript, Pages 18-19.

[36] October 9, 2012 press release from Public Employees for Environmental Responsibility; available at http://www.peer.org/news/news-releases/2012/10/08/rising-doubts-on-independence-of-interior-inspector-general/ (last accessed December 5, 2012). Separately, PEER has been also critical of Mr. Devaney's tenure as the Department's Inspector General. See, New York Times, "A Zealous Watchman to Follow the Money," March 9, 2009; http://www.nytimes.com/2009/03/10/us/politics/10devaney.html (last accessed December 5, 2012).

administration. If she releases something that makes political waves, they may not appoint her."[37]

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SUMMARY: As this Majority Staff Report demonstrates, Acting Inspector General Kendall's approach to working with the Department in such a collaborative manner was not isolated to her service on the OCS Safety Oversight Board. The Committee's oversight of the IG during Ms. Kendall's tenure as Acting Inspector General has identified numerous examples where the IG chose to inform the Department informally of management issues or potential fraud, waste, or abuse rather than conduct a full-scale investigation into the potential problem or wrong-doing. Although Acting Inspector General Kendall has explained such an approach has effectuated positive results and improved the Department's operations, this approach has also had the effect of minimizing public awareness of and accountability for problems at the Department and frustrating Congressional oversight of the Department and the IG.

[37] USA Today, "Interior inspector defends impartiality in report probe," May 22, 2012; available at http://usatoday30.usatoday.com/news/washington/story/2012-05-22/deepwater-drilling-report/55143864/1 (last accessed December 3, 2012).

PART 2 – MORATORIUM INVESTIGATION: IG's Report Dogged by Questions

For more than two years, the House Natural Resources Committee has been conducting oversight of the Department's decision to impose a moratorium on offshore drilling after the Deepwater Horizon accident and the editing of a Department report that incorrectly suggested that the peer reviewers supported the moratorium decision. However, more recently the Committee has also conducted oversight of the IG's handling of an investigation into the same Department report. The Committee has sought to conduct its oversight of these matters in a deliberate fashion that followed the facts where they have led. This report seeks to let those facts speak for themselves.

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BACKGROUND: On April 20, 2010, the Macondo well located approximately 50 miles from the coast of Louisiana in the Gulf of Mexico experienced a blowout that caused explosions and a fire aboard the Deepwater Horizon offshore drilling rig, resulting in the tragic loss of 11 lives. The drilling rig sank on April 22, 2012, and the uncontrolled well released oil into the Gulf of Mexico for 12 weeks before it was capped.

In the days immediately after the disaster, the Department of the Interior and the Department of Homeland Security launched a joint investigation team ("JIT") into the causes of the incident. In addition, on April 30, 2010, the President called upon Secretary Salazar to issue within 30 days a report recommending what, if any, additional safety measures should be implemented, and Secretary Salazar issued a Secretarial Order[38] establishing the Outer Continental Shelf ("OCS") Safety Oversight Board.

ACTING IG's ROLE IN RESPONSE TO THE DEEPWATER HORIZON TRAGEDY

The Secretary appointed Wilma Lewis, the Assistant Secretary for Land and Minerals Management, Rhea Suh, the Assistant Secretary for Policy, Management, and Budget, and Mary Kendall, the Acting Inspector General, to develop policy recommendations on behalf of the OCS Safety Oversight Board. The OCS Safety Oversight Board was tasked with providing oversight of the Department's work on the JIT; "[p]roviding recommendations regarding interim safety measures that may

[38] Secretarial Order No. 3298, "Establishment of the Outer Continental Shelf Safety Oversight Board," issued April 30, 2010.

enhance OCS safety"; and making policy recommendations to improve and strengthen the overall management, regulation, and oversight of OCS operations.[39]

On May 14, 2010, Secretary Salazar formally requested the IG to conduct a separate review to determine whether there were deficiencies in the Minerals Management Service's regulations and policies that needed to be changed to improve offshore drilling safety.

In response to the President's directive, the Department issued on May 27, 2010 a report entitled "Increased Safety Measures for Energy Development on the Outer Continental Shelf"[40] ("30-day Safety Report" or "Drilling Moratorium Report"). The Executive Summary to the 30-day Safety Report contains a "recommendations" section that outlines a number of technical changes that could be imposed to increase the safety of offshore drilling.

Immediately after the list of technical recommendations, the Executive Summary states:

> The Secretary also recommends temporarily halting certain permitting and drilling activities. First, the Secretary recommends a six-month moratorium on permits for new wells being drilled using floating rigs. … The Secretary further recommends an immediate halt to drilling operations on the 33 permitted wells, not including the relief wells currently being drilled by BP, that are currently being drilled using floating rigs in the Gulf of Mexico. Drilling operations should cease as soon as safely practicable for a 6-month period.[41]

The Executive Summary then states: "The recommendations contained in this report have been peer-reviewed by seven experts identified by the National Academy of Engineering. Those experts, who volunteered their time and expertise, are identified in Appendix 1. The Department also consulted with a wide range of experts from government, academia and industry."

The Secretary issued a directive on May 28, 2010 imposing the moratorium recommendations contained in the 30-day Safety Report, and the Department then promptly issued a Notice to Lessees and Operators of Federal Oil and Gas Leases informing that new "deepwater" applications would not be considered and letters to the 33 individual operators of permitted wells notifying them to suspend activities.

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[39] Id. at section 4(c).

[40] Report available at: http://www.doi.gov/deepwaterhorizon/loader.cfm?csModule=security/getfile&PageID=33598 (most recently accessed on December 6, 2012). The 30-day Safety Report itself does not explain how the OCS Safety Board contributed to or participated in its development. However, the 30-day Safety Report does refer, on page 30, to the OCS Safety Oversight Board, explaining that it "reviews and oversees OCS operations to support reasoned and fact-based recommendations for potential improvements."

[41] Id.

PEER REVIEWERS COMPLAIN ABOUT MORATORIUM LANGUAGE

Almost immediately after the issuance of the 30-day Safety Report, some of the technical experts who had peer reviewed the report objected that the Executive Summary language implied they had supported the Secretary's moratorium recommendation when, in fact, they did not. In an undated letter to Louisiana Governor Bobby Jindal and members of the Louisiana Congressional delegation, believed to have been sent and publically released on or about June 1, 2010, eight technical experts who had reviewed the draft 30-day Safety Report stated, "A blanket moratorium is not the answer. It will not measurably reduce risk further and it will have a lasting impact on the nation's economy which may be greater than that of the oil spill."

On June 2, 2010, Deputy Secretary David Hayes issued letters to the technical experts stating, "[W]e did not mean to imply that you also agreed with the decision to impose a moratorium on all new deepwater drilling." The letter added, "We regret any misunderstanding or confusion related to the inclusion of the recommendation to impose a 6-month moratorium on all new deepwater wells in the executive summary of the final report." Secretary Salazar also hosted a conference call and a follow up meeting in mid June to hear directly from the peer reviewers about their concerns on the moratorium.

On June 7, 2010, nearly 40 oil and gas drilling, exploration, and production companies filed suit in U.S. District Court for the Eastern District of Louisiana[42] seeking an injunction against the Department's moratorium actions and a declaration that the Department had acted arbitrarily and capriciously in violation of the Administrative Procedure Act.[43]

CONGRESS REQUESTS IG INVESTIGATION

Senator Vitter and Representative Scalise, both from Louisiana, sent a letter to the Department's IG on June 16, 2010, requesting that it "identify when and how the modification to the [Drilling Moratorium Report] occurred, and if there were any violations of law as it relates to the Information Quality Act."[44]

At the Committee's June 17, 2010 Subcommittee on Energy and Mineral Resources' oversight hearing on the Minerals Management Service, then Subcommittee Ranking Member Lamborn asked Acting Inspector General Kendall whether the IG, given its past investigations of scientific integrity issues, was investigating the

[42] *Hornbeck Offshore Services, et. al, v . Salazar, et al.*, 2:10-cv-01663 (J. Feldman).
[43] 5 U.S.C. §§ 551-559.
[44] Section 515 of the Consolidated Appropriations Act, 2001 (Pub.L. 106-554), enacted December 21, 2000. Commonly known as the Information or Data Quality Act, Section 515 requires the Office of Management and Budget to issue guidelines to ensure that the information disseminated by Executive Branch agencies them is of high quality, objectivity, utility, and integrity.

circumstances surrounding the editing of the Drilling Moratorium Report. Ms. Kendall responded by stating:

> Congressman Lamborn, we have not. I understand right now that the 60-day moratorium is the issue of a lawsuit brought against the Department by industry. It has been the Office of Inspector General's practice for as long as I have been with the office that when a matter is in another forum, such as a Federal District Court, unless there is a compelling need for us to get involved and, in this case, we have not heard from either of the parties—either the Department or the industry—we would not investigate that. I think it would be inappropriate.
>
> I mean, I have heard all the things that you have itemized here. **I was not involved in the process of developing that report, and I think it would be inappropriate for me to comment on it.**[45] (Emphasis added).

Congressman Lamborn followed up by adding: "And by the way, I didn't want to make any suggestion that you were involved. In fact, it is good that you are not so that you can be a disinterested, objective observer because there needs to be an investigation." After additional questioning from Congressman Lamborn, Ms. Kendall agreed that the IG *could consider* opening an investigation into the editing of the Drilling Moratorium Report.

The District Court hearing the *Hornbeck* litigation issued an injunction against the Department on June 22, 2010. The Department immediately appealed the order, and on July 8, 2010, a panel of the U.S. Court of Appeals for the Fifth Circuit denied the government's request to stay the District Court's order. The Department then took steps on July 12, 2010 to rescind the May 28 moratorium directive and issue a new one in its place. Those actions were also challenged in court.[46]

On July 20, 2010, then Ranking Member Hastings, Congressman Lamborn and five other members of the Committee sent a follow up letter to the IG that noted the Department's handling of the moratorium severely undermined the public's trust that the Department's actions were based on sound science, explained how the moratorium decision would result in considerable economic harm throughout the Gulf region and financial waste at the Department, and requested the IG "open an investigation into the [peer reviewer] allegations and the decisions made associated with this 30-Day Safety Report."

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[45] Serial Report No. 111-58, Subcommittee on Energy and Natural Resources oversight hearing, "The Deepwater Horizon Incident: Are the Minerals Management Service Regulations Doing the Job?" June 17, 2010, at page 31; available at http://www.gpo.gov/fdsys/pkg/CHRG-111hhrg56979/pdf/CHRG-111hhrg56979.pdf (last accessed December 6, 2012).

[46] For a more detailed discussion of the legal challenges to the moratorium decision, please see the November 27, 2012 decision by the U.S. Court of Appeals for the Fifth Circuit in *Hornbeck Offshore Services, et. al, v. Salazar, et. al*, No. 11-30936, Slip Opinion at pages 3-7.

On July 21, 2010, Acting Inspector General Kendall sent a letter to Ranking Member Hastings and the other Members who signed the July 20 letter indicating that the IG "has, in fact, been conducting an investigation into these allegations. When we have completed the investigation, we will make the results available to the public. We will ensure that you, and the other members of Congress who made a similar request, are provided a copy of the results of our investigation directly."

The OCS Safety Oversight Board issued its report and recommendations to the Secretary on September 1, 2010,[47] and the report was released to the public a week later.

The IG issued its report into the editing of the Drilling Moratorium Report on November 8, 2010. During the course of its investigation, the IG interviewed three of the technical experts who had objected to the moratorium language in the Executive Summary and three current or former Department officials involved in the drafting, review, and editing of the Drilling Moratorium Report. It also obtained a small number of emails and several versions of the draft Drilling Moratorium Report and Executive Summary from Counselor to the Secretary Steve Black and his special assistant, Neal Kemkar, who had the lead in drafting the report and working with the White House to get it finalized. The 8-page IG report summarizes the witness statements and documents obtained by the IG during the course of its investigation and lists 17 attachments, including formal witness interview summaries and copies of emails between Mr. Black and a White House official.

According to the IG report:

> All DOI officials interviewed stated that it was never their intention to imply the moratorium was peer reviewed by the experts, but rather rushed editing of the Executive Summary by DOI and the White House resulted in this implication. After reviewing different drafts of the Executive Summary that were exchanged between DOI and the White House prior to its issuance, the OIG determined that the White House edit of the original DOI draft Executive Summary led to the implication that the moratorium recommendation had been peer reviewed by the experts.[48]

On December 7, 2010, the IG issued a report of its findings and recommendations for improving the regulation of offshore oil and gas drilling, building upon the IG's work contained in the OCS Safety Oversight Board's September 2010 report.

[47] Outer Continental Shelf Safety Oversight Board Report to the Secretary of the Interior Ken Salazar; available at: http://www.doi.gov/news/pressreleases/upload/OCS-Safety-Oversight-Board-Report.pdf

[48] November 8, 2010, Department of the Interior Office of Inspector General Investigative Report of Federal Moratorium on Deepwater Drilling, Synopsis, Page 1.

ACTING IG REFUSES TO COMPLY WITH DOCUMENT REQUEST AND SUBPOENA

On April 25, 2011, Committee Chairman Hastings and Energy and Mineral Resources Subcommittee Chairman Lamborn sent separate letters to Secretary Salazar and Acting Inspector General Kendall requesting information about the moratorium decision and 30-day Safety Report and, in the case of the letter to Ms. Kendall, about the IG's investigation. On May 11, 2011, Acting Inspector General Kendall sent a letter providing a copy of its November 2010 report and Attachments 1 through 11.

However, Ms. Kendall stated that the IG was unable to provide attachments 12 through 18 based on a claim, articulated by the Department's Deputy Solicitor Art Gary to the IG, that those six attachments "reflect or constitute predecisional and deliberative interagency communications relating to the manner in which the 30-Day Report was finalized, and thus raise important confidentiality interests of the Executive Branch." According to Ms. Kendall's letter, Mr. Gary had conveyed this position directly to a different Congressional committee.

Ms. Kendall's May 11 letter also clarified that the IG's 2010 investigation had been "unable to independently conclude whether the implications contained in the 30-Day Report were intentional or not."

On August 1, 2011, another letter was sent to Acting Inspector General Kendall seeking clarification on whether the IG had additional documents responsive to the Committee's original April 25 request. Acting Inspector General Kendall responded on August 17, 2011, explaining that the IG did in fact have additional documents: it had identified a total of 47 documents responsive to the Committee's April 25 request. In addition to the copy of the report and 11 attachments provided with the May 11 response, the IG was providing with its August 17 letter copies of 28 additional documents, including a copy of an interview transcript. However, Ms. Kendall said the IG was unable to provide seven more documents (in addition to the six previously withheld ones, for a total of 13) that the Department had articulated a confidentiality interest in.

A follow up letter was sent to the IG on April 6, 2012, seeking an update of any steps taken since the November 2010 report to further investigate the editing of the Drilling Moratorium Report, and requesting copies of emails and others documents from the two IG investigators who worked on the case, Senior Special Agent Richard Larrabee and Program Integrity Division Director Harry Humbert, created between May 27, 2010 and the date of the letter.

A subpoena was issued to the Acting Inspector General on April 12, 2012, seeking copies of the 13 documents she was withholding from the Committee.[49]

On April 18, 2012, the IG sent a letter stating that Acting Inspector General Kendall was declining to comply with the Committee's duly authorized and issued subpoena and referring the Committee to the Department for production of the relevant documents. The letter also stated that the IG's decision was based on a long-standing protocol within the Department, and its respect for the Department's confidentiality claim helps promote "the free flow of information to the IG and allows us to execute our oversight responsibilities to the fullest extent possible under the IG Act."

Ironically, the IG letter added, "One result of this arrangement is that oversight committees such as yours *have the benefit of truly probing OIG reports* that are based on examination of all relevant Department information, even information that may be subject to a cognizable claim of privilege."

NEW QUESTIONS ABOUT ACTING IG'S CONFLICTING ROLES

In its April 24, 2012, response to the Committee's April 6 letter, the IG stated it had not conducted any further investigations into the editing of the Drilling Moratorium Report since the November 2010 report was issued. The IG response also provided copies of Mr. Larrabee's and Mr. Humbert's documents. Acting Inspector General Kendall, IG Chief of Staff Hardgrove and other senior IG staff met with Chairman Hastings and Committee staff on April 26, 2012 to discuss the IG's refusal to comply with the April 12 subpoena and the Committee's concerns about how the IG handled its 2010 investigation. The Committee majority staff also interviewed the IG's lead investigator who worked on the moratorium case on April 30, 2012.[50]

Given the significant and ongoing concerns into the IG's investigation, a letter was sent to the IG on May 2, 2012 requesting documents from Acting Inspector General Kendall, Mr. Hardgrove, and seven other IG officials about the IG's investigation into the Drilling Moratorium Report. The IG began providing the requested documents, on a rolling basis, on May 16, 2012.

Chairman Hastings sent a letter on May 10, 2012 reiterating the Committee's position that the IG was obligated, absent a legitimate assertion of Executive Privilege, to comply with a duly authorized and issued Congressional subpoena for

[49] On March 28, 2012, the Committee voted 23-17 to authorize Chairman Hastings to issue subpoenas *duces tecum* in two oversight matters, including the investigation into the editing of the Drilling Moratorium Report. A record of the authorization is available at http://naturalresources.house.gov/news/documentsingle.aspx?DocumentID=288827 (last accessed on December 12, 2012). In addition to the April 12 subpoena to Acting Inspector General Kendall, a separate subpoena *duces tecum* was issued to Secretary Salazar on April 3, 2012 for the same 13 documents covered by the IG subpoenas, as well as documents from five Department officials. The Department has not fully complied with that subpoena.

[50] The lead investigator informed his management of the interview in an April 30, 2012 3:05 pm email.

documents in its custody. Simply put, the letter stated the document handling protocols established by the IG and the Department were not an appropriate justification for the IG's refusal to comply.

Following up on questions raised by the recently provided documents, including about the accuracy of Ms. Kendall's testimony before the Committee in June 2010, another letter was sent on May 22, 2012 to the IG requesting additional documents about any communications between Ms. Kendall and senior Department officials involving the Drilling Moratorium Report, Ms. Kendall's service on the OCS Safety Oversight Board, and Ms. Kendall's June 17, 2010 appearance before the Committee.

The Committee sent a letter to Acting Inspector General Kendall on June 25, 2012, expressing concern about the appearance that certain management and personnel decisions under consideration at the IG were being considered in retaliation against the senior special agent who led the investigation into the Drilling Moratorium Report and who had engaged in protected whistleblower communication with Congress. In particular, the letter requested information about plans under consideration to reassign or transfer any employees to the IG's Western Region Office in Sacramento, including employees in domicile locations such as the specific senior special agent who had worked on the moratorium investigation and raised concerns to his supervisors about how the case was managed.

Acting Inspector General Kendall responded on June 27, 2010 to questions about her role on the OCS Safety Oversight Board and the accuracy of her June 17, 2010 testimony, denying that her independence had been compromised by her service on the OCS Safety Oversight Board and arguing that at no time did she participate in the development of the 30-day Safety Report.

On July 26, 2012, Acting Inspector General Kendall was invited to testify on August 2, 2012, at a full Committee hearing titled, "Oversight of the Actions, Independence and Accountability of the Acting Inspector General of the Department of the Interior." Ms. Kendall was informed that she should be prepared to answer questions on her role overseeing IG's investigation into the Drilling Moratorium Report, the IG's response to the Committee's April 12 subpoena, the effectiveness of an Inspector General in an Acting capacity, and other matters.

On July 31, 2012, Acting Inspector General Kendall sent a letter providing documents and responding to the Committee's whistleblower retaliation concerns, stating she personally and the IG as an organization are "fully aware" of whistleblower protections, that no decision had been made on whether to transfer an employee to the regional office in Sacramento and, therefore, no specific employee had yet been identified for the targeted reassignment.

Ms. Kendall testified before the Committee at its August 2, 2012 oversight hearing,[51] answering questions about her role on the OCS Safety Oversight Board, her handling of the IG's moratorium investigation, and the IG's handling of ethics and scientific integrity complaints, among other topics.

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FINDINGS: During the course of the Committee's investigation of the Department's economically devastating moratorium decision and the manipulation of the peer review language in the Drilling Moratorium Report's Executive Summary, the Committee has obtained documents from the Department and the IG, heard from the Acting Inspector General and other Department officials, and conducted formal interviews and off-the-record discussions with several current and former IG staff members.

The Committee's investigation has raised troubling questions about the Acting Inspector General's, and the IG Chief of Staff's, conduct in overseeing the IG's investigation into the Drilling Moratorium Report while at the same time serving on a Departmental policy board, the accuracy and completeness of the Acting Inspector General's testimony before the Committee on two occasions, and the IG's response to concerns raised by the senior special agent who led the IG's moratorium investigation. In addition, the Acting Inspector General has displayed contumacious conduct in refusing to comply with a duly authorized and issued Congressional subpoena. This Majority Staff Report outlines the findings of this investigation.

ACTING IG'S CONFLICTING ROLES RAISES MANY QUESTIONS

Acting Inspector General Kendall has argued, in testimony[52] before and correspondence[53] with the Committee, that she was not involved in developing the 30-day Safety Report. The information obtained by the Committee during the course of its investigation raises significant questions about the accuracy and completeness of this statement and other testimony before the Committee.

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[51] The Committee held a second oversight hearing on the Drilling Moratorium Report and other topics on September 13, 2012. The Committee heard testimony from two Department officials who had worked on the Drilling Moratorium Report, Neal Kemkar, Special Assistant to the Counselor to the Secretary, and Mary Katherine Issue, former Deputy Director of the Minerals Management Service. Mr. Kemkar and Ms. Ishee had been issued separate subpoenas *duces tecum* prior to the hearing. They did not comply with these duly authorized and issued Congressional subpoenas.

[52] Serial Report No. 111-58, Subcommittee on Energy and Mineral Resources oversight hearing, "The Deepwater Horizon Incident: Are the Minerals Management Service Regulations Doing the Job?" June 17, 2010, at page 31; available at http://www.gpo.gov/fdsys/pkg/CHRG-111hhrg56979/pdf/CHRG-111hhrg56979.pdf (last accessed December 6, 2012); see also, Testimony of Mary Kendall, Oversight Hearing of the full Committee on Natural Resources on "Oversight of the Actions, Independence, and Accountability of the Acting Inspector General of the Department of the Interior," August 2, 2012, unofficial transcript at page 30.

[53] June 27, 2012 letter from Acting Inspector General Kendall to Chairman Hastings.

Acting Inspector General Kendall was appointed by Secretary Salazar to serve on the OCS Safety Oversight Board on April 30, 2010, along with the Assistant Secretary for Lands and Minerals Management, Wilma Lewis, and the Assistant Secretary for Policy, Management, and Budget, Rhea Suh, both of whom are senior political appointees at the Department. According to an April 26, 2010 email obtained from the IG, the appointment appears to have been in the works for several days before the formal announcement. Ms. Suh wrote an email to Ms. Kendall that day with the subject line "whoops-plan b," telling Ms. Kendall to "[a]ct really surprised. David or Wilma have the lead in talking to you about it! Sorry!" Ms. Kendall responded 10 minutes later, saying, "Got it!"[54]

Although IG staff were aware of Ms. Kendall's appointment,[55] it appears staff were in the dark about what Ms. Kendall was herself doing on the OCS Safety Oversight Board and how it related to the IG's work and the Department's work on the 30-day Safety Report.[56] This confusion is understandable.

According to an April 30, 2010 email from Ms. Lewis to Secretary Salazar, the members of the OCS Safety Oversight Board had already met and decided to focus on: "1) **proposals for interim measures**; and 2) oversight of, and periodic reports to you regarding, the MMS portion of the Joint Investigation. With respect to item 1, we are aware of the 30-day time period for your report to the President." (Emphasis added) The Drilling Moratorium Report, drafted under Mr. Black's direction and later investigated by the IG, was also focused on interim safety measures.

Similarly, Ms. Lewis wrote a May 2, 2010 email[57] to Counselor Black and MMS Deputy Director Mary Katherine Ishee[58] about the need for close cooperation: "Because the information needed for the interim measures report for the POTUS and related work tasked to the Oversight Safety Board is the same, we should make sure to coordinate our efforts to avoid duplication of time and resources. Please keep us in the loop as you schedule interviews and as you gather materials. We would like to have Board participation when you are meeting with MMS personnel, industry, experts, and other parties." Mr. Black responded, "Agreed. Thanks Wilma.

[54] April 26, 2010 1:47 pm email from Mary Kendall to Rhea Suh, subject: "re: whoops – plan b."

[55] April 30, 2010 email from Richard Larrabee to Acting Inspector General Kendall offering to assist the OCS Safety Oversight Board's work if needed.

[56] Although the IG's Central Region had been tasked with assisting the OCS Safety Oversight Board, it is unclear what staff understood the IG's and Ms. Kendall's roles to be in that effort. Interview with senior manager in the IG's Office of Investigations, December 4, 2012: ["I don't think that was communicated well, which may have led to some of the perceptions. … I don't think people generally knew what all she was doing with the Department. I didn't have a good understanding of that."; see also, June 12, 2010 email from IG Chief of Staff Hardgrove to Acting Inspector General Kendall discussing edits to a draft memorandum from the IG to the other OCS Safety Oversight Board members: "I have no problem working closely with the Dept [sic] on this or other issues. I probably did not realize that a majority of our staff is not yet prepared for it nor understands it."

[57] May 2, 2010 7:20 pm email from Wilma Lewis to Steve Black, Mary Katherine Ishee (CCs sent to Rhea Suh and Mary Kendall), Subject: Coordination on Interim Measures.

[58] Acting Inspector General Kendall was copied on the email.

See you tomorrow." Also in a May 2, 2010 email, Deputy Secretary Hayes, current Chief of Staff Laura Davis, Mr. Black and other senior Department officials were provided a work plan for the OCS Safety Oversight by Ms. Lewis.

DOUBTS ABOUT CONGRESSIONAL TESTIMONY

Although Ms. Kendall has sought, in her statements and correspondence, to distance the work of the OCS Safety Oversight Board from the 30-Day Safety Report, these emails suggest the two functions were not just complementary but inextricably intertwined, dating to the very beginning of the Department's work on developing interim safety recommendations.

Beginning on May 6, 2010, Ms. Kendall and others on the OCS Safety Oversight Board were provided outlines and early drafts of what became the Drilling Moratorium Report.[59] Mr. Black sent a copy of the then-current version of the draft recommendations to the members of the OCS Safety Oversight Board on May 11, 2010 and asked for "comments or questions."

In addition, the Committee has obtained a calendar invitation for a May 25, 2010 meeting and conference call that was to include the peer reviewers, along with Ms. Kendall, Mr. Black, Ms. Lewis, Ms. Suh and other senior Department officials. The subject of this calendar invitation is listed as: "Follow up call with NAE Peer Review Panel (30-Day Safety Report attached)." A document titled "Interim Measures Report 100525 nk Final.pdf" was attached to the invitation.

If Ms. Kendall is correct, then Mr. Black must have been mistaken when he thanked Ms. Kendall for her "participation." In an email chain dated May 28, 2010, Ms. Kendall wrote to Mr. Black requesting a copy of the letter Secretary Salazar sent to the President transmitting the Drilling Moratorium Report. The original email from Ms. Kendall states, in part:

> We are launching teams next week to respond to the Secretary's request that we [the IG] determine whether specific deficiencies in [Minerals Management Service] policies or practices exist that need to be addressed to ensure that operations on the [Outer Continental Shelf] are conducted in a safe manner protective of human life, health, and the environment. **We do not, however, want to duplicate effort that you have already made (your effort has been tremendously impressive, by the way!).** (Emphasis added).

Mr. Black responded by saying, in part: "And thanks for your kind words, Mary, and **for your participation in so many of the meetings and interviews leading up to this report**. I have attached the final 30-day report and the transmittal letter that went

[59] See May 6, 2010 email from Neal Kemkar to Wilma Lewis, Steve Black, Mary Katherine Ishee, Rhea Suh, and Mary Kendall.

to the White House yesterday. Please don't hesitate to call me if you have any questions." (Emphasis added).

The email string ends with Ms. Kendall thanking Mr. Black and asking if the 30-Day Report and transmittal memorandum from Secretary Salazar can be shared with the IG team investigating MMS. Nowhere in the email string does Ms. Kendall object to how her role is characterized.

Just three weeks after the Drilling Moratorium Report was issued, Ms. Kendall testified before this Committee that, "**I was not involved[60] in the process of developing that report, and I think it would be inappropriate for me to comment on it.**"[61] (Emphasis added).

Representative Lamborn replied, "And by the way, I didn't want to make any suggestion that you were involved. In fact, it is good that you are not so that you can be a disinterested, objective observer because there needs to be an investigation."

In more recent correspondence with the Committee and in public statements, Ms. Kendall has modulated her position, stating that she "had no role in drafting the report" itself or the Executive Summary and was not an "active" participant in meetings where the draft report was discussed.[62] However, those claims are qualitatively different than what Ms. Kendall testified to in June 2010: that she was "not involved in the process" of developing the 30-Day Safety Report. Ms. Kendall may not have been as actively involved in drafting or reviewing language for the report or arranging and attending meetings with the peer reviewers, especially compared to Mr. Black or other Department officials, but the fact remains that she was provided drafts and updates about the report throughout the process, was asked for her comments, and attended meetings with the peer reviewers where the near final version of the 30-Day Safety Report was discussed.

Even if Ms. Kendall's personal participation at meetings was limited to being an "active listener,"[63] it stands to reason that she would have been privy to inside knowledge about how the Drilling Moratorium Report was developed and may

[60] Merriam Webster Online Dictionary defines the present tense of "involved" to mean "to engage as a participant"; available at: http://www.merriam-webster.com/dictionary/involve (last accessed February 19, 2013).

[61] Serial Report No. 111-58, Subcommittee on Energy and Natural Resources oversight hearing, "The Deepwater Horizon Incident: Are the Minerals Management Service Regulations Doing the Job?" June 17, 2010, at page 31; available at http://www.gpo.gov/fdsys/pkg/CHRG-111hhrg56979/pdf/CHRG-111hhrg56979.pdf (last accessed December 6, 2012).

[62] Statement from Mary Kendall, Oversight Hearing of the full Committee on Natural Resources on "Oversight of the Actions, Independence, and Accountability of the Acting Inspector General of the Department of the Interior," August 2, 2012, Unofficial Transcript, page 88; see also, USA Today, "Interior inspector defends impartiality in report probe," May 22, 2012; available at http://usatoday30.usatoday.com/news/washington/story/2012-05-22/deepwater-drilling-report/55143864/1 (last accessed December 3, 2012).

[63] USA Today, "Interior inspector defends impartiality in report probe," May 22, 2012; available at http://usatoday30.usatoday.com/news/washington/story/2012-05-22/deepwater-drilling-report/55143864/1 (last accessed December 3, 2012).

herself have been a fact witness who would have had information or access to documents that could have assisted the IG's own investigation. However, by all accounts, IG investigative staff were also unaware of Ms. Kendall's involvement.[64]

The facts clearly show Ms. Kendall was "involved in the process" whereby the report was developed, contrary to her June 2010 testimony. Had Ms. Kendall provided a more fulsome answer to Representative Lamborn's question at the time, one that clarified her role on the OCS Safety Oversight Board, the Committee and the public may have had a better understanding of her potential conflict of interest, these concerns about the integrity and independence of the IG's investigation could have been prevented, and Ms. Kendall's candor and truthfulness likely would not be called into question now.

NEW QUESTIONS ABOUT CONGRESSIONAL TESTIMONY

In order to demonstrate her unfamiliarity with and further distance herself from the 30-day Safety Report, Ms. Kendall went so far as to testify at the August 2, 2012 oversight hearing that, "**I am almost embarrassed to say this, sir, but I have never read the 30-Day Report.**"[65]

However, the facts also call this assertion – and the accuracy of Ms. Kendall's August 2012 testimony – into doubt.

In a May 26, 2010 email to the other members of the OCS Safety Oversight Board and other Department staff, Ms. Kendall discussed reading the 30-Day Safety Report in connection with her work on the Board, writing, "I will not be able to participate in tonight's call, but will have a revised draft document outlining what we (OIG) think remains on the to-cover list **after reading the 30-day report**. I'll bring the outline up momentarily." (Emphasis added)

[64] See for example, interview with senior manager in the IG's Office of Investigations, December 4, 2012.

[65] Statement from Mary Kendall, Oversight Hearing of the full Committee on Natural Resources on "Oversight of the Actions, Independence, and Accountability of the Acting Inspector General of the Department of the Interior," August 2, 2012, Unofficial Transcript, Page 86; see also questions from Representative Fleming, Id. at pages 43-46.

From:	Mary Kendall
To:	Cardinale, Richard
Cc:	Holley, Amy; Rees, Gareth C; Dieguez, Heather; Farquhar, Ned; Mussenden, Paul; Jacobson, Rachel; Suh, Rhea; Lassiter, Tracie L; Lewis, Wilma
Subject:	Re: Safety Oversight Board - Conference Call Tomorrow
Date:	05/26/2010 05:11 PM

Rich and all - I will not be able to participate in tonight's call, but will have a revised draft document outlining what we (OIG) think remains on the to-cover list after reading the draft 30-day report. I'll bring the outline up momentarily. Mary

Mary L. Kendall
Acting Inspector General
Office of Inspector General
Department of the Interior
(202) 208-5745

Image 2: Kendall Email About Reading 30-Day Safety Report

This email, obtained from the IG, indicates Ms. Kendall was in the process of reading the draft 30-Day Safety Report in May 2010 and was familiar enough with its contents to determine how that document complemented the Board's efforts.

This stands in stark contrast to Ms. Kendall's testimony before the Committee in August 2012 that she had never read the 30-day Safety Report.

QUESTIONS ABOUT INTERFERENCE WITH IG'S INVESTIGATION

Internal IG documents obtained by the Committee suggest the IG took pains from the very start to avoid conducting a full-scale investigation into the editing of the Drilling Moratorium Report, as was called for in the June 16, 1010 letter from Senator Vitter and Representative Scalise, at the June 17, 2010 Subcommittee hearing by then Subcommittee Ranking Member Lamborn, and again in the July 20, 2010 letter from then Ranking Member Hastings and six others.

While testifying before the Committee on June 17, 2010, Acting Inspector General Kendall stated that the IG would not be conducting an investigation because the moratorium itself was the subject of litigation:

> It has been the Office of Inspector General's practice for as long as I have been with the office that when a matter is in another forum, such as a Federal District Court, unless there is a compelling need for us to get involved and, in this case, we have not heard from either of the parties—either the Department or the industry—we would not investigate that. I think it would be inappropriate.[66]

[66] Serial Report No. 111-58, Subcommittee on Energy and Natural Resources oversight hearing, "The Deepwater Horizon Incident: Are the Minerals Management Service Regulations Doing the Job?" June 17, 2010, at page 31;

According to internal IG documents, in the hours after the hearing, Ms. Kendall continued to resist conducting a full-scale investigation. In an email string, also dated June 17, 2010, between Ms. Kendall, IG General Counsel Delaplaine, and an IG staff attorney, the IG attorneys discuss drafting a response letter to Senator Vitter and Representative Scalise that would reiterate Ms. Kendall's testimony that the IG will not investigate further and clarifying that the moratorium was not discussed in the body of the 30-day Safety report, just the transmittal letter to the President and the Executive Summary.

Acting Inspector General Kendall agreed with this approach, responding by email on June 17, at 5:24 pm:

> You understood correctly. My statement this morning [at the Subcommittee's hearing] was to the effect that 'it is our practice not to conduct an investigation if a matter is being addressed in another legal forum. Here, the moratorium issue is before the federal district court (we'll need to get details). Barring extraordinary circumstances, we would not investigate.' Looking at the Information Quality Act, I do not think it would be applicable here (we should discuss why), where by the Department's own admission, it did not intend to imply that the experts reviewed the moratorium issue, and apparently issued an apology. There are no legal consequences I can see for violating the Information Quality Act, either.

The IG attorneys circulated a draft response by email on June 21, 2010 that states, in part, "[t]he letter currently states that 'the OIG is not aware of any formal challenges to the Department's safety report' under the Information Quality Act's procedures. DOI has a specific process for 'affected persons' to challenge 'disseminated information' under the IQA. The congressional letter does not appear to qualify as such a challenge and I am not aware of any IQA challenges to the 30-day report, but I wanted to mention it since you [Ms. Kendall] would likely know better."[67]

According to the IG's computerized case management system, the IG opened a case file for the moratorium investigation on June 22, 2010,[68] and assigned it to the Office of Investigation's Public Integrity Division to handle.[69] According to the IG's case

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available at http://www.gpo.gov/fdsys/pkg/CHRG-111hhrg56979/pdf/CHRG-111hhrg56979.pdf (last accessed December 6, 2012).>

[67] June 21, 2010, 5:32 pm, email from Bruce Delaplaine to Kevin Laden, subject: re: Draft to Sen. Vitter & Rep. Scalise.

[68] The same day the Federal District Court hearing the Hornbeck litigation issued an injunction against the 6-month moratorium.

[69] The investigation was assigned case number PI-PI-10-0562-1. The lead investigator, Senior Special Agent Richard Larrabee, had previously worked in the Program Integrity Division but at the time was assigned to the Office of Investigation's Energy Investigations Unit based out of the Central Regional Office in Colorado. However the IG's investigation remained focused on the Department's compliance with the Information Quality Act for several more weeks.

management system, the lead investigator conducted interviews with several of the technical experts who had peer reviewed the 30-day Safety Report and with Mr. Black and Mr. Kemkar, who had prepared the draft and worked with the White House on the edits that led to the incorrect peer review language.

In her July 21, 2010 letter, Ms. Kendall informed then Ranking Member Hastings and Representative Lamborn that the IG was conducting an investigation into the allegations concerning the editing of the 30-day Safety Report and the moratorium decision itself. However, the records obtained by the Committee suggest that the IG's investigation, at the time of the July 21 letter, was focused on whether the Department had complied with the Information Quality Act and not a broader review of the moratorium decision itself or how the incorrect peer review language found its way into the final report.[70]

However, it is unclear based on internal IG records that the IG took any additional investigative actions to broaden the scope of the investigation beyond the initial focus on the Information Quality Act.

FRUSTRATIONS WITH OBTAINING RELEVANT DOCUMENTS

One of the challenges apparently faced by the IG's investigators was obtaining documents that would shed light on why the peer review language was edited in order to verify witness statements. It appears that rather than obtain documents from the Department's email servers even before any interviews were conducted, or directly from the witnesses themselves, the investigators were directed to first seek them through alternative means, including the Department's Solicitor's Office, which was compiling an administrative record to defend the moratorium decision in court.

According to an internal IG case management system document, the lead investigator proposed on July 8, 2010, as the next step in the investigation, to conduct a broad centralized "review of all department personnel emails involved in drafting and reviewing the executive summary attached to the report that made the misrepresentation (for the one-week period prior[71] to release of the executive summary) in order to help determine whether such misrepresentation was intentional or a mistake, as claimed by the Department." The lead investigator's plan also proposed interviewing department officials after the email search was conducted and then analyzing whether any laws such as the Information Quality Act were violated.

[70] The senior special agent overseeing the investigation was not made aware of the letter from then Ranking Member Hastings until July 30, 2010, when he discovered a copy of the letter on the internet. See July 30, 2010 7:50 am email from Richard Larrabee to Kris Kolesnik, Subject: House Cmttee Natural Resources Request for Investigation.

[71] Had the investigators conducted a broad search for documents in the week before the 30-day Safety Report was issued on May 27, 2010, it is possible they would have identified the May 25, 2010 calendar entry showing Ms. Kendall had received a draft of the report and had been invited to a meeting with the peer reviewers where the report was discussed.

The lead investigator sent a follow up email to the Director of the Program Integrity Division, Harry Humbert, on June 9, 2010, expressing concern about the direction and scope of the investigation:

> As we discussed, I think we as the DOI-OIG could be opening ourselves up to legitimate criticism (of biasm) by not pursuing this investigation in a similar manner in which we would pursue an investigation of a lower level DOI employee. As you know, in order to be effective and thorough in any investigation, we need to take the same comprehensive approach with the 'higher level' investigations as we do with the 'lower level' investigations, and we have regularly made extensive use of the [centralized email retention database used by the Department] to obtain emails of DOI employees in pursuance of our investigations over the past 5 years.

The lead investigator was unable at that time to conduct a broad email search prior to any interviews with Department officials.[72] Counselor to the Secretary Black was interviewed for almost 80 minutes on July 14, 2010 and, and according to the lead investigator's notes and formal interview summary,[73] he told the investigators that the incorrect and misleading peer reviewer language was an accident caused by rushed editing. He also added that he had in his possession relevant documents, but they should be considered privileged because they concerned communications between the Secretary and the President.[74]

At 3:36 pm on July 14, the lead investigator sent an email to Program Integrity Division Director Hubert asking, "**Why would I believe Steve Black** but not believe [a former Bush Administration official who was the subject of a separate IG investigation] whose emails we reviewed under an investigation requested by Secretary Salazar)? Both investigations concerned a 'policy decision' that was made where there wasn't any 'evidence of a cover-up'? – disturbed." (Emphasis added)

On July 15, 2010, the IG interviewed Neal Kemkar who, as Special Assistant to Mr. Black, interacted with the peer reviewers and helped coordinate the review and editing of the draft 30-day Safety Report. According to the lead investigator's notes

[72] In interviews with Committee staff, several IG investigators have said the usual investigative process is to try to obtain emails first through a centralized source, then conduct an interview, followed by requesting documents from the witness to compare (for accuracy and completeness) against the documents previously obtained. However, in the April 26, 2012 meeting, IG Chief of Staff Hardgrove said such steps are resource intensive and time consuming and are not needed in every investigation, including the one into the Drilling Moratorium Report.

[73] According to the lead investigator, Mr. Black requested that the interview with the IG not be recorded for later transcription.

[74] In the April 26, 2012 meeting with Chairman Hastings, Acting Inspector General Kendall and Chief of Staff Hardgrove questioned why the investigators did not obtain documents directly from Mr. Black during the interview. The lead investigator has said they did not request documents at that time directly from Mr. Black based on directions from Ms. Kendall and Mr. Hardgrove. Interview with the IG's lead investigator into Drilling Moratorium Report, April 30, 2012.

and official interview summary, Mr. Kemkar said he had emails and documents reflecting who made the edits and when they were made.

Also on July 15, 2010, the lead investigator prepared a draft Report of Investigation ("ROI"), based on the witness interviews. The lead investigator noted in the case management system that the report could not be finalized until after relevant documents could be obtained and reviewed.

IG staff have said during interviews they generally are allowed to obtain relevant documents directly from a witness or from a centralized email search before and/or after a witness interview, and they could not remember another example where IG staff would be directed to obtain necessary information through secondary means such as an administrative record used in litigation as opposed to the directly from the witness or the original source of information.

The draft ROI described how the incorrect peer review language was the result of late night edits by the White House and that the Department witnesses interviewed (Mr. Black and Mr. Kemkar) had said there was no intent to mislead about the peer reviewers' support of the moratorium. The lead investigator sent the July 15 draft ROI by email[75] to Program Integrity Director Humbert on July 19, 2010, explaining:

> I am still awaiting for a copy of the Administrative Record of the litigation in Louisiana from [the Solicitor's Office] in order to review drafts of the Executive Summaries; however, I am concerned that the drafts will not be able to clearly document which draft belongs to DOI versus the White House and at what time-frames the changes may have been made (and by whom). As we have discussed in depth, the only way to unequivocally identify these facts and time-frames is by conducting a thorough review of the email traffic between DOI and the White House on May 26 and the early morning hours of May 27, 2010, which has been denied by Steve [Hardgrove] and Mary [Kendall].

The email concluded by saying the draft Report of Investigation may need to be updated based upon a review of the *Hornbeck* litigation's administrative record and receipt of any legal analysis by the IG's attorneys on whether the Information Quality Act was violated.

IG'S NARROW FOCUS OBSCURES QUESTIONS ABOUT WHITE HOUSE INTENT

On July 21, 2010, an IG attorney sent by email[76] a draft legal analysis to the lead investigator, stating, "As we discussed, **it is possible that additional evidence could uncover a more intentional misrepresentation regarding the safety report as a**

[75] July 19, 2010 1:32 pm email from Richard Larrabee to Harry Humber, subject: PI-10-0526-I.

[76] July 21, 2010 9:37 am email from Kevin Laden to Richard Larrabee, cc to Bruce Delaplaine, subject: IQA Draft Legal Opinion –Kladen 7.20.10 (2).doc

whole, but the evidence currently developed does not appear to support such an interpretation." (Emphasis added)

The lead investigator then sent an email[77] with an updated draft Report of Investigation, incorporating the draft Information Quality Act section from the IG attorney, to Deputy Assistant Inspector General Scott Culver, also on July 21, adding:

> Also, as you will notice that the final section to the Details of Investigation section of the ROI is still outstanding because I am waiting to hear from [the Solicitor's Office] when I can view their Administrative Record for different drafts of the Executive Summary on-line (I've been told it will be on-line later this week sometime). **As you know, I was directed to not ask for Secretary Counselor Steve Black's email that contained the actual drafts sent to, and returned by the White House (even though he hold us he had them if we wanted them).** (Emphasis added)

Although the lead investigator had attempted to obtain relevant documents about the editing of the Drilling Moratorium Report from the Solicitor's Office, as opposed to directly from the witnesses or from a centralized email search, even those documents were not immediately forthcoming. In a July 27, 2010, email[78] to Program Integrity Division Director Humbert, the lead investigator wrote:

> Just called [the Solicitor's Office] again yesterday in re the Administrative Record in order to get whatever drafts of the Executive Summary that may have been placed in the record. [The Solicitor's Office] told me that they are still working on completing the final administrative record and they will let me know when it is placed on-line for all of the public to view." The lead investigator added, "Seems a bit ironic to me that in conducting an internal OIG investigation, we have been directed to not secure vital documents pertinent to the investigation internally, but rather must wait for its public release in order to obtain documentation.

This did not sit well with Program Integrity Division Director Humbert, who wrote, "I want a name and phone number of the person you are dealing with at the [Solicitor's Office]. We are NOT waiting until the public gets a copy before we are permitted to view it."[79] The following day, Program Integrity Division Director Humbert sent a follow up email to the lead investigator, stating "I forwarded the issue with the [Solicitor's Office] to Scott [Culver, Deputy Assistant Inspector General

[77] July 21, 2010 1:50 pm email from Richard Larrabee to Scott Culver, cc to Harry Humbert, subject: PI-PI-0562-I.
[78] July 27, 2010 8:59 am email from Richard Larrabee to Harry Humbert, subject: Re: Hey Rich.
[79] July 27, 2010 9:03 am email from Harry Humber to Richard Larrabee, subject: Re: Hey Rich.

for Investigations] yesterday who was to have addressed the concerns we have with John [Dupuy, Assistant Inspector General for Investigations]."[80]

The lead investigator was then asked to update the IG's case management system, which he did.[81]

SA Larrabee has completed drafts of the ROI and Summary. OGC has completed their analysis of whether the facts and circumstances determined in the investigation may represent a violation of the Information Quality Act. The ROI cannot be finalized, however, until drafts of the Executive Summary have been obtained and reviewed. Counselor Steve Black said he had copies of the various drafts in his emails; yet we were directed to not obtain Black's emails, but rather try to obtain the drafts from the official Administrative Record SOL is preparing in relation to the moratorium litigation in Louisiana. According to SOL, however, they have not yet completed the Admin Record for release to the public.	07/28/2010
Interviews of Black and Kemkar have been completed and IARs have been drated. SA Larrabee will be starting to draft the ROI forthwith. An OGC analysis of the findings of the case in relation to the Information Quality Act has also been reqeusted. SA Larrabee will additionally be starting to draft a summary of our findings in the style of the "Kalamath case".	07/16/2010

Image 3: IG Case Management System Entries

Meanwhile in late July through August 2010, Acting Inspector General Kendall was receiving information from the IG's Central Region staff tasked with reviewing OCS safety issues and coordinating with Assistant Secretary Lewis and Assistant Secretary Suh on the details for finishing the OCS Safety Oversight Board's recommendations and report to the Secretary.[82] A draft of the Board's report was sent to senior Department officials for review and comment on August 11, 2010.[83]

[80] July 28, 2010 12:04 pm email from Harry Humbert to Richard Larrabee, subject: PI-0562.

[81] The IG's case management system was updated on July 28, 2010 . See Image 3.

[82] See e.g., July 28, 2010 2:34 pm email from Mary Kendall to Wilma Lewis and Rhea Suh (and seven CCs, including IG Chief of Staff Hardgrove), subject: Re: oversight board. See also, August 4, 2010 8:53 pm email from Mary Kendall to Wilma Lewis (and eight CCs, including Assistant Secretary Suh and IG Chief of Staff Hardgrove), subject: Re: oversight board.

[83] August 11, 2010 11:23 pm email from Wilma Lewis to David Hayes, Steve Black, Laura Davis (and 12 other officials and CCs to Ms. Suh, Ms. Kendall (and four other officials), subject: Draft Safety Oversight Board Report.doc.

However, the IG's lead investigator was still having difficulty obtaining documents from the Department, especially compared to the work being performed by the IG in support of the OCS Safety Oversight Board.[84] An internal IG email[85] indicates the issue was elevated to IG Chief of Staff Hardgrove. The lead investigator sent an email on August 10, 2010 to Assistant Inspector General Dupuy asking, "How is moratorium case coming?" Mr. Dupuy responded, "it is an interesting one, I have to get with steve again re: the one missing piece on the case regarding email requests, harry and I discussed it this morning."

As a result of this prompting, the lead investigator was allowed to proceed with a limited email search for Mr. Black's emails files between May 26 and 27, 2010.[86] According to the IG's internal case management system, a search of one of the Department's email archive systems was attempted on August 11, 2010. However, the search was not successful, as the Department has previously discontinued systematically saving emails in the specific archival database that had been searched.[87] Internal IG documents indicate Acting Inspector General Kendall and Chief of Staff Hardgrove were made aware of these problems and agreed to having Mr. Humbert request documents directly from Mr. Black.[88]

On September 1, 2010, Program Integrity Division Director Humbert issued a memorandum to Mr. Black requesting copies of emails and drafts of the Executive Summary received from outside the Department between May 26 and 27, 2010. Deputy Solicitor Art Gary responded on behalf of Mr. Black (and Mr. Kemkar). However, no documents were immediately forthcoming, as the Department reviewed the IG's request and reviewed whether any of Mr. Black's and Mr. Kemkar's documents were "privileged."

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[84] In contrast, an August 11, 2010 10:47 am email to Mary Kendall from Don Crook, Assistant Special Agent in Charge, IG Central Region, indicates that the IG staff assisting the OCS Oversight Review Board conducted 140 interviews and reviewed more than 2,000 documents.

[85] August 8, 2010 8:49 am email from Assistant Inspector General for Investigations John Dupuy to Richard Larrabee, subject: Re: Nyt article.

[86] However, internal IG emails indicate the lead investigator was not allowed to request the computer hard drives from potential witnesses or interview Secretary Salazar. See e.g., August 12, 2010 12:40 pm email from Harry Humbert to Richard Larrabee, Subject Re: Zantaz.

[87] The Department had deployed an email archiving system called Zantaz in order to automatically preserve records sent from or to the Secretary's Office and certain bureaus that may be relevant to Indian trust litigation before discontinuing its use in April 2010. The IG apparently had been able to search for documents maintained in the Zantaz database in connection with other investigations as an alternative or in addition to doing other forms of centralized email searches. These broader centralized email searches are still available by reviewing the Department's email servers and are conducted, with approval by IG management, by staff within the IG's computer crimes unit.

[88] August 20, 2010 4:13 pm email from Harry Humbert to Richard Larrabee, subject: Black. See also, Case Management System entry for August 20, 2010. Mr. Humbert went to Mr. Black's office on August 20, 2010, but Mr. Black was not there. According to a Case Management System entry dated August 25, 2010, Mr. Humbert made a second unsuccessful attempt that day to meet with Mr. Black to request his documents.

Meanwhile, the Department released the OCS Safety Oversight Board's report on September 8, 2010.

The involvement of the Solicitor's Office prompted a strong reaction from the lead investigator who, in a September 10, 2010 email, wrote: "I would like to point out that the Secretary's Office's approach to our request for documentation, ironically, is in direct contradiction with Secretary Salazar's own memorandum he issued on April 20, 2010 to the entire department regarding cooperation with the OIG."[89]

The lead investigator continued to express his concern with the Department's handling of this document request:

> Based on my understanding after having worked many OIG cases, we have always received all requested documentation, analyzed it and moved forward with our investigation utilizing the information derived from the documentation. After a final ROI is drafted, we then afford [the Solicitor's Office] the opportunity to review the ROI to identify any departmental privileged information/documents; OIG's OGC then consults with [the Solicitor's Office] about what documents/information will ultimately be included or withheld from the ROI, based on privilege.[90]

The lead investigator concluded with: "Regarding this specific instance, concomitant with other instances we have previously discussed concerning this investigation**, I am deeply concerned that this is yet another example of how a double standard is being followed in this investigation in granting great deference to the Secretary's Office that would not be granted to any other departmental bureaus or employees.** For what it is worth. Have a great weekend."[91] (Emphasis added)

The Department appeared resistant to provide Mr. Black's documents to the IG out of concern that that may be subject to a claim of Executive Privilege by the President.[92] According to an internal IG email,[93] IG General Counsel Delaplaine informed Deputy Solicitor Gary that such privilege concerns are not a legitimate basis to withhold documents from the IG:

> The anticipated constitutional battle over presidential powers did not occur today, as our discussion started with Art [Gary] advising that he has yet to review the material we requested. I did take the opportunity to

[89] September 10, 2010 9:01 am email from Richard Larrabee to Harry Humbert, Subject PI-PI10-0562-I.
[90] Id.
[91] Id.
[92] Mr. Black's claim during his interview that the document were privileged may have been a factor in the IG management's reluctance to authorize a full-scale search for emails, as opposed to the limited document collection directly from Mr. Black, as such a broad search may have come across other privileged communications with the White House. Interview with senior manager in IG's Office of Investigations, December 4, 2012.
[93] At the Committee's August 2, 2012 hearing, Acting Inspector General claimed she was unfamiliar with this email when asked.

> explain our position that they do not have a valid basis to keep the requested material from us as it could not fall under the executive privilege document (there was no decision pending for the President to make as the moratorium decision had already been made; the only issue being discussed was how to word an executive summary).[94]

Mr. Delaplaine added, "Art gave the impression that he agreed and that he viewed his likely role as explaining to the interviewee why his documents cannot be withheld. He also mentioned that if anyone were to assert executive privilege, it would have to come from the White House."[95]

On September 24, 2010, Deputy Solicitor Gary sent an email to IG General Counsel Delaplaine transmitting emails from Mr. Black and Mr. Kemar and advising, "We have concluded that all of these communications and attachments are subject to the deliberative process and presidential communications privileges. … The Department would assert these privileges and withhold these documents from disclosure under exemption 5 of the Freedom of Information Act, discovery in litigation, etc."[96] The email from Mr. Gary also requested the opportunity to discuss the Department's privilege claim before the IG proposed disclosing any of the documents. In a September 24, 2010 email, Mr. Delaplaine states, "We will comply with their claim of privilege unless and until we collectively decide otherwise."[97]

IG INVESTIGATOR NOT ALLOWED TO INTERVIEW WHITE HOUSE OFFICIAL

Based upon his review of Mr. Black's and Mr. Kemkar's documents, the lead investigator recommended seeking an interview with Joe Aldy, Special Assistant to the President for Energy and Environment and one of the White House officials who provided edits to the Drilling Moratorium Report.[98] The afternoon of September 27, 2010, the lead investigator also sent a revised draft of the Report of Investigation to his supervisor, updated to reflect the emails provided by Mr. Black and Mr. Kemkar, adding:

> Based upon our discussions, assuming my recommendation to request an interview with the White House will be denied by upper management of OIG, I will start completing the ROI by incorporating this [Investigative Activity Report summarizing the emails from Mr. Black and Mr. Kemkar].

[94] September 17, 2010 4:03 pm email from Bruce Delaplaine to Stephen Hardgrove, CCs to Harry Humbert and John Dupuy, Subject meeting with Art Gary.
[95] Id.
[96] September 24, 2010 4:35 email from Art Gary to Bruce Delaplaine, subject OIG Sep 1, 2010 Letter Response.
[97] September 24, 2010 5:41 pm email from Bruce Delaplaine to Harry Humbert and Richard Larrabee, Subject: Fw: OIG Sep 1, 2010 Letter Response
[98] IG Case Management System entry for September 27, 2010. See also, September 25, 2010 email 1:05 pm email from Richard Larrabee to Harry Humbert, Subject Fw: OIG Sep 1, 2010 Letter Response: "The WH clearly edited the version sent to them by DOI in a manner that created the misrepresentation – intentional or not, only interviews with WH staff could possibly determine."

> As directed, I will make no mention in the ROI of the fact that we did not conduct any independent validation that Black provided all of his emails that would be responsive to our request.[99]

According to an internal IG email,[100] Acting Inspector General Kendall and Chief of Staff Hardgrove met with managers in the IG Office of Investigations to discuss the moratorium report. On October 5, 2010, Ms. Kendall was provided a legal opinion, updated to reflect the contents of Mr. Black's and Mr. Kemkar's emails, on whether the Drilling Moratorium Report violated the Information Quality Act.[101] In an email exchange between Ms. Kendall and Mr. Delaplaine, it appears the IG was planning to follow up with the Department on its privilege concerns but it is unclear what the outcome was.[102]

On October 8, 2010, Acting Inspector General Kendall circulated by email revised language she wanted used in the Report of Investigation, substantially rewriting the portion of the report describing the emails that were exchanged between the Department and the White House that led to the incorrect peer review language and the Department's compliance with the Information Quality Act.[103] Among the draft language Ms. Kendall struck was a sentence saying the IG could not "independently validate that the emails provided by Black in response to the IG were complete and unedited."

On October 14, 2010, the lead investigator sent to his supervisor, Mr. Humbert, a revised version of the draft ROI, incorporating the edits from Ms. Kendall.[104] The supervisor then sent an email to Ms. Kendall saying he had received edits back from the lead investigator and asking for time to discuss with Ms. Kendall.[105] Ms. Kendall indicated she was available to meet any time that day. The lead investigator followed up with another revised draft Report of Investigation on October 19, 2010, which was then provided to Ms. Kendall.[106]

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[99] September 27, 2010 12:08 pm email from Richard Larrabee to Harry Humbert, Subject Re: When is it good to call to Discuss Moratorium Issues? Note: The language referenced in the quote about not being able to validate emails was included in a draft of the report but was stricken during the editing process by Ms. Kendall.

[100] September 29, 2010 3:53 pm email from Harry Humbert to John Dupuy and Scott Culver, Subject: reminder.

[101] October 5, 2010 1:59 pm email from Bruce Delaplaine to Mary Kendall, subject: The Information Quality Act and the Secretary's May 27, 2010 Safety Report to the President.pdf

[102] October 7, 2010 3:01 pm email from Mary Kendall to Bruce Delaplaine, subject Re: doc I just gave you re moratorium: Mr. Delaplaine: "[D]o you want me to raise the privilege issue with [Deputy Solicitor] Art [Gary] today," to which Ms. Kendall responded, "Don't worry about Art today. I am going to raise it with [Deputy Chief of Staff] Renee Stone this afternoon."

[103] October 13, 2010 2:13 pm email from Mary Kendall to Harry Humbert, Richard Larrabee, Kevin Laden (CCs sent to John Dupuy, Scott Culver, Bruce Delaplaine, subject: The attachment would help ….

[104] October 14, 2010 10:01 am email from Richard Larrabee to Harry Humbert, subject: ROI.

[105] October 14, 2010 10:35 am email from Harry Humbert to Marry Kendall, subject: Moratorium Edits: "I have them back from Richard. Three areas that I wanted to quickly discuss whether it is good for you."

[106] October 19, 2010 4:55 pm email from Harry Humbert to Mary Kendall, Subject Fw: FMDD ROI

As IG staff worked to finalize the draft report in late October 2010, an IG staff member asked Acting Inspector General Kendall whether any portions of the draft report should be provided to Mr. Black for review and comment.[107] Ms. Kendall replied: "I have communicated to the Deputy Chief of Staff [Renee Stone] what we are saying about the privilege exchange. We don't need to send it to Steve Black, but I appreciate your raising the issue."

However, before the report could be finalized and released, a direction was given not to finalize or distribute the report due to a "possible new development."[108] The new development, apparently, was that Ms. Kendall was awaiting an answer about whether the lead investigator would be allowed to interview Mr. Aldy, the White House staffer.[109] According to a November 1, 2010 email from Deputy Secretary Hayes to Ms. Kendall, the White House Counsel's office was consulted:

> After teeing the issue up last week, I had a conference call this afternoon with White House counsel regarding the two open issues involved in finalizing your moratorium report: (1) potential release of the email exchange with the WH: and (2) the potential ok for you to interview Joe Aldy (so that you can report directly on the nature of the WH editing, and whether it was intended to link the peer review to the moratorium decision or whether it was an inadvertent consequence of the editing process).[110]

Mr. Hayes advised that he expected a response the following day. The documents obtained from the Department and the IG do not indicate whether a response was provided from the White House counsel. Ms. Kendall has said her office was not seeking permission from the Deputy Secretary but that the request to interview the White House official was made through him as a courtesy given the IG's jurisdiction did not extend to the White House.[111] The Report of Investigation was finalized without the IG staff interviewing Mr. Aldy. The IG provided the final report to the Department on November 8, 2010, and publicly released it the next day.

In a November 9, 2010 email to an IG senior official, the lead investigator commented:

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[107] October 28, 2010 5:59 pm email from Sandra Evans to Bruce Delaplaine and Mary Kendall, Subject: Federal Moratorium on Deepwater Drilling.

[108] October 29, 2010 12:52 pm email from Harry Humbert to Sandra Evans and Scott Swanson (CCs to Richard Larrabee and Bruce Delaplaine), Subject Re: Federal Moratorium on Deepwater Drilling.

[109] October 29, 2010 3:02 pm email from Mary Kendall to Harry Humbert , Subject Re: Federal Moratorium on Deepwater Drilling.

[110] November 1, 2010 10 pm email from David Hayes to Mary Kendall (CC to Laura Davis), Subject Feedback on the moratorium report.

[111] Testimony of Mary Kendall, Oversight Hearing of the full Committee on Natural Resources on "Oversight of the Actions, Independence, and Accountability of the Acting Inspector General of the Department of the Interior," August 2, 2012, unofficial transcript at pages 84-85.

> I was very dismayed to see that the final version of the ROI failed to mention the disclaimer that we did not independently validate the emails provided to us by the Secretary's office. …You know my feelings about our failure to independently validate the emails, and now I think we further exacerbated the issue by editing this ROI in a way that could be open to criticism as being an attempt to obscure this fact.[112]

In a letter dated November 9, 2010 to Acting Inspector General Kendall, Secretary Salazar stated that the IG's investigation confirms that there was no wrong doing in connection with the development of the Drilling Moratorium Report.

In a candid email to the same IG senior official, the lead investigator characterized the Secretary's statement as "spin":

> Salazar's statement that our ROI concluded it was a mistake and unintentional is a clear attempt to spin our report – I truly believe the editing WAS intentional – by an overzealous staffer at the WH. And, if asked, I – as the Case Agent – would be happy to state that opinion to anyone interested. We simply were not allowed to pursue the matter to the WH. But of course, that was not mentioned in our report.[113]

CONCERNS ABOUT POSSIBLE WHISTLEBLOWER RETALIATION

Congress has taken a number of steps to protect and encourage whistleblowers, whether they are reporting violations of law to an agency inspector general or informing Congress about internal mismanagement or the wasting of funds at a government agency. In addition, under Section 7 of the Inspector General Act, agency inspectors general are responsible for investigating complaints alleging violations of law or mismanagement, gross waste of funds, and abuse of authority, as well as protecting from reprisal agency employees who blow the whistle.

The Whistleblower Protection Act, 5 U.S.C. § 2302, prohibits certain personnel practices, including the retaliatory transfer or reassignment or other "personnel action against an employee who discloses information to the Congress." In addition, section 713 of the Consolidated Appropriations Act of 2012, P.L. 112-74, prohibits the use of federal funds to relocate, reassign, or transfer, among other actions, an employee of the federal government for communicating with Congress or Congressional staff.

According to internal IG documents, IG management considered making personnel changes in 2012 that could have resulted in the transfer of the lead investigator who oversaw the investigation into the editing of the Drilling Moratorium Report. In the

[112] November 9, 2010 8:08 am email from Richard Larrabee to Kris Kolesnik, Subject Re: moratorium report.

[113] November 10, 2010 12:39 pm email from Richard Larrabee to Kris Kolesnik, Subject Fw: News Article – Interior Dept. Responds to IG Investigation into its Oil Spill Report.

weeks after the investigator's concerns came to light, current Assistant Inspector General for Investigations Rob Knox sent an email to all investigative staff informing them of staffing needs in the Western Region Office in Sacramento and requesting a volunteer to be transferred there. Mr. Knox also advised, "in the event no one volunteers, it may be necessary to consider other alternatives to meet our staffing needs in Sacramento. This may include a review of our current staffing at smaller offices or domiciled locations to determine if a directed relation may be appropriate."[114]

The IG's lead investigator for the moratorium investigation, who works out of a home office and shared space at a federal building in Boston, is one of only a handful of Office of Investigation staff based in such a domicile location and who would have been subject to the directed reassignment.

Shortly thereafter, Mr. Knox began work to prepare for a directed reassignment in the event no volunteers came forward.[115] Mr. Knox sent an email to each of the Special Agents in Charge and the Director of Program Integrity requesting an analysis of the workloads and resource costs associated with the employees based in domicile locations.[116]

In his analysis,[117] the supervisor of the senior special agent based in Boston who handled the moratorium investigation reported that, "Although remotely located, SA Larrabee has become an integral part of the [Energy Investigations Unit ("EIU")]. … SA Larabee's location has not impacted his ability to remain fully engaged with others in the office." The analysis noted the Boston based employee traveled 11 times in FY 2012, at an average of $1504 per trip.[118] The supervisor also found the costs and time associated with training the Boston based agent to develop his expertise on energy issues would be lost if the employee was reassigned and "is not in the best interest of the OIG or its mission."

[114] June 12, 2012 email from Robert Knox to All Investigative Employees, Subject: Request for volunteer to accept Permanent Change of Station (PCS) to Sacramento, CA. Mr. Knox forwarded the email to Steve Hardgrove and Mary Kendall on June 12, 2012 at 5:28 pm and wrote, "FYI – keeping you guys in the loop…".

[115] June 19, 2010 3:52 pm email from Robert Knox to Scott Culver (CC recipient redacted), Subject: Updates: "I want to be able to make a directed move decision quickly after the final date for Sacramento volunteers. Pet M. and I discussed the sorts of data he can look at to prepare for that decision. Also I will be sending out an email to the SACs requesting a 'justification' on all domicile locations. In other words, I want their best business case for keeping locations open. This will be just one more factor to consider in the decision."

[116] June 19, 2012 4:32 pm email from Robert Knox to Jack Rohmer, Megan Wallace, David Brown, John Meskel, David Little (and CCs to Scott Culver and an unknown recipient whose name was redacted), Subject: Request for analysis. This email was forwarded to Mr. Hardgrove on June 19, 2012 at 5:14 pm: "FYI – just a continuing part of the process we are working on."

[117] June 27, 2010 11:45 pm email from Keith Kuczka to Robert Knox and Scott Culver (CCs sent to Jack Rohmer and Don Crook), Subject: Domicile Analysis – Boston, MA. Mr. Culver responded at 11:58 am: "Keith, thanks for your prompt response. I have read your analysis and appreciate the comprehensive, and objective thoughts. Your input will be very valuable in our final analysis and decisions here at HQ."

[118] This cost was approximately $200 higher than the average trip cost, but the supervisor noted airfare from Boston to many locations was cheaper than airfare from Denver where the other EIU employees are based.

The Special Agent in Charge of the Sacramento office also informed Mr. Knox that although his office could use additional staff, he was not in favor of receiving the additional staff through a directed reassignment given the impact it could have on morale and may cause the affected employee to seek employment elsewhere, undermining the purpose of the reassignment in the first place.[119]

In response,[120] Mr. Knox said:

> I realize directed moves have not often been used by this OIG in the past but we are now preparing for the future. The setting is different and calls for a new approach.
>
> These sorts of changes have a dramatic impact on the entire workforce, not just the employees who are moved. For this reason, all senior managers and leaders in OIG must operate with the same commitment and understanding of how we are re-shaping the organization. I certainly look forward to the engaged and supportive leadership of each special agent in charge in this process.
>
> We are trying to get you the right fit for your Western Region team. However, this process will not be driven by personalities. The selection may be based on a volunteer or a business case as to the right person for a directed move. In my view, all fully successful investigative employees are qualified to fill the position. I know whomever is assigned to your office will grow with the experience and the influence of yours and Eric's coaching and mentoring.

Mr. Knox then forwarded that message to IG Chief of Staff Hardgrove, adding, "FYI – just keeping you updated on the 'noise'."[121]

On June 25, 2012, Chairman Hastings sent a letter to Acting Inspector General Kendall requesting information about the staffing needs in the Sacramento office, the possible directed reassignment of employees in domicile locations, and Ms. Kendall's views on whether such a personnel move involving an employee who had communicated with Congress would constitute unlawful retaliation.

In her July 31, 2012 response, Ms. Kendall stated that the directed reassignment was one option under consideration to address budget considerations and staffing needs in the Western Region Office but that no decision had been made as of the date of the letter. Ms. Kendall also clarified that the only employees who would be subject

[119] June 20, 2012 5:05 pm email from David Brown to Robert Knox and Scott Culver, Subject: Directed Reassignment to Sacramento.

[120] June 21, 2012 10:19 am email from Robert Knox to David Brown and Scott Culver, Subject Re: Directed Reassignment to Sacramento.

[121] June 21, 2012 10:20 am email from Robert Knox to Steve Hardgrove, Subject Re: Directed Reassignment to Sacramento.

to a directed reassignment order were criminal investigators in the GS-1811 job series who would have agreed to such a transfer when they accepted employment.

Ms. Kendall declined to offer her views on whether such personnel actions would constitute unlawful reprisal against a Congressional whistleblower, explaining "the establishment of whistleblower status is always uniquely fact driven. Presently, we have no such facts."

Although the IG has apparently not moved forward with its plans to address staffing needs to Sacramento through a directed reassignment, employees in domicile locations may still be faced with furloughs, reassignments, or reductions to address the possible budget sequestration.[122]

FLOUTING A CONGRESSIONAL SUBPOENA UNDERMINES IG ACT

A duly authorized subpoena for documents was issued to the Acting Inspector General on April 12, 2012 for copies of 13 documents either created or obtained by the IG during its investigation in to the editing of the Drilling Moratorium Report. The Acting Inspector General Kendall informed the Committee that it would not comply with the subpoena pursuant to a protocol that allows the Department to assert a privilege claim over documents that have been provided by the Department to the IG.[123] This protocol, according to the Acting Inspector General, "promotes the free flow of information to the OIG and allows us to execute our oversight responsibilities to the fullest extent possible under the IG Act."[124]

According to the IG, the documents in question are Department documents that the Department has itself refused to provide to the Committee, and the Department has asserted "that they 'implicate important Executive Branch confidentiality interest."[125] It appears the only articulation of a privilege claim that the IG has received is the one first made by Deputy Solicitor Gary in a September 24, 2010 email to IG General Counsel Delaplaine.[126] That email explained the Department

[122] Interview with senior manager in the IG's Office of Investigations, December 4, 2012.

[123] See April 18, 2012 letter from Acting Inspector General Kendall to Chairman Hastings.

[124] Id. However, it is unclear what additional authority this protocol confers, given section 6(a)(1) of the IG Act already provides for an Inspector General "to have access to all records … documents, papers, recommendations, or other material" necessary to conduct an investigation or audit. In addition, considering the difficulties the lead investigator had in obtaining documents in a timely manner directly from witnesses in the moratorium investigation, as opposed to through the Solicitor's Office, it is also unclear whether the Department is satisfying the Secretary's April 20, 2010 policy memorandum instructing employees to assist the IG with investigations and to make even privileged documents available to the IG upon request.

[125] Id.

[126] The Committee has obtained documents from the IG indicating the IG General Counsel had additional communications with the Solicitor's Office in February and March 2011 concerning whether the IG could release any attachments to the IG's November 2010 report. According to a February 7, 2011 email to Bruce Delaplaine (CC sent to Ed Keable), Art Gary advised, "In light of the concerns raised when you published the report I don't think

considered the documents provided by Mr. Black and Mr. Kemkar to be covered by the Freedom of Information Act's Exemption 5, protecting privileged communications, and requested an opportunity to further discuss the privilege concerns before the IG released the documents.

To be clear, the Freedom of Information Act[127] and the Inspector General Act[128] cannot be used a basis to withhold information from Congress. IG General Counsel Delaplaine has also opined that the documents in question do not appear to be covered by a valid claim of executive privilege.[129]

Internal IG documents indicate that Deputy Secretary Hayes also had communications with the White House Counsel's office in late October or early November 2010 concerning whether the IG could interview a White House staffer and release communications between the Department and the White House. It is unclear from the documents obtained by the Committee whether the White House Counsel ever responded to Mr. Hayes.

The IG and the Department both appear to have failed to follow the long-standing procedures concerning Congressional oversight requests that may implicate Executive Branch confidentiality interests. According to a November 4, 1982 memorandum from President Reagan, an agency head is instructed to "promptly notify" the Attorney General concerning Congressional requests seeking information that raises substantial questions of executive privilege and the Attorney General shall, in turn, notify and consult with the White House Counsel. Under the Reagan policy, agency heads, the Attorney General, and the White House Counsel may determine that the information is not covered by executive privilege and direct its release.

However, if it is believed the information may be subject to an executive privilege claim, "the issue shall be presented to the President" and the agency head and Attorney General will be advised of the President's decision. Pending a decision by the President, the agency head is instructed to advise the Congressional committee to hold its request in abeyance. If the President does assert executive privilege, the agency head is to inform the Congress of the assertion and that it was made with the "specific approval" of the President.

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you should do so [release the unredacted report and attachments] without us proposing this to WHC [White House Counsel]."

[127] 5 U.S.C. § 552(d).

[128] Section 5(e)(3) of the IG Act: "Except to the extent and in the manner provided under *section 6103(f) of the Internal Revenue Code of 1986* [*26 USCS § 6103(f)*], nothing in this section or in any other provision of this Act shall be construed to authorize or permit the withholding of information from the Congress, or from any committee or subcommittee thereof."

[129] September 17, 2010 4:03 pm email from Bruce Delaplaine to Stephen Hardgrove, cc's to Harry Humbert and John Dupuy, subject: "meeting with Art Gary."

Neither the Department nor the IG has indicated that the President has asserted, or was even considering asserting, executive privilege for the 13 documents covered by the April 12, 2010 subpoena.

The Department's vague assertion of executive branch confidentiality interest, and the IG's blind reliance on such a claim, falls far short of an assertion of executive privilege by the President and does not excuse their failure to comply with the Committee's subpoenas.

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SUMMARY: The Acting Inspector General's testimony at the August 2, 2012 oversight hearing did little to allay the concerns that her involvement in the OCS Safety Oversight Board compromised the IG's independence in handling of the IG's moratorium investigation; that the lead investigator was frustrated in his ability to obtain information or pursue leads as he felt necessary; that the June 17, 2010 testimony was complete and accurate; and that refusal to comply with a subpoena was well-founded. If anything, the Committee's oversight has identified new and troubling questions about whether the IG's proposed personnel actions would be in retaliation for communicating with Congress, and whether the Acting Inspector General's August 2, 2012 testimony was itself complete and accurate.

PART 3 – RENEWABLE ENERGY STUDY DROPPED: IG Never Finalized Critical Report

During the course of the Committee's investigation into the IG's review of the Drilling Moratorium Report, the Committee expanded its oversight of the IG to include other matters handled during the time period when the Department has been without a permanent Inspector General. The expanded oversight has raised new questions about whether the IG's independence and objectivity have been impaired and whether Congress and the public have been properly kept apprised of problems within the Department.

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BACKGROUND: One such oversight area involved the IG's work evaluating the Department's renewable energy programs. The Obama Administration has announced several policy initiatives to promote the development of renewable energy on federal lands, among other priorities. However, based on a review of publicly available IG reports, including the Semiannual Reports to Congress,[130] it appeared the IG had not conducted any programmatic evaluations of the Obama Administration's renewable energy programs and policies.

EXPANDED COMMITTEE OVERSIGHT OF IG RAISES NEW CONCERNS

On May 30, 2012, the Committee sent a letter to the IG requesting information about any audits, investigations, or evaluations concerning the Department's renewable energy programs on federal lands (both on shore and offshore), and two other Administration priorities. The Committee's letter requested the IG provide the information no later than June 7, 2012.

In a July 20, 2012 letter to the Committee, Acting Inspector General Kendall responded that "an evaluation conducted in 2010 on renewable energy was suspended following a meeting with the Department to discuss our draft report." The letter went on to explain that "[a]fter conducting some follow up work subsequent to our meeting with the Department, we concluded that we could not verify all the information provided to us by the Department on such a comprehensive letter without undertaking considerably more field work." The letter concluded by stating that due to the passage of time, the IG chose instead "to focus on more manageable size efforts in which we could be confident of the timeliness and accuracy of our findings, and make more meaningful recommendations."

[130] The IG has since removed all publicly available reports, including copies of the Semiannual Report to Congress, from its website.

On August 22, 2012, the Committee sent a follow up letter requesting copies of the draft IG report that was provided to the Department for review in 2010, as well as emails and other documents concerning edits to the draft report, the Department's comments, and any meetings with Department officials to discuss the renewable energy study. The letter gave a deadline of September 5, 2012 for the requested documents.

IG staff informed the Committee that the IG would not meet the original deadline but would seek to respond on a rolling basis. The IG first provided a copy of the draft renewable energy study on September 17, 2012. On September 20, 2012, the IG provided a copy of a 37-page memorandum from Steve Black, Counselor to the Secretary, to Acting Inspector Counsel Kendall dated July 23, 2010, commenting on the IG's draft renewable energy study. Also on September 20, 2012, Committee staff met with Acting Inspector General Kendall, Assistant Inspector General for Audits Kim Elmore, and Associate Inspector General for External Affairs Kris Kolesnik to discuss the IG's handling of the renewable energy study. The IG provided additional documents on October 25, 2012.

According to internal documents, the IG staff spent between August 2009 and May 2010, interviewing senior Department officials, collecting information about the renewable energy programs from across the Department's bureaus, and preparing an initial draft of the renewable energy study. After an initial meeting with senior Department officials and the receipt of extensive comments from the Department during the summer of 2010, the IG staff attempted to revise the draft report to respond to the Department's and the Acting Inspector General's concerns. The Acting Inspector General even made specific line edits to the revised draft and sought assistance from one of the IG's staff writers to further revise the report in December 2010. IG staff who conducted the review objected to the changes, and the dispute was elevated to Deputy Secretary Hayes in April 2011.

In an attempt to further address the Department's and Acting Inspector General Kendall's concerns, the IG staff conducted additional research and prepared an addendum on the Department's activities since the initial fact-finding had concluded and the draft report had been prepared and submitted for the Department's review. The additional information was provided to Ms. Kendall in June 2011.

It appears, based on internal IG emails, that no further action was taken on the report until March 2012, when a Bureau audit liaison asked for the status of the renewable energy study and IG staff inquired with IG senior management on whether the evaluation remained open or closed. It is unclear from the internal IG documents obtained by the Committee whether the renewable energy study was ever officially closed.

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FINDINGS: According to internal IG documents, the IG initiated its comprehensive review of the Department's renewable energy program on August 10, 2009, explaining in one email that the review would focus "on the regulations, policies, goals, and standards at the Departmental level as well as for each Bureau." The IG assigned a Certified Public Accountant based out of the IG's Sacramento regional office to serve as the team leader overseeing the renewable energy study. The IG hosted an entrance conference with the Department and Bureau officials on August 20, 2010, to discuss the scope and goals of the IG's review, including determining what policies, regulations, goals, and measures existed for each renewable energy program. After multiple drafts of a report and multiple meetings with senior Department officials, the IG declined to issue a final report.

IG STAFF'S RESEARCH AND WORK APPEARS FOR NAUGHT

Part of the IG's information gathering included an October 23, 2009, interview with Steve Black, Counselor to the Secretary and the official responsible for overseeing the development and implementation of Department's renewable energy programs under the Obama Administration. According to the IG team leader's notes, Mr. Black stated the Department has a long-term vision to promote renewable energy development, and has established several internal task forces, offices, and memorandums of understanding with other federal agencies and the state of California to promote that vision. The Department has also begun work to establish performance measures and goals and to prioritize certain projects for fast-track development.

On November 20, 2009, the IG team leader briefed IG senior management on the status of the renewable energy study and the team's preliminary findings. According to the internal briefing memorandum, the IG staff had concerns that "major issues have not been dealt with or handled sufficiently" including insufficient transmission lines; lack of measures and management controls; and a focus on solar, wind, and fast-track projects being handled by the Bureau of Land Management and the then Minerals Management Service to the exclusion of other projects, programs, and Bureaus. The IG staff added, "We had difficulty finding Departmental representatives and then meetings were cut short and not enough information was given to remove concerns found during the evaluation to date."

In early 2010, the IG staff finished their research and submitted a draft of their report to IG headquarters for review. In discussing the IG's planned outreach to the Department to discuss the draft report, Ms. Elmore sent an email on May 3, 2010, to the team leader stating, in part, that "The DOI has set up an energy reform team (anticipating our recommendation) and we want the team (representatives from each bureau) to have the benefit of everything we learned during the assignment." On May 10, 2010, the team leader and other IG staff presented their findings at the Department's "Greening the Environment" conference in Portland, Oregon.

The IG staff and management met with Department officials in an exit conference on May 27, 2010, to discuss the draft report and the IG's findings. According to the team leader's notes, Steve Black did not attend (the exit conference was held the same day the Department issued the Drilling Moratorium Report), but Laura Davis, current Chief of Staff, and other senior officials did attend all or part of the meeting. At the conclusion, Acting Inspector General Kendall offered to provide the Department a draft of the report for review.

DEPARTMENT COMPLAINS ABOUT CRITICAL DRAFT IG REPORT

On June 21, 2010, Acting Inspector General Kendall transmitted a revised draft of the renewable energy report to Secretary Salazar and requested a written response within 30 days. The transmittal memorandum stated, "We found that the major challenges facing Interior's ability to implement successful long term alternative energy plans include a lack of holistic coordination and communication of programs and efforts, inadequate management and creation of policy, a number of ground-level issues, and the insufficient planning for these programs after American Recovery and Reinvestment Act (ARRA) grants run out."

On July 23, 2010, Mr. Black sent Acting Inspector General Kendall a 37-page memorandum, along with 29 attachments totaling approximately 600 pages, commenting on the IG's draft report. Rather than issue a final report that included the Department's comments, the IG spent more than one year working to revise the draft report to better reflect the Department's and Acting Inspector General Kendall's comments and concerns. Ultimately, the IG never did publicly release a final renewable energy study.

Acting Inspector General Kendall sent an email to her senior staff on August 9, 2010, stating she had not yet finished reviewing the Department's comments and requesting an internal meeting "to be sure we are all on the same page when it comes to the final report. Let's have a discussion with [the Team leader and her management] before they get too far into the re-write." The meeting between Acting Inspector General Kendall and IG management to discuss the Department's comments occurred on August 13, 2010. The team lead was unavailable and did not attend the meeting, but according to an internal IG document dated September 22, 2010, she described Mr. Black's 37-page comment memorandum as "highly political and not always pertinent to our report."

CONFIDENTIAL PREDECISIONAL DRAFT

Memorandum

To: Mary L. Kendall
Acting Inspector General

From: Steve Black, Counselor and Janea Scott, Special Assistant

Subject: Department's Preliminary Comments on the Draft Evaluation Report: Creating a Deliberately Successful Approach to Alternative Energy: Positive Steps and Remaining Challenges (WR-EV-MOA-0017-2009)

Date: July 23, 2010

Thank you for the opportunity to submit comments on your draft report. Renewable Energy is one of the Secretary's highest priorities for the Department of the Interior. When Secretary Salazar first entered the Interior Building on January 21, 2009, he spoke of his vision of energy independence for the Nation. He recognized that the Department had a major role to play in reaching this long range goal. And the Department has made and continues to make incredible progress toward that goal. Excerpts from this speech Secretary Salazar made on May 5, 2009 give voice to his vision:

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We always appreciate the views of the Office of the Inspector General and welcome the collaborative relationship that you are working to build. We are supportive of the kind of proactive, constructive work that can help us identify and fix issues before they become problems. We believe that we are all working toward the same goal, which is to have a robust and sustainable renewable energy program at the Department of the Interior and do our part in reaching the President's goals for the Nation.

Our primary concerns with the draft report are that it does not present a complete picture of the Department's renewable energy program and that it is focused on a limited set of examples that aren't placed within the context of the Department's broad renewable energy program.

Image 4: Excerpt of Steve Black Comments on Draft IG Report

It is unclear from the IG documents what specific direction was given to the team working on the renewable energy study at the August 13 meeting, but in the following months the review team worked to incorporate more of the Department's comments into a revised draft report. A revised draft of the renewable energy study was prepared by IG staff and submitted to IG management for review in October 2010.

Acting Inspector General Kendall remained dissatisfied with the review team's revisions and responses to the Department's comments. The Deputy Assistant Inspector General for Audits, Melanie Sorenson, sent an email on December 7, 2010,[131] to IG management in Sacramento stating, "Mary would like to meet

[131] Also on December 7, 2010, Acting Inspector General Kendall issued a report to Secretary Salazar containing the IG's analysis and evaluation of the policies and practices that contributed to the Deepwater Horizon accident, building off of the August 2010 report of the Outer Continental Shelf Safety Oversight Board, of which Ms. Kendal was a member.

regarding the Alternative Energy report. She has spent a lot of time reviewing the report, as well as reviewing the Department's response – she believes we should be incorporating more of their response into the body of the report than we currently do." Another meeting with the Acting IG and the IG staff was scheduled for December 10, 2010.[132]

EDITS BY ACTING IG REMOVE CRITICISM, CHANGE MEANING

Acting Inspector General Kendall herself sent an email on December 20, 2010 to senior IG management and the review team lead stating that she had identified four themes she wanted addressed in a subsequent revision and advised that an IG staff/editor had been assigned "to review the report with cold eyes and a completely fresh mind." The four themes were: current renewable energy programs are decentralized without any comprehensive link; communication is not optimized leading to overlap and redundancy; specific performance goals, policies, and procedures are missing; and lack of clarity about how the Department will continue to promote private investment and development. She went on to direct the review team to work with the writer/editor "to revamp, and strengthen, the report in this direction."

On January 3, 2011, the writer/editor sent an updated version of the draft report, reflecting the edits from Acting Inspector General Kendall and herself, to the team lead for review. In transmitting the revised draft, the writer/editor stated, "Mary Kendall and I have worked on the Alternative Energy report the past few weeks. Attached is the draft we have reworked and inserted comments."

Overall, the edits by Acting Inspector General Kendall and the writer/editor softened the critical tone of the draft report and minimized the shortcomings in the Department's renewable energy programs.[133] For example, the first paragraph of the Results in Brief section on page 2 of the revised draft report was edited to remove critical statements about inadequate management and oversight at the

[132] The IG staff person who led the renewable energy evaluation study recalled Acting Inspector General Kendall had a meeting or discussion with the Deputy Secretary about this issue during this time frame, as well as a subsequent meeting or meetings in early 2011. Interview with the team leader for the Office of Inspector General's renewable energy evaluation study (WR-EV-MOA-0017-2009), December 20, 2012. The IG has not provided any calendar entries reflecting such meetings or discussions occurred, but Majority Staff notes Ms. Kendall was in contact with the Deputy Secretary about the IG's moratorium investigation in November 2010 and a March 8, 2011 1:28 pm email from Ms. Elmore to IG Chief of Staff Hardgrove includes the statement, "I realize that we have a disconnect between what the team learned while performing our review and **what the department is telling Mary in her meetings.**" (Emphasis added).

[133] The IG's team leader said in her draft evaluation report, she had tried to give credit to the Department where appropriate but also recognized weaknesses and red flags she had found, but the edits from the Acting IG took out the critical parts and kept in the positive comments: "To me that is not forward thinking, that is glad-handing and that's not my job as an auditor. It changes the nature of what I found and, thus, makes it inaccurate." Interview with the team leader for the Office of Inspector General's renewable energy evaluation study (WR-EV-MOA-0017-2009), December 20, 2012.

Department, the lack of holistic approach in coordinating programs across Bureaus, and the absence of solutions to ground-level problems like transmission and storage. The opening paragraph after these edits read simply: "The U.S. Department of the Interior (DOI) is making many laudable efforts to quickly establish a variety of alternative energy programs." This revision substantially changes the meaning conveyed in the original version.

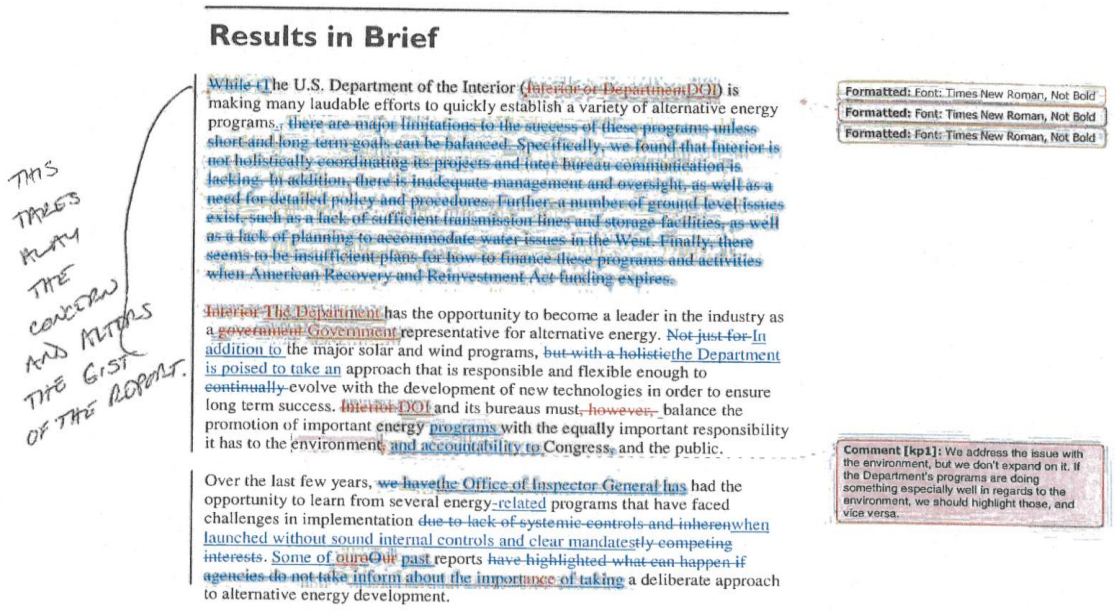

Image 5: Edits to Draft IG Renewable Energy Study[134]

In the body of the revised draft report, several other sections were substantially revised and critical language removed. In the section on Policies, Procedures, Performance Goals, and Management Tools on page 12 of the revised draft, three sentences criticizing the Department's emphasis on starting programs and minimizing environmental impacts at the expense of long-term operation, sound financial management, and transparency.

[134] The original text was drafted by the team leader for the IG's renewable energy study. The redline-strikeout edits were prepared by Acting Inspector General Kendall and an IG staff writer/editor. The handwritten comments in the margin of the draft text are those of the IG team leader who drafted the original text.

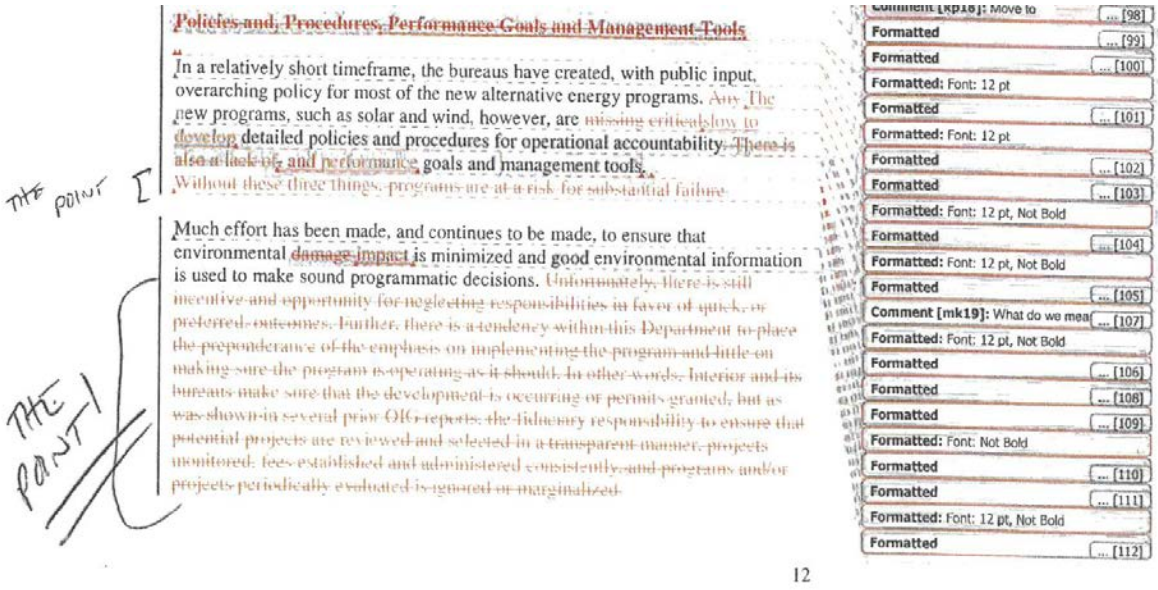

Image 6: Edits to Draft IG Renewable Energy Study[135]

In a January 5, 2011, email to her immediate supervisors in the Sacramento regional office, the team leader described the edits and comments from Acting Inspector General Kendall and the staff writer/editor as "a wee bit frustrating." The team leader also told the Committee's majority oversight staff that she could not support the changes because they were not accurate.[136] One of her supervisors responded by recommending that the team leader attempt to answer the questions and comments "as you deem appropriate," "determine if any of the edits made to the report are in conflict with the facts gathered or the analysis made and disclose any such problems to [the staff writer/editor] and Mary K.," and "determine if the report, as now constructed, accurately conveys the current status of alternative energy development and coordination within DOI and report any misgivings in this regard." The supervisor added, "I realize this will take quite a bit of effort on your part, but believe that we have a duty to the OIG to provide our best advice and counsel. It is then up to those above us to decide what to do what this advice and counsel." The team leader then provided the staff writer/editor, in a January 20, 2011 email, general background information about the research and fact-finding that had used to develop the report.

[135] The original text was drafted by the team leader for the IG's renewable energy study. The redline-strikeout edits were prepared by Acting Inspector General Kendall and an IG staff writer/editor. The handwritten comments in the margin of the draft text are those of the IG team leader who drafted the original text.

[136] Interview with the team leader for the Office of Inspector General's renewable energy evaluation study (WR-EV-MOA-0017-2009), December 20, 2012: "If you have seen some of my notes in the margins in this report, I was a little bit frustrated with the direction because to me it changed very much the tenor of the report and the findings, to the extent that I could no longer support it as it was recommended being changed … because this wasn't accurate anymore."

DISAGREEMENT OVER DIRECTION OF REPORT ESCALATES

However, the IG staff ultimately was not happy with the direction of the report, based on the edits by Acting Inspector General Kendall and the staff writer/editor. According to a February 22, 2011 email from Ms. Elmore to the Sacramento regional supervisors, the dispute between staff and Acting Inspector General Kendall was so significant that it warranted elevation to Deputy Secretary David Hayes for resolution:

> I met with Mary last week and one of the topics I brought up was alternative energy. I explained to her that the team could not support the report as written. She said she could not live with our draft. I suggested that we get together with David Hayes to discuss. I explained to her that the examples being provided to her by the administration were not in the same 'category' of alternative energy and that they were mixing apples and oranges.

Ms. Elmore added: "Mary is meeting with David Hayes this week. At the meeting she will request a time to meet on alternative energy. … Hopefully we can finally put this issue behind us if we can get all the knowing parties in the same room."

Based on internal IG documents, IG staff began work preparing for the meeting with Deputy Secretary Hayes, which was scheduled for April 20, 2011 – approximately one year after the draft renewable energy study had been submitted to IG management for review and 11 months after the original exit conference with the Department. Invitees for the April 20 meeting included Deputy Secretary Hayes, Counselor Black, Chief of Staff Laura Davis, Bureau and Service Directors, and two special assistants to Counselor Black, Neal Kemkar and Janea Scott.

However, it is unclear from these documents whether IG staff would have an opportunity to meet with Acting Inspector General Kendall before the Hayes meeting, and whether they would even be allowed to speak at the Hayes meeting to make their case in support of the original draft report. In a March 1, 2011 email to Ms. Elmore, the team leader asks:

> Based on Steve's [Hardgrove, IG Chief of Staff] email we cannot tell what the plan is for meeting with the department. **Are we allowed to be discussing (and refuting if necessary) with the Department or were going to have to sit quietly and not address discrepancies?** Since it looks like we are only planning for one day, are we only meeting with the Department or are we working with Mary directly after the meeting to get the report written and finished? Essentially, do we have a plan and strategy yet or are we flying blind? (Emphasis added)

Following up on the questions from the team leader, Ms. Elmore herself writes to Chief of Staff Hardgrove in a March 8, 2011 email and requests the opportunity to meet with Acting Inspector General Kendall before the Hayes meeting "so that we … know exactly what is expected of us in this meeting." Ms. Elmore continued, stating, "**I realize that we have a disconnect between what the team learned while we were performing our review and what the department is telling Mary in her meetings.** I know some of this disconnect is timing, that is projects have begun since we concluded our field work. and [sic] also I believe some of the disconnect is the department speaking about programs that are not classified as alternative energy." (Emphasis added). The email concludes, "If you and Mary are open to a meeting with us I will get it scheduled."

One of the supervisors in the Sacramento office sent a follow-up email, also on March 8, 2011, recommending that the IG try to anticipate the arguments that will likely be made by the Department at the Hayes meeting on April 20:

> I would agree with the 'timing' aspects and reading the meeting invite and purpose … and taking into consideration the response we have already received, I could imagine Steve Black, along with D. Hayes and L. Davis focusing that meeting on highlighting to the OIG the dept's accomplishments, in effect, laying out for us ***'what has changed since the draft report,'*** which our report data is now very dated and we would be in a situation of not knowing and unable to add anything to the conversation, in effect, try and defend our prior work or the dept. attempting to embarrass OIG as to what we don't know.[137]

Two weeks later, and the IG staff continued to stress the need to prepare internally and to fret about whether Acting Inspector General Kendall would be supportive of their position at the Hayes meeting. In a March 25, 2011 email, Ms. Elmore wrote to the team leader and a supervisor in the Sacramento regional office that, "I think it is important that we put together the draft agenda for the meeting on the 20th and walk Mary through why we have whatever topics we put on the agenda. (so she knows our viewpoint) [sic] I know it is a difficult task to put the agenda together because we do not know where Mary will be coming from. But I see this as our opportunity to show her some of our views."

IG MEETS AGAIN WITH DEPARTMENT TO ADDRESS CONCERNS

Acting Inspector General Kendall met with staff in the Sacramento regional office on April 13, 2011 to prepare for the Hayes meeting the following week. According to an agenda for the meeting, IG staff wanted guidance from Acting Inspector General Kendall on several questions, including: "[c]an we discuss and refute if necessary or is it a listen only approach," "[w]hat is our stop point (when/in what circumstances

[137] Emphasis in original.

are we inflexible)," and "[w]hat are we willing to change in the report, separate from Departmental concerns."

According to the notes of the meeting prepared by the team leader, Acting Inspector General Kendall began the April 20, 2011, meeting with a welcome followed by introductions. Counselor to the Secretary Black then took over and outlined steps the Department had taken in the area of renewable energy. The team leader noted that throughout Mr. Black's presentation, other attendees made supportive comments "which was received well by the Acting IG and others from the OIG as a sign that new work had been accomplished since fieldwork had ended that the OIG was not aware of."

The team leader then had an opportunity to present her findings in rebuttal: "However, when it came time for the evaluation team to comment, [the team leader] clarified that virtually all of the efforts listed by Mr. Black were well known to the team and were not a presentation of new information." The team leader summarized her findings, according to notes in the IG's case management system, as a "disconnect" between senior management and lower level staff and field offices, miscommunication or (or entire lack thereof) and the absence of a long-term strategy.

Mr. Black and other attendees "proceeded to disagree with the findings [the IG staff] presented, using some of the already discussed accomplishments to support their disagreement," according to the team leader's notes of the meeting in the case management system. The IG team leader attempted to provide additional information, but the "Acting IG stopped the explanations from [the team leader] and began to transition the meeting to a close." After a few additional comments from Department officials, "[t]he Acting IG then thanked the attendees, assured the attendees that efforts made by the Department would be reflected in the report, and concluded the meeting."

In the weeks after the meeting with Deputy Secretary Hayes and Counselor Black, the IG staff continued work on updating the draft renewable energy report, including conducting a May 12, 2011 interview the Department's Director of Planning and Performance Management, Richard Beck. Mr. Beck confirmed that the Department lacked measures or goals for renewable energy across the Department, focusing mostly on the Bureau of Land Management and fast-tracked projects. According to an internal IG document, the review team was scheduled to meet with Acting Inspector General Kendall on May 12 almost immediately after the team's meeting with Mr. Beck.

It is unclear, based on the documents obtained from the IG, what occurred after the meeting with Acting Inspector General Kendall. However, on June 14, 2011, Ms. Kendall sent an email to Counselor Black requesting a copy of his presentation materials from the April 20 meeting with Deputy Secretary Hayes. Also on June 14,

2011, the team leader circulated a draft memorandum updating the Department's activities on renewable energy since the conclusion of field work more than a year earlier that could be included as an addendum to a finalized report.[138] Although recognizing that the "Secretary has made great strides in making alternative energy a priority across the Department," the draft addendum continues to point out "a cohesive, long term prospective for alternative energy across the Department" is still missing.

The IG did not take further steps to finalize the renewable energy study, but the IG did not provide a formal close out memorandum. In March 2012, staff within the IG and in one of the Bureaus that had assisted the IG during the field work phase inquired into the status of the report. According to a March 20, 2012 email from Ms. Sorenson to the Sacramento regional office supervisors, "I just finished speaking to Mary. She is leaning toward drafting a memo to close out the job." However, notes from the IG's internal case tracking system suggest the report was still listed as open in June 2012, more than a year after the meeting with Deputy Secretary Hayes and one month after the Committee requested information about any IG audits or evaluations into the Department's renewable energy programs.

In a September 20, 2012 meeting with Committee staff, Acting Inspector General Kendall explained that the report was never finalized because the draft findings lacked sufficient support and documentation, especially compared with other IG reports, and had become untimely given the passage of time. She denied that pressure from the Department had any influence on the decision to not finalize the report. However, the IG had not provided the additional documentation at the time of the meeting, and Committee staff therefore was not in a position to ask about the concerns raised by the review team's emails and notes.

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SUMMARY: These documents suggest strong disagreements and frustration by staff in the direction and comments given by the Acting Inspector General and the appearance that she was more accepting of the criticisms of her staff from the Department than she was the work being done by her own staff. It is also unclear, based on the documentation provided by the IG, why this review faced such considerable delays that the original fact-finding became outdated and that the team's efforts to incorporate more timely information in the report was to no avail. The IG's decision to not finalize the renewable energy report, and the lack of transparency about its findings, has deprived the public and Congress of learning about the challenges faced by the Department in pursuing the Obama Administration's renewable energy policies.

[138] The team leader recalls providing the draft addendum to Acting Inspector Kendall before Ms. Kendall was scheduled to have a meeting or discussion with the Deputy Secretary. Interview with the team leader for the Office of Inspector General's renewable energy evaluation study (WR-EV-MOA-0017-2009), December 20, 2012.

PART 4 – A PATTERN EMERGES: Embarrassing Investigations Not Pursued

Congress intended an Inspector General to act independently and to serve without regard to the politics of the Administration in charge. It also desired to be kept informed of wrongdoing and problems within a department or agency. Beginning with the inquiry into the IG's handling of the Drilling Moratorium Report investigation, and continuing with the expanded oversight into the operations and activities of the IG since it has been without a permanent Inspector General, the Committee has been focused on ensuring the IG is holding the Obama Administration to the same ethical and legal standards as the previous administration.

However, the Committee's oversight has identified significant concerns suggesting the IG has not been as aggressive in blowing the whistle on misdeeds by the current Administration, although it remains unclear whether this is intentional or merely a result of the IG's more accommodating and less assertive approach for interacting with the Department. Indeed, the IG's approach to working collaboratively with the Department, in many cases without conducting formal investigations or issuing reports, may allow the Department to address the single, isolated problem at hand, but it has the effect, whether intentional or not, of reducing the public's and Congress' awareness of problems in the Department and minimizing the deterrent effect that a formal investigation or report would have throughout the Department.

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BACKGROUND: In recent years, the IG has pursued several high-profile investigations involving former officials of the George W. Bush Administration. For example, between 2009 and 2010, the IG conducted investigations into whether the Bush Administration had improperly rushed an environmental review for the Cape Wind project off the Massachusetts coast (the IG concluded it had not);[139] alleged conflicts of interest in the handling of oil shale leases and negotiation of employment by former Secretary Gale Norton (the Department of Justice decline to prosecute); and the renegotiation of oil shale lease addenda by outgoing Bush Administration officials.

In calling for an IG investigation into the editing of the Drilling Moratorium Report, then Ranking Member Hastings and six other minority members of the Natural Resources Committee wrote to Acting Inspector General Kendall to say, "[d]uring the previous administration, the Inspector General's office had a record of

[139] Cape Wind Associates, LLC, Report of Investigation-PI-MA-08-0513-I, January 28, 2010.

aggressively investigating exactly these types of actions. … We expect you to hold the Obama Administration to this same standard."[140]

COMMITTEE'S OVERSIGHT EXPANDS TO INCLUDE ETHICS, SCIENTIFIC INTEGRITY

In recent months, the Committee's oversight interest has expanded to include other matters handled during the time the IG has been without a permanent Inspector General, focusing on any IG's work involving renewable energy, Klamath River dam removal, and scientific integrity – all Obama Administration priorities. On May 30, 2012, a letter was sent to the IG requesting information about any audits, investigations, or evaluations into Department programs and policies involving renewable energy on federal land, restoration of the Klamath River basin (including any science on dam removal), and implementation of the Department's January 2011 scientific integrity policy, as well as a list of any scientific integrity complaints investigated by the IG since January 2009. The IG provided the requested information on July 20, 2012.

At the Committee's August 2, 2012, oversight hearing, Acting Inspector General Kendall was asked several questions about how the IG interacts with the Department's Ethics Office and the steps taken to investigate potential violations of federal ethics and conflict of interest laws, as well as follow up questions about the Department's handling of scientific integrity complaints stemming from the IG's July 20 response.

In describing the standards used by the IG to pursue an ethics investigation, Acting Inspector General Kendall responded: "The process differs almost every case. But we review the allegations and determine whether or not it is something that falls within the scope of what we have defined as the high-impact, high-risk cases. And if it does, we will accept it for investigation. Most ethics cases do fall within that."[141]

At the August 2 hearing, Acting Inspector General Kendall was asked to provide, within two weeks, information about ethics investigations and complaints handled by the IG and ethics cases referred to the Department of Justice for prosecution. A follow up letter was sent on August 24, 2012, reiterating the request and asking that the IG provide information by September 7, 2012, identifying all complaints, cases, or referrals received by the IG, including ones from the Department's Ethics Office, since January 2009, as well as documents relating to referrals to the Department of Justice. Committee majority oversight staff provided subsequent clarification to focus the IG's response on ethics matters involving political appointees and career senior executives within the Department.

[140] July 20, 2010 letter to Acting Inspector General Kendall from Ranking Member Hastings and six other minority members of the Natural Resources Committee.

[141] Testimony of Mary Kendall, Oversight Hearing of the full Committee on Natural Resources on "Oversight of the Actions, Independence, and Accountability of the Acting Inspector General of the Department of the Interior," August 2, 2012, unofficial transcript at page 40.

On September 17, 2012, the IG provided a list identifying almost 200 closed ethics or public integrity investigations involving the Department's political appointees and senior executives that have been handled by the IG since January 2009. The IG has also made available for inspection by Committee majority oversight staff copies of investigative reports or other documents from 23 of these cases. However, the Committee has not yet been provided information about open cases and any referrals to the Department of Justice. The IG has also made available IG staff for interviews.

FINDINGS:[142]During the course of its oversight of IG activities, the Committee has learned about the IG's internal organization, operations, and procedures for conducting ethics, public integrity, scientific integrity, and other investigations.

Investigations are initiated when the IG receives notice of a complaint or a potential problem from any number of avenues, including the news media, investigative field work, and tips from confidential sources or whistleblowers. The IG's Office of Investigations has a Complaint Review Group[143] that meets each week to review the complaints and tips that have been received and to determine whether an investigation should be conducted within the IG or whether the matter should be referred back to the Department or Bureau responsible.[144]

TROUBLING EXAMPLES DEVIATED FROM STANDARD PROCEDURES

If the IG determines that a complaint warrants a full investigation, the Special Agent in Charge ("SAC") for the appropriate region where the complaint originated, or the Director of Public Integrity Division will be the team leader who will assign investigators to the matter and manage the investigation. At this point, the investigation is generally handled only by the SAC and the investigative team that the SAC has put together.

An investigation plan is created and discussed among the team members and managers, and the investigators will proceed with interviewing relevant fact witnesses and gathering documents as they deem appropriate. The investigative team is also responsible for drafting interview summaries and other investigation activity reports, and preparing final reports of the investigation. This process is documented through the IG's Case Management System ("CMS"), which allows investigators and relevant managers to track progress on a matter, upload documents relevant to the case, and generally manage the flow of information

[142] The description of the investigative process is the result of interviewing several employees within the IG and reviewing thousands of pages of documents from various investigations. The IG did not provide a description of this process in writing to the Committee.

[143] The IG Complaint Review Group is composed of the regional Special Agents In Charge, the Director of Public Integrity, and the various Assistant Inspector Generals and Deputy Assistant Inspector Generals. The Deputy Inspector General and her Chief of Staff do not attend or weigh in on the Complaint Review Group's recommendations or decisions.

[144] When a matter is referred back to the bureau, a referral letter is drafted from the IG either directing the bureau to report back to IG on how the matter was handled or not, depending on the severity of the allegations.

within OIG. The IG investigative staff spoken to by the Committee have said the IG's typical process is to have the investigators verify the accuracy and completeness of the documents collected during an investigation, either by collecting documents directly from an individual's personal computer or from a centralized search of computer servers and email systems, rather than relying only on what a witness may have provided.

At the conclusion of the fact finding portion of an investigation, the investigators usually will draft a Report of Investigation ("ROI") that summarizes the steps taken to gather the facts, and the conclusion reached by the OIG. An ROI may suggest ways in which the Department can improve in a particular area, or, may determine based on a gathering of all available information that no wrongdoing occurred.

A significant portion of the IG Office of Investigations' caseload appears to involve matters that could be characterized as ethics, conflict of interest, or public integrity violations. The Committee's expanded oversight has paid particular attention to the IG's handling of these kinds of cases.

Federal ethics and conflict of interest laws prohibit, among other things, the misuse of federal positions for personal or financial gain, restrict the activities of former government officials, prohibit certain outside activities and income, and require the filing and disclosure of financial and investment information.[145] In addition, the Office of Government Ethics has issued Standards of Ethical Conduct for Employees of the Executive Branch,[146] and the Department of the Interior has issued supplemental ethics regulations[147] that, for example, prohibit certain Department employees from holding financial interests in federal resources administered or managed by the Department.

Based in the Solicitor's Office, the Department's Ethics Office manages the ethics program at the Department level, counsels Department officials on their conflict of interest, recusals, and financial disclosure requirements, and coordinates ethics compliance across the Bureaus and other offices.[148] The Ethics Office may refer an alleged violation to the Department's IG for further investigation, or the IG may initiate an ethics investigation on its own or in response to an outside complaint.

According to the Department, the Ethics Office has referred eight cases to the IG for further investigation since January 2009, and only one involved a senior executive and none involved a political appointee.[149] After an investigation is completed, the

[145] See generally 18 U.S.C. §§ 201-209 and 5 U.S.C. app. 4, §§ 101-111.
[146] See generally 5 C.F.R. part 2635.
[147] See generally 5 C.F.R. part 3501.
[148] Interview with Richard Grant, Deputy Designated Agency Ethics Official, Office of the Solicitor, Departmental Ethics Office, occurred in Committee offices on September 7, 2012 and by telephone on November 1, 2012.
[149] Interview with Christopher Mansour, Director, and Jason Buckner, Deputy Director, Office of Congressional & Legislative Affairs, occurred by telephone on October 5, 2012; Richard Grant, Deputy Designated Agency Ethics Official, Office of the Solicitor, Departmental Ethics Office, occurred by telephone on November 1, 2012.

IG may, in turn, refer a case to the Department of Justice for prosecution or to the Department or relevant Bureau or other office for administrative action.

In addition to the IG's questionable handling of the moratorium investigation, the Committee's expanded oversight of IG activities has identified several examples where IG investigations into politically sensitive matters appear to have deviated from the office's general case management or investigative practices or to not have been formally investigation at all. The Committee's oversight into these areas, however, was frustrated by a lack of documentation, consistent with the Federal Records Act, that would explain the basis for decisions in how cases are opened, pursued, and closed.

EXAMPLE 1 – KLAMATH SCIENTIFIC INTEGRITY COMPLAINT

BACKGROUND: Bureau of Reclamation ("Reclamation") Science Advisor and Scientific Integrity Officer Dr. Paul R. Houser was told by his supervisor, Deputy Commissioner for External and Intergovernmental Affairs, Kira Finkler, on February 8, 2012 that he had until February 10, 2012 to resign from his position with Reclamation or be terminated. Through documents obtained from Dr. Houser and from the IG, it is clear that Dr. Houser believed that the termination was in retaliation for Dr. Houser emailing an opinion that was inconsistent with the stated position of the Department and that Dr. Houser believed there was a serious concern of a violation of scientific integrity, as well as a concern of retaliatory termination.

On February 8, 2012, in response to notice of his threatened termination, Dr. Houser filed a complaint with the IG's Office of Whistleblower Protection ("WBP"). His termination became effective on February 10, 2012.

On May 30, 2012, the IG received a letter from the Committee asking for information about a variety of investigations, audits, and scientific integrity complaints, including any concerning the Klamath River basin or any reviews involving the adequacy of the science supporting the Department's plan to remove the Klamath River dams. In a July 20, 2012, response, Acting Inspector General Kendall stated the IG had not done a formal review of the Klamath science but, "Given the comprehensiveness of the governing Agreements, the transparency being given to the process, and the complete absence (to date) of any complaints in which this effort is proceeding, the OIG does not have any plans to conduct any additional reviews at this time."[150]

In testimony before the Committee on August 2, 2012, Ms. Kendall also said she was unfamiliar with the details of one specific scientific integrity complaint involving the Department's justification for removing dams in the Klamath River basin and

[150] July 20, 2012 letter from Acting Inspector General Mary L. Kendall to Chairman Hastings. Four lists of cases were also included in this response, (1) Energy Cases; (2) Klamath Restoration Cases (including the Finkler case); (3) Scientific Integrity Cases (the Finkler case is not listed); and (4) Audits, Inspections, and Evaluation Reports.

therefore could not answer questions about it. "I have many people on my staff who work these issues on behalf of the Office of Inspector General. I apologize. I don't know the details about this one."[151]

Representative McClintock asked, "Well, you have got a row of folks behind you. Do any of them know?,"[152] referring to IG Chief of Staff Hardgrove, General Counsel Bruce Delaplaine, and other IG senior staff sitting behind Ms. Kendall in the Committee's hearing room. Ms. Kendall answered, "Congressman, we would be glad to get back to you and provide details about this. I simply don't know them today."[153]

On August 28, 2012, the IG received a letter requesting all documents related to Dr. Houser's case. These documents were provided on a rolling basis between September 19 and October 17, 2012.[154] Upon receipt of the documents, the IG was asked to provide members of their team for interviews with Committee staff.[155]

FINDINGS: According to IG documents obtained by the Committee, on September 14, 2011, Dr. Houser was asked to review a draft Department press release.[156] The draft press release related to the Department study on the proposal to remove four dams in the Klamath River basin and was provided to Dr. Houser by the Public Affairs Officer for Reclamation. On September 15, 2011, after studying the expert panel reviews of the Klamath River proposal, and gathering additional information, Dr. Houser emailed his analysis of the press release review to his supervisor, Deputy Commissioner for External and Intergovernmental Affairs Finkler.

In his email, Dr. Houser raised several concerns with the accuracy of the scientific data in the press release, and he mentioned that the release offered only the positive view of the dam removal, without reference to the uncertainties or

[151] Testimony of Mary Kendall, Oversight Hearing of the full Committee on Natural Resources on "Oversight of the Actions, Independence, and Accountability of the Acting Inspector General of the Department of the Interior," August 2, 2012, unofficial transcript at page 111.
[152] Id.
[153] Id.
[154] The emails from four IG employees were provided. No emails were produced from Assistant Inspector General for Investigations John Dupuy's computer or from Deputy Assistant Inspector General for Investigations Scott Culver's computer. According to the IG, the computers for Mr. Culver and Mr. Dupuy were searched and no relevant emails were found. From the email productions of the other IG employees, it is clear that there are in fact emails relevant to this matter that were sent and received by both Mr. Culver and Mr. Dupuy. Both Mr. Culver and Mr. Dupuy have stated that they did not delete the emails related to this matter. Whatever the cause of the failure to properly maintain and provide investigation records, the Committee is concerned that the IG's record retention practices are falling short of the Federal Records Act requirements.
[155] The IG initially offered to make available the investigators along with the Associate Inspector General for Whistleblower Protection and the Chief of Staff collectively. The Committee rejected this offer out of concern that the presence of managers in the interviews with staff would have the potential to create a chilling effect that could limit the participant's ability and willingness to speak freely about the case and their respective experiences. Individual conversations with several IG employees were eventually scheduled.
[156] Press Release "Studies Show Removing Klamath Dams Could Add Thousands of Jobs and Boost Dwindling Salmon Runs; Draft Environmental Analysis also Released, Public Comment Period Opens".

negatives.[157] Dr. Houser's stated concern was that the release presented a biased view of the Klamath River dam removal benefits. In response to providing his opinion on this press release, as he was asked to do, Dr. Houser was asked by Ms. Finkler why he emailed his comments on the press release, why he chose to document his concerns via email, and told by her that he was creating discoverable records that could be subject to the Freedom of Information Act disclosures.

According to Dr. Houser, Ms. Finkler told him that "the Secretary wants to remove those dams."[158] Dr. Houser also received an email from Christine Karas, Deputy Area Manager, Klamath Basin Area Office, Bureau of Reclamation stating:

> [P]lease carefully consider the depth of familiarity you have with the body of science surrounding Klamath dam removal before creating discoverable records of your personal opinions. All government e-mail is captured in a discoverable data base and the confidentiality notice you included is not valid on government correspondence.[159]

Approximately one month after Dr. Houser's review of this press release, he received a negative performance rating.[160] At a meeting to discuss this performance rating, Ms. Finkler purportedly told Dr. Houser that his email responding to the draft press release was not in support of the organization's mission, and that the email did not contribute to a positive workplace and showed he was not a team player.[161]

In the subsequent months, Dr. Houser observed his opportunities for growth, training, and travel diminish. He was also cited for sending an unrelated email directly to David Hayes, Deputy Secretary of the Department, and for leaving the word "draft" on a memorandum that was presented to the Commissioner. On February 8, 2012, Ms. Finkler told Dr. Houser that his expertise and skill were not a good match for the science advisor position and that he had until February 10, 2012 to resign or be terminated.

IG STAFF QUESTION POLITICIAL APPOINTEE'S ACTIONS

On February 8, 2012, Dr. Houser called the Office of Whistleblower Protection ("WBP") to describe his situation, ask for advice, and to make a formal complaint that he believed his termination was in retaliation for providing a scientific opinion concerning the press release.[162] The Associate Inspector General for Whistleblower

[157] September 15, 2011 email from Dr. Paul R. Houser to Kira L. Finkler.

[158] February 24, 2012 Allegation of Scientific and Scholarly Misconduct and Reprisal for a Disclosure Concerning the Biased Summarization of Key Scientific Conclusions for the Klamath River Dam Removal Secretarial Determination Process; prepared by Dr. Paul R. Houser.

[159] September 19, 2011 email from Christine D. Karas to Paul R. Houser and Keith C. Schultz.

[160] Dr. Houser received a "minimally successful" rating in the category of "Mandatory Department Wide Element" but received fully successful rating for each of the "Position Specific Elements" in which he was rated.

[161] February 24, 2012 Allegation of Scientific and Scholarly Misconduct and Reprisal for a Disclosure Concerning the Biased Summarization of Key Scientific Conclusions on the Klamath River Dam Removal Secretarial Determination Process; prepared by Dr. Paul R. Houser.

[162] PI-PI-12-0238-G Case Notes File Entry of February 14, 2012.

Protection, Laurie Larson-Jackson received the complaint, and provided the relevant information to the Assistant Inspector General for Investigations, John Dupuy.[163] On February 9, 2012 the Deputy Assistant Inspector General, Scott Culver, assigned two investigators with the Office of the Inspector General's Program Integrity Division to interview Dr. Houser[164] and Ms. Finkler.

During Ms. Finkler's interview with the IG investigators, she defended her decision to terminate Dr. Houser's employment and confirmed that she questioned him regarding writing his opinion in an email.[165] The IG investigators questioned Ms. Finkler on why she would discourage the Scientific Integrity Officer from putting his scientific opinion in writing, and she repeatedly explained that emails can be misconstrued. Ms. Finkler said, "Well, I mean, I've worked in D.C. for 20 years, and I know that emails can be misconstrued, you know, you can't always – it's very easy to misrepresent something in an email."[166]

The IG investigators questioned this analysis: "It would seem to me that there would be a lot more chance of something being misconstrued if it was just spoken back and forth, as opposed to written down. There is no ambigu[ity]."[167] Ms. Finkler continued to insist that emails can be misconstrued: "again, I guess, you know, misconstrue something that is in an email"[168]; "I mean once you put something in an email, it's there forever, and it can be easily misconstrued."[169]

Ms. Finkler requested a break, and the interview went off the record.[170] During the break, it was decided that the investigators were no longer going to discuss the press release or Dr. Houser's email questioning the objectivity of the scientific description, and that Ms. Finkler would review her emails and answer additional questions at a later date.[171] The interview continued with questions about why Ms. Finkler had terminated Dr. Houser, and what justification she had for this decision. In the end she simply told the IG investigators that he was not the "right fit."

IG MANAGEMENT BECOMES PERSONALLY INVOLVED IN DIRECTING INVESTIGATION

After the IG investigators first interviewed Dr. Houser and Ms. Finkler, they were called to brief Mr. Dupuy, Mr. Culver, and Chief of Staff Steve Hardgrove. According

[163] February 8, 2012 email from Associate Inspector General for Whistleblower Protection to Assistant Inspector General for Investigations, "I just left you a detailed voicemail about the above complaint. I have a lot of information to share with you and time is of the essence. I gave Steve Hardgrove a heads up (via voicemail) on this too."

[164] February 9, 2012 email from Laurie Larson-Jackson to Stephen Hardgrove, "I briefed Scott and sent him a summary chronology (attached below) and three emails with attachments that I received from Mr. Houser. Scott will send an agent to interview Mr. Houser this morning."

[165] February 9, 2012 Finkler interview, p 37 ln 4-20.

[166] February 9, 2012 Finkler interview, p 38 ln 14-16.

[167] Id. p 39 ln 11-14.

[168] Id. p 38 ln 19-20.

[169] Id. p 41 ln 5-6.

[170] Id. p 43 ln 4-18.

[171] Id.

to some sources within the IG, it was directly after this meeting on February 9, 2012 where Hardgrove gave the order to Mr. Dupuy and Mr. Culver that this investigation was not to proceed, but the two investigators assigned to this matter were not informed of this decision at this time.

On February 10, 2012, the investigator in charge of the case described the status of the case in an email to his supervisor, Director of the Public Integrity Section, Megan Wallace:

> [We] conducted interviews of the complainant (Houser) and potential subj (Finkler) yesterday. After that we briefed Scott, John and Steve. This is a tough one, there is a chance he is being terminated because she/they disagree w/ his scientific opinion on the elimination of the Klamath River Dams, but it's not conclusive. He has been reprimanded for some other apparently minor incidents which are not connected to the dam issue. Bottom line, [Culver] is contacting the DOI head "science guy" today (Dr. Ralph Morgenweck) to ask his opinion. After that we will be told what do to. We had another conversation this morning with Steve Hardgrove. Our gut feeling is, if Morgenweck tells Scott there is nothing suspicious about Houser being terminated then we will probably shut this down. Will let you know.[172]

On two separate occasions, February 10 and 13, 2012 , the investigators interviewed the Department Scientific Integrity Officer, Dr. Ralph Morgenweck about his working relationship with Dr. Houser and whether he had any concerns about the termination.

Dr. Morgenweck described Dr. Houser as "very intelligent, follows through on commitments he makes" and stated that he feels Dr. Houser "is performing very well, in his role of scientific integrity officer."[173] Dr. Morgenweck described Dr. Houser's writing as "presented in a manner that was clear, understandable and to the point, and I felt that the work was good quality."[174] The IG investigators asked Dr. Morgenweck whether based on what he knew of the situation, should the IG "continue to look into, investigate further, in order to determine more of the facts?"[175] Dr. Morgenweck responded:

> Yes, I do, and for several reasons. One is, this kind of situation is something that could potentially weigh very heavily on our reputation for scientific integrity in the Department. I think that based on what I know from our conversations, I don't see substantial concerns about Paul's performance, that would lead me, anyway – to believe that the action being proposed is commensurate with what they have relayed to you,

[172] February 10, 2012 Email from Investigator to Megan Wallace.
[173] February 13, 2012 interview of Morgenweck, p 6 ln 24-25; p 7, ln 1-2.
[174] Id, p 7 ln 17-19.
[175] Id. p 9 ln 5-7.

> and so, that does concern me, that the motivation behind this is potentially that issue about when he gave his scientific opinion, and that was not viewed as being a team player by the communications folks. That is a scientific integrity issue, and so, I think it does bear looking into.[176]

According to IG documents, on or around February 13, 2012 Mr. Hardgrove made a decision, "Based on my experience and analysis of the matter, it was my opinion that Dr. Houser's proposed termination was not a matter for the OIG to investigate." Mr. Hardgrove listed several factors that "played into" his decision including that "Dr. Houser was a probationary SES employee," and that "Established due process procedures were in place for Dr. Houser to utilize in addition to being informed that he could report his allegation to the Office of Special Counsel who has primary jurisdiction on reprisal allegations."[177]

This decision is memorialized in an undated memorandum to file created by and signed by Mr. Hardgrove. According to this memo, he made this decision based on information provided to him from the investigators "after interviewing Dr. Houser and his supervisor Kira Finkler." There is no reference to Dr. Morgenweck being interviewed or even whether Mr. Hardgrove knew this interview occurred.

While there is no date on the memorandum itself, it states that Mr. Hardgrove made the decision "on or about February 13." The document was uploaded into the IG case management system on September 18, 2012, seven months after the memo indicates the decision was made and more than one month after Ms. Kendall was unable to answer questions about the case at the Committee's August 2 hearing.

It is unclear why the Chief of Staff was making decisions on whether an investigation should proceed. All information gathered from the IG shows that these types of decisions are generally made by the SAC of a particular Region, or the Program Integrity Division Director. There is no evidence that the investigators or Dr. Houser were told of Mr. Hardgrove's decision at this time.

IG STAFF SKEPTICAL ABOUT POLITICAL APPOINTEE'S MOTIVES

On February 15, 2012, Ms. Finkler called the lead investigator on the matter and requested to be re-interviewed, specifically concerning the press release and Dr. Houser's response to the press release.[178] This re-interview occurred the next day, February 16, 2012. During the second interview of Ms. Finkler, she restated her claim that emails can be misconstrued:

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[176] Id. p 19 ln 8-23. Dr. Morgenweck also expressed concern that the science advisor for Reclamation was reporting to a political appointee responsible for communications, whose job is to present Interior in the best light at all times, not to uphold the integrity of scientific data and processes. He expressed that this line of reporting created the exact environment that the scientific integrity policies were intended to avoid and that this is something the IG could potentially remedy.

[177] Undated Memorandum to file from Steve Hardgrove, uploaded into CMS September 18, 2012.

[178] February 16, 2012 email from lead investigator to Larson Jackson.

> And I know that we agreed to disagree, last week, that emails can be misconstrued, but I still stand by that, that I think emails can be misconstrued. I think that, you know, people dash off emails very quickly, and you could miss a work or something, misspell something, and then you know, once again, it's not – it's there forever, but yet, you might have dashed it off very quickly, or you might have dashed it off when you were upset and it's there.[179]

Eventually, Ms. Finkler explained that the concern she has with emails is not that they will be misconstrued but that it will be in the *Washington Post*.[180] Near the conclusion of this interview, one of the investigators explained the IG's opinion of this matter in this way:

> [W]e all looked at this and we feel that the reasons that you cited for terminating him are trivial, that basically, he wore shorts to work once, he gave the Commissioner a report that said "draft" that wasn't supposed to say "draft", and he sent an email to Mr. Hayes. Those are the three tangible things, you know, things that we can see and read, and then the other thing that you told us intangible's, like leadership. Well, he is not leading, and those are – that is kind of like a basket full of smoke.[181]

On February 23, 2012 the investigators were told by Ms. Wallace and Mr. Culver that the investigation was not to be pursued. No interview write-ups were completed, and no Report of Investigation was drafted. There is no documentation that memorializes when or whether Dr. Houser was informed that the IG was not going to finish the investigation they had initiated.[182]

On May 2, 2012, approximately three months after Dr. Houser's complaint to the IG, Dr. Houser sent an email to Ms. Larson-Jackson and the two investigators who worked on his case asking about the status of their investigation. Ms. Larson-Jackson responded that she had already discussed with Dr. Houser that "the OIG decided against opening a formal investigation after its initial complaint."[183] Based on all interviews conducted, no one in the IG specifically remembers telling Dr. Houser or sending him correspondence that a formal investigation was not going to

[179] February 16, 2012 Finkler interview, p 5 ln 11-18.
[180] Id. p 21 ln 19-21.
[181] Id. p 6 ln 17-22.
[182] Indeed, Dr. Houser continued to provide updates and information to Ms. Larson-Jackson as though he believed she was working on his case. In a March 1, 2012 email from Dr. Houser, he provided additional troubling information about Ms. Finkler's work at Reclamation to the IG. IG was informed that Ms. Finkler previously worked for Trout Unlimited, an organization that is a signer of the Klamath Agreements that propose the removal of the dams. Based on several document requests to the IG, this potential conflict of interest was never investigated or even questioned. An Ethics Recusal document prepared by Ms. Finkler and submitted to Reclamation in April of 2010 makes no mention of this prior relationship.
[183] May 1, 2012 email from Larson-Jackson to Houser.

be opened, and Dr. Houser was under the impression until the receipt of this email that the IG was in fact investigating his case.

The IG received a letter from Congress requesting all emails, notes, and memoranda related to this case on August 28, 2012. There was no explanation in the case management system, or any of the investigators' case files, explaining why the investigation was shut down until September 18, 2012, when the undated Hardgrove memo was uploaded into the case management system.[184]

SUMMARY: A review of the available information in this case, including information gathered from various in-person and telephonic interviews, and a review of hundreds of documents shows that the IG interviewed the complainant, and by all accounts found him to be credible and his termination to be troubling. The IG also interviewed Ms. Finkler, and by all accounts, including the recorded transcripts of her interviews, found her version of events to be incredible, and found her decision to terminate Dr. Houser to be troubling.

At this point in the investigation, IG Chief of Staff Hardgrove made a unilateral decision to shut down the investigation, a decision that is contrary to the normal course of how investigations are typically conducted within the IG, and was contrary to the opinion of every single other person with knowledge of the matter, including the Director of the Public Integrity Section, the Associate Inspector General for Whistleblower Protection, the Deputy Assistant Inspector General for Investigations, and the Assistant Inspector General for Investigations.

The decision was not communicated to the investigators on the case, who went on to interview Dr. Morgenweck twice, and conduct a follow up interview of Ms. Finkler. Only after these additional interviews are conducted are the investigators told that there will be no investigation. No justification for the termination of the investigation is included in the case management system for 7 months. It does not appear that Dr. Houser was provided this information until May 2012. According to several IG employees, the alleged wrongdoing by a political appointee against a senior scientist was exactly type of case that calls for a thorough and independent investigation, and an opportunity to follow the investigation to its conclusion.

EXAMPLE 2 – NO IG INVESTIGATION INTO APPARENT CONFLICT OF INTEREST

BACKGROUND: According to a March 17, 2012, article in the *Los Angeles Times*, Counselor to the Secretary Steve Black was instructed to recuse himself from matters involving NextEra Energy, a developer of solar and wind energy projects, due to a romantic relationship Mr. Black was reported to have had with a lobbyist for the company. In addition to his role overseeing the development and editing of

[184] The IG's computerized case management system records when documents are saved into the system. The Hardgrove memorandum describing the reasons for shutting down the Houser investigation was entered into the system on September 18, 2012, more than one month after Ms. Kendall was asked at the Committee's August 2 hearing about the matter.

the Drilling Moratorium Report, Mr. Black advises the Secretary on renewable energy policies and leads the Department's Renewable Energy Policy Group, a group of federal and state officials established by Secretarial order in 2009 to coordinate review and processing of renewable energy projects in California.

Among the projects NextEra is developing is the 250 mw Genesis Solar Energy Project and the 750 mw McCoy Solar Energy Project on federal land near Blythe, California managed by the Bureau of Land Management. The NextEra lobbyist previously served as Special Advisor to the Governor of California for Renewable Energy Facilities and served on the Renewable Energy Policy Group led by Mr. Black before being hired by the energy firm in July 2011.

The *Los Angeles Times* article also states Mr. Black discussed the relationship with the Department's Ethics Office in the fall of 2011 and was later told to recuse himself, but it does not state when the relationship began, when the recusal became effective, or whether the IG has investigated Mr. Black's actions to determine whether any federal ethics laws were violated.

> ***"Steve Black, Interior Secretary Ken Salazar's alternative energy advisor, discussed his relationship with a NextEra Energy lobbyist with officials in the department's ethics office last fall (2011), an Interior spokesman said. To avoid a conflict of interest, Black was later told to recuse himself from matters involving NextEra which has more than a dozen wind and solar projects in California."*** *– Los Angeles Times, March 17, 2012*

Findings: As Acting Inspector General Kendall explained at the August 2 hearing, the IG generally decides to take on and investigate "high-impact, high-risk cases. … Most ethics cases do fall within that."[185]

The Department has provided information indicating that no ethics cases involving political appointees, including Mr. Black, have been referred to the IG for investigation for the past four years.[186] It also appears, based on the list of cases

[185] Testimony of Mary Kendall, Oversight Hearing of the full Committee on Natural Resources on "Oversight of the Actions, Independence, and Accountability of the Acting Inspector General of the Department of the Interior," August 2, 2012, unofficial transcript at page 40.

[186] Interview with Christopher Mansour, Director, and Jason Buckner, Deputy Director, Office of Congressional & Legislative Affairs, occurred by telephone on October 5, 2012; Richard Grant, Deputy Designated Agency Ethics Official, Office of the Solicitor, Departmental Ethics Office, occurred by telephone on November 1, 2012.

provided to the Committee, that the IG has not received any formal ethics complaints involving Mr. Black and does not otherwise appear to have conducted any review or investigation of Mr. Black's actions involving the NextEra Energy lobbyist to determine whether a violation of federal ethics and conflict of interest laws occurred in connection with his work on renewable energy issues for the Department.

A senior IG official has confirmed that staff within the office were aware of the allegations involving Mr. Black, as described in the *Los Angeles Times* article, but that no investigation was ever conducted to determine whether his conduct before or after the recusal was put in place violated federal ethics laws.[187] The official explained that there was no indication that Mr. Black had engaged in wrong doing.[188] However, the IG under Mr. Devaney had investigated ethics issues and potential conflicts of interest involving Bush Administration officials.[189]

According to the *Los Angeles Times*, some renewable energy advocates, however, have expressed concern about whether Mr. Black could be effective in his role advising the Secretary on renewable energy issues and leading the Department's Renewable Energy Policy Group, given his recusal from matters concerning NextEra Energy. For example, it is unclear what Mr. Black's involvement was in developing the Department's Solar Energy Roadmap,[190] issued October 12, 2012, and how those actions were consistent with his ethics agreement and recusal.

EXAMPLE 3 – COMPLAINT ABOUT OFFICIAL'S ROLE IN DEEPWATER INVESTIGATION

BACKGROUND: This second case also involved alleged interference in the development of a technical document by a political appointee. A week after the Deepwater Horizon incident, the Department of the Interior and the Department of Homeland Security issued a convening order establishing the Joint Investigation Team ("JIT"). The JIT was tasked with trying to identify the factors that caused the blowout of the Macondo well and the subsequent explosion, fire and sinking of the Deepwater Horizon offshore drilling rig. Under the convening order, the JIT was to issue a report of its findings and improved safety recommendations within nine months. However, the submerged blowout preventer was not recovered until September 2010, pushing back the JIT's report.

The firm Det Norske Veritas was retained by the JIT to conduct forensic examination and testing of the blowout preventer recovered from the Deepwater Horizon rig.

[187] Interview with senior manager in the IG's Office of Investigations, December 4, 2012.
[188] Id.
[189] See, New York Times, "Interior Dept. Official's Role as Oil Lobbyist is Investigated," May 13, 2003; available at http://www.nytimes.com/2003/05/13/politics/13INQU.html (last accessed December 18, 2012).
[190] Department of the Interior Press Release, October, 12, 2012; available at http://www.blm.gov/wo/st/en/info/newsroom/2012/october/NR_10_12_2012.html (last accessed on December 5, 2012).

Det Norske Veritas completed its testing on March 4, 2011, and issued its report (in two volumes) on March 20, 2011. On April 22, 2011, the Coast Guard issued part 1 of the JIT report, focusing on the explosions and fires on, evacuations from, and sinking of the Deepwater Horizon offshore drilling rig. On September 14, 2011, the Department's Bureau of Ocean Energy Management, Regulation and Enforcement ("BOEMRE") issued Part 2 of the JIT report, focusing on the causes of the blowout.

According to an internal IG document reviewed by Committee majority oversight staff, a confidential source complained to the IG on March 31, 2011 that BOEMRE Director Michael Bromwich had months earlier directed members of the JIT to draft a separate report focused on the blowout preventer and that Mr. Bromwich had assigned staff from BOEMRE's Investigations and Review Unit ("IRU") to review and edit the draft report, against the objections from the JIT members.

The confidential source alleged Mr. Bromwich had directed the JIT to issue this report on April 20, 2011 – the one year anniversary of the Deepwater Horizon accident – separate from the formal investigative report being prepared by the JIT under the April 2010 convening order. The confidential source described the reasons for issuing such a report at that time as politically motivated to help justify and defend the moratorium decision, according to the IG document.

According to the confidential source, the members of the JIT objected because the investigation was still ongoing and the Det Norske Veritas report had not yet been completed. Nonetheless, Mr. Bromwich and BOEMRE Investigations and Review Unit staff insisted on such a report. The JIT members submitted a draft report to Mr. Bromwich and the IRU on March 4, 2011, according to the confidential source. That draft did not contain executive summary or conclusion sections. Two weeks later, according to the confidential source, the IRU staff returned to the JIT members a revised version of the draft report, including new executive summary and conclusion sections.

According to the confidential source, the IRU staff had removed language critical of BOEMRE and added inaccurate scientific and technical language that could decrease safety and undermine the JIT's broader work. For example, the confidential source described edits that attributed the Deepwater Horizon accident to a failure of the blowout preventer, even though the Det Norske Veritas investigation was ongoing, and deleted a discussion about subsequent inspections not identifying problems with other blowout preventers.

The IG document states the confidential source provided a copy of the revised draft report containing the IRU edits in early April 2011 and, on April 7, 2011, the Acting Inspector General was provided a copy of the draft report, which was subsequently shared with senior officials in the Department. The IG document concluded by stating the confidential source reported on April 14, 2011 that the IRU had decided against issuing a separate blowout preventer report.

FINDINGS: The IG assigned this matter a case number (PI-PI-11-0312-I) indicating it was assigned to the IG's Public Integrity Division. However, the IG report reviewed by Committee staff does not describe any investigative actions or follow up other than the Acting Inspector General sharing a copy of the draft report, and presumably the concerns from the confidential source, to the Department's senior managers. The list of ethics and public integrity cases provided by the Department in September 2012 includes this investigation and shows that the IG opened the case file on March 25, 2011 and closed it on May 17, 2011.

According to a senior official within the office, the IG did not conduct a formal investigation into Mr. Bromwich's involvement,[191] including considering whether such actions or editing would violate the Department's scientific integrity policy.[192] The official did not recall the IG doing a formal investigation "because nothing had really happened yet, I think was some of the thinking, that this was just back and forth of editing a document, and these folks were coming to us, sharing their concerns that they had more technical expertise that had not been represented in this critical document." The IG official added that "eventually the issue went away … and the issue was resolved" because the report was never issued and the concerns of the JIT members had been addressed internally.[193]

However, the official did note the similarities with the editing of the drilling moratorium report: "It really was kind of ironically about editing a report, the same thing we are talking about with [the drilling moratorium report]. Bromwich was kind of in the same role with the people that were preparing the report and they were taking out information that people with the more technical knowledge thought should be in there, and they were feeling the pinch of that."[194]

Before the IG provided a copy of the case document for review, it consulted with the Department of Justice litigation team working on the Deepwater Horizon enforcement case to determine whether the document could be provided to Committee staff for review. The Department of Justice did not object.

The IG official denied that any favoritism was shown to the Department or Mr. Bromwich in the handling of this matter or that the case was handled out of the normal course, given the allegations and personalities involved.[195]

However, it is troubling that the IG did not comprehensively investigate the allegations that a senior political official had been accused of possibly interfering in the Joint Investigation Team's Deepwater Horizon investigation. Instead, the matter

[191] Interview with senior manager in the IG's Office of Investigations, December 4, 2012.
[192] Departmental Manual, section 305 DM 3, "Integrity of Scientific and Scholarly Activities," effective January 28, 2011.
[193] Interview with senior manager in the IG's Office of Investigations, December 4, 2012.
[194] Id.
[195] Id.

seems to have been resolved by the Acting Inspector General discretely informing the Department of the concerns, and the Department putting a stop to the problematic activity. Although the IG may have achieved a desirable outcome with minimal embarrassment to the Department, this low-key, accommodating approach is an example of the IG falling short of its obligations under the IG Act to report to Congress about problems with the Department's operations and activities.

***

SUMMARY: The IG under its current leadership does not appear to be pursuing investigations involving Obama Administration political appointees in the same manner or with the same assertiveness as was previously done. In several examples identified during the Committee's oversight, the IG has not fully investigated allegations of misconduct that appear similar to cases the previous Inspector General had pursued, often leading to sensational headlines, management reforms, and prosecution. In choosing to handle problems informally, often without a formal investigation or public report, the IG is frustrating Congressional oversight of the Department and the IG and leaving the impression that this Administration is receiving a pass on potential wrong doing.

CONCLUSION

An Inspector General is expected to serve as an independent watchdog, to protect against fraud, waste, and abuse, and to keep both the Department head and the Congress informed of problems within the Department. However, as this Majority Staff Report has found, Acting Inspector General Kendall and Chief of Staff Hardgrove have blurred the line between being an independent watchdog and serving as an informal advisor and collaborator on Department policy initiatives.

Acting Inspector General Kendall has publicly stated she has sought to establish a more collaborative relationship with the Department than the IG previously had, something that has not gone unnoticed by the Department's political appointees. Ms. Kendall's accommodating approach has raised questions among the public and Congress, as well as among the IG's professional career staff who are dedicated to holding the Department accountable, about whether the IG's independence has been compromised, and whether the IG has held the Obama Administration to the same standards of accountability as previous administrations were held.

The Committee's investigation has identified numerous troubling examples that call into question Ms. Kendall's management of the IG during the almost four years she has served as Acting Inspector General:

- IG staff have been hampered in pursuing investigations involving political appointees or Obama Administration priorities;
- The Acting Inspector General informally advising senior Department officials of potential problems without conducting formal investigations or issuing reports to the public and Congress;
- Ongoing questions about the accuracy and completeness of testimony Ms. Kendall provided to the Committee in 2010 and 2012; and
- Missing or inadequate documentation of how IG investigations were handled.

Ms. Kendall has expressed an interest in being made the permanent Inspector General for the Department, notwithstanding the potential conflict of interest inherent in having the fate of her appointment beholden to the same officials she is supposed to oversee. However, the White House's inaction in nominating a permanent Inspector General and leaving Ms. Kendall to serve as the Acting Inspector General for almost four years has only exacerbated the problem with the Department's IG. The President should not delay any further in acting to nominate someone who can serve as the independent watchdog the Department deserves and who does not have the questionable history and judgment Ms. Kendall has brought to the position.

EXHIBIT

47

March 19, 2012

To: John E. Dupuy, Assistant Inspector General for Investigations,
Office of Inspector General, U.S. Department of the Interior

From: Dr. Corey S. Goodman

Re: DOI IG Request that NPS Investigate Allegations of Scientific Misconduct

Dear Mr. Dupuy,

On September 14, 2011, I wrote to you concerning the NPS investigation of scientific misconduct that your office requested of the NPS in November 2010. You never responded to my letter. Moreover, it has now been sixteen months since you made your request of the NPS, and one year since Interior released the public version of the Frost Report.

Surely it is time that the DOI IG decided whether the NPS response was appropriate or not, and whether further involvement by your office is warranted.

I include a copy of my September 14, 2011 letter as an attachment here.

To briefly recap the history, on October 18, 2010, I gave a talk and provided documentation to the California Council on Science and Technology (CCST) in which I alleged the NPS misused science by claiming that NPS had conclusive data showing that Drakes Bay Oyster Company (DBOC) disturbed harbor seals in Drakes Estero. They did so by failing to disclose their cameras, photos, and logs, and acknowledge that the photographic data, as analyzed by NPS employees and volunteers, revealed no oyster farm disturbances of the harbor seals and thus contradicted their public claims.

On November 22, 2010, I wrote to Interior Secretary Salazar and requested an investigation of these allegations that NPS officials and scientists violated a series of federal government rules, regulations, and codes, and in so doing committed scientific misconduct. In brief, I alleged that NPS officials and scientists intentionally withheld key data – more than 250,000 minute-by-minute photographs from NPS secret cameras and logs containing detailed analysis of those photos – from the:

(1) investigation by your office (DOI IG report issued July 2008),
(2) National Academy of Sciences panel (NAS report issued May 2009),
(3) Marine Mammal Commission panel (MMC report pending), and
(4) various elected officials, press, and public.

The withheld data – dating from May 2007 until June 2010 -- contradict public claims these same NPS officials and scientists made to these investigations, panels, elected officials, and public. This constituted, according to my

submission to the Secretary, scientific misconduct.

On November 9, 2010, Deputy Assistant Inspector General Scott Culver wrote to me that your office had asked NPS to investigate these allegations and would *"evaluate their* [NPS] *response to determine whether or not appropriate action was taken or further involvement by our office appears warranted."*

The NPS asked the DOI Solicitor's office to conduct the investigation. Field Solicitor Gavin Frost filed his report with the Solicitor in early February 2011. A redacted, revised public version of the Frost Report was released on March 22, 2011.

On September 14, 2011, I wrote to you with ten questions concerning the Frost Report. I won't repeat them here, but rather refer you to that letter (enclosed). On October 6, 2011, when I met with you and Scott Culver in your office in Washington, you indicated that the NPS still had not formally responded to your questions and request.

You requested that NPS investigate these allegations sixteen months ago, and they released a report twelve months ago. We await your determination as to whether the Frost Report and NPS actions were adequate and whether further action is warranted.

Thanks very much for following up on this investigation and determining whether or not appropriate action was taken, or further involvement of your office appears warranted. I look forward to receiving answers to the ten questions listed in my letter of September 14, 2011.

Sincerely yours,

[signature on file]

Corey S. Goodman, Ph.D.
corey.goodman@me.com
415 663-9495

EXHIBIT

48

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The NPS asked the DOI Solicitor's office to conduct the investigation. Field Solicitor Gavin Frost filed his report with the Solicitor in early February 2011. A redacted, revised public version of the Frost Report was released on March 22, 2011.

I write today with ten questions concerning the Frost Report:

(1) NPS response to OIG. Has NPS provided a response to the DOI IG concerning your request from last November? If so, do you find their actions appropriate? If not, why not? It has been over ten months since you requested their investigation, and nearly six months since the Frost Report was publicly released. If you have not yet heard from NPS, what are you doing about it, since the same scientists and officials that Gavin Frost concluded were biased are actively involved in ongoing science and policy matters in a time-sensitive fashion?

(2) Potential referral to the OIG. In his Report, Mr. Frost wrote:

> "*the present record discourages a referral of this matter for prosecution, but encourages full discussion and potential referral with OIG representatives*."

Has the recommended discussion by NPS, DOI, and/or SOL taken place with the OIG? If so, when? What is the scope of that referral?

(3) Frost Report vs. Goodman Referral. Do you believe that Gavin Frost appropriately described the original submission to Secretary Salazar? Frost focused on the criminal code and on potential disciplinary action. Was that focus consistent with the original submittal? Did Mr. Frost investigate all five of rules, policies, and regulations that the submittal alleged were violated? Were Frost's conclusions appropriate given the original submittal?

(4) Criminal code definition of intent. Do you believe that Gavin Frost's focus on the criminal code and the "beyond a reasonable doubt" definition of "intent" was appropriate? Does a finding of scientific misconduct require this criminal definition of "intent"? Did Gavin Frost consider whether the misconduct had been committed "intentionally, or knowingly, or recklessly" as defined by the December 6, 2000 Federal policy? Does the OIG believe that Frost followed the proper definition of scientific misconduct?

(5) Gavin Frost is a lawyer not a scientist. The submittal to Secretary Salazar alleged scientific misconduct. Mr. Frost is a lawyer, not a scientist. DOI has many distinguished scientists. Jeff Ruch, Executive Director, Public Employees for Environmental Responsibility (PEER), pointed out this problem with the Frost Report. After the report was released, he stated:

> *"In addition, contrary to Interior Department promises to use scientists to review scientific misconduct charges, in this instance the task was given to lawyers in the Office of the Solicitor. "Interior still is not living up to its own rules about how to review charges of scientific misconduct," Ruch added."*

Do you think it appropriate that DOI did not use any scientist in their investigation of scientific misconduct? Was this DOI review conducted with the appropriate scientific expertise? Did the failure to include scientific expertise materially alter the scope of the review?

(5) Passive disclosure to DOI OIG. Do you accept Gavin Frost's description that the NPS scientists were not guilty of scientific misconduct because they had passively disclosed the cameras, photos, and logs to the DOI IG during it's 2007-2008 investigation (what he called "passive disclosure") because some of the digital photos were on the NPS computers to which the IG agents had access? Does the OIG consider that because some of the undisclosed NPS photos were on a NPS computer hard drive obtained by OIG agents, that this constitutes adequate disclosure?

(6) Intended disclosure to NAS. Do you accept Gavin Frost's description that the NPS scientists were not guilty of scientific misconduct because they had intended to disclose the cameras, photos, and logs to the NAS panel during it's 2008-2009 investigation (what he called "intended disclosure") in early May 2009 on the eve of the public release of their published report? Did the Frost Report convince you that the purpose of the May 1, 2009 Briefing Statement sent to then-Regional Director Jon Jarvis was for to give to the Executive Director of the Ocean Studies Board on the day before the public release of the NAS report? Does the May 1, 2009 document represent adequate disclosure of the cameras, photos, and logs? Is there sufficient evidence that the NPS scientists intended its disclosure to the NAS panel? Even if correct, is intended disclosure the day before the public release of a printed report -- a report that represented over one year of review by the NAS panel -- constitute grounds to dismiss allegations of failure to disclose? Do you concur with Gavin Frost's description and interpretation of the disclosure issue?

(7) Violations of NPS Code of Scientific and Scholarly Conduct. Gavin Frost found that five NPS officials and scientists (Don Neubacher, Dr. Dave Graber, Dr. Sarah Allen, Mr. David Press, and Dr. Ben Becker) had all repeatedly violated the NPS Code of Scientific and Scholarly Conduct, but he defined this violation NOT as scientific misconduct but rather as administrative misconduct, and then he failed to note this finding in either his introductory summary of his findings or in his final conclusions. Do you accept the conclusion of the Frost Report that, even though five NPS employees were guilty of violating the NPS Code of Scientific and Scholarly Conduct, that because Mr. Frost could not prove "intent" as defined by criminal law, that therefore none of the NPS employees was guilty of scientific misconduct, but only of administrative misconduct? Are you aware of any NPS or DOI document that defines the difference between scientific misconduct vs. administrative misconduct? Does the DOI IG consider this an appropriate definition, and an appropriate finding? Does the DOI OIG agree with the DOI Solicitor's Office that there was no scientific misconduct in this case?

(8) Mr. Frost told Mr. Lunny and me that he found scientific misconduct. The public version of Mr. Frost's Report is dated March 22, 2011, but his full report was submitted to the SOL in late January or early February. Mr. Frost told Kevin Lunny on January 26, 2011 that he was nearly finished and would be submitting his report within a few days. However, the March 22 Frost Report contradicted what Mr. Frost told Mr. Lunny and me on January 26 and 24, respectively. In a letter to Gavin Frost on April 4, 2011, Mr. Lunny recounted the details of a phone

call with Mr. Frost at 7 am on January 26, 2011 and wrote:

> *"… you told me that had "found scientific misconduct" …"* Mr. Lunny went on to write: "*We are at a complete loss to understand how you could tell me that you found "scientific misconduct" within a few days [on the eve] of finalizing your work and then, after six or seven weeks of internal, non-public review, your most fundamental conclusion was altered. Either you hung up the phone with me* [on January 26, 2011] *and then changed your report just before submitting it, or your report was amended after it arrived at the Solicitor's office*."

In his email reply to Mr. Lunny on April 4, 2011, Mr. Frost did not deny Mr. Lunny's assertion, but rather replied that he would send a complete response to Mr. Lunny's letter by Friday April 7, 2011, and added that he took full responsibility for all statements in his report. Mr. Frost did not respond by the end of the week. Mr. Frost did not respond by the end of the month. Mr. Frost has never responded.

I since came forward and provided support for Mr. Lunny's assertion. Two days earlier, on January 24, I had a 20-minute phone conversation at 5:43 pm with Mr. Frost in which I was told the same thing, as reported in the Point Reyes Light newspaper, that *"… Frost declared finding multiple NPS employees guilty of scientific misconduct*." Mr. Frost concluded that the "*Environment Impact Statement process for the oyster company was "tainted" with bad science*." Mr. Frost is aware of my public account of their phone conversation, and he has not denied making those statements in that conversation either.

What changed between January 24/26 and March 22? Has the OIG seen the version of the Frost Report that Mr. Frost cited to me on January 24 and to Mr. Lunny on January 26? Has the OIG seen the original (possibly called draft) version of the Frost Report, submitted to SOL in early February? Has the OIG compared that initial version to the public March 22 version? What has changed other than redactions to protect privacy? Have conclusions changed? Have facts or descriptions been altered? Have descriptions of people or events changed? Who made those changes? Who, at DOI, were provided copies of the Frost Report as initially submitted by Frost? Did anyone in NPS have a copy? Did anyone in NPS suggest changes? What happened to the finding of scientific misconduct that Mr. Frost cited to me and Mr. Lunny on January 24 and 26, respectively?

(9) Biased evaluation of science continues at NPS. The three NPS scientists -- Dr. Allen, Mr. Press, and Dr. Becker -- are playing major roles in the ongoing EIS process concerning the oyster farm. Two weeks after the public release of the Frost Report, these same three scientists published a scientific paper that plays a central role in the EIS, and has recently come under major criticism. Gavin Frost described these three NPS scientists as having "*bias*," "*advocacy*," a "*troubling mind-set*," of having "*mishandled*" data, acted *"improperly,"* and showing a "*willingness to allow subjective beliefs and values to guide scientific conclusions*." The Report stated: *"This misconduct arose from incomplete and biased evaluation and from blurring the line between exploration and advocacy through research."* Has the NPS

taken any action to stop the biased behavior by these same scientists engaged in the EIS process? Was Mr. Frost aware of the NPS paper that was submitted for publication before his investigation began and was accepted for publication before his report was released?

(10) NPS Director Jon Jarvis statement on the Frost Report. On March 23, 2011, Senator Feinstein wrote to Secretary Salazar:

> *"I write to express concern that the [NPS] and the [DOI] have once again failed to grasp the severity of recent misconduct at Point Reyes National Seashore. Rather than accepting the Frost Report's verdict of misconduct and taking decisive action, the Department of the Interior responded defensively by noting the absence of "criminal violation," admitting that "mistakes" were made, and declining to inform the public whether corrective action is taken."*

NPS Director Jon Jarvis responded to Senator Feinstein's comments on the radio show "Forum" with Michael Krasny on KQED Public Radio in the Bay Area on Thursday, April 7, 2011, at 9:00 am. Here is a transcript of Jarvis' comments:

> Krasny: "*Excuse me, so Senator Feinstein was out of line by calling it misconduct?*"
>
> Jarvis: "*Well, I'm not going to respond to that question, but I will say that there was no finding of scientific misconduct on any of those reports of [NPS] scientists. You can read the reports yourself. And there are actual statements of that regard from all of them -- there is no scientific misconduct. What there were that we have to deal with -- there is a lack of public confidence in the science of the [NPS] at Point Reyes*."

Given your knowledge of the facts, and reading of your own 2008 OIG Report, the 2009 NAS report, and the 2011 Frost Report, does the OIG agree or disagree with Mr. Jarvis' public statement that the NPS has been cleared of all scientific misconduct? Doesn't the Frost Report finding that five NPS employees repeated violated the NPS Code of Scientific and Scholarly Conduct constitute scientific misconduct?

Thanks very much for following up on this investigation and determining whether or not appropriate action was taken, or further involvement of your office appears warranted. I look forward to receiving answers to the ten questions listed above.

Sincerely yours,

[signature on file]

Corey S. Goodman, Ph.D.
corey.goodman@me.com
415 663-9495

EXHIBIT

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United States Department of the Interior

NATIONAL PARK SERVICE
Pacific West Region
333 Bush Street, Suite 500
San Francisco, California 94104-2828

IN REPLY REFER TO:

L7617 (PWR-NR)

October 3, 2012

Amber D. Abbasi
Cause of Action
2100 M Street, NW, Suite 170-247
Washington DC 20037

Dear Ms. Abbasi:

This letter responds to the complaint you filed on August 7, 2012, on behalf of Kevin and Nancy Lunny, the owners of Drakes Bay Oyster Company, and Dr. Corey Goodman, regarding the *Draft Environmental Impact Statement: Drakes Bay Oyster Company Special Use Permit* (Draft EIS) and the March 2012 *Atkins North America, Final Report on Peer Review of the Science Used in the National Park Service's Draft Environmental Impact Statement: Drakes Bay Oyster Company Special Use Permit* (Atkins Report).

As noted in the Draft EIS, the Secretary's authority under Section 124 is "notwithstanding any other provision of law". The Department decided as a matter of discretion to prepare the EIS and use the procedures of the National Environmental Policy Act (NEPA) to help inform its decision. Similarly, the Department has considered your Information Quality Act (IQA) Complaint as a matter of discretion.

Director's Order 11B, which sets forth National Park Service policy regarding the resolution of complaints under the IQA, provides that IQA complaints on draft documents like the Draft EIS will generally be treated in the same manner as any other comment on the draft document. Your complaint was submitted on August 7, 2012. The official public comment period on the Draft EIS closed on December 9, 2011. Your IQA complaint was therefore submitted after the close of the official Draft EIS public comment period and was untimely.

The Atkins Report was commissioned by the Department of the Interior to provide an independent assessment of the quality of the science used by the NPS in the Draft EIS. As such, the Atkins Report serves a primarily internal function and is not being separately "disseminated" to the public in a manner subject to the IQA or Director's Order 11B. It is being provided to the public solely in order to disclose its role in informing the EIS.

During the public comment period on the Draft EIS, the National Park Service received more than 52,000 comment letters. Drakes Bay Oyster Company (DBOC) submitted lengthy comments on the Draft EIS. DBOC, and ENVIRON on behalf of DBOC, submitted extensive comments on most topics analyzed as part of the Draft EIS, including the submittal of soundscape data gathered by its consultant, ENVIRON. The NPS also received detailed comments on other issues raised in your complaint, including the effects of the alternatives on wilderness resources, harbor seals, birds and bird habitat, and visitor experience and recreation. On September 27, 2012, the National Academy of Sciences published the *Scientific Review of the Draft Environmental Impact Statement, Drakes Bay Oyster Company Special Use Permit* (NAS Review). The NAS Review assessed the scientific information, analysis, and conclusions in the Draft EIS. Thus, the issues raised in your complaint will be addressed by the NPS as part of its response to comments on the Draft EIS.

Finally, we note that based on your Complaint, Dr. Goodman does not appear to be an "affected person" under the IQA. The Complaint expressly acknowledges that Dr. Goodman "does not have a pecuniary interest in this matter." Dr. Goodman's voluntary participation in the public debate over DBOC's operation does not make him an affected party within the meaning of the IQA. The "reputational harm" alleged in the Complaint was apparently caused by the reactions of third parties to Dr. Goodman's own voluntary statements, and is not based on the actual content of the Draft EIS or the Atkins Report. Moreover, Dr. Goodman did not submit comments on the Draft EIS. We also disagree with the complaint's assertion that Dr. Goodman's membership in the NAS qualifies him as an affected person. Dr. Goodman had no official role in any of the NAS reviews of this matter. His support for DBOC does not make him an affected person within the meaning of the IQA. This issue does not affect the ultimate disposition of your Complaint, because the other complainants qualify as "affected persons."

If you wish to appeal this decision, as described in Section IV(G) of Director's Order 11-B, please send the appeal to:

National Park Service
Office of the Director
Attention: Information Quality Request
1849 C Street, NW, Mail Stop 3115
Washington DC 20240

Sincerely,

Christine S. Lehnertz
Regional Director, Pacific West Region

EXHIBIT

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CAUSE of ACTION
Advocates for Government Accountability
A 501(c)(3) Nonprofit Corporation

October 16, 2012

VIA CERTIFIED MAIL

Margaret O'Dell
Deputy Director, Operations
National Park Service
Office of the Director
Attention: Information Quality Request
1849 C Street, NW, Mail Stop 3115
Washington, D.C. 20240

RE: ADMINISTRATIVE APPEAL OF THE NATIONAL PARK SERVICE'S RESPONSE TO COMPLAINT ABOUT INFORMATION QUALITY L7617 (PWR-NR)

Dear Ms. O'Dell:

Pursuant to Part IV.G of Director's Order #11B,[1] we write to appeal the National Park Service's ("NPS") October 3, 2012, Decision Letter[2] regarding the Complaint About Information Quality L7617 (PWR-NR) ("Complaint") that was submitted on behalf of Kevin and Nancy Lunny (collectively "Lunnys") and Dr. Corey Goodman on August 7, 2012. The Complaint challenges information NPS disseminated in the *Draft Environmental Impact Statement: Drakes Bay Oyster Company Special Use Permit* ("DEIS") and the March 2012 *Atkins North America, Final Report on Peer Review of the Science Used in the National Park Service's Draft Environmental Impact Statement: Drakes Bay Oyster Company Special Use Permit* ("Atkins Report"). For the reasons stated below and in the Complaint, which is incorporated by reference as if fully set forth herein and attached as Exhibit B,[3] we respectfully urge you to adopt the proposed corrections to the DEIS and Atkins Report set forth in the Complaint. We also urge you, per Part IV.G of Director's Order #11B, to require the withdrawal of the DEIS and Atkins

[1] Director's Order #11B: Ensuring Quality of Information Disseminated by the National Park Service (2002) [hereinafter Director's Order #11B].

[2] *See* Letter from Christine S. Lehnertz, Regional Director, Pacific West Region, National Park Service, to Amber D. Abbasi, L7617 (PWR-NR) (October 3, 2012) (attached as Exhibit A) [hereinafter "Decision Letter"].

[3] In the interest of brevity, this Appeal Letter solely responds to NPS's October 3, 2012, Decision Letter and does not address the merits of the Complaint's proposed corrections to information NPS disseminated via the DEIS and Atkins Report. We ask that you meaningfully review and consider both the Appeal Letter, which supplements the Complaint, and the Complaint itself (Exhibit B) before making a determination as to the merits of the proposed corrections to the DEIS and Atkins Report.

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Washington, DC 20037-1233
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Ph: 202.507.5880

Report from the public domain and prohibit their use in any agency decisionmaking process until they are corrected to comply with minimum applicable information-quality standards.[4]

1. Background

By way of background,[5] the Lunnys own Drakes Bay Oyster Company ("DBOC"), an environmentally responsible, sustainable oyster farm employing about thirty (30) full-time workers. DBOC is located in Drakes Estero, California, which is part of the Point Reyes National Seashore. The Lunnys hold a renewable Reservation of Use and Occupancy ("RUO") and renewable Special Use Permit (SUP) that allow them to farm oysters in the Point Reyes National Sea Shore. DBOC's RUO and SUP will expire on November 30, 2012. However, DBOC will be able to continue operating if the Secretary of the Interior, Ken Salazar, grants the Lunnys an additional ten-year SUP.[6] The publications that are the subject of the Complaint, the DEIS and Atkins Report, were produced for the specific purpose of enabling the Secretary to make an informed, reasoned decision on whether to grant the Lunnys and DBOC another ten-year SUP. Because the challenged information at issue in the Complaint strongly militates toward the conclusion that DBOC should not be issued another ten-year SUP, which would force the Lunnys to close their family business and lay off their employees, it is particularly important to not only the Lunnys but also numerous families whose primary source of income is the jobs that DBOC provides that you address the merits of the Complaint with alacrity.

As NPS's October 3, 2012, Decision Letter acknowledges, the DEIS and Atkins Report were prepared pursuant to and use the procedures required by the National Environmental Policy Act ("NEPA").[7] Under Part IV.E of Director's Order #11B, complaints about information quality regarding "analyses conducted under ... NEPA ... will be considered prior to the final ... information product"—here, the Final Environmental Impact Statement ("Final EIS")—if "an early response would not unduly delay issuance of the ... information, and the complainant has shown a reasonable likelihood of suffering actual harm" from the information unless NPS "resolve[s] the complaint" before the final information product is disseminated. Given the substantial risk that, if the DEIS and Atkins Report are not timely corrected, the Lunnys, DBOC, and its employees will suffer severe and irreparable harm, we ask that you give expedited review

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[4] *See* Director's Order #11B, pt. IV.G. ("If th[e deciding] ... official determines that an appeal of a determination of merit or the proposed correction of information has merit, the affected program office or park will be... withdrawn ... from the public domain and will not be used in any Departmental, bureau, or office-decision-making process until it is corrected.").

[5] For a more detailed discussion of the circumstances leading the Lunnys and Dr. Goodman to submit the Complaint, see Exhibit A at i-ii, 1-7.

[6] *See* Department of the Interior, Environment, and Related Agencies Appropriations Act of 2010, Pub. L. No. 111-88, § 124, 123 Stat. 2904, 2932 (2009) ("Prior to the expiration on November 30, 2012, of the Drake's Bay Oyster Company's Reservation of Use and Occupancy and associated special use permit ... within Drakes Estero at Point Reyes National Seashore, notwithstanding any other provision of law, the Secretary of the Interior is authorized to issue a special use permit with the same terms and conditions as the existing authorization ... for a period of 10 years ....").

[7] *See* Decision Letter at 1.

to this Administrative Appeal and independently evaluate the merits of the Complaint and adopt its proposed corrections in the Final EIS.[8]

2. NPS's Decision Letter Responding to the Complaint is Insufficient to Satisfy NPS's Information-Quality Obligations.

2.1 NPS is Statutorily Obligated to Consider Information Quality Act Complaints that Comply with Director's Order #11B's Procedural Requirements.

As an initial matter, contrary to the Decision Letter's claim that NPS "has considered … [the] Complaint as a matter of discretion," it is statutorily obligated to do so, as the Complaint was submitted in accordance with the procedures prescribed by Director's Order #11B. Under the Information Quality Act ("IQA"),[9] as supplemented by mandatory Office of Management and Budget Guidelines ("OMB Guidelines"),[10] federal agencies, such as NPS, are required to "issue guidelines ensuring and maximizing the quality, objectivity, utility, and integrity of information (including statistical information) disseminated by the agency … [and] establish administrative mechanisms allowing affected persons to seek and obtain correction of information maintained and disseminated by the agency that does not comply with th[ose] guidelines …."[11] As Director's Order #11B expressly acknowledges, OMB "guidelines require … that administrative mechanisms be established to allow affected persons to seek and obtain correction of information … when that information does not comply with [information-quality] guidelines …."[12] And as Director's Order #11B explains, "[t]he purpose of this Director's Order is to establish … NPS guidelines to comply with these requirements."[13]

Consideration of IQA complaints is not a matter of grace left to individual agencies' untrammeled discretion but rather a responsibility and duty that Congress wisely chose to impose on federal agencies in an effort to ensure that the information disseminated by those agencies meets basic minimum standards for information quality, such as those prescribed by Director's Order #11B. Information NPS develops must be based on "reliable data sources…[that] will ensure information quality";[14] "based on accepted practices and policies";[15] transparent;[16]

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[8] Because the DEIS was so inadequate as to preclude meaningful analysis by the public, thereby violating NEPA's implementing regulations, *see* 40 C.F.R. § 1502.9(a), to comply with its NEPA obligations NPS is required to not only revise the DEIS and implement the Complaint's meritorious proposed corrections but re-circulate it and seek public comment on the Revised DEIS.

[9] Treasury and General Government Appropriations Act for the Fiscal Year 2001, Pub. L. No. 106-554, § 515 (2001) (codified at 44 U.S.C. § 3516 Note).

[10] Office of Management and Budget, Guidelines for Ensuring and Maximizing the Quality, Objectivity, Utility, and Integrity of Information Disseminated by Federal Agencies, Final Guidelines, With Request for Public Comment 66 Fed. Reg. 49,718 (Sept. 28, 2001).

[11] 44 U.S.C. § 3516(b)(2)(A)-(B) Note.

[12] Director's Order #11B, pt. I.

[13] *Id.*

[14] *Id.*, pt. III.A.

[15] *Id.*

"accurate, timely, and reflect the most current information available";[17] documented;[18] and objective and unbiased.[19] Dissemination of inaccurate, nontransparent, and misleading information by federal agencies has the potential to cause serious, real-world injuries to individuals like the Lunnys and Dr. Goodman. Congress intended that the IQA and guidelines promulgated pursuant to it would provide a mechanism for individuals and entities that are adversely affected by this sort of "information" to obtain redress.

Director's Order #11B is mandatory and binding on NPS personnel, as 43 C.F.R. § 20.502 makes abundantly clear: "Employees are required to carry out the announced policies and programs of the Department and to obey proper requests and directions or supervisors." As NPS's 2006 Management Policies elucidate: "Service-wide policy is articulated by the Director of the National Park Service. NPS employees must follow these policies unless specifically waived or modified in writing by the Secretary, the Assistant Secretary, or the Director."[20] NPS has an obligation to adhere to the procedures and standards for information quality established by Director's Order #11B.

2.2 Because the Complaint was Timely Filed Under Director's Order #11B, NPS is Required to Adopt the Complaint's Meritorious Proposed Corrections in the Final EIS.

Contrary to the Decision Letter's bald assertion that because the Complaint "was ... submitted after the close of the official DEIS public comment period ... [it] was untimely,"[21] Director's Order #11B does not require that a complaint about information quality regarding information disseminated in a draft environmental impact statement must be submitted within the public comment period—quite the opposite. Under Part IV.E of Director's Order #11B, the *only* timing requirement for information-quality complaints submitted in connection with structured reviews is limited to circumstances where the complaint "pertains to a final document":

> In cases where a request [for correction of information submitted pursuant to Director's Order #11B] *pertains to a final document*, the NPS will first determine whether the request pertains to an issue discussed in the draft document upon which the requester could have commented. If the NPS determines that the requester had the opportunity to comment on the issue at the draft stage and failed to do so, it may consider the request to have no merit.[22]

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[16] *See id.*
[17] *Id.*, pt. III.B.
[18] *Id.*
[19] *See id.*, pt. VI.C.
[20] National Park Service, Management Policies 2006, 4 *available at* http://www.nps.gov/policy/MP2006.pdf (last visited October 9, 2012) [hereinafter Management Policies 2006].
[21] Decision Letter at 1.
[22] Director's Order #11B, pt. IV.E (emphasis added).

Part IV.E of Director's Order #11B contains no other timing requirements for information-quality complaints submitted in connection with structured NEPA reviews. And the Decision Letter fails to cite any language from Director's Order #11B indicating that the Complaint was untimely under Part IV.E of Director's Order #11B. Because Director's Order #11B does not contain timing requirements for information-quality complaints submitted in connection with structured reviews prior to the release of the final document, logic and common sense dictate that there are none. Where, as here, a Director's Order comprehensively describes all of the timing requirements for submitting complaints about information quality, there is no basis for reading additional "implied" timing requirements into that Order that are not supported by its text or structure.[23]

The Complaint was submitted on August 7, 2012. As the Decision Letter acknowledges, the Final EIS has not been released.[24] Therefore, the Complaint was timely submitted, as required by Director's Order #11B. Because the Complaint was timely submitted in accordance with Part IV.E of Director's Order #11B, the Complaint's meritorious proposed corrections must be adopted in the Final EIS.[25]

2.3 The Atkins Report is Subject to and Must Comply with Director's Order #11B and Other Binding Sources of Minimum Information-Quality Standards.

According to the Decision Letter, "the Atkins Report serves a primarily internal function and is not being separately 'disseminated' to the public in a manner subject to the IQA or Director's Order 11B."[26] In other words, the Decision Letter claims that the Atkins Report is not subject to the IQA, Director's Order #11B, and other sources of binding minimum information-quality standards because it was not "disseminated" within the meaning of Director's Order #11B.[27] But that claim is belied by Director's Order #11B's definition of the term "[d]issemination," which broadly "means NPS initiated or sponsored distribution of information

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[23] As the Supreme Court has explained, "The logic that invests the omission with significance is familiar: the mention of some implies the exclusion of others not mentioned." *United Dominion Indus. v. United States*, 532 U.S. 822, 836 (2001).

[24] *See* Decision Letter at 2.

[25] *See* Director's Order #11B, pt. IV.E (if an information-quality complaint concerning a draft document associated with a structured review is submitted prior to release of the final document, NPS's "response will be included in the final document"). As explained in greater detail below, because NPS took great pains to conceal the inaccuracies and deliberate misrepresentations in the DEIS, Dr. Goodman did not discover the extent to which the conclusions in the DEIS were supported by false and deliberately misleading information until well after the initial public comment period had closed. (The DEIS was made publicly available on September 21, 2011; the public comment period closed on December 9, 2011.)

[26] Decision Letter at 1.

[27] Under Director's Order #11B, only "information" that is "disseminated" by NPS to the public" or "utilized by the NPS" is subject to its information-quality guidelines. *See* Director's Order #11B, pt. III. The Decision Letter—correctly—does not question that the Atkins Report constitutes information subject to Director's Order #11B and other binding minimum information-quality standards.

to the public."[28] As the Decision Letter concedes, the Atkins Report has been "provided to the public ...."[29] In fact, the Atkins Report has been—and continues to be—publicly available on the U.S. Department of Interior's ("DOI") website (NPS is an agency of the DOI).[30] Thus, the Atkins Report has been "disseminated" according to NPS's own definition of that term.

Part VI.F of Director's Order #11B does limit the scope of the general definition of "dissemination," explaining that "[d]issemination does not include distribution *limited to* [i.e., exclusively to] government employees or NPS contractors or grantees; intra- or inter-agency use or sharing of government information; and responses to requests for agency records ...."[31] But here, distribution was not limited to government employees or contractors, partners, or grantees, or to intra- or inter-agency use or sharing: DOI made the Atkins Report publicly available on its website so that anyone with Internet access could view it at any time. And the Atkins Report was not publicly released in response to a request for agency records. Part VI.F of Director's Order #11B also excludes "distribution limited to correspondence with individuals or persons, press releases, archival records, public filings, subpoenas or adjudicative processes" from the definition of "dissemination." But the Atkins Report is not correspondence; it is not a press release; it is not an archival record; it is not a public filing; it is not a subpoena; and it is not related to any adjudicative process. Although the Decision Letter suggests otherwise—and even assuming that the Atkins Report "serves a primarily internal function," which we dispute—Part VI.F of Director's Order #11B does not contain an exception for information contained in documents that "serve[] a primarily internal function" that are "provided to the public solely in order to disclose ... [their] role in informing the EIS."[32] As explained in Part 2.2 of this Appeal Letter, because Part VI.F of Director's Order #11B comprehensively lists all of the exceptions to the general definition of "dissemination" and conspicuously omits mention of any "primarily internal function" exception, it is readily apparent that Director's Order #11B does not contain such an exception. The Decision Letter appears to have contrived this exception without any textual basis or source of authority for doing so.

Therefore, because the Atkins Report has been "disseminated," within the meaning of Part VI.F of Director's Order #11B, and no exception applies, the Atkins Report is subject to the same information-quality standards as the DEIS.

2.4 Under Director's Order #11B, NPS is Obligated to Address the Merits of All Issues Raised in the Complaint, Irrespective of Whether Those Issues Were Also Raised in Public Comments and the Supplemental National Academy of Science Review of the DEIS.

The Decision Letter implies that, although NPS has discretion to address the merits of the Complaint's proposed corrections in the Final EIS, it is only obligated to consider earlier public

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[28] Director's Order #11B, pt. VI.F.
[29] Decision Letter at 1.
[30] *See* Atkins Report, (March 2012), *available at* http://www.doi.gov/news/pressreleases/loader.cfm?csModule=security/getfile&pageid=284844.
[31] Director's Order #11B, pt. VI.F (emphasis added).
[32] Decision Letter at 1.

comments and the *Scientific Review of the Draft Environmental Impact Statement, Drakes Bay Oyster Company Special Use Permit* ("Scientific Review Report")[33] that the National Academy of Sciences ("NAS") published on September 27, 2012. But the IQA and Director's Order #11B demand much more than this. Again, as explained above, under the IQA and Director's Order #11B, NPS does not have "discretion" to adhere to its information-quality obligations and address the merits of properly submitted information-quality complaints such as the Complaint at issue here—it is required to do so.

Further, although there is some limited overlap between issues raised in public comments and the Scientific Review Report, the Complaint raises issues and requests specific corrections of information disseminated in the DEIS and Atkins Report that are outside the scope of the issues raised and corrections proposed by public comments and the Scientific Review Report. Although both the Scientific Review Report and the Complaint address at some level the DEIS's Impact Levels for Soundscape, Harbor Seals, and Birds and Bird Habitat, the Scientific Review Report—which supports the conclusions and corrections advocated in the Complaint—does not address those Impact Levels with the same level of specificity as the Complaint. For example, the Scientific Review Report concludes that there is a "High" level of uncertainty about the accuracy of the DEIS's claim that DBOC causes a major long-term adverse impact on Drakes Estero's Soundscape, noting that "[b]ased on the data presented in the DEIS, impacts could be moderate to minor"; there is a "High" level of uncertainty about the accuracy of the DEIS's claim that DBOC causes a moderate long-term adverse impact on Drakes Estero's harbor seal colony, determining that DBOC activities may only have a "minor impact" on the seals; and that there is a "Moderate" level of uncertainty about the accuracy of the DEIS's claim that DBOC causes a moderate long-term adverse impact on Drakes Estero's bird population, stating that DBOC's "[i]mpact may be minor ...."[34] And, the Scientific Review Report does broadly highlight some of information-quality deficiencies that plague the DEIS and Atkins Report.[35] But the Scientific Review Report could not and does not propose specific corrections to that information and does not address those issues in as much detail as the Complaint. And unlike the Complaint, the Scientific Review Report does not address the DEIS's Wilderness and Visitor Experience Analysis, which NAS determined was too subjective for meaningful scientific review. Likewise, the public comments do not address the information-quality issues related to the Atkins Report.

The Decision Letter states that resolution of the question whether Dr. Goodman is an "'affected person' under the IQA ... [will] not affect the ultimate disposition of ... [the] Complaint, because the other complainants [i.e., the Lunnys] qualify as 'affected persons.'"[36] For purposes of this Appeal Letter, we take this statement at face value and will therefore not address the merits of this claim. Nevertheless, we dispute the assertion that Dr. Goodman does not qualify as an "affected person" for the reasons outlined in the Complaint and reserve the right to

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[33] The Scientific Review Report is attached as Exhibit C.

[34] Scientific Review Report at 5.

[35] *See, e.g., id.* (noting "lack of direct measurements of sound levels related to DBOC operations" in the DEIS); *cf.* Complaint at 15-19 (discussing NPS's failure to take on-site measurements of DBOC noise-generating activities).

[36] Decision Letter at 2.

address the merits of this assertion at a later time, in the event that litigation is required to resolve this matter.

3. Conclusion

The Complaint is the *third* information-quality complaint that NPS and DOI have received requesting correction of information NPS has disseminated concerning DBOC and Drakes Estero in about five years. NPS has not addressed the merits of any of those complaints—and did not even bother to respond at all to one of them.[37] Yet the subject of the first two complaints—an NPS report entitled "Drakes Estero: A Sheltered Wilderness Estuary"—was the object of a DOI Office of Inspector General Investigative Report that expressly concluded that NPS had "misrepresented research" in that document.[38] To date, NPS has flouted its obligations under the IQA and Director's Order #11B. We urge you to break this pattern and honor NPS's obligations under the IQA and Director's Order #11B, independently review our Complaint, and meaningfully consider the merits of its proposed corrections.

Thank you for your attention in this matter. All communications regarding this Appeal Letter and the Complaint should be directed to the Lunnys' and Dr. Goodman's attorney in this matter, Amber D. Abbasi, Chief Counsel for Regulatory Affairs, Cause of Action, 2100 M Street, N.W., Suite 170-247, Washington, D.C. 20037, Phone: (202) 507.5880, Fax: (202) 507.5881, E-mail: amber.abbasi@causeofaction.org. Please do not hesitate to contact me if you have any questions or concerns about this Appeal Letter. We look forward to timely correction of the inaccurate, nontransparent, and misleading information within the scope of the Complaint.

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[37] *See* Letter from Robert Plotkin to Earl E. Devaney, Inspector General, U.S. Dep't of Interior (July 19, 2007) (information-quality complaint requesting correction of "Drakes Estero: A Sheltered Wilderness Estuary") (attached as Exhibit D). *Compare* Letter from Samuel W. Plauché to NPS Correspondence Control Unit Officer (August 23, 2007), *available at* http://www.nps.gov/policy/Plaucheltr.pdf (last visited October 11, 2012) (information-quality complaint requesting correction of "Drakes Estero: A Sheltered Wilderness Estuary"), *with* Letter from Jonathan B. Jarvis, Regional Director, Pacific West Region, National Park Service, to Samuel W. Plauché (October 23, 2007), *available at* http://www.nps.gov/policy/infoqualcorrect.htm (last visited October 11, 2012) ("NPS finds that the concerns in your IQA complaint are moot and no further correction is warranted").

[38] *See* DOI OFFICE OF INSPECTOR GENERAL, REPORT OF INVESTIGATION—POINT REYES NATIONAL SEASHORE, Case No. OI-CA-07-0297-1, at 2 (July 21, 2008) (concluding that NPS employees "misrepresented research" in initial versions of a 2007 report regarding DBOC's oyster farm) (attached to the Complaint as Exhibit 1).

Sincerely,

Amber D. Abbasi
Cause of Action
2100 M Street, N.W., Suite 170-247
Washington, D.C. 20037
Phone: 202.507.5880
Fax: 202.507.5881
E-mail: amber.abbasi@causeofaction.org

EXHIBIT

51

United States Department of the Interior

NATIONAL PARK SERVICE
1849 C Street, N.W.
Washington, D.C. 20240

IN REPLY REFER TO:

DEC 21 2012

Ms. Amber D. Abbasi
Cause of Action
2100 M Street NW, Suite 170-247
Washington D.C. 20037

Dear Ms. Abbasi:

This letter responds to your appeal of the October 3, 2012, decision by the National Park Service (NPS) regarding the information quality complaint that you submitted on behalf of Kevin and Nancy Lunny and Dr. Corey Goodman. Your appeal letter is dated October 16, 2012, and NPS received it on October 22, 2012. As an initial matter, we note that prior to this response and prior to the conclusion of the sixty-day period for NPS to respond, you filed a lawsuit that includes a claim on this matter. Although it appears you believe that a response to your appeal is no longer necessary, we believe it is nevertheless appropriate to respond.

We note that your information quality complaint appears to have been mooted by the Secretary of the Interior's November 29, 2012, memorandum, which announced his decision to allow the Drakes Bay Oyster Company's authorizations to expire by their own terms. That memorandum stated that the decision was "based on matters of law and policy," that the documents challenged in your complaint "are not material to the legal and policy factors that provide the central basis" for the decision, and that the decision was "based on the incompatibility of commercial activities in wilderness and not on the data that was asserted to be flawed."

Accordingly, the information challenged in your complaint has not been used and will not be used in a decision-making process, particularly now that the authority provided by section 124 of Public Law 111-88 has lapsed. An environmental impact statement (EIS) is a public disclosure document and cannot simply be withdrawn from the public domain, so there does not appear to be any further relief left for NPS to grant under section IV(G) of Director's Order 11B.

Regardless, we do not believe you have identified any errors in the Regional Director's October 3, 2012, decision denying your initial complaint or identified any new issues. As an initial matter, your appeal does not discuss, much less respond to, the threshold question of section 124 and its "notwithstanding any other provision of law" clause. The appeal's generic arguments that the consideration of IQA complaints is not "a matter of grace" are not relevant here. As explained in the October 3 response, the Information Quality Act is an "other provision of law" and the Secretary was not bound by it when exercising his discretion under section 124.

Similarly, your appeal fails to explain your complaint's failure to comply with the timing requirements of Director's Order 11B. As discussed in the response, section IV(E) of Director's

Order 11B provides that information quality complaints related to draft documents "will generally be treated as a comment on the draft document." Comments are not excused from compliance with applicable time periods simply because they are submitted as information quality complaints. Moreover, even if your interpretation of that language were correct, neither your complaint nor your appeal address the requirements of the following paragraph, which provides that an IQA complaint will not be considered prior to a final action where it would "unduly delay issuance of the agency action." Clearly a seventy-page complaint submitted eight months after the close of the comment period does not meet this requirement, nor could the National Environmental Policy Act process function properly if agencies were compelled to accept such complaints. This is further confirmed by the language cited in your appeal (at page 4), which confirms that if an information quality complaint is received late in the process, when it could have been submitted as a timely comment, then it is to be considered "to have no merit."

Further, we believe we have addressed in the final EIS the concerns that you raised in your initial complaint. In response to the body of public comments, we consulted additional articles from the scientific literature, conducted additional analyses, and used additional information provided to us as part of the public comment process to address questions and concerns of fact. We left the analysis of wilderness intensity largely as presented in the draft EIS because these intensity determinations are matters of policy and interpretation, not scientific fact.

We used the Atkins Report as a peer review report that called our attention to scientific concerns identified by the report's authors in the draft EIS. We similarly used the National Research Council report as a peer report that raised scientific concerns. We did not cite the Atkins Report as an independent source of scientific facts or information. As stated in the October 3, 2012, response, the Atkins report is an independent assessment of the quality of the science in the EIS, and is neither "information" nor "disseminated" under Director's Order 11B and the Information Quality Act.

In conclusion, we find that your appeal presents neither a basis to conclude that the October 3, 2012, decision was in error nor any new information. Accordingly, your appeal is denied.

Sincerely,

Jonathan B. Jarvis
Director

EXHIBIT

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ECSGA
1623 Whitesville Rd.
Toms River, NJ 08755
www.ECSGA.org

Kevin Lunny
Drakes Bay Oyster Company
17171 Sir Francis Drake Blvd
Inverness, CA 94937
January 7, 2013

Dear Kevin,

The Board of the ECSGA continues to be quite upset about the whole Drakes Bay - National Park Service fiasco. We offer our condolences to you, your family and your employees. I never dreamed it would be possible for government employees in this country to propagate such misleading and fraudulent information on such an epic scale without being held accountable. It is unconscionable that our attempts to correct the record and ensure that accurate science, appropriate statistics and rational thought have all been pushed aside by those who view the creation of a wilderness as an end that apparently justifies any means.

The National Park Service Environmental Impact Statement is full of falsehoods and inaccuracies. We would like to do everything in our power to get the EIS retracted or amended to reflect reality.

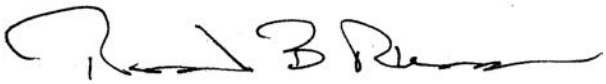
The NPS documents have already done great harm, and we can be certain that if they are not retracted or corrected they will continue to be used against the shellfish aquaculture industry at public hearings for years to come, both in this country and around the world. I personally know of two cases where the issues raised in the DEIS have already been used to quash oyster lease applications: one in Alabama and one in South Carolina. In both cases regulators referred to threats of damage by the introduced invasive species of tunicate, *Didemnum*. I find this particularly disturbing because I spent quite a bit of effort refuting this particular element of the DEIS and provided extensive written comments rebutting the NPS assertions that oyster aquaculture was responsible for this introduction and that oyster farming activities contribute to the spread and persistence of this species. Apparently these comments were ignored by the NPS as these assertions are repeated in the final EIS.

As you know, the EIS is rife with misleading and false statements of environmental impacts associated with shellfish culture. My greatest fear is that I will be spending the rest of my life refuting these claims as more opponents of shellfish aquaculture discover that the government scientists have given credence to these false claims of detrimental impacts.

I had the honor of being asked to present a paper at the World Oyster Congress in Arcahon France a few weeks ago. I was discussing your case with growers from Australia and New Zealand and they were quite concerned that the false claims of marine mammal impacts would be used to thwart leases in their countries as well. When government scientists make these assertions of impact, these claims seem to carry more weight than when they are made by an NGO or university researcher. They encouraged me to spare no effort in ensuring that these false claims were rectified.

I welcome your thoughts on what we can do to try to convince Secretary Salazar to retract or correct the EIS. These falsehoods cannot be allowed to remain in the literature. This is not the way our government is supposed to work! Scientific integrity and fact should win out over deceit and fraud.

Sincerely,



Robert B. Rheault, Ph.D.
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EXHIBIT

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Drakes Bay closure could increase oyster prices

By Mark Prado, The Marin Independent Journal
Posted: 02/19/2013 08:30:00 AM PST
Updated: 02/19/2013 08:30:02 AM PST

The Drakes Bay Oysters Co. is making its final legal bid to stay open and there is fear if it fails oyster prices will rise and the bivalve business in the region won't be the same.

Drakes Bay Oysters Co. owner Kevin Lunny is nearing the end of his legal rope. As expected, U.S. District Judge Yvonne Gonzalez Rogers last week rejected an appeal of her previous ruling dismissing a preliminary injunction request to halt the federally-ordered closure.

The U.S. Ninth Circuit Court of Appeals will now take up the appeal. It will receive arguments from the government Tuesday on why Drakes Bay should close and Lunny's team will likely respond Thursday, then it will be up to the court to decide the fate of the oyster farm.

If it does not grant the injunction, Drakes Bay will have to close operations by March 15, a move many believe will lead to higher oyster prices in the region.

Lunny has said his operation accounts for up to 40 percent of the commercial oyster production in the state.

"It will be tough," said Douglas Bernstein, executive chef at Fish in Sausalito, which procures three different types of oysters from Drakes Bay. "It is the larger shucked oysters that they provide that will be hard to replace."

Those may have to come from Washington state and with higher costs.

"We are talking about getting oysters in 45 minutes from Drakes Bay versus 14 hours," Bernstein said. "And it costs more to get them sent here and you have an impact on the environment because of the transportation needed. You also are talking about the quality of the product. From Drakes Bay you get them as soon as they are out of the water. There are a lot of impacts to this."

Eventually the added costs will be passed on to oyster consumers, but not right away, Bernstein said.

"I think a lot restaurants will have to eat the costs initially," he said.

The Station House Cafe in Point Reyes Station offers a variety of oyster dishes from stew to shooters. About 40 percent of its oysters come from Drakes Bay.

"We are definitely looking ahead on this, we get a lot of oysters from them," said Wayne Pratt, executive chef, who has noticed some prices for oysters already inching up. "We will have no choice but to pass along the costs, but we don't want it to get to a point where it becomes a delicacy that no one can afford."

If Drakes Bay closes, that doesn't necessarily mean a financial boon for other local producers.

"We are already maxed out as far as our business demand," said Martin Seiler, manager of the Tomales Bay Oyster Co. in Marshall. "With one less operation it will be harder for tourists out here who enjoy buying oysters on site. We are already busy and it will just get more crowded if Drakes Bay closes."

The closure order came on Nov. 29 of last year when Interior Secretary Ken Salazar announced he would allow a 40-year lease - originally negotiated with the Johnson Oyster Co. in 1972 and taken on by Drakes Bay - to expire.

Oyster producers in the Northwest that seemingly would stand to gain from a closure of Drakes Bay by producing more said that is not necessarily the case.

"No doubt the closure of Drakes Bay would have a huge impact down there," said Margaret Pilaro Barrette, executive director of the Pacific Coast Shellfish Growers Association, which represents oyster operations in Washington, Oregon and Alaska. "But there is already a shortage of oysters on the West Coast and the demand is growing domestically and internationally."

Barrette does expect prices to rise with demand.

"And to take these oysters to other places means there are transportation costs, and those get passed on," she said.

Contact Mark Prado via email at mprado@marinij.com

EXHIBIT

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FOR IMMEDIATE RELEASE

DECEMBER 3, 2012

CONTACT:

Mary Beth Hutchins or Briton Bennett

202-499-4232

DRAKES BAY OYSTER COMPANY PROMISES TO FIGHT NATIONAL PARK SERVICE DECISION

"We are …fighting…against a federal government that seems to value lies over the truth and special interests over the welfare of a community," – Kevin Lunny, owner, DBOC

MARIN COUNTY, CA – Drakes Bay Oyster Company (DBOC) Owner Kevin Lunny announces today a continued effort to fight for his family's business that was shut down by the National Park Service on November 30. Retaining the help of government accountability group Cause of Action as well as Stoel Rives LLP, DBOC released the following statement today from Kevin Lunny:

"We have been a dedicated small family farm for four generations in the West Marin community and when we purchased Drakes Bay Oyster Company seven years ago, we saw an opportunity to revive a part of our community that would provide local jobs, sustainable products for local businesses, and a positive long-term impact on the Bay itself.

The National Park Service has not just shut down our business, but has misrepresented the law, our contracts with the State of California, and the results of scientific studies.

Our family business is not going to sit back and let the government steam roll our community, which has been incredibly supportive of us. We are exploring possible responses to the National Park Service and will be taking legal action against them soon. We are not walking away, instead we are fighting for our community, our employees, and our family against a federal government that seems to value lies over the truth and special interests over the welfare of a community."

Cause of Action's Executive Director Dan Epstein explained why his organization is dedicated to this fight:

"Cause of Action fights federal agencies every day that are abusing their power, ignoring law and procedure, and wasting taxpayer dollars. We aim to hold the National Park Service accountable for their treatment of the Lunny family and the Drakes Bay Oyster Company as we view their actions as a disregard for law and precedent that demands accountability. We are working with the Lunny family on the best legal strategies moving forward."

About Cause of Action:

Cause of Action is a nonprofit, nonpartisan organization that uses investigative, legal, and communications tools to educate the public on how government accountability and transparency protects taxpayer interests and economic opportunity. For more information, visit www.causeofaction.org.

EXHIBIT

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April 27, 2009

To: Secretary Ken Salazar, Department of Interior

From: Dr. Corey Goodman, member, National Academy of Sciences

RE: **Jon Jarvis' Record of Scientific Misconduct is Inconsistent With President Obama's Policy on Scientific Integrity, and Thus Jarvis Should Not be Nominated as the Next Director of the NPS**

Dear Secretary Salazar,

As an elected member of the National Academy of Sciences (NAS), I listened this morning to President Obama as he spoke to my colleagues at our annual meeting. He sent a powerful message about the integrity of science. The President said:

> *"And we have watched as scientific integrity has been undermined and scientific research politicized in an effort to advance predetermined ideological agendas. I know that our country is better than this."*
>
> *"… we are restoring science to its rightful place."*
>
> *"… the days of science taking a back seat to ideology are over. Our progress as a nation – and our values as a nation – are rooted in free and open inquiry. To undermine scientific integrity is to undermine our democracy."*
>
> *"I want to be sure that facts are driving scientific decisions – and not the other way around."*

Policy, he told us, would be driven by good science, not false science being driven by predetermined agendas. The country's top scientists gave him a loud ovation.

Yet if what I read in the April 16 issue of the Park Service Traveler is correct, then you Mr. Secretary may be about to embark on a decision that is inconsistent with these principles of scientific integrity – principles that I have no doubt you share. It was reported that you have settled on your choice for the next Director of the National Park Service (NPS): Regional Director Jon Jarvis. The author went on to write: *"If the nomination is made, and Mr. Jarvis is confirmed, he will bring with him not only a solid Park Service resume to Washington, D.C., but one heavily involved in science."*

I strongly encourage you to reject Jon Jarvis as a candidate for Director, NPS. Jon Jarvis has indeed been *"heavily involved in science"* – but unfortunately in his case it has been in the misuse and abuse of science. Jarvis repeatedly violated the NPS Code of Scientific Conduct (January 2008); sanctioned, defended, and promoted false science to the National Academy of Sciences (NAS); and fully participated in the misrepresentation of science that violated the Federal Policy of Scientific Misconduct established by the White House Office of Science and Technology Policy (Federal Register, December 2000).

If you join me in supporting, as I firmly believe you do, President Obama's March 9 Policy on Scientific Integrity, then Jarvis must be rejected as a candidate. Jarvis is a repeat offender – he has a pattern of flagrantly ignoring the NPS Code of Scientific Conduct and the OSTP Federal Policy on Scientific Misconduct. His track record is not consistent with the standard of integrity and transparency set by President Obama, and supported by you. There are basic tenets that the President, you, and I

share – the sanctity of data, the integrity of science, and the use of good science – *not false science* – in making public policy decisions. After eight years in which these values were trammeled, it is energizing to the scientific community to see the stand taken by the President. A Jarvis appointment would run counter to those tenets.

In addition to being an elected member of the National Academy of Sciences, I am a life-long scientist and professor (Stanford, UC Berkeley, UCSF), a West Marin resident, and an ardent supporter of the integrity of science. Over the past several decades, I participated in public service at the interface of science and public policy. I served on, and for six years chaired, the Board of Life Sciences (BLS) of the National Research Council (NAS) and today serve on the California Council for Science and Technology.

In April 2007, I received a request from a member of the Marin County Board of Supervisors to evaluate some provocative scientific claims emanating from the NPS (specifically Pt. Reyes National Seashore Superintendent Don Neubacher and his staff) against a local organic rancher, environmental icon, and the owner of an oyster farm in Drakes Estero (Kevin Lunny, owner of Drakes Bay Oyster Company). At the time, I did not know Kevin Lunny. Rather, my agenda was then and is now the truth – scientific integrity. Some members of our West Marin community, including some County Supervisors, were suspicious of the scientific claims levied against Lunny by the NPS, claims that branded him as an environmental criminal, claims that NPS scientific data showed that his oyster farm caused grave environmental harm to the estero. The Supervisors asked me to evaluate the science.

In the two weeks leading up to Marin County May 8, 2007 hearing, I read the scientific literature, and was shocked and deeply disturbed by what was discovered. I became alarmed because the NPS allegations misquoted their own scientific studies. Simply said, I discovered a stunning case of the misuse of science. The scientific record was clear: there was simply no evidence to support the NPS claims that Lunny's oyster farm was harming the eelgrass, the harbor seals, the fish, or increasing the sediments in Drakes Estero.

On May 8, 2007, I testified to the Marin County Board of Supervisors and said:

> *"I believe that public policy decisions can and should be informed by quality science. But this must be science conducted rigorously, without agendas or conflicts-of-interest. The political process can be dangerously misled by bad or misused science. One of my greatest concerns when I see science being invoked in public policy debates is to make sure that it is good science and not pseudo-science or -- even worse -- a blatant misuse of science."*

I went on to testify:

> *"The scientific data suggest that the four major claims made by the PRNS and its scientist Sarah Allen concerning the purported negative impact of Lunny's oyster farm on the ecology of Drake's Estero are incorrect. Most troubling is that the evidence refuting these claims comes largely from their own published data. The scientific record is clear: there is no evidence that Lunny's oyster farm is having a negative impact on the eelgrass, sediment, or harbor seal pups."*

With deep regret, I concluded for the Supervisors that the NPS claims against Drakes Bay Oyster Farm were a blatant misuse of science.

That hearing was in May 2007. My first interaction with Regional Director Jon Jarvis occurred in June 2007 when he inappropriately denied my FOIA requests for data and facts that the NPS publicly referenced at the May 8th hearing and in their May 2007 publications on Drakes Estero. But it was not until August 2007 that I began to fully understand the extent to which Jarvis was directing a cover-up of the scientific misconduct by Neubacher and his staff. At that time, Jarvis began to overturn the July 21, 2007 directive from NPS Director Bomar and Senator Feinstein to work with me (and California Dept. of Fish & Game) to seek an independent review by the National Research Council (NRC) of the allegations of scientific misconduct by the NPS.

Nearly two years later, it is now clear that Jon Jarvis continued to manipulate the presentation and publication of false science in order to cover-up the original scientific misconduct and to confuse the NRC (NAS) panel, the public, and its elected officials. Over these two years, Jarvis directed and participated in a series of misrepresentations intended to obfuscate and mislead the NPS science. Jarvis' misconduct should not be rewarded by nomination as Director of NPS.

Attached to this letter are a series of documents, many of which I have authored. Needless to say, there are more documents, and considerably more facts and data to support my analysis and claims. At the conclusion of this letter, I request a meeting with you to discuss these allegations.

You should know that another elected member of the National Academy of Sciences, Dr. Peter Gleick (MacArthur Fellow, President of the Pacific Institute) has also reviewed much of this data, and come to the same conclusions of false science (e.g., see pages 79 and 80 of #2 below).

When you look into these allegations, you will discover that there was an investigation and report by the Inspector General of the Department of Interior, but the IG explicitly stated that they had no scientists on their staff and thus they did not investigate the allegations of scientific misconduct. There is today an ongoing study by the Ocean Studies Board of the NRC, but they too have explicitly stated that they will not comment on scientific misconduct. Thus, no one has ever investigated the allegations of scientific misconduct by Jarvis and Neubacher.

Here is a brief overview of the attached documents.

(1) **December 18, 2007**: at the request of Executive Director Dr. Susan Roberts of the Ocean Studies Board of the NRC (NAS), a 77-page misconduct and ethics complaint by Dr. Corey Goodman was submitted to the National Research Council, and then separately submitted to NPS Director Bomar, detailing the case (at the time) for scientific misconduct by Jon Jarvis and Don Neubacher. Bomar's assistant wrote back saying that Bomar had instructed Dan Wenk (current Acting Director, NPS) to respond to this ethics complaint. It is now 16 months later, and no further communications were received from the NPS. Much has happened since then in terms of the cover-up of this scientific misconduct and new presentations of false science to the NRC panel, largely directed by Jon Jarvis, and some of it authored by Jon Jarvis (see #3 below).

(2) **September 4, 2008**: an 87-page powerpoint by Dr. Corey Goodman was presented to the panel from the Ocean Studies Board of the National Research Council (National Academy of Sciences) investigating the NPS false science concerning Drakes Estero. This presentation focused on the case for scientific misconduct by the NPS, in particular by Regional Director Jarvis and Superintendent Neubacher.

(3) **October 25, 2008**: Jarvis responded on September 24 to Dr. Goodman's presentation to the NRC panel on September 4; on October 25, Dr. Goodman responded to Jarvis' letter and showed that he misrepresented the facts in the NPS data and the NPS testimony and reports; this report revealed false science authored by Jarvis.

(4) **January 18, 2009**: at the September 4 meeting of the NRC panel, Jarvis allocated a majority of his presentation time to allow NPS Dr. Ben Becker to present new NPS scientific analysis of disturbances of harbor seals by the oyster farm, and the impact on the harbor seal population (even though NPS Director Bomar stated to Senator Feinstein and Kevin Lunny that the NRC study would focus only on existing science and not new science). In this January 18 report by Dr. Goodman, evidence was presented to show that Becker's paper and presentation used fabricated and falsified disturbance data that violated NPS protocols. Becker's statistical analysis was highly flawed. This report focused on a key disturbance record – April 29, 2007 – and showed that the claimed disturbance of harbor seals by oyster workers on that day was physically impossible – the tides were too high, the oyster workers were not working, and the events as reported could not have occurred. This was false science. Records were either falsified or fabricated.

(5) **March 5, 2009**: in the March 5 issue of the Pt. Reyes Light, the local West Marin (Pulitzer prize-winning) newspaper, editor Tess Elliott wrote an article on how the NRC/NAS panel was deliberately ignoring the allegations of scientific misconduct. John Hulls, science writer for the newspaper, wrote an editorial based on the leaked NRC/NAS draft report and reviewers' comments; Hulls revealed that the NRC draft report, while concluding that the NPS use of science was misleading, nevertheless was guided by a November 10, 2008 NRC formal outline that instructed the panel: ***"Sloppy use of data – but forgive the troops."***

(6) **March 26, 2009**: in the March 26 issue of the Pt. Reyes Light, Tess Elliott wrote a strongly-worded editorial entitled *"The point of misconduct"* in which she claimed a *"a large-scale cover up"* and, concerning Jarvis, Neubacher, and scientific misconduct, wrote: *"the Federal Policy on Research Misconduct is a descriptive rather than a prescriptive law. It has been rendered meaningless because no one is enforcing it."* Concerning the NRC instruction to its panel members to *"forgive the troops"*, Elliott quoted me concerning the NRC/NAS: *"We don't have a definition of forgiveness. To forgive implies you have done something wrong."*

(7) **April 20, 2009**: Kevin and Nancy Lunny, owners of Drakes Bay Oyster Company, wrote to the Ocean Studies Board (NRC/NAS) panel and demonstrated how Jon Jarvis had overturned NPS Director Bomar's July 21, 2007 directive and had manipulated the NAS panel into focusing on the wrong questions and ignoring the serious allegations of NPS scientific misconduct.

(8) **April 23, 2009**: in the April 23 issue of the Pt. Reyes Light, science writer John Hulls wrote an editorial showing how Jon Jarvis led *"frantic attempts to steer the* [NRC/NAS] *report"* away from its original intent – namely, the serious allegations of NPS scientific misconduct – to instead focus on a further review

of Drakes Bay Oyster Company. The editorial went on to say that the leaked draft report did not support a single NPS charge levied against Lunny and DBOC. The editorial concluded: *"The Park Service invoked science to brand Lunny as a criminal, yet its own report doesn't back up its claims. The Department of the Interior should make the Park Service apologize and make sure it doesn't happen again."*

Based on the record and these documents, Jon Jarvis should not be nominated to serve as Director, National Park Service. A Jarvis appointment will not serve President Obama or you as Secretary in your mutual quest to elevate the integrity of science as a cornerstone of your administration. Jon Jarvis' track record in matters concerning Drakes Estero in Pt. Reyes National Seashore is inconsistent with the principles and policies of the Obama administration. The preponderance of evidence shows that Jon Jarvis condoned and contributed to the repeated presentation and publication of false science.

Notwithstanding his support by various constituencies, Jarvis' fundamental principles on the use of science – or in his case the misuse and abuse of science – are antithetical to the principles of the Obama administration. His behavior concerning Drakes Estero in the Pt. Reyes National Seashore over the past two years was so egregious as to compel the rejection of his nomination.

Recommendations:

(1) Withdraw the nomination of Jon Jarvis for Director of the National Park Service;

(2) Meet with me to examine the data and facts that support the allegations made in this letter (I will contact your office to set up a time);

(3) Halt the assault by the NPS on Kevin and Nancy Lunny and Drakes Bay Oyster Company;

(4) Direct the NPS to work in harmony with, rather than against, the Pt. Reyes National Seashore and West Marin agricultural community (largely local, natural, organic, and sustainable – the kind of agriculture that the First Lady supports and encourages); and

(5) Respond to the outstanding ethics complaint against Jon Jarvis and Don Neubacher submitted to Director Bomar on December 18, 2007, and include in that investigation the contemporary allegations of scientific misconduct by Jon Jarvis.

Additional information or documentation is available upon request. Thank you.

Sincerely yours,

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EXHIBIT

56

May 10, 2009

To: Secretary Ken Salazar, Department of Interior

From: Dr. Corey Goodman, member, National Academy of Sciences

RE: **In His Own Words: Jon Jarvis vs. the National Academy of Sciences – Two Very Different Descriptions of the NAS Study on NPS Science**

Dear Secretary Salazar,

Two weeks ago, after listening to the President's uplifting speech to the National Academy of Sciences (NAS) in which he presented a powerful message about the importance of scientific integrity, I urged you to reject Regional Director Jon Jarvis as a candidate for Director of the National Park Service (NPS) because his repeated misuse of science was inconsistent with the President's principles. My reasoning was simple: for two years, Jon Jarvis abused and misused science, covered up NPS false science, and orchestrated a whole new generation of his own false science. Jarvis' conduct and that of others below him led to the filing to then NPS Director Bomar in December 2007 of a comprehensive scientific misconduct and ethics complaint against Jarvis, Superintendent Neubacher, and various NPS subordinates. That complaint remains pending today.

A cloud of scientific misconduct hangs over Jarvis' head, a cloud that has gotten darker over the past week with the release of the National Research Council (NRC) report on the NPS misuse of science concerning the oyster farm in Drakes Estero. The NRC report is critical of NPS misrepresentations of science under Jarvis' watch.

Misrepresentation of data is a key element of scientific misconduct as defined by the White House Office of Science and Technology Policy in the Federal Register.

Senator Dianne Feinstein, in her May 5, 2009 letter to you, cited the NAS report when she wrote:

> *… the National Park Service "selectively presented, over-interpreted, or misrepresented the available scientific …"*

The Senator found it *"troubling and unacceptable"* that the NPS had misrepresented the scientific data. In Feinstein's May 5 press release, she urged you to:

> *… carefully review the NAS report and acknowledge the flawed findings of the controversial National Park Service report on the ecological impact of the Drake's Bay Oyster Company, called "Drakes Estero: A Sheltered Wilderness Estuary."*

You and the President would expect one of your top leaders, confronted with a devastating report from the country's most esteemed scientific body, to take full responsibility, acknowledge mistakes, correct errors, take disciplinary action, apologize to the Lunny's, and propose actions to make certain that such misrepresentations of scientific data never happen again.

In fact, two years ago, Jon Jarvis echoed similar principles, when in his September 2007 "*Clarification*" document, he wrote:

> *When we* [NPS] *become aware of errors, oversights, or new information, we update park publications ..."*

However, Jarvis' behavior for the past two years has not been consistent with those principles. There has been a pattern, both in his conduct over the past two years, and in his recent response to the NAS report. The NPS mistakes and errors were pointed out to Jarvis over and over again from 2007 to 2009, but not only did he not correct them, he publicly denied them and covered them up.

In the San Francisco Chronicle on December 28, 2007, when confronted with allegations of serious misrepresentations of scientific data by NPS, staff writer Peter Fimrite quoted Regional Director Jarvis when he wrote:

> *"Park service officials deny any misrepresentations were made and have stood firmly behind their research."*

In contrast to Jarvis' denials from 2007 to 2009, just this past week, the NAS report concluded that NPS did indeed misrepresent their own scientific data. How did Jarvis respond to the NAS report? Did Jarvis do what you would expect of a top leader in the Obama administration? Jarvis issued a limited and nuanced apology, falsely claimed that the NAS concurred with his conclusions, falsely stated that NPS errors were minor and only overreaching, and finally launched a campaign to say that he disagreed with the NAS conclusions (while never specifying in what way).

When asked by the Editor of the Pt. Reyes Light how he planned to correct the NPS misrepresentations in the public record (as he assured us in the "Clarification" document in September 2007 that he would do), on May 7, 2009, Jarvis was quoted:

> *"Jarvis declined to describe his plan for correcting the public record."*

The Pacific West Region NPS press release on May 5 quoting Jarvis, and Jarvis' comments to the press, are in stark contrast to the NAS press release and Senator Feinstein's press release and the NRC report itself. Was Jarvis truthful in his communications with the public? Did he retract and correct the false science? You be the judge. Let Jarvis speak for himself.

In the NPS press release on May 5, Jarvis is quoted as saying:

> *"Certainly, we apologize for the errors in our original document and already have taken steps to correct them," Park Service Regional Director Jon Jarvis said. "We appreciate the thoroughness of the academy's report and especially that academy concurred with many of our conclusions in the final, corrected version of the report."*

What was Jarvis referring to when he said that the NAS concurred with his *"final, corrected version of the report"*? The most recent public version of the *"Drakes Estero: A Sheltered Wilderness Estuary"* report was the May 11, 2007 version, and that version is the one that the NAS analyzed and found had seriously misrepresented the scientific

data. Jarvis invented the notion of a *"final, corrected version of the report"* out of thin air – no such version of the Drakes Estero report exists.

With what conclusions in the May 11, 2007 version of the NPS Drakes Estero report did NAS concur? Jarvis says many. The NAS report did agree with the NPS narrative in the Drakes Estero report concerning the ecological richness of Drakes Estero, but on the important issues at hand, namely the NPS claims of grave harm to the Estero caused by the oyster farm, the NAS disagreed and concluded that the NPS misrepresented their own data. Jarvis rejected the NAS conclusions on the critical issue of the integrity of NPS science.

The Editor of the Pt. Reyes Light newspaper asked Jarvis about his statement in the NPS press release in which he referred to a *"final, corrected version of the report"*. Editor Tess Elliott wrote (May 7, 2009):

> *In a press release, Jarvis wrote that the Academy affirmed [NPS' Science Advisor Sarah] Allen's conclusions [in the disputed Drakes Estero Report], but over the phone he contradicted himself. "It's the conclusions that are debated," he said, not the raw data.*

Thus, in his own press release, Jarvis said the NAS concurred with his conclusions, but in his interview with the Editor of the Pt. Reyes Light, he said it was the conclusions in which they differ but not the raw data. Serious allegations were levied against Jarvis and the NPS concerning the veracity of their raw data (suggesting that some of it may have been fabricated or falsified) in December 2007. More recently, further allegations of scientific misconduct were formally transmitted to you in February 2009 by the NAS. The NAS explicitly stated that they would not investigate the charges of scientific misconduct, and referred those charges directly to you. These scientific misconduct and ethics complaints remain pending today.

In the San Francisco Chronicle, Jarvis is quoted as saying (May 6, 2009):

> *"They didn't say our research was wrong. They just said it was incomplete," Jarvis said. "What there really is here is a disagreement among scientists about the level of impact on the environment. That does not mean that one side is guilty of misconduct."*

To the contrary, the NAS did in fact say that the NPS conclusions were wrong, and that the NPS misrepresented the scientific data. To say *"they just said it was incomplete"* is misleading. NAS said it was wrong. Feinstein said it was *"troubling and unacceptable"*. Jarvis' portrayal of the NAS report differs from what the NAS, Senator Feinstein, and newspapers around the country have said about it.

In the Marin Independent Journal newspaper, Jarvis is quoted (May 6, 2009):

> *"We agree with some conclusions, disagree with some and say we need more research, too," said Jarvis.*

To the Associated Press, Jarvis is quoted as saying (May 6, 2009):

> *Park Service Director Jon Jarvis says he disagrees with some of those findings.*

Over and over again last week, Jarvis said he disagreed with the NAS report. With what conclusions does Jarvis disagree? What does he know that the panel of eleven esteemed scientists picked by the National Academy of Sciences does not? Does he disagree that under his watch, the NPS misrepresented their own scientific data? Does he disagree that he was told about these misrepresentations by an elected member of the National Academy of Sciences two years ago, and over and over again since, and he did nothing? Does he disagree that he denied those allegations?

Jarvis used the word "*overreaching*" to describe what the NAS had concluded about the NPS science. In the Pt. Reyes Light newspaper, Jarvis is quoted (May 7, 2009):

> *"There was some overreaching."*

The word "*overreach*" has a very different meaning from the word "*misrepresent*". By saying that the NAS simply concluded that Jarvis overreached, Jarvis misrepresented the NAS report. The NAS said he *"selectively presented, over-interpreted, or misrepresented"* scientific data, far different language than "*overreach*".

Jarvis has been deceptive and misleading this past week, completely in character with his behavior over the past two years. The Jarvis you witnessed in his press release and comments to the press last week is the same Jarvis we have watched misrepresent, cover-up, and obfuscate the NPS false science for the past two years. Jarvis keeps repeating the same pattern of misrepresentations. Surely there must be someone more fit for this important job as Director of the NPS – someone whose actions and words are consistent with the principles of scientific integrity that you and the President share.

Serious and substantive allegations have been made in writing that Jarvis violated the White House OSTP Federal Policy on Research Misconduct (December 2000), and violated the NPS Interim Scientific Code of Conduct Policy (January 2008). These charges of data manipulation were first raised in May 2007 and then filed in December 2007 with then NPS Director Bomar. They constitute the basis of the allegations of scientific misconduct and ethics complaints, charges that remain pending, and that must now be investigated by your Department, and if found to be true, should then lead to disciplinary action.

Jarvis' supporters say that this one incident of the misuse of science concerning the oyster farm and Drakes Estero was minor and just a blip on an otherwise stellar career. I cannot comment on the rest of his career, but I do know that over a two-year period, Jarvis repeatedly misrepresented science and allowed a predetermined agenda drive the misuse of science, rather than insisting upon good science informing policy decision. This was not an isolated incident, but rather Jarvis was a serial offender. This was not a minor misrepresentation of science, but rather was a major one.

On December 12, 2007, Senator Feinstein said on the ABC7 Bay Area evening news:

> *"If the Park Service did in fact manipulate the data, that is a serious matter, which should result in disciplinary action."*

The NRC panel concluded that the NPS did in fact misrepresent data. The NRC explicitly refused to consider scientific misconduct, including fabrication and falsification of data. Tess Elliott, Editor of the Pt. Reyes Light newspaper, wrote:

> *Still its determination that the park, "in some instances selectively presented, overinterpreted, or misrepresented the available scientific information" approximates the definition of scientific misconduct as written in the federal register.*

In April 2007, as an elected member of the National Academy of Sciences, and a local resident, I was asked by a County Supervisor to read the provocative NPS claims of overwhelming evidence of harm caused by the oyster farm, read the NPS science, and come testify to the Marin County Board of Supervisors as to whether I thought the data supported these strong conclusions, which I did on May 8, 2007. I was stunned to find that the NPS had misrepresented its own science. These were not minor exaggerations of interpretation; they were not simple "*overreaching*". Rather, they were clearly false conclusions – claims having no support in the data, claims of data that did not exist in the publications, claims of data that appear to have been fabricated, claims of data not in the NPS harbor seal database. I testified:

> "*The scientific record is clear: there is no evidence that Lunny's oyster farm is having a negative impact on the eelgrass, sediment, or harbor seal pups."*

Two years later, after Jarvis unnecessarily spent $450,000 of taxpayer money, deceived Senator Feinstein and then Director Bomar, dismissed my involvement, picked the wrong NRC Board, asked the wrong questions, and made sure that "scientific misconduct" was completely off the table – with everything manipulated in his favor, and with a captive panel releasing a rather scrubbed and sanitized report – nevertheless the NRC panel concluded what I concluded two years earlier – namely that the NPS had misrepresented the science. The NAS press release stated:

> "A *new report from the National Research Council finds a lack of strong scientific evidence that the present level of oyster farming operations by Drakes Bay Oyster Co. (DBOC) has major adverse effects on the ecosystem of Drakes Estero."*

Why did Jarvis let this happen? Why did Jarvis waste time, energy, and $450,000 of taxpayers' money to get a group of eleven esteemed scientists to tell the world what Jarvis had already been told two years earlier by an elected member of the NAS? Jarvis did not promote good science, but rather he denied and deceived to cover-up false science, and promoted a next generation of false science.

In the end, after an unnecessary two-year drama, the NAS concluded:

> *… The National Park Service report "Drakes Estero: A Sheltered Wilderness Estuary" in some instances selectively presented, over-interpreted, or misrepresented the available scientific information on DBOC operations by exaggerating the negative and overlooking potentially beneficial effects.*

Jarvis was trained as a biologist. He served as a park biologist. He was told this conclusion two years ago. It should not have taken two years for Jarvis to listen to

the message, and it is not clear that he grasps the conclusions and their implications. He certainly has not responded appropriately.

In President Obama's speech to the National Academy of Sciences two weeks ago, he said:

> *"… we are restoring science to its rightful place."*
>
> *"… the days of science taking a back seat to ideology are over."*
>
> *"I want to be sure that facts are driving scientific decisions ..."*

Regional Director Jon Jarvis has misused and abused science in a fashion inconsistent with the President's principles. Ideology drove false science. Scientific decisions were not driven by facts. The integrity of science was tarnished, not restored. Given what you and the President are trying to achieve in restoring science to its rightful place, and in particular in the NPS, it would be a mistake to ask the President to approve the nomination of Jon Jarvis as Director, NPS.

Recommendations:

I end this letter with the following recommendations and action items:

(1) Withdraw the nomination of Jon Jarvis for Director of the National Park Service;

(2) Meet to examine the data that support the allegations of scientific misconduct against Regional Director Jarvis and Superintendent Neubacher;

(3) Halt the NPS assault on Kevin and Nancy Lunny and Drakes Bay Oyster Co., and on our community;

(4) Direct the NPS to work in harmony with, rather than against, the Pt. Reyes National Seashore and West Marin agricultural community (largely local, natural, organic, and sustainable – the kind of agriculture supported by the Obamas); and

(5) Respond to the outstanding ethics complaint against Jon Jarvis and Don Neubacher submitted to then Director Bomar on December 18, 2007, and include in that investigation the contemporary allegations of scientific misconduct by Jarvis.

Mr. Secretary – should you have any doubts or should you require further validation, I offer to fly to Washington, come sit in your office with Jon Jarvis and Don Neubacher, and go through the data and allegations of scientific misconduct point by point in your presence, with them being given opportunity to respond.

Sincerely yours,

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EXHIBIT

57

May 16, 2009

To: Secretary Ken Salazar, Department of Interior

From: Dr. Corey S. Goodman, member, National Academy of Sciences

RE: **Regional Director Jon Jarvis and Scientific Misconduct: The Case Against a Jarvis Nomination for Director, NPS**

About the author: Dr. Corey Goodman is an elected member of the National Academy of Sciences (NAS). He is a West Marin resident (Marshall, CA). For several decades he was a Professor at Stanford and U.C. Berkeley; today he is an Adjunct Professor at U.C. San Francisco while spending most of his time in the private sector. Dr. Goodman was asked by a member of the Marin County Board of Supervisors in April 2007 to investigate the National Park Service (NPS) science in relation to the oyster farm in Drakes Estero, and to testify at their hearing in May 2007. When Dr. Goodman testified to the Supervisors on May 8, 2007, he had not discussed the issue with Kevin Lunny, owner of Drakes Bay Oyster Company (DBOC). Rather, Dr. Goodman spoke as an independent scientist. He reported that the NPS had misrepresented their own data. Dr. Goodman spoke that day, and continues to speak, for scientific integrity and against predetermined agendas driving false science. Goodman does not represent Kevin Lunny or DBOC. He receives no compensation for this public service. Two years later, a NAS report (Ocean Studies Board) confirmed what Dr. Goodman told the Marin County Supervisors, other elected officials, the NPS, and Department of Interior in 2007. The NAS concluded that the NPS had "… *selectively presented, over-interpreted, or misrepresented* …" their own scientific data, leading to conclusions that were flawed, misleading, and exaggerated. Dr. Goodman concluded that NPS data were misrepresented, selectively presented and omitted (i.e., cherry-picked), fabricated, and falsified, and that these misrepresentations have continued to this day under the leadership of NPS Regional Director Jon Jarvis. Goodman contends that Jarvis and colleagues violated the NPS Code of Scientific and Scholarly Conduct and White House Office of Science and Technology Policy (OSTP) Federal Policy on Research Misconduct. The scientific misconduct and ethics complaints against Jarvis remain pending.

About the case for scientific misconduct against NPS Regional Director Jon Jarvis: On May 8, 2007, a NPS superintendent and his staff scientist gave testimony to the Marin County Supervisors in which they misrepresented the NPS scientific data in falsely claiming that they had strong evidence to show that an oyster farm was causing grave environmental harm to Drakes Estero. On May 8 & 11, 2007, these same NPS officials published a report that made further false science claims against the oyster farm. In May 2007, Dr. Goodman said these claims were false; in May 2009, an NAS panel similarly concluded that these claims were false. These NPS officials were under the jurisdiction of Regional Director Jon Jarvis. Jarvis became publicly involved in this issue in June 2007, and was officially asked by then NPS Director Bomar to take charge of this matter in July 2007. This case involves Jarvis' actions – what he did and did not do – and what took place under his watch from 2007 to 2009. It is based on a series of events in which Jarvis oversaw a serial pattern of scientific misconduct, including misrepresentations, cover-ups, publications and press interviews intended to deceive and confuse the public, and comments to his superiors intended to similarly deceive them. By his own actions, and the actions of those for which he had responsibility, Jarvis committed scientific misconduct.

Timeline of Serial Misrepresentations by Regional Director Jon Jarvis:

(1) The Point Reyes National Seashore (PRNS) is a unit of the National Park Service under the administrative jurisdiction of the Pacific West Region, headed by Regional Director Jon Jarvis. Drakes Estero is in PRNS. Drakes Bay Oyster Company (DBOC) is in Drakes Estero. Kevin Lunny owns DBOC. Don Neubacher is the PRNS Superintendent. Dr. Sarah Allen is PRNS Staff Scientist.

May 8 & 11, 2007: Neubacher and Dr. Allen made strong claims that the oyster farm was causing grave environmental harm to Drakes Estero in their public testimony to the Marin County Board of Supervisors on May 8, 2007. They made a series of claims against DBOC, including claims concerning harm to harbor seals, eelgrass, fish, and sediments. Allen's most provocative claim was that the oyster farm had caused an 80% decline in harbor seals at a specific (but unnamed) subsite in Drakes Estero in 2007 compared to two years before. They testified that this 80% decline in harbor seals was *"a serious problem right now"* and *"a national issue"*. Neubacher and Allen included these same claims, including the 80% decline in harbor seals, in their report published by NPS, *"Drakes Estero, A Sheltered Wilderness Estuary"* (herein called the Drakes Estero Report, published and republished on May 8 & 11, 2007). These claims were false. We now know that the available scientific literature and NPS harbor seal database did not support these claims. **NPS Superintendent Neubacher's and Scientist Dr. Allen's misrepresentations of NPS scientific data violated the OSTP Federal Policy on Research Misconduct (Federal Register, December 6, 2000).**

May 12 & 13, 2007: After Allen ignored a request for data, Dr. Corey Goodman submitted two FOIA requests to Superintendent Neubacher on May 12 and 13, 2007. Goodman requested "the data" (i.e., the Drakes Estero harbor seal data, including 2007 data) used to calculate the 80% decline (declared by NPS to be a national emergency) and an identification of where in the Estero the decline occurred. Concerning the 80% decline, Goodman asked: *"what site?"*, *"compared to what?"*, *"what is evidence that this reduction is a result of the oyster operation?"*

(2) June 13, 2007: Jarvis responded to Goodman's FOIA requests. **Jarvis denied the request for "the data" using inappropriate reasons in conflict with DOI FOIA guidelines.** Jarvis denied "the data" citing *"deliberative process privilege"*, even though a few days later, Jarvis' FOIA Officer Holly Bundock admitted to Goodman that she knew that data was explicitly excluded from this exemption. Moreover, the data were no longer deliberative since NPS has testified and published conclusions based upon it. Jarvis also refused to answer the question: *"what subsite?"* He did so by denying any records existed which supported the 80% claim (e.g., which subsite out of eight total subsites in Drakes Estero), and saying that without documents, he did not have to answer questions. **Jarvis withheld the missing piece of information ("*what subsite?*") crucial to affirm or refute the most important NPS harbor seal claim against the oyster farm. This single decision by Jarvis perpetuated the present conflict.**

This question ("*what subsite?*") remained unanswered by NPS for 16 months until Sept 4 & 24, 2008 (see #19 & #20 below) when at a meeting of the National Academy of Sciences (NAS) panel, Jarvis asked NPS scientist Dr. Ben Becker to give an explanation of how NPS derived the 80% decline claim – an explanation that was

completely untenable -- and then 20 days later Jarvis himself gave a different, and equally untenable, explanation of the 80% decline to the panel.

(3) July 21, 2007: Senator Feinstein held a meeting at Olema with NPS Director Mary Bomar, Jarvis, Neubacher, Lunny, Goodman, and others. Goodman accused the NPS of scientific misconduct. **Bomar removed Superintendent Neubacher from administrative responsibility for the oyster farm, and directed Jarvis to assume those duties and be accountable for DBOC and Drakes Estero.** Feinstein and Bomar instructed Jarvis to work with Goodman and CA Dept Fish & Game Tom Moore to oversee NAS review of the May 2007 Drakes Estero Report and NPS public testimony. Feinstein and Bomar agreed with Goodman that Jarvis' FOIA denial of harbor seal data was inappropriate and insisted that Jarvis provide Goodman with the data within two weeks. Feinstein and Bomar asked Jarvis to remove the Drakes Estero Report from the NPS website and to post a correction. Goodman indicated that he had heard that Jarvis and Neubacher were preparing a so-called "peer-review" of the Drakes Estero Report that would be a rebuttal to Goodman's criticisms. **Jarvis said that NPS had been obtaining external peer-reviews of the Drakes Estero Report, and planned to release a new document based in part on these reviews.** Jarvis was instructed by Feinstein and Bomar not to release this new document, but instead to share the "peer reviews" with Goodman, and to have the current testimony and the Drakes Estero Report independently reviewed by the NAS. **Two months later it was revealed that these so-called "peer-reviews" did not meet DOI peer-review standards. Moreover, the so-called peer reviews described to Feinstein and Bomar by Jarvis, were not reviews of the Drakes Estero Report, but rather were reviews of their "*response to Goodman*" as a rebuttal to Goodman's earlier report.**

(4) July 21 & 22, 2007: At the conclusion of the Olema meeting, Goodman handed DOI Solicitor Molly Ross (21st), and the next day emailed Jarvis (22nd), a copy of a 25-page report on scientific misconduct focused on the misrepresentation of USGS Dr. Roberto Anima's 1991 paper and NPS claims concerning oyster feces in sediments. Ross never responded. **Jarvis, now in charge of all matters concerning the oyster farm and Drakes Estero, never responded. Jarvis ignored the case for scientific misconduct submitted by Goodman.**

(5) August 13, 2007: Neubacher, as instructed by Jarvis, sent Goodman the harbor seal data. The NPS data revealed that there was no evidence that DBOC had caused harm to the harbor seals. This is presumably why the data had been withheld in June. Only one of the eight subsites had declined by 80% in 2007, and that subsite was sandbar A. Sandbar A was the only subsite that fit all of the descriptions in Dr. Allen's public testimony. However, Sandbar A is in the designated wilderness area, far away from the oyster farm, and disturbances at sandbar A came from Park visitors. The oyster farm did not cause the 80% decline at sandbar A. **The NPS harbor seal data revealed that the NPS harbor seal claims against DBOC were fabricated in both the NPS public testimony to the Marin County Board of Supervisors and in the NPS Drakes Estero Report**.

(6) August 17, 2007: At Olema, Senator Feinstein and NPS Director Bomar directed three individuals – Jarvis, Goodman, and Tom Moore (CA Fish & Game) – to jointly prepare a "charter" for the outside, independent science review, to be conducted by the National Academy of Sciences (NAS). Jarvis scheduled a meeting at his office in mid-August. He excluded Moore, and thus eliminated input from the State of California, but invited in his place two additional NPS scientists, including West

Regional Chief Scientist Dave Graber (who reported to Jarvis). For the next six weeks, Jarvis and Graber (by email) kept pushing for irrelevant questions about everything other than investigating the May 2007 NPS testimony and Drakes Estero Report. Jarvis did not want to investigate whether his subordinates had misrepresented their own scientific data. In September, Jarvis wrote to Goodman telling him that the NPS proposed questions were essentially the same as Goodman's (when they were in fact completely different), and that Jarvis would go ahead without Goodman and submit his questions to the NAS Ocean Studies Board. **Jarvis first excluded Moore, and subsequently excluded Goodman, from overview of the NAS panel charter questions.**

Jarvis took the NPS proposal to the Ocean Studies Board rather than the NAS Board (called COSEPUP) that traditionally investigated ethics and misconduct issues. Jarvis submitted the formal proposal on October 24, 2007 without notifying Goodman. Weeks later, in November, Goodman was contacted by NAS Ocean Studies Board Executive Director Dr. Susan Roberts. Roberts said that Jarvis told her that Goodman had pre-approved the questions. **Having excluded Goodman from overview of the NAS charter, Jarvis then misrepresented Goodman's support of the proposed charter to Roberts.**

Towards the end of December, Goodman eventually got some changes made to the mission statement (specifically a reference to the Drakes Estero Report and public testimony) to better align the study with what Feinstein and Bomar had requested on July 21.

(7) August 20, 2007: Having analyzed the harbor seal data and found the NPS 80% decline claim a misrepresentation, Goodman asked Jarvis to examine the data and investigate the misconduct. Jarvis assigned his Chief Scientist Dave Graber the task of examining the NPS harbor seal data. Graber emailed Goodman, and cc'ed Jarvis, that he would do so. Neither Graber nor Jarvis ever got back to Goodman. **Jarvis did not fulfill his duty to investigate the allegations of scientific misconduct by his subordinates at PRNS. At the same time, he was actively involved in a cover-up to defend Neubacher and avoid investigation of NPS**.

(8) September 18, 2007: In mid-September, having been instructed by Feinstein and Bomar NOT to issue any further documents on NPS science until after the independent review was completed (May 2009), Jarvis issued the NPS "*Clarification*" document. NPS Regional FOIA Officer Holly Bundock (who reports to Jarvis and whose office is across the hall from Jarvis) sent Goodman the "*Clarification*" document *("NPS Clarification of Law, Poloicy, and Science on Drakes Estero"*). This document conspicuously listed no authors, but it was prepared by, and released by, Jarvis' office. This is the very document that Feinstein and Bomar (on July 21, 2007 at Olema) instructed Jarvis not to release. Bundock quoted an email between Goodman and Jarvis as their reason for releasing the document, an email that simply asked for the over-due but promised outside reviews of the NPS Drakes Estero Report. Jarvis' office falsely claimed that Goodman requested the "*Clarification*" document, and used this excuse to release it to Goodman, certain environmentalists, and the press. **Jarvis was responsible for the September 18, 2007 "*Clarification*" document – it was his document, put out by his office, under his responsibility.**

Although Jarvis told Feinstein and Bomar on July 21 that the reviewers were independent, had done a peer-review, and had been sent the Drakes Estero Report (and told Goodman the same thing by email), in fact most of the so-called "peer

reviews" were informal emails back and forth between NPS scientist Dr. Allen and various friends, colleagues, collaborators, and former colleagues. None of the reviewers appeared to have been sent the NPS Drakes Estero Report and asked to review it, but instead were sent Goodman's May 8th report to the Marin County Supervisors and asked to help revise the "*response to Goodman*" document that became the "*Clarification*" document. **Contrary to Jarvis' statements, his "*Clarification*" document did not follow DOI peer-review standards, and was not a peer-review of the Drakes Estero Report. Jarvis misrepresented this document to Feinstein and Bomar, and to the public, and issued the deceptive "*Clarification*" document in conflict with the directive from Feinstein and Bomar.**

(9) One of the so-called peer-reviews was by West Regional Chief Scientist Dave Graber who reported to Jarvis. Graber and Jarvis should have been investigating the serious allegations of scientific misconduct on the part of their subordinates, but they were not. Instead Graber was helping Allen respond to Goodman with an email "*Hiya*" which gave her suggestions to help rebut Goodman's criticisms so that certain points would get *"gently hammered home."* **Jarvis and Graber were required to place objectivity ahead of allegiance to individuals, but they did not. Instead of investigating the allegations of scientific misconduct by analyzing the NPS data vs. the NPS claims, they helped cover-up the NPS misconduct by participating in a rebuttal of Goodman.**

(10) The NPS "*Clarification*" document, released by Jarvis, was written in such a way as to confuse the public. Jarvis and Neubacher told the community that this peer-reviewed document was an independent validation of the NPS claims and the Drakes Estero Report, and served as a rebuttal against Goodman's testimony and reports. The "*Clarification*" document was provided to the local press within several days, and was described to them as a validation of the NPS claims and a rebuttal of Goodman. Evidence for this confusion can be found in an article in the October 4, 2007 issue of the West Marin Citizen which stated: *"Ultimately, the report upholds the park's concern about the oyster farm on the basis that it alters natural conditions and resources."*

The "*Clarification*" document was a convoluted attempt to convince the public that NPS had refuted Goodman's criticisms, when in reality it was a retraction of the claims in the Drakes Estero Report. **Jarvis' "*Clarification*" document retracted all of the NPS claims against DBOC, but buried these retractions in the middle of paragraphs and sections that appeared to the casual reader to be a validation of the NPS claims and a rebuttal to Goodman. Jarvis' document was intentionally misleading.**

For example, the "*Clarification*" document contains no mention of the NPS claim that DBOC caused an 80% decline in harbor seals at one unnamed subsite. In fact, it states: *"More focused analyses are required to determine if oyster operations are affecting seal distribution and productivity within Drakes Estero."* That statement overturns Neubacher's and Allen's strong claims in their May 2007 public testimony and the Drakes Estero Report. [Three months later, Jarvis reinstated the 80% decline -- see #14 below.]

As further evidence of the way in which this document has misled the community, to this date, the "Save Drakes Bay Coalition" website (including the Sierra Club, NPCA, Environmental Action Committee, and others) states, concerning the "Clarification" document: *"Peer-reviewed by 7 non-NPS marine ecology experts. Dr.*

Corey Goodman's analysis refuted by these experts." This statement has been posted since 2007. This website's misrepresentation is similar to how Jarvis and Neubacher misrepresented the "*Clarification*" document to the community.

(11) Dr. Peter Gleick, NAS member, MacArthur Fellow, Founder of the Pacific Institute, and well-known environmentalist, reviewed Jarvis' "*Clarification*" document, and wrote:

"… this NPS 'rebuttal' … acknowledges very clearly that the NPS was wrong and Goodman was right, over and over and over again, but couched in language that pretends the opposite."

"The NPS errors were NOT minor, but major and misleading, and now, given the responses, pretty obviously intentional. Nor were they corrected when pointed out …"

"… it should be an embarrassment to the Park Service. It is a remarkable piece of misleading fluffery … the Park Service effectively acknowledges over and over that they were wrong and Goodman was right."

(12) October 23, 2007: Jarvis rejected, as "moot", the Information Quality (aka DQA) complaint filed by Marin Farm Bureau, Pacific Coast Shellfish Growers Association, Marin Organic, DBOC, and Pacific Institute for correction of information in the Drakes Estero Report. Jarvis rejected it because *"NPS has initiated an independent scientific review of the body of scientific studies."* This was a false statement. On October 23, 2007, no review of any kind had been initiated. It would be another six months before a contract was executed between NPS and NAS (April 2008).

October 24, 2007: A day after rejecting the DQA complaint, Jarvis submitted a proposal to the NAS to study mariculture in Drakes Estero. However, Jarvis' proposal did not include in its mission statement a request to review the Drakes Estero Report. **Jarvis rejected the DQA because he said the Drakes Estero Report was already under review. One day later, Jarvis proposed that NAS conduct a science review that avoided any reference to the Drakes Estero Report.**

(13) December 18, 2007: At the request of Ocean Studies Board Executive Director Roberts, who was in charge of the NAS review of oyster farm and Drakes Estero, Goodman sent a 77-page scientific misconduct and ethics complaint to the NAS, including alleged violations of sections I.1 and I.2 of the OSTP Federal Policy on Research Misconduct by Don Neubacher and Sarah Allen, and violation of sections III.3, IV.1, IV.3, V.1, and V.2 by Jon Jarvis and David Graber.

December 21, 2007: **Goodman send the 77-page scientific misconduct and ethics complaint against Jarvis and his subordinates to NPS Director Bomar with a detailed cover letter asking her to investigate misconduct and ethics.** On January 4, 2008, her assistant Melissa Kuckro emailed Goodman to say that Bomar had received the document and had *"asked Deputy Director Dan Wenk to handle this issue and to communicate further with you about it."* Goodman never heard back from Wenk. Three months later, on March 27, 2008, Goodman emailed Kuckro asking about the status of the ethics investigation, and requested a reply from Deputy Director Wenk. Goodman never received a reply.

(14) December 28, 2007: In an interview with the San Francisco Chronicle (environment reporter Peter Fimrite), Jarvis reinstated the very claims of environmental harm by the oyster farm that his "*Clarification*" document had withdrawn. According to Jarvis: *"Our research would indicate there are some negative effects."* He went on to

reiterate the claim of an 80% decline in harbor seals due to DBOC. **Jarvis said that *"Park service officials deny any misrepresentations were made and have stood firmly behind their research."*** After the story was published, Goodman spoke to Fimrite who assured him that Jarvis made those statements. **Some three months after Jarvis retracted every major claim of environmental harm by DBOC (in a concealed fashion in the "*Clarification*" document), Jarvis told the press that the accusations by NPS against DBOC were accurate and he stood by them.**

(15) December 31, 2007: Lunny wrote to Jarvis asking him, among other detailed questions, about his quotes in the SF Chronicle article and whether he had indeed retracted his retractions, and if so, based upon what data.
January 14, 2008: **Jarvis refused to answer questions about his public accusations in the SF Chronicle, saying he did *"not think long detailed, point-by-point responses are productive …"* Jarvis would not discuss his denial of NPS misrepresentations, and his reinstatement of the claims against DBOC.**

(16) May 12, 2007 to September 3, 2008: Jarvis was asked by formal letter and separately by FOIA, and refused to answer the question: "*what subsite*?". Goodman published articles in the local press and asked. Goodman submitted a 77-page scientific misconduct complaint with Bomar on December 21, 2007, and made this point in great detail. Jarvis remained silent. **For 16 months, Jarvis steadfastly refused to answer the question *"what subsite?"* concerning the 80% decline in harbor seals at an unnamed subsite due to DBOC.**

(17) Summer, 2008: On July 31, 2008, Goodman submitted a FOIA request to Jarvis for a copy of the annual 2007 Harbor Seal Report which is usually published in December. Jarvis, in previous correspondence, promised the report would be available in December 2007. On August 25, 2008, eight months after the Report was supposed to be available, and on the eve of the NAS public hearing, Jarvis denied Goodman's request, declaring *"…the 2007 Harbor Seal Report is undergoing peer review and is, as a result, withheld …"* Jarvis was incorrect. After the NAS hearing, Goodman subsequently discovered that the annual 2007 PRNS Harbor Seal Monitoring Report had been dated June 2008 and was already posted on a NPS website. The 2007 Harbor Seal Report was not submitted to the NAS panel, and was withheld from Goodman. Moreover, it was posted on the NPS website in such a way as to make it invisible to a Google search. The 2007 PRNS Harbor Seal Monitoring Report on the NPS website contained a computer instruction that prohibited it from being retrieved by Google, Yahoo, and other search engines. It was hidden. It was withheld. It was not provided to the NAS panel.

The 2007 PRNS Harbor Seal Monitoring Report contradicted the harbor seal claims made by NPS officials in May 2007, and contradicted the Jarvis-Becker lead presentation to the NAS panel in September 2008 (see #18 below). The official 2007 NPS Harbor Seal Report did not make the provocative 80% decline claim against the oyster farm as had the NPS officials in May 2007. It made no claims that the oyster farm was disturbing the harbor seals. Yet it was authored by the same PRNS scientists as made these claims in the Drakes Estero Report in 2007 and in the Becker paper in 2008. Lunny sent all of this information to Jarvis on October 15, 2008. **Jarvis was told that the annual NPS 2007 Harbor Seal Monitoring Report contradicted the harbor seal claims against the oyster farm made by his NPS officials in May 2007, that this Report was posted on the web and hidden so as to make it nearly impossible to find by search engines, that Jarvis had incorrectly denied Goodman's FOIA request for a copy of this public Report in August 2008,**

and that Jarvis had not supplied this Report to the NAS panel. Jarvis was told all of this and did nothing. Jarvis did not respond.

(18) September 4, 2008: Jarvis, on the NAS agenda to make the lead presentation to the NAS panel, gave a majority of his allotted time to NPS scientist Dr. Ben Becker to allow him to present new harbor seal data analysis that was in a paper in press and had also been given to the NAS panel. Becker presented new false science to the NAS panel. New science, however, was expressly excluded from this review process as stated in letters between Feinstein and Bomar and copied to Jarvis. **The Becker report was so flawed that he was forced to retract the paper, make major revisions, and resubmit the paper. Becker's second version contained further misrepresentations, selective use and omission of data, and fabricated and falsified data. Jarvis gave Becker's paper to the NAS panel and highlighted Becker's presentation in the key time slot, thus vouching for its veracity. Becker used cherry-picked and falsified data. His statistical analysis was flawed. His paper did not show what he and Jarvis said it did.**

(19) September 4, 2008: At the NAS panel meeting, Goodman presented the case for scientific misconduct, with considerable focus on the May 2007 claim of an 80% decline in harbor seals at an unnamed subsite caused by DBOC. Goodman showed that the subsite was sandbar A, and that this sandbar was in the wilderness area and far away from the oyster farm. Jarvis asked for additional time at the end of the meeting for Becker to respond to Goodman's assertion that NPS had cited data from sandbar A. This was the first time in 16 months that Jarvis or his NPS staff attempted to explain their May 2007 claim, and did so because they were forced to respond to Goodman's presentation. Becker spoke, using specific numbers that he obtained from Allen, and gave an explanation for what Allen cited in her testimony and the Drakes Estero Report. **Becker's explanation was completely untenable, and inconsistent with the details of Allen's May 2007 testimony, the NPS Drakes Estero Report, and the NPS harbor seal database. After the meeting, Goodman and Becker met, with two reporters (Tess Elliott, Pt. Reyes Light; and Andrea Blum, West Marin Citizen) and two NPS officials (Dr. John Dennis and Holly Bundock) present, and Goodman showed Becker why his explanation, as told to him by Allen, was untenable. Becker agreed, and asked "*why would they do this?*"**

(20) September 24, 2008: Jarvis submitted a document to the NAS panel attempting to explain the original 80% claim made on May 8, 2007. Knowing that Becker's explanation of the 80% decline claim on September 4, 2008 had been shown to be untenable, and that Becker had agreed with Goodman in front of the local press, Jarvis provided the NAS panel with another completely different explanation, in writing, of how Allen had derived the 80% decline claim in May 2007. Sixteen months after Jarvis' colleagues made the provocative claim, Jarvis wrote an explanation of it that was false and misleading. Interestingly, Jarvis orchestrated two completely different explanations for this NPS false claim within a 20-day period – the first on September 4th by Becker and the second on September 24th by Jarvis himself. Goodman sent a 26-page report about Jarvis' false explanation of the 80% claim to the NAS panel on October 25, 2008. **Jarvis misrepresented the NPS data, testimony, and the Drakes Estero Report to the NAS panel. In writing he gave a false explanation to cover-up the original false claim.**

(21) May 5-7, 2009: On May 5, the NAS released it's report. The NAS concluded:

> *… The National Park Service report "Drakes Estero: A Sheltered Wilderness Estuary" in some instances selectively presented, over-interpreted, or misrepresented the available scientific information on DBOC operations by exaggerating the negative and overlooking potentially beneficial effects.*

Also on May 5, Jarvis' West Regional NPS office released a press release, and Jarvis gave interviews with many newspapers about the report. In the NPS press release, Jarvis stated:

> *"Certainly, we apologize for the errors in our original document and already have taken steps to correct them," Park Service Regional Director Jon Jarvis said. "We appreciate the thoroughness of the academy's report and especially* ***that academy concurred with many of our conclusions in the final, corrected version of the report."***

The most recent public version of the *"Drakes Estero: A Sheltered Wilderness Estuary"* report was the May 11, 2007 version, and that version is the one that the NAS analyzed and found had seriously misrepresented the scientific data. Jarvis invented the notion of a *"final, corrected version of the report"*. **There is no *"final, corrected version"* of the NPS Drakes Estero report, as confirmed by NAS staff.** In response to Jarvis' press release, on May 11, 2009, Lunny asked the NAS if the panel had reviewed an unreported or undisclosed version of the Drakes Estero Report. Greg Symmes of the NAS responded:

> ***"The NRC* [NAS] *Committee did not review an unreported or undisclosed version of NPS Drakes Estero report."***

In the San Francisco Chronicle, Jarvis was quoted by Peter Fimrite:

> *"**They didn't say our research was wrong. They just said it was incomplete,**" Jarvis said.*

In the Point Reyes Light newspaper, Jarvis was quoted by Editor Tess Elliott:

> ***"There was some overreaching."***

It might be argued that perhaps Jarvis was misquoted by Editor Tess Elliott. To determine the veracity of those quotes, Goodman telephoned Elliott on Thursday May 14. She read her notes from the interview of Jarvis to Goodman. Elliott said Jarvis used the word "*overreaching*" twice in the interview. She was struck by the word and wrote it down in the context of the whole quotes. Elliott, quoting her notes said that Jarvis' second use of the word was in response to her question about scientific misconduct:

> ***"Neither the IG nor the NAS found that* [scientific misconduct]. *What they did find in both cases was overreaching."***

The DOI IG stated: *"We did not, however, analyze the science."* The NAS stated that they would not deal with allegations of scientific misconduct, and instead formally referred them to DOI Secretary Salazar. When Jarvis said that neither the IG nor the NAS found scientific misconduct, he knew that neither had looked. Moreover, the IG did find some misconduct by Allen. Most of the allegations remain pending.

Thus, Jarvis misrepresented the NAS report in his press release and his interviews with the press by saying there was some "*overreaching*" and that the NPS research was "*incomplete*" when in fact the NAS found that the NPS report had misrepresented their own data. Jarvis said the NAS concurred with his most recent version of the Drakes Estero Report, when no such version exists. Jarvis said he disagreed with the NAS conclusions without saying which ones.

Conclusions

Regional Director Jon Jarvis is not fit to serve this President, Administration, Department, or Agency. His record involving the oyster farm and Drakes Estero disqualifies him. He fails to meet the "Obama standards for service."

The NPS Code of Scientific and Scholarly Conduct (January 31, 2008) states:

"To enhance their contribution to quality, objectivity, utility, and integrity of such information, all NPS employees working with scientific and scholarly information will, in performing their duties: …

- *conduct, process data from, and communicate the results of scientific and scholarly activities honestly, objectively, thoroughly, and expeditiously; …*
- *be responsible for the quality of collected data and interpretations, and for the integrity of conclusions drawn in the course of scientific and scholarly activities;*
- *place integrity, utility, and objectivity of scientific and scholarly activities and reporting of their results ahead of personal gain or allegiance to individuals or organizations."*

Jarvis failed to meet this NPS Code of Scientific and Scholarly Conduct:

- **Jarvis did not communicate the results of scientific activities honestly:**
  - **Jarvis' "Clarification" document was intended to deceive, #'s 8-11 above**
  - **Jarvis did not submit the annual 2007 PRNS Harbor Seal Monitoring Report to the NAS panel; this Report contradicted the harbor seal claims against the oyster farm made by NPS in the Drakes Report, #17 above**
  - **Jarvis' press release and quotes concerning the NAS report, #21 above**
- **Jarvis did not take responsibility for data quality and integrity of conclusions:**
  - **Jarvis' September 24, 2008 report to the NAS explaining the May 2007 NPS harbor seal claims (80% decline at unnamed subsite) in #20 above**
  - **NPS Dr. Ben Becker's presentation, paper, retraction, and revised paper to the NAS with all of its flaws and falsified data analysis, #'s 18 above**
- **Jarvis did not place integrity and objectivity of scientific reporting ahead of his allegiance to individuals and organizations:**
  - **Jarvis refused to investigate scientific misconduct by his subordinates while covering up their misconduct and releasing documents and interviews to deceive and confuse the public, #'s 7-10, 14, 15, & 21 above**

Transparency and scientific integrity are two key cornerstones of the Obama Presidency. On the first day of the Obama Presidency, a Presidential Memorandum to the "Heads of Executive Departments and Agencies" was issued declaring that a *"democracy requires accountability and accountability requires transparency."* The Presidential policy is clear -- "*The Freedom of Information Act should be administered with a clear presumption: In the face of doubt, openness prevails. All agencies should adopt a presumption in favor of disclosure, in order to renew their commitment to the principles embodied in FOIA, and to usher in a new era of open Government. The presumption of disclosure should be applied to all decisions involving FOIA.*"

Jarvis failed to meet the President's standard of transparency & openness:

- **Jarvis was not open and transparent in his FOIA denials:**
  - **in 2007, Jarvis inappropriately denied NPS harbor seal data, and refused to answer the question "what subsite?" concerning the most provocative NPS claim of harm to harbor seals by DBOC, # 2 above**
  - **in 2008, Jarvis inappropriately denied access to the annual 2007 PRNS**

Harbor Seal Monitoring Report, saying that it was still being peer-review, when in fact it had been finalized several months earlier, and was already posted on an NPS website, but in a form that made it unsearchable by search engines (Google, Yahoo), see #17 above

Some 50 days later, in another memorandum, President Obama said, "*The public must be able to trust the science and scientific process informing public policy decisions. Political officials should not suppress or alter scientific or technological findings and conclusions*."

Jarvis failed to meet the President's standard of scientific integrity in public communications of scientific findings and conclusions:

- **Jarvis did not openly and honestly present NPS scientific data and conclusions to the public, nor did he openly and honestly present the conclusions of the NAS report to the public (as in #9, #10, #15, #17, #19, #20, #21, and #22 above).**

In President Obama's speech to the National Academy of Sciences, he said:

"… we are restoring science to its rightful place."

"… the days of science taking a back seat to ideology are over."

"I want to be sure that facts are driving scientific decisions ..."

The consideration of Jon Jarvis for a presidential appointment should not rest exclusively on whether or not he -- and those he oversaw – formally committed scientific misconduct. I have concluded that Jarvis and his staff in fact did commit scientific misconduct, and did so on numerous occasions starting in 2007 and continuing until this very day. Rather, does Jarvis embrace and practice transparency and does his record exemplify the highest standards of scientific integrity? Jarvis was placed in charge of matters concerning the oyster farm and Drakes Estero. At every turn, Jarvis evaded transparency and avoided scientific integrity.

Regional Director Jon Jarvis has misused and abused science in a fashion inconsistent with the President's principles. He allowed ideology to drive false science. On his watch, scientific decisions were not driven by facts. The integrity of science was tarnished by his actions, not restored. The preponderance of evidence says that Jarvis violated the OSTP Federal Policy on Research Misconduct (Federal Register, December 6, 2000).

EXHIBIT

58

From: [redacted]
To: [redacted]
Subject: Fwd: Jarvis responses, excerpts - Holdren/Goodman emails
Date: Wednesday, February 20, 2013 12:31:59 PM
Attachments: ATT00353.htm
Jarvis response excerpts_5-17-09.doc

Begin forwarded message:

From: "Holdren, John P." <John_P._Holdren@ostp.eop.gov>
Date: May 18, 2009 4:08:21 AM PDT
To: Corey Goodman <corey.goodman@me.com>
Subject: Jarvis responses

Corey --

Mr Jarvis has provided to Secretary Salazar's Chief of Staff a written response, dated May 17, to your memos of May 14 and May 16, and the Chief of Staff has just sent it to me. I am attaching here a set of excerpts containing the key substantive points relating to the questions of "What did he know? When did he know it? What did he do?" I'd be grateful for any reactions you would like to offer on these specific points, attaching relevent documentation if possible or calling my attention to the location of documentation in the materials you've provided to me previously. I would appreciate your holding the Jarvis material in confidence. Thanks.

Best,
John

JOHN P. HOLDREN
Assistant to the President for Science and Technology
and Director, Office of Science and Technology Policy
Executive Office of the President of the United States
jholdren@ostp.eop.gov, 202-456-7116
Executive Assistant Pat McLaughlin
pmclaughlin@ostp.eop.gov, 202-456-6045

Excerpts from Jarvis written response of 17 May 2009 to Goodman memos of 14 and 16 May

I had no involvement in the "Drakes Estero, A Sheltered Wilderness" document preparation, posting, review or revision.

I had no knowledge of or involvement in the park superintendent's statements to the Marin County Supervisors in May of 2007.

I knew, by official memo dated May 1, 2007, that the Office of the Inspector General had opened an investigation based upon allegations by Kevin and Nancy Lunny against the park superintendent.

May-June 2007, I was generally aware of the Freedom of Information Act (FOIA) requests from Dr. Goodman but had no involvement in the details. Our office processes about 500 FOIA's per year and as Regional Director I sign them but rely on my staff to comply with the law on details, withholding and timing of response. (Note: The allegations by Goodman about denial of FOIA information was thoroughly investigated by the Office of the Inspector General and no violations were found.)

I knew that Dr. Corey Goodman had made allegations regarding scientific misconduct as of July 21, 2007.

August 23, 2007: I was informed by letter from Gordon-Derr, Attorneys at Law, of a formal complaint under the Information Quality Act. This was the first such complaint against the NPS in its history.

In July of 2007, when I learned there were specific errors in the "Drakes Estero, A Sheltered Wilderness" document, I instructed the park to remove it from the web and post an explanation.

In July of 2007, I suggested the independent scientific review of the science around the Drakes Estero be conducted by the National Academy of Sciences. Over the course of the following months I worked at first with Dr. Goodman until he refused to allow the NPS to pose any questions to the Academy for their review. I then submitted his questions and those developed by the NPS together.

On 12/27/07, I received an email from Dr. Susan Roberts of the National Academy: she states: *"I have some good news to report. With some minor tweaking, we have reached agreement with Senator Feinstein's staff (with concurrence from Dr. Goodman and the Lunny's) on a statement of task for the Drakes Estero study."*

Dr. Goodman has also made scientific misconduct accusations regarding Dr. Ben Becker's peer reviewed and published paper in Marine Mammal Science. Specifically Goodman says: *"Becker was forced to retract his paper, make major revisions, and resubmit the paper. Becker's second version contained further misrepresentations,*

selective use and omission of data, and fabricated and falsified data." The actual facts here are that Dr. Becker voluntarily revised his paper even though Daryl Boness, editor of Marine Mammal Science stated "*I am satisfied that there is no basis for considering pulling your paper from Marine Mammal Science for ethical grounds (Scientific Misconduct). The reviews I received based on your responses to Dr. Goodman's questions and your new analysis suggests there is no need to even revise your manuscript before publication.…"* In that Dr. Goodman's allegations were reviewed and rejected by a scientific journal, I took no further action in regard to Dr. Becker's work.

EXHIBIT

59

United States Department of the Interior

OFFICE OF INSPECTOR GENERAL
Washington, DC 20240

Memorandum

JUL 2 4 2009

To: Renee Stone
Deputy Chief of Staff

From: John E. Dupuy
Assistant Inspector General for Investigations

Subject: Investigative Findings

On July 15, 2009 the Office of Inspector General received a complaint from Dr. Corey S. Goodman, a member of the National Academy of Sciences. requesting an investigation of Jonathan Jarvis for misconduct and ethics violations. Dr. Goodman alleged that Mr. Jarvis deliberately withheld a document "...from the IG investigation of Drakes Estero, from the public, and from its elected officials."

According to Dr. Goodman, initial documents claimed that "...Drakes Bay Oyster Company (DBOC) had caused an 80% decline in harbor seals" but in a "non-public" document dated July 27, 2007, this language was removed. Dr. Goodman believes this claim to be false and that Mr. Jarvis deliberately directed "...a web of deception and a cover-up of misconduct..." to keep the information from the public.

We have completed an inquiry into this allegation and we have found no evidence to support this complaint. Should you have any questions or concerns please do not hesitate to contact me at (202) 208-5351.

cc: Jonathan Jarvis

EXHIBIT

60

S. HRG. 111–98

MARKOWSKY, MILLER, BABAUTA, AND JARVIS NOMINATIONS

HEARING

BEFORE THE

COMMITTEE ON ENERGY AND NATURAL RESOURCES UNITED STATES SENATE

ONE HUNDRED ELEVENTH CONGRESS

FIRST SESSION

TO

CONSIDER THE NOMINATIONS OF JAMES J. MARKOWSKY, TO BE AN ASSISTANT SECRETARY OF ENERGY (FOSSIL ENERGY), WARREN F. MILLER, JR., TO BE AN ASSISTANT SECRETARY OF ENERGY (NUCLEAR ENERGY) AND DIRECTOR OF THE OFFICE OF CIVILIAN RADIOACTIVE WASTE, ANTHONY M. BABAUTA, TO BE AN ASSISTANT SECRETARY OF THE INTERIOR (INSULAR AREAS), AND JONATHAN B. JARVIS, TO BE THE DIRECTOR OF THE NATIONAL PARK SERVICE

JULY 28, 2009

Printed for the use of the
Committee on Energy and Natural Resources

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The dedicated men and women of the National Park Service who care for and manage America's national parks and the millions of citizens who enjoy them every day need and deserve to have a qualified, vigorous, full time director confirmed and on the job. We know you, Mr. Chairman, will do what is necessary to move the nomination through your committee expeditiously, and we call on the full Senate to confirm Jonathan Jarvis as Director of the National Park Service as quickly as possible. We believe he will be a valuable addition to the strong team at the Interior Department. We respectfully request that this letter be made a part of the confirmation hearing record.

STATEMENT OF LAURIE A. WAYBURN, PRESIDENT, THE PACIFIC FOREST TRUST, SAN FRANCISCO, CA

I am writing to urge you to support the confirmation of Jonathan Jarvis as the Director of the National Park Service.

Mr. Jarvis has over 30 years of experience in the management of our nation's natural resources. With a formal training in biology, Mr. Jarvis' scientific background provides an invaluable complement to his considerable firsthand management experience. Starling his career as a seasonal ranger and working his way to director of the agency's Pacific West Region, Mr. Jarvis brings with him an intimate knowledge of the complex management issues facing the National Park Service. In the nearly 15 years the Pacific Forest Trust has worked with Mr. Jarvis, he has repeatedly demonstrated his ability to balance an unremitting commitment to scientific integrity with the pragmatism requisite in natural resource management decisions.

Mr. Jarvis' career has been dedicated to protecting the resources managed under the National Park System and ensuring the public's access to these national treasures. Not one to let difficult decisions sway his convictions, his integrity and courage in the face of controversy have won him the admiration of fellow Park Service colleagues. and the respect of diverse stakeholders. Recognizing this excellence in. leadership, Mr. Jarvis' was elected by his peers as the president of the George Wright Society, an association of Park Service managers and researchers. The qualities exemplified by Mr. Jarvis will be indispensable in navigating the highly contentious issues that will face the next director, such as snowmobile use in Yellowstone and the regulation of the Colorado River in the Grand Canyon.

As the National Park Service approaches its centennial in 2016, the agency embarks upon a time of both great challenges and great opportunities. Dwindling park attendance and an aging workforce will demand an innovative new approach to attracting the next generation of employees and visitors. A maintenance backlog of nearly $8 billion faces the National Park System, but over $750 million in federal stimulus funds and an Administration budget request of $2.7 billion signal renewed investment in our National Park System and an optimistic future. As the agency confronts these and other challenges, Mr. Jarvis' experience, scientific knowledge and acute understanding of the Management realities facing the agency will be crucial to leading the National Park Service into its second century.

I thank you for your time and consideration and urge you to support the confirmation of Jonathan Jarvis as the Director of the National Park Service.

STATEMENT OF MATT VANDER SLUIS, GLOBAL WARMING PROGRAM MANAGER, PLANNING AND CONSERVATION LEAGUE

I am writing on behalf of the Planning and Conservation League to express our strong support for the appointment of Jonathan Jarvis as Director of the National Park Service. For the past 30 years, Mr. Jarvis has demonstrated his dedication to the National Park Service, his employees, and the American public. His commitment to standing up for public resources, combined with his extensive experience, has well equipped him to confront the complex challenges facing our National Parks.

Mr. Jarvis will bring an essential science-based perspective to the decision making process. As former chief biologist of the North Cascades National Park, Mr. Jarvis consistently demonstrated his commitment to scientific integrity. He also understands the scientific imperative to address environmental challenges including climate change, directing the parks in his region to be carbon neutral by 2016.

Mr. Jarvis's work with diverse constituencies has further prepared him for the task of Director. He has cooperated with different land management agencies to preserve wildlife corridors, such as in the Santa Monica Mountains, and has been receptive to the concerns of historical and cultural preservation advocates. In addition, his rise through the ranks from seasonal ranger to director of the Pacific West Region allows him to identify with all different levels of the Park Service.

In light of these qualifications, we encourage the Senate to support the appointment of Jonathan Jarvis as Director of the National Park Service.

STATEMENT OF GREGORIO KILILI CAMACHO SABLAN, DELEGATE FROM THE NORTHERN MARIANA ISLANDS, U.S. HOUSE OF REPRESENTATIVES

I write today to lend my solid support for Mr. Anthony Marion Babauta, whom the President has nominated to be Assistant Secretary of the Interior for Insular Affairs.

President Obama chose well. Mr. Babauta is attuned in all respects to the needs of the insular and outlying areas of the United States.

I am personally acquainted with Mr. Babauta, having worked with him while he served as the Staff Director for the U.S. House of Representatives Natural Resources Subcommittee on Insular Affairs, Oceans and Wildlife. As Staff Director, he was instrumental in passage of the legislation giving the people of the Northern Marianas a voice in Congress, the seat I now hold.

Mr. Babauta was also deeply involved in legislation extending federal immigration to the Northern Marianas and, as Assistant Secretary, now will be equally involved in implementing that law.

I respectfully ask that the Committee on Energy and Natural Resources recommend that the Senate confirm Mr. Babauta.

DEPARTMENT OF THE INTERIOR,
OFFICE OF THE INSPECTOR GENERAL,
July 24, 2009.

Memorandum

To: Renee Stone, Deputy Chief of Staff

From: John E. Dupuy, Assistant Inspector General for Investigations

Subject: Investigative Findings

On July 15, 2009 the Office of Inspector General received a complaint from Dr. Corey S. Goodman, a member of the National Academy of Sciences, requesting an investigation of Jonathan Jarvis for misconduct and ethics violations. Dr. Goodman alleged that Mr. Jarvis deliberately withheld a document ". . .from the IG investigation of Drakes Estero, from the public, and from its elected officials."

According to Dr. Goodman, initial documents claimed that ". . .Drakes Bay Oyster Company (DBOC) has caused an 80% decline in harbor seals" but in a "non-public" document dated July 27, 2007, this language was removed. Dr. Goodman believes this claim to be false and that Mr. Jarvis deliberately directed ". . .a web of deception and a cover-up of misconduct. . ." to keep the information from the public.

We have completed an inquiry into this allegation and we have found no evidence to support this complaint. Should you have any questions or concerns please do not hesitate to contact me at (202) 208-5351.

STATEMENT OF FRANK HUGELMEYER, PRESIDENT AND CHIEF EXECUTIVE OFFICER, OUTDOOR INDUSTRY ASSOCIATION

On behalf of Outdoor Industry Association (OIA), the premiere outdoor trade group in the U.S., I am writing to express our support for the nomination of Jonathon Jarvis for Director of the National Park Service. OIA believes that Mr. Jarvis is an extremely accomplished candidate for the job and that he will successfully lead the National Park Service into its second century of stewardship of our nation's world-renowned natural treasures.

As the national trade association representing stakeholders in the $730 billion outdoor industry, OIA values America's National Parks as an unparalled resource that provides outdoor recreation opportunities for all generations of Americans. Our National Parks offer a variety of outdoor recreation experiences ranging from climbing, biking and kayaking to hiking, wildlife viewing and camping. Throughout his thirty years of tenure with the National Park Service, Mr. Jarvis has demonstrated his commitment to the economic vitality of America's pristine natural landscapes.

Mr. Jarvis has demonstrated his capabilities in the context of assignments with both large and small park units including Alaska's Wrangell-St. Elias National Park, Washington's Mount Rainier, North Cascades National Park, Craters of the Moon National Monument in Idaho, and Hawaii's USS Arizona Memorial. Over the

past seven years as regional director of the agency's Pacific West Region, whose 54 park units include some of the largest and most well-known parks in the National Park System, he has successfully managed some 3,000 employees and an annual budget of more than $350 million.

As a trained biologist, Mr. Jarvis is aptly qualified to ensure that the park system continues to grow and evolve to represent and interpret nationally significant landscapes, ecosystems and the full range and diversity of American history and culture. OIA hopes that the parks will continue to place a priority on engaging Americans, including our young people.

We ask you, Mr. Chairman, to urge your colleagues to promptly advance Mr. Jarvis' nomination through the full committee. We respectfully ask that you make this letter a part of the confirmation hearing record.

STATEMENT OF FELIX P. CAMACHO, GOVERNOR OF GUAM

Chairman Jeff Bingaman, Ranking Member Senator, Lisa Murkowski and Members of the Committee, thank you for this opportunity to testify in support of Anthony Marion Babauta's nomination as the United States Assistant Secretary of Interior for Insular Areas.

As Governor of Guam, I am truly proud of Mr. Babauta's many accomplishments that have led him to this prestigious nomination from President Barack Obama and Secretary of the Interior, Ken Salazar. His recent appointment as Senior Advisor to Secretary Salazar has enabled him to assist President Obama's Administration and Secretary Salazar in achieving the Department of the Interior's goals.

His ten years of service in the U.S. House of Representatives' Natural Resources Committee have helped to improve U.S. policies governing U.S. territories and other U.S. affiliated island nations. He has also served on the House Natural Resources Committee as the staff director for the subcommittee on Insular Affairs. His expertise, work ethic, and exposure to various issues affecting the insular areas helped to strengthen the federal government's relationship with these communities. Mr. Babauta was actively involved in addressing critical issues including the renegotiated Compact with the Republic of the Marshall Islands and the Federated States of Micronesia, the Guam War Claims, and the political advancement of Puerto Rico.

Mr. Babauta's experience in matters pertaining to national defense, international relations, political status, economic development, healthcare, and the environment, has garnered him the respect of leaders in the Insular Areas.

The Micronesian Chief Executives Summit, an organization comprised of Presidents from the Republic of Palau, Republic of the Marshall Islands, the Federated States of Micronesia and Governors from Guam, the Commonwealth of the Northern Mariana Islands, Yap, Kosrae and Phonpei, support Mr. Babauta's nomination and believe that if confirmed, Mr. Babauta will broaden the Department of Interior's understanding of issues affecting Micronesia.

I believe President Obama understands that the issues of Micronesia and other insular areas must be advanced. Through the President's reestablishment of the Assistant Secretary position to the Department of the Interior; shared ideas, goals, and plans to effectively address long-standing and current concerns of the insular areas will be well represented through the leadership of Mr. Babauta.

I believe Mr. Babauta's history of public service to our nation and our region is proof that he has the willingness and professionalism to effectively serve as the next U.S. Assistant Secretary of Interior for Insular Areas. His deep understanding and vast work experience in the House of Representatives regarding the growing complexity of current and emerging issues in the Insular Areas, the Micronesian Islands and other Pacific Islands, are invaluable qualities essential to building stronger political, cultural, and economic ties between the United States and the insular areas.

The people of Guam offer their full support for the confirmation of Mr. Babauta as the next U.S. Assistant Secretary of Interior for Insular Areas. Never before has there been a native of Guam or Micronesia considered for a position such as this. Mr. Babauta is undoubtedly the person best suited to represent the interests of these communities. His work and commitment in strengthening policies and relations in the insular areas is unquestionable. The community of Guam acknowledge Mr. Babauta as a well-respected leader for the work he has done while serving on the Subcommittee on Insular Affairs, Oceans, and Wildlife.

Mr. Chairman and members of the Committee, I am proud to testify in support of the confirmation of Anthony Marion Babauta to be confirmed as the next U.S. Assistant Secretary of the Interior for Insular Areas. On behalf of Lieutenant Governor Michael W. Cruz, M.D. and the people of Guam, I ask for your swift and positive consideration of his confirmation.

EXHIBIT

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S. HRG. 111–98

MARKOWSKY, MILLER, BABAUTA, AND JARVIS NOMINATIONS

HEARING

BEFORE THE

COMMITTEE ON ENERGY AND NATURAL RESOURCES UNITED STATES SENATE

ONE HUNDRED ELEVENTH CONGRESS

FIRST SESSION

TO

CONSIDER THE NOMINATIONS OF JAMES J. MARKOWSKY, TO BE AN ASSISTANT SECRETARY OF ENERGY (FOSSIL ENERGY), WARREN F. MILLER, JR., TO BE AN ASSISTANT SECRETARY OF ENERGY (NUCLEAR ENERGY) AND DIRECTOR OF THE OFFICE OF CIVILIAN RADIOACTIVE WASTE, ANTHONY M. BABAUTA, TO BE AN ASSISTANT SECRETARY OF THE INTERIOR (INSULAR AREAS), AND JONATHAN B. JARVIS, TO BE THE DIRECTOR OF THE NATIONAL PARK SERVICE

JULY 28, 2009

Printed for the use of the
Committee on Energy and Natural Resources

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MARKOWSKY, MILLER, BABAUTA, AND JARVIS NOMINATIONS

TUESDAY, JULY 28, 2009

U.S. SENATE,
COMMITTEE ON ENERGY AND NATURAL RESOURCES,
Washington, DC.

The committee met, pursuant to notice, at 10:03 a.m. in room SD–366, Dirksen Senate Office Building, Hon. Jeff Bingaman, chairman, presiding.

OPENING STATEMENT OF HON. JEFF BINGAMAN, U.S. SENATOR FROM NEW MEXICO

The CHAIRMAN. Let me welcome everyone to the hearing. We have two things we're going to try to do this morning. If we are able to get a quorum of 12 Senators, we hope to report three pending nominations to the full Senate. Those are the nominations of: Wilma Lewis, to be the Assistant Secretary of Interior for Lands and Minerals Management; Richard G. Lewis, to be the Administrator of the Energy Information Administration; and Robert V. Abbey, to be the Director of Bureau of Land Management. So we will put that on hold until we get more Senators present.

The other purpose is to have a hearing to consider four additional nominees. These are: James J. Markowsky, who is to be the Assistant Secretary of Energy for Fossil Fuels; Warren F. Miller, to be an Assistant Secretary of Energy for Nuclear Energy and to be the Director of the Office of Civilian Radioactive Waste Management; Anthony Babauta, to be an Assistant Secretary of Interior for Insular Affairs; and Jonathan B. Jarvis to be the Director of the National Park Service.

Let me just go through a couple of points here. Let me note that the committee is aware of an allegation that was made against Mr. Jarvis related to the operation of an oyster farm in the Point Reyes National Seashore. The Department of Interior's Office of Inspector General has completed an inquiry into that allegation and has reported that it has found no evidence to support the allegation.

Without objection, I would put the Office of Inspector General's memorandum on that office's investigative findings in our record of today's hearing.

Let me defer to Senator Murkowski for any statement she has.

STATEMENT OF HON. LISA MURKOWSKI, U.S. SENATOR FROM ALASKA

Senator MURKOWSKI. Thank you, Mr. Chairman. Hopefully, we will have enough members here to move through the three nominees as part of the business meeting.

I want to thank you for holding this hearing this morning for these nominees. I want to thank them for their willingness to serve. We're going to hear from two nominees for the Department of Energy that will be responsible for the two sources of energy that together provided 91 percent of our Nation's electricity last year, fossil fuels and nuclear.

As much as we all hope for the creation and expansion of other economic sources of energy, we must continue to invest in technologies that will allow the growth of these, our largest sources of domestically produced energy. I am pleased that the President has chosen to nominate two very qualified persons for these key positions, also pleased to see that the administration has decided to reinstate the position of Assistant Secretary of the Interior for Insular Affairs. This is an area I believe that is way too often overlooked or certainly forgotten in the functions of the Department. It needs representation at the Assistant Secretary level. I'm pleased that Delegate Bordallo is here this morning. I'm sure she will reaffirm that. I'm also glad to see that the President has selected a nominee that has a strong background and expertise in this area.

Certainly last but not least, the Director of the Park Service. This position has more impact on my State than any other State, as 65 percent of the lands controlled by the National Park Service are located within the State of Alaska. I'm pleased to note that Mr. Jarvis has spent a portion of his career in Alaska. I'm optimistic that he'll have a full understanding of the very unique opportunities and challenges the Park Service faces in my State. I look forward to discussing these issues as the nomination process continues.

Thank you, Mr. Chairman.

The CHAIRMAN. Thank you very much.

Unfortunately, I have the absent myself in order to attend a meeting on health care which is going on at this point. I'm going to ask Senator Udall to take over as chair of the remainder of the hearing, and he will call on—let me go ahead and call on Senator Cantwell to do her introduction of Mr. Jarvis and then Delegate Bordallo to introduce Mr. Babauta.

STATEMENT OF HON. MARIA CANTWELL, U.S. SENATOR FROM WASHINGTON

Senator CANTWELL. Thank you. Chairman Bingaman, Ranking Member Murkowski, Subcommittee Chairman Udall, and members of the committee: I'm honored to be here this morning to introduce President Obama's nomination to serve as the Director of the National Park Service, John Jarvis. It is a position that our late committee Chairman Senator Clinton Anderson of New Mexico once called "the greatest job in America."

I believe there are few souls as talented, enterprising, and experienced as John Jarvis to take the reins and move our park system into the next century. Mr. Chairman, our national park systems de-

EXHIBIT

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United States Senate
WASHINGTON, DC 20510

February 13, 2012

The Honorable Ken Salazar
Secretary, Department of Interior
1849 C St., NW
Washington, DC 20240

Dear Secretary Salazar:

As we continue to investigate issues related to scientific misconduct at our federal agencies, it has been brought to our attention a concerning matter related to Jon Jarvis, Director, National Park Service (NPS). Of particular interest to our efforts are the circumstances involving a distinguished member of the National Academy of Sciences (NAS), White House science advisor Dr. John Holdren, and the serious concerns raised by Senator Dianne Feinstein.

On three occasions in 2009, while the Jarvis nomination was being vetted, Dr. Corey Goodman, an elected NAS member, submitted three letters to you detailing a case of serial scientific misconduct by Jon Jarvis and NPS officials and scientists under his direct supervision. It is our understanding that Dr. Goodman contacted you after discussing the matter concerning Jon Jarvis, Drakes Bay Oyster Company, and Point Reyes National Seashore with Dr. Holdren, Science Advisor to the President. We are in possession of the three letters dated April 27, 2009, May 10, 2009 and May 16, 2009. That a distinguished member of the NAS would need to send such letters of concern to you directly is distressing. Even more distressing is the fact that you have failed to respond.

Dr. Goodman's three letters outline significant matters of scientific integrity, that in light of President Obama's promise of "*restoring science to its rightful place*," logically would have necessitated your response and responsible steps to rectify Jarvis' work. At minimum, all of these charges should have been disclosed during Jarvis' nomination process to the White House, Senate Energy Committee and the Congress and all should have been made aware of the ongoing investigations into the work of then-Regional Director of the Pacific West Region Jarvis.

We are also aware that you asked Mr. Jarvis to respond to Dr. Goodman's 21 points outlined in his May 16, 2009 letter to you, but that Mr. Jarvis responded to only seven of those points on May 17, 2009. At Dr. Holdren's request, Dr. Goodman provided a critical review of Jarvis' partial response on May 19, 2009. Did congress have copies of Dr. Goodman's three letters, the Jon Jarvis response, and Dr. Goodman's critique of that response during the nomination process? If not, why was this information withheld?

As Senator Feinstein recently noted, *"three independent offices — the Interior Department's Inspector General, the National Academy of Sciences and the Interior Department's solicitor — uncovered errors and misrepresentations in the National Park*

Service's assessment of oyster farm operations."[1] Our question of course then would be: If the NAS, the Interior IG and DOI Solicitor properly disclosed the totality and scope of pending scientific integrity issues, and then fully disclosed his conduct to the White House and the President, would (a) Mr. Jarvis' name even have been recommended by you to the President; and (b) the President have submitted the nomination to the US Senate for confirmation?

Over the last several years we have uncovered multiple instances of scientific misconduct at the EPA and Interior. Last year, we noted some of those in a letter to Dr. Holdren. Unfortunately, Dr. Holdren flouted Congressional oversight and implicitly admitted in his response that he had not taken steps to address these very real and serious concerns. We are hopeful that you have not taken a similar "pass" on issues of scientific integrity. Accordingly, we ask for thorough and complete responses to the following:

1. What is the status of Interior's response to the three letters written by Dr. Goodman, and Goodman's critique of Jarvis' partial response?

2. Who at Interior was charged with responding to the three letters written by Dr. Goodman? Please provide all emails, memorandum or other documents related to each of Dr. Goodman's three letters.

3. Upon receipt of Dr. Goodman's complaint, did you, as Secretary, direct that an investigation be initiated to determine whether or not the Data Quality Act, White House OSTP Federal Policy on Research Misconduct, or the NPS Code of Scientific and Scholarly Conduct were violated? If not, why not?

4. Did you disclose to the White House, when the Jarvis nomination was being vetted, that three letters and 21 counts of scientific misconduct against Jarvis were pending? Did you, or anyone else at the Department of the Interior, similarly disclose these developments to the U.S. Senate? Please provide the report(s), letters, memorandum, emails and/or other documents which disclosed these circumstances to either the White House and/or the US Senate during consideration of the nomination or during the confirmation process. If any information was withheld, who at Interior or the White House determined that the information related to Mr. Jarvis' conduct did not need to be brought to the attention of the Senate during his confirmation?

5. What is the status of the permits for Drakes Bay Oyster Company?

6. Did Mr. Jarvis disclose that, in December 2007, a 77-page scientific integrity complaint had been submitted to the Director, National Park Service and never answered? What is the status of the outstanding ethics complaint against Jon Jarvis and Don Neubacher submitted to Director Bomar on December 18, 2007, and did the US Department of the Interior and/or National Park Service investigate those scientific misconduct allegations?

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[1] Marin Independent Journal, *Marin Voice: Best science should be our goal*, Senator Dianne Feinstein, February 2, 2012.

7. The third of three Goodman letters detailed 21-counts of scientific misconduct by Mr. Jarvis. Immediately upon receipt, according to available information, Mr. Jarvis provided you with responses to seven of the 21 counts, and did not even address the majority of the charges. Please provide detailed responses to each of these specific charges. Why was Mr. Jarvis allowed to provide only a partial response? Why did you fail to respond to Dr. Goodman? Were Jarvis' responses provided to the White House and/or the Senate Committee on Energy and Natural Resources? Please attest to the veracity of each of the 21 points outlined in the May 16, 2009 letter from Dr. Goodman. Which of the points did Jon Jarvis respond and which did he exclude? In light of Dr. Goodman's critique of Jarvis' partial response, do you consider the Jarvis response adequate?

We concur with Senator Feinstein that "*the transparency that comes with scientific review is a good thing, even when it doesn't support an individual's agenda.*"[2] It remains imperative that individual agendas of federal bureaucrats lacking a scientific basis are not allowed to undermine private citizens and our economy.

If nobody has yet been charged with responding to Dr. Goodman's letters, we ask that you personally respond and that we receive copies of those responses. It is particularly troubling that Jarvis was accused of being involved in and directing a cover-up of the fabrication, falsification and/or misrepresentation of scientific misconduct. It is further frustrating that you were informed of these significant matters and it appears that nothing was done.

It does our Nation and science a disservice to allow any agency of the federal government to ignore the responsibility to investigate scientific misconduct, especially when brought to your direct attention.

Sincerely,

David Vitter
United States Senate

James Inhofe
United States Senate

[2] *Id.*

EXHIBIT

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United States Department of the Interior

OFFICE OF THE SECRETARY
Washington, DC 20240

MAY 30 2012

The Honorable David Vitter
United States Senate
Washington, DC 20510

Dear Senator Vitter:

Thank you for your letter dated February 13, 2012, cosigned by Senator Inhofe, to Secretary Salazar, expressing concern that the Department of the Interior has not taken seriously or been forthcoming regarding allegations about the integrity of science related to environmental impacts of an oyster company operating within Point Reyes National Seashore. Secretary Salazar asked that I respond to you on his behalf. I can assure you that the Department is committed to scientific integrity and the use of the best available scientific information in our decisionmaking as well as to transparency with Congress.

The Department has taken very seriously the allegation of scientific misconduct and concerns about scientific quality included in the three letters you reference – April 27 and May 10, 2009, letters to Secretary Salazar and the May 16, 2009, letter to Dr. Holdren as well as in several other related submissions to the Department by Dr. Goodman. These concerns have been investigated by the Department's Office of the Inspector General, the National Academy of Sciences, the Department's Office of the Solicitor, and the Marine Mammal Commission. Not one of these independent investigations or scientific reviews has found any facts or made findings to support the very serious allegation of wrongdoing, serious or minor, against National Park Service Director Jon Jarvis. Each of these reports was made available to the public at the time of their release and they are enclosed with this letter. I also understand that Dr. Goodman filed a new complaint with the Inspector General that includes his concerns regarding Director Jarvis. The Department will respond as appropriate should the Inspector General make any new findings as a result of this new investigation.

In addition, the Senate was fully aware of the allegations made by Dr. Goodman against Director Jarvis during his pendency of his nomination and those allegations were addressed formally in the record of his confirmation hearing. The record for that hearing is also enclosed with this letter.

Again, thank you for sharing your concerns with the Department. A similar letter has been sent to Senator Inhofe.

Sincerely,

Rachel Jacobson
Acting Assistant Secretary for Fish
and Wildlife and Parks

Enclosures

EXHIBIT

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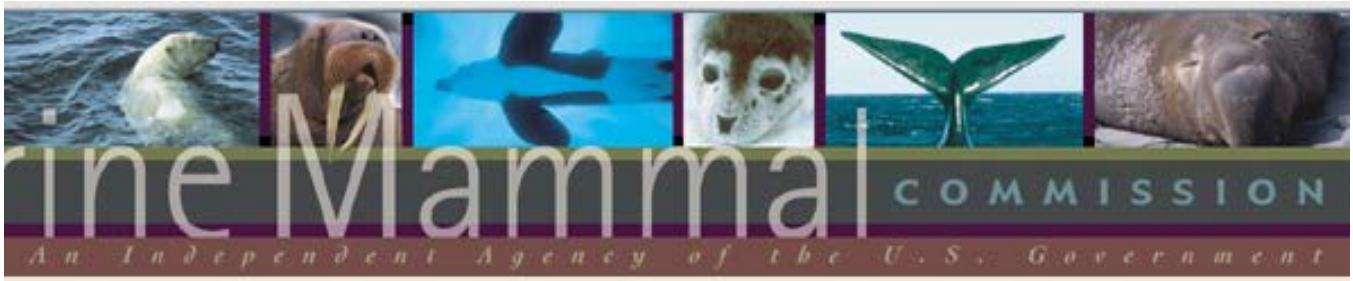

Commission Policies

Scientific Integrity Policy

The Marine Mammal Commission is committed to maintaining the integrity of, and promoting public trust in, the science used to inform policy decisions under the Marine Mammal Protection Act and related statutes. The Commission has established and follows specific measures to meet its commitment to scientific integrity. The Act assigns seven major duties to the Commission (16 U.S.C. § 1402(a)), nearly all of which involve gathering, compiling, evaluating, analyzing, interpreting, or reporting scientific information. The Commission uses such scientific information to conduct specific reviews and studies, and to formulate recommendations to other agencies, the Administration, and Congress. To read about the Marine Mammal Commission's Scientific Integrity Policy, click here.

Ensuring Data Quality

The Marine Mammal Commission has adopted guidelines to ensure and maximize the quality, objectivity, utility, and integrity of information disseminated by the agency in accordance with the directive issued by the Office of Management and Budget (67 Fed. Reg. 8452B8460), pursuant to section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001.

Policy on Indirect Costs

Due to the limited amount of funds available for research awards and the nature of the Commission's goals and responsibilities, the Marine Mammal Commission has traditionally limited indirect costs for research grants and contracts awarded by the Commission to 10 percent of the total award. Indirect costs, or overhead, include, but are not limited to, operation and maintenance of facilities, general and departmental administration, and library expenses. Although the Commission recognizes the costs associated with the maintenance of research programs and the institutions that support them, the Commission believes it is necessary to limit its contributions to indirect costs to meet the unique and broad goals of the Marine Mammal Protection Act.

(top)

EXHIBIT

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MARINE MAMMAL COMMISSION

14 February 2012

From: Timothy J. Ragen

To: John P. Holdren

Subject: Scientific Integrity at the Marine Mammal Commission

Title II of the Marine Mammal Protection Act of 1972, as amended, established the Marine Mammal Commission. The Commission consists of three members who are appointed by the President subject to Senate confirmation. The Act requires that individuals serving as Commissioners be knowledgeable in the fields of marine ecology and resource management.

The Commission is assisted in its work by a nine-member Committee of Scientific Advisors on Marine Mammals. Members of the Committee are appointed by the Chairman of the Commission after consultation with the Chairman of the Council on Environmental Quality, the Secretary of the Smithsonian Institution, the Director of the National Science Foundation, and the President of the National Academy of Sciences. The Act requires that Committee members be knowledgeable in marine ecology and marine mammal affairs. The Commission also consists of an Executive Director, who is appointed by the Chairman with the approval of the other Commissioners, and a small professional staff with scientific, policy, legal, budgetary, and administrative duties and expertise.

The Marine Mammal Commission is committed to maintaining the integrity of, and promoting public trust in, the science used to inform policy decisions under the Marine Mammal Protection Act and related statutes. The Commission has established and follows specific measures to meet its commitment to scientific integrity. The Act assigns seven major duties to the Commission (16 U.S.C. § 1402(a)), nearly all of which involve gathering, compiling, evaluating, analyzing, interpreting, or reporting scientific information. The Commission uses such scientific information to conduct specific reviews and studies, and to formulate recommendations to other agencies, the Administration, and Congress. The Act also requires that the reports and recommendations of the Commission "shall be matters of public record and made available to the public at all reasonable times."

Your 17 December 2010 memorandum on scientific integrity guides executive departments and agencies toward four objectives pertaining to the foundations of scientific integrity in government, public communications, use of federal advisory committees, and professional development of government scientists and engineers. On 29 March 2011 the Commission provided the Office of Science and Technology Policy a scientific integrity policy designed to achieve those objectives. Following consultation with your staff, the Marine Mammal Commission has revised that document and is adopting the following policies and procedures.

I. FOUNDATIONS OF SCIENTIFIC INTEGRITY IN GOVERNMENT

The Marine Mammal Commission's organization, policies and procedures are committed to—

1. Ensuring a culture of scientific integrity

- The Commission uses a longstanding review process to develop sound scientific and policy advice and formulate recommendations to further the purposes of the Marine Mammal Protection Act. The process is designed to facilitate "honest investigation, open discussion, refined understanding, and a firm commitment to evidence." It includes—
  - expert investigation and analysis of scientific information by staff or members of the Commission's Committee of Scientific Advisors on Marine Mammals,
  - scientific input from outside experts and sources when appropriate,
  - analysis, "peer" review, and comment by members of the Committee of Scientific Advisors on Marine Mammals, and
  - final review and approval of agency recommendations and the underlying rationale by the Commissioners.
- The Committee of Scientific Advisors on Marine Mammals constitutes a standing peer review body. It provides independent assessment of recommendations being considered by the Commission and the scientific underpinning for those recommendations. Such reviews help to ensure the scientific integrity of Commission recommendations and shield the Commission's use and interpretation of scientific data and analyses from political influence.

2. Strengthening the actual and perceived credibility of government research

- The Marine Mammal Protection Act requires that the Commissioners be knowledgeable in the fields of marine ecology and resource management. The Act also requires that nominees be vetted by the Chairman of the Council on Environmental Quality, the Secretary of the Smithsonian Institution, the Director of the National Science Foundation, and the President of the National Academy of Sciences prior to nomination by the President and that, once nominated, they be confirmed by the Senate prior to appointment.
- The Act also requires that members of the Committee of Scientific Advisors on Marine Mammals be knowledgeable in marine ecology and marine mammal affairs. The Commission Chair is required to consult with the Chair of the Council on Environmental Quality, the Secretary of the Smithsonian Institution, the Director of the National Science Foundation, and the President of the National Academy of Sciences before appointing Committee members. That consultation is aimed specifically at ensuring that Committee members have the required knowledge and experience.
- Commissioners and members of the Committee of Scientific Advisors on Marine Mammals serve as special government employees and are required to file financial disclosure reports. Staff members who serve in decision-making and policy setting positions also are subject to government ethics reporting and disqualification requirements. The reports provide a basis for identifying actual and potential conflicts of interest. Government-wide conflict of interest standards and internal agency policies are used to determine when Commissioners,

Committee members, or staff members must be or should be disqualified or excused from participating in related Commission matters.

- It is the policy of the Commission to ensure that its scientific staff is selected primarily on the basis of scientific and technological knowledge, credentials, experience, and integrity. In furtherance of this policy, the Commission is committed to—
  - developing position descriptions and vacancy announcements that highlight required academic credentials germane to the fields of marine mammals, marine ecology, and resource management;
  - advertising vacancies broadly, including in newsletters, publications and Web sites of appropriate scientific societies, and professional organizations;
  - considering candidates on the basis of scientific credentials along with other factors relevant to particular positions;
  - relying on independent reviews of candidate qualifications provided by the Office of Personnel Management.
- The Marine Mammal Protection Act requires that the Commissioners consult with the Committee of Scientific Advisors on Marine Mammals on all studies and recommendations under consideration, on research programs conducted or proposed under the authority of the Act, and on all applications for permits for scientific research. Such consultations provide a mechanism for independent peer review by qualified experts of the data and research used to support the Commission's policy decisions and recommendations. When appropriate and feasible, the Commission also may provide opportunities for peer review of the information underlying agency policies and recommendations by experts not associated with its Committee of Scientific Advisors on Marine Mammals.
- The Commission sponsors workshops and studies to develop, compile, and assess information required to better understand important scientific questions.
- The Commission abides by government-wide requirements providing whistleblower protection. As a small agency, the Commission does not have its own Inspector General. However, the Commission has entered into a cooperative agreement with the Inspector General of the Department of Commerce to conduct independent investigations should the need arise or if the objectivity of the Executive Director, the Chair of the Commission, or the General Counsel should be placed in question by a whistleblower's allegations.

3. Facilitating the free flow of scientific and technological information consistent with privacy and classification standards

- The Commission actively seeks input from and open dialogue among all parties engaged in all issues (scientific, technological, and otherwise) pertaining to marine mammals. The Commission considers the open exchange of information and viewpoints as central to well-informed decision making.
- It is the policy of the Commission, as specified in the Marine Mammal Protection Act, that all Commission reports and recommendations shall be matters of public record and made available to the public. In accordance with this requirement, the Commission publishes all of

its recommendations, annual reports, and technical reports on its Web site and in other formats, as appropriate.

- The Commission publishes an annual report of its activities and accomplishments for the immediately preceding year.
- The Commission makes available to the public various periodic, annual, or final reports from those conducting Commission-supported research. The Commission also encourages publication of scientific or management data or findings in refereed journals, and provides links to publications from such studies.
- The Commission encourages investigators to make data or meta-data available to the public in open formats and, when appropriate, posts or provides links to such material on its website.

4. Establishing principles for conveying scientific and technological information to the public

- It is the policy of the Commission to provide a detailed rationale for all of its recommendations involving scientific and policy advice to other government agencies. Among other things, the rationale for Commission recommendations is intended to explain any underlying assumptions and portray and discuss uncertainties.
- The Commission's annual reports provide a broad overview of Commission activities and accomplishments in a given year and highlight important issues concerning the conservation of marine mammals, including related scientific and technical information.
- The Commission provides references to the sources of scientific information that underlie its scientific and policy recommendations, and includes citations to such information, as appropriate, in letters and reports to promote transparency of its findings.
- Through its letters, annual reports, and other reports, the Commission provides independent expert analysis of scientific, policy, and regulatory issues consistent with the provisions of the Marine Mammal Protection Act.

II. PUBLIC COMMUNICATIONS

Because of its small size, the Commission does not have a public affairs office. Rather, media contacts are addressed by appropriate staff, in coordination with the Executive Director.

- In general, the Executive Director fields media requests or directs them to the staff member with the appropriate knowledge and expertise. Agency scientists may speak to the media and the public about the scientific and technical aspects of their work, subject to coordination with their supervisor and/or the Executive Director. Agency scientists responsible for responding to media requests may not be asked or directed to alter their scientific findings.
- Given the Commission's duties and its role as an independent oversight agency, a premium is placed on accurate and full presentation of scientific findings and their implications for effective marine mammal management and conservation. Disputes that may arise over whether to proceed with requested media interviews or contacts are handled through

consultations between the Executive Director, the Commissioners, and the Commission staff.

III. USE OF FEDERAL ADVISORY COMMITTEES

The Committee of Scientific Advisors on Marine Mammals is a federal advisory committee. The Commission manages Committee activities to ensure that they are in compliance with the Federal Advisory Committee Act.

1. Recruitment Process

- The knowledge requirements and appointment process for members of the Commission's Committee of Scientific Advisors on Marine Mammals are set forth in section 203 of the Marine Mammal Protection Act. It is the policy of the Commission, to the extent consistent with the Act's appointment process, to make the recruitment of new members of the Committee as transparent as practicable.

- Appointments initially are for a three-year term and may be extended for an additional period or indefinitely unless and until a successor is appointed. As such, vacancies do not occur on a regularly scheduled basis.

- Because of the statutorily mandated appointment process, which can take several months to complete, it is impractical to solicit recommendations for each vacancy as it occurs. Rather, it is the policy of the Commission to publish in the *Federal Register* periodic (e.g., every three years), general invitations seeking names of candidates for appointment to the Committee. This will provide the Commission with a list of possible candidates that can be considered each time that a vacancy occurs.

2. Biographical Information

- The Commission's Web site identifies the current members of the Committee of Scientific Advisors on Marine Mammals and lists their affiliation.

- The Commission posts biographical information about the members of the Committee of Scientific Advisors on Marine Mammals on its Web site, including current and past affiliations, educational background, scientific expertise, and relevant experience.

3. Selection Process

- The members of the Committee of Scientific Advisors on Marine Mammals are appointed by the Chairman of the Commission, in consultation with the other Commissioners and with the Chairman of the Council on Environmental Quality, the Secretary of the Smithsonian Institution, the Director of the National Science Foundation, and the President of the National Academy of Sciences. The consultation process helps ensure that the selection of candidates for the Committee is appropriately based on an individual's expertise in and knowledge of marine mammal science and marine ecology and his or her contribution to these disciplines.

- The appointment process helps to maintain a high level of member expertise with regard to relevant scientific disciplines (e.g., marine mammal veterinary medicine, population dynamics, biometrics, behavior, etc.), marine mammal species (e.g., cetaceans, pinnipeds,

sirenians), and geographic areas of particular importance to the Commission's responsibilities.

- Diversity among Committee members and points of view represented also are considered by the Commissioners during the selection process. Expertise and geographical representation are two of the main considerations for selection.

4. Conflict of Interest Waivers

- Currently no members of the Committee of Scientific Advisors on Marine Mammals require a conflict of interest waiver. If the Commission issues any such waivers in the future, they will be made publicly available, except as provided for under 18 U.S.C. § 208(b) and applicable regulations implementing that provision.

5. Status of Reports, Recommendations, and other Products

- Reports, recommendations, and other products produced by the Committee of Scientific Advisors on Marine Mammals are treated solely as the findings of the Committee.

- Such reports, recommendations, and other products are not subject to intra- or inter-agency revision.

IV. PROFESSIONAL DEVELOPMENT OF GOVERNMENT SCIENTISTS AND ENGINEERS

The Commission is committed to promoting and facilitating the professional development of its staff, including scientists, consistent with federal ethics rules, job responsibilities, and budgetary constraints. The Commissioners and members of the Committee of Scientific Advisors on Marine Mammals are independent scientists that serve as special government employees. Their pursuit of scientific research and professional development in their personal capacities is not limited in any way by their membership on the Commission or Committee except as required under applicable ethics laws and requirements.

- To the extent consistent with their job responsibilities and applicable ethics laws, staff members are allowed and encouraged to prepare articles and papers for publication in peer-reviewed, professional, or scholarly journals. Newly hired staff members are provided opportunities and encouraged to complete and submit for publication any papers or research results pending at the time of appointment.

- Scientific, management, and policy findings of the Commission and related work products, including those arising from studies or workshops sponsored by the Commission, may be appropriate for submission to peer reviewed, professional, or scholarly journals or presentation at professional meetings. Staff members are encouraged to pursue such publications or to make such presentations, both for their own professional development and as a means to further the mission of the Commission.

- Employees are allowed and encouraged, subject to applicable ethics laws, to serve as editors or editorial board members of professional or scholarly journals.

- Employees may participate fully in professional or scholarly societies and, subject to applicable ethics laws, serve as officers or on governing boards of such societies.
- Subject to applicable ethics laws, staff may receive honors and awards for their research and discoveries.
- Employees also are allowed and encouraged, subject to budgetary constraints, to continue their education by taking training and leadership courses related to their work responsibilities. They also are encouraged to participate in a wide array of interagency activities to ensure that they are well-informed regarding all activities pertinent to Commission responsibilities.

EXHIBIT

66

MEMORANDUM OF UNDERSTANDING
BETWEEN THE MARINE MAMMAL COMMISSION
AND THE OFFICE OF THE INSPECTOR GENERAL,
DEPARTMENT OF COMMERCE

Whereas the Marine Mammal Commission desires to comply with both the letter and the spirit of the Inspector General Act of 1978, as amended;

Whereas the Marine Mammal Commission lacks the personnel and resources to establish its own Office of the Inspector General; and

Whereas the Marine Mammal Commission has close working relationships with the National Oceanic and Atmospheric Administration and the National Marine Fisheries Service, both elements of the Department of Commerce;

The Marine Mammal Commission (hereinafter "the Commission") and the Office of the Inspector General of the Department of Commerce (hereinafter "the Inspector General") do hereby agree that:

1. Should the need ever arise to investigate criminal matters relating to the personnel, programs, or operations of the Commission or to refer such matters to prosecutive authorities, the Commission may request that the Inspector General conduct the necessary investigation or provide other necessary assistance;

2. A request by the Commission calling for an investigation or seeking other assistance from the Inspector General is to be made in writing by the Commission's Executive Director;

3. Upon receipt of a request from the Commission, the Inspector General will make an independent determination as to whether an investigation or other action is warranted;

4. If the Inspector General determines that an investigation or other action is not warranted, notice of such a determination and the reasons therefor must be provided in writing to the Commission within 30 days of receipt of the Commission's request;

5. If the Inspector General determines that an investigation or other action is warranted, the Inspector General will proceed in accordance with the requirements of the Inspector General Act;

6. Costs of investigations or other actions undertaken by the Inspector General on behalf of the Commission will be borne by the Commission on a fully reimbursable basis. The actual hourly rate used will be determined by the parties to this agreement prior to each investigation or other action taken on behalf of the Commission;

7. This agreement enters into effect upon signature by both parties;

8. This agreement made be modified at any time by mutual consent of the parties; and

9. This agreement may be terminated by either party by providing the other party written notice 60 days prior to the termination date.

[redacted]

Date: 16 Nov 90

Frank D. DeGeorge
Inspector General

Date: 11/19/90

EXHIBIT

67

November 7, 2012

From: Dr. Corey S. Goodman

To: Todd J. Zinser, Inspector General, Department of Commerce

Re: Request that DOC OIG investigate allegations that Marine Mammal Commission Exec. Director Dr. Timothy Ragen, in the review and release, and later private reversal of the key conclusion, of his MMC Report on "Mariculture and Harbor Seals in Drakes Estero, California," violated MMC policies, FOIA, and the MMC Scientific Integrity Policy

Dear Inspector General Zinser,

I request that the Department of Commerce Office of the Inspector General (DOC OIG), initiate an investigation into allegations of misconduct by Dr. Timothy Ragen, Executive Director, Marine Mammal Commission (MMC). The complaint presented below alleges that Dr. Ragen violated MMC policies, rules, and guidelines, the Federal Freedom of Information Act (FOIA), and the MMC Scientific Integrity Policy. This complaint alleges:

- Publicly Dr. Ragen claimed to be transparent, inclusive, and to provide equal access, and to be independent, unbiased, and without conflict, but
- Privately Dr. Ragen was secretive, exclusive, dependent upon NPS, biased, and conflicted, and gave NPS inappropriate access, and veto power including
    - Access to documents not provided to other parties,
    - Ability to critique work of other parties without disclosure or comment, and
    - Power to not respond to questions and not participate in open discussions.

As a result of Dr. Ragen's inappropriate actions, the MMC Report was:

- Not an independent review of NPS science as claimed by MMC, and
- Not a legitimate independent peer review of the draft EIS as claimed by NPS.

Dr. Ragen deceived the public, the press, elected officials, and all parties involved by privately allowing NPS to review itself, while publicly claiming that the MMC Report represented an independent review of the NPS science.

Dr. Ragen espoused the principles of <u>transparency, inclusiveness, and equal access</u>. He wrote of <u>open discussion, open dialogue, and open exchange</u>. Dr. Ragen failed on every one of those principles. He failed the MMC. He failed our community.

Dr. Ragen failed to disclose the inappropriate access relationship granted to NPS. Dr. Ragen was not transparent. Dr. Ragen was exclusive, not inclusive. Dr. Ragen granted special access, not equal acess. Dr. Ragen went to great lengths not to disclose his private bias – apparently breaking FOIA regulations by withholding key communications.

Dr. Ragen allowed the NPS to assert that the MMC Report served as an independent peer review of the NPS harbor seal section of the DEIS when it was anything but independent. That assertion allowed NPS to omit the harbor seal section of the DEIS from the Atkins Peer Review Report, thereby eliminating the possibility that Atkins scientists would find fault with that section. By his actions, Dr. Ragen empowered the NPS to secretly review itself, and to deceive the public.

In summary, Dr. Ragen's conduct was inappropriate and unethical. NPS employees were equally inappropriate, complicit, and active participants throughout a MMC review process that was anything but transparent, inclusive, and independent. Dr. Ragen established a public process with a veneer of fairness, balance, and independence, while his private activities subordinated that independence to the very entity being investigated and reviewed – the National Park Service.

Five specific allegations are presented here concerning Dr. Ragen's misconduct and deception involving his oversight of the MMC Report on "Mariculture and Harbor Seals in Drakes Estero, California" on November 22, 2011, and his private (concealed) reversal of the key conclusion from his MMC Report in a letter on June 17, 2012. It is alleged that:

1) **Dr. Ragen Violated MMC Policies Established for Scientific Review**
    a. Did Not Treat All Parties Equally But Had Biased Interactions with NPS
    b. Did Not Conduct an Independent Review of NPS Data and Analysis
2) **Dr. Ragen Changed MMC Terms of Reference Without Disclosure or Discussion**
    a. Changed Scope, Title, and Purpose of MMC Report
    b. Accepted Lack of Disclosure of Key Data and Paper by NPS
3) **Dr. Ragen Violated the Federal Freedom of Information Act (FOIA)**
    a. Failed to Disclose and Release Key Communications
    b. Failed to Provide Basis for Failing to Disclose & Release Key Communications
4) **Dr. Ragen Violated MMC Scientific Integrity Policy**
    a. Did Not Follow Open Discussion, Open Dialogue, Open Exchange
    b. Undermined and Avoided Meetings to Discuss Data and Analysis
5) **Dr. Ragen Failed to Properly Disclose Reversal of Key Conclusion of MMC Report**
    a. Reversed MMC Support of Key NPS Paper In a 'Private' Letter
    b. Concealed Reversal While Claiming Key MMC Conclusion Was Unchanged

According to the MMC Scientific Integrity Policy filed on March 29, 2011 with Dr. John Holdren [Director, Office of Science and Technology Policy (OSTP), White House], the MMC has a cooperative agreement with the DOC OIG regarding investigations of the MMC. According to that 2011 policy, the DOC OIG agreed to conduct independent investigations of the Executive Director when appropriate given the circumstances. The serious allegations of misconduct and deception set forth in this complaint against the MMC Executive Director mandate that the DOC OIG undertake this investigation.

The above-cited MMC Report is being relied upon by NPS to help justify a pending Department of the Interior policy decision. The NPS has announced that in its final Environmental Impact Statement (EIS) for the oyster farm lease renewal at Drakes Estero, it plans to consider Dr. Ragen's MMC Report as an independent review of NPS science, and as a 'peer review' of the EIS section on harbor seal impacts.

As an elected member of the National Academy of Sciences (NAS), I listened the morning of April 27, 2009, as President Obama spoke to my fellow NAS members at our annual meeting. It was an historic speech – the first President to address the NAS since President John Kennedy. President Obama sent a powerful message about the integrity of science. The President spoke movingly of "*restoring science to its rightful place*" and the

need "*to be sure that facts are driving scientific decisions*." Toward that end, he established scientific integrity policies under the jurisdiction of the White House OSTP.

The 2011 MMC Scientific Integrity Policy states that MMC policies are intended to *"ensure a culture of scientific integrity"* and provide *"independent expert analysis of scientific, policy, and regulatory issues consistent with the provisions of the Marine Mammal Protection Act."*

Dr. Ragen abandoned the MMC policy filed with the White House at the very time he should have been guided by it. The Scientific Integrity Policy's directive of "*honest investigation, open discussion, refined understanding, and a firm commitment to evidence*" was not followed, nor did Dr. Ragen adhere to the directive that "*the Commission actively seeks input from and open dialogue among all parties engaged in all issues …*"

Dr. Ragen was disingenuous to a U.S. Senator, the Marin County Board of Supervisors, independent scientists who became involved at the request of the County Supervisors, a community torn apart by NPS misconduct at Point Reyes, the press seeking the truth, the oyster farmer, and the farm's 30 workers whose livelihoods rest in the balance.

This case, with all of its details, boils down to the following three questions:

1. Did Dr. Ragen ignore his principles of transparency, inclusiveness, equal access, fairness, and independence, and sacrifice the impartiality of his MMC Report?
2. Did Dr. Ragen allow NPS to review NPS – effectively allowing a self-review – while publicly claiming the MMC Report was independent and without bias?
3. Did Dr. Ragen deceive the public in his MMC Report and his communications?

I end with a note concerning my affiliation. I have many professional affiliations as scientist, professor, educator, entrepreneur, executive, and venture capitalist. Those professional affiliations have shaped my life and provide the scientific experience and wisdom – as well as the scientific credentials and reputation (e.g., elected member of the National Academy of Sciences, professor at UCSF) – that I bring to this issue.

In coming forward with this complaint, I do so as independent citizen scientist, and I do so on behalf of truth, scientific integrity, and my commitment to public service at the interface of science and policy. That commitment is reflected by my service to the National Research Council (I chaired the NRC Board on Life Sciences for six years) and the California Council on Science and Technology (I serve as an elected member).

It is now clear that there were two faces to Dr. Ragen, one public and the other private. Dr. Ragen deceived the public to believe he was independent, and in so doing, violated his own MMC policies and misled elected officials in an ongoing public policy decision. There are profound implications in the misconduct described here, not just for the MMC and NPS, but for all Federal agencies that rely upon impartial and scholarly science for policy decisions. I pledge my full cooperation with your investigation.

Sincerely yours,

Corey S. Goodman, Ph.D.
corey.goodman@me.com; 415 663-9495; PO Box 803, Marshall, CA 94940

INTRODUCTION TO COMPLAINT AGAINST DR. RAGEN

On February 18, 2010, just a few days before the four-day Marine Mammal Commission (MMC) panel meeting at Point Reyes National Seashore, MMC Executive Director Dr. Timothy Ragen wrote to Drakes Bay Oyster Company (DBOC) owner Kevin Lunny and former Sierra Club representative Gordon Bennett, and copied David Weiman (DBOC consultant), Neal Desai (National Parks Conservation Association), Mike Gosliner (MMC General Counsel), and Samantha Simmons (MMC Assistant Scientific Program Director). Dr. Ragen wrote to Mr. Lunny and Mr. Bennett concerning his decision to allow Mr. Bennett to participate in a key site visit during the panel meeting.

This was an important policy decision based upon "*basic principles that the Commission has long espoused and sought to foster in the face of such issues …*" Dr. Ragen wrote:

> ***Based on the above, I have decided that Gordon should be invited [to] participate in the trip to the estero.***

Dr. Ragen made this key policy decision based upon well-reasoned MMC principles. Dr. Ragen described the MMC principles as follows:

> ***To make this decision, I have looked to basic principles that the Commission has long espoused and sought to foster in the face of such issues, and which we have embraced in structuring this review.***
>
> ***The first principle is that of transparency. At all levels of the government, our business should be transparent to the people we serve. The Obama Administration has made a strong commitment to such transparency, and in the course of this Drake's Estero matter, I have heard a call for greater transparency from all quarters. I do not believe that such transparency can be achieved if we selectively allow some parties greater access to the panel or access that is not subject to some sort of outside scrutiny. Transparency must apply equally to all parties – otherwise the process is not truly transparent.***
>
> ***The second principle is inclusiveness. The Commission has long advocated that, in the face of difficult challenges involving multiple perspectives, all affected parties and perspectives should be represented or included in discussions. To deny participation by any one party or perspective would not be consistent with this principle and, among other things, would undermine transparency.***
>
> ***The third principle would be equal access. In this case, we have asked the involved parties not to communicate with the panel outside of the meeting itself. The intent of that request is twofold: (1) to allow the panel to prepare for the meeting without interruption and (2) to ensure that the all involved parties have equal access to them. To deny Gordon, or at least some outside observer/participant, the opportunity to be present during the estero trip would run counter to the principle of equal access.***

Dr. Ragen's decision stood for principles of **transparency, inclusiveness, and equal access**. He wrote eloquently, for example, that:

> ***I do not believe that such transparency can be achieved if we selectively allow some parties greater access to the panel or access that is not subject to some sort of outside scrutiny. Transparency must apply equally to all parties – otherwise the process is not truly transparent.***

These words established principles that our community and elected officials share with Dr. Ragen. We could all find common ground with these principles of transparency, inclusiveness, and equal access. We looked forward to a fair MMC process.

The principles Dr. Ragen described in his email on February 18, 2010 were echoed in the MMC Scientific Integrity Policy that he filed with the While House Office of Science and Technology Policy on March 29, 2011. Dr. Ragen assured the White House of:

> **"*honest investigation, open discussion, refined understanding, and a firm commitment to evidence.*"**

Dr. Ragen wrote that the Commission seeks:

> **"** ***input from and open dialogue among all parties engaged in all issues …*****"**
>
> **"*open exchange of information and viewpoints ...*"**

Dr. Ragen's principles in his Scientific Integrity Policy in March 2011 -- **open discussion, open dialogue, and open exchange** – were aligned with the principles he wrote in February 2010 – **transparency, inclusiveness, and equal access**.

Some of Dr. Ragen's principles were repeated once again on September 29, 2011 in an email to David Weiman (DBOC consultant) when he wrote concerning his conversation with Mr. Gordon Bennett and Mr. Neal Desai:

> ***I reminded them that the Commission won't use anything they send unless it is available for all to review.***

That was an excellent re-statement of Dr. Ragen's principles of inclusion and equal access. The problem is that Dr. Ragen did not follow his own principles. Much of what was submitted and discussed with Dr. Ragen by Drs. Harwood, Becker, and Richard, and Mr. Bennett and Mr. Desai, during September-October 2011 was not shared with Dr. Goodman, even though much of it was featured in or influenced what Dr. Ragen wrote in his MMC Report release on November 22, 2011.

Dr. Ragen promised the community and elected officials that he would conduct an independent review – without bias or conflict – that would be fair and provide equal access to all parties. He claimed that he was only interested in the science, not politics, and that he would treat all parties equally without bias, would not have inappropriate interactions with any side, would share all data and analyses with all parties, and would recruit his own independent statistician to review the NPS Becker et al. 2011 paper.

The problem is that by the time Dr. Ragen released his MMC Report on November 22, 2011, he had failed in every promise he made to the community, to our elected officials, and to the White House. Dr. Ragen's failures became more profound with release of his 'private' letter to Dr. Goodman on June 17, 2012.

This complaint documents in detail the failures of Dr. Ragen to abide by the principles he established for the MMC in general, and the review of Drakes Estero in specific. In public, Dr. Ragen spoke and wrote of his lofty principles. In private, a picture emerges of another Dr. Ragen, working in secrecy rather than transparency, working exclusively with NPS rather than inclusively with all parties, and providing special access to NPS rather than equal access to all parties. As described below, much but not all of the evidence comes from two parallel FOIA requests submitted to the NPS and the MMC.

"Ben, as promised."

Those three words summarize this complaint. Those three words were the entirety of an email message from MMC Executive Director Dr. Tim Ragen to NPS scientist Dr. Ben Becker on Monday morning, August 29, 2011. Dr. Ragen's email contained a document (from Dr. John Harwood) that never should have been sent that morning to Dr. Becker.

While telling the public and elected officials that he was independently reviewing a key NPS scientific publication co-authored by Dr. Becker, Dr. Ragen was privately working with Dr. Becker to enable NPS to help review NPS, all under the auspices of the name and independence of the Marine Mammal Commission.

That one email reveals the two faces of Dr. Ragen: one public – proclaiming independence, fairness, equality, and a lack of bias – and the other private – conducting a secret, biased, one-sided process with NPS Dr. Becker. While proclaiming that he was conducting an independent review of Dr. Becker's key NPS paper, Dr. Ragen actually allowed Dr. Becker to staff and have a major impact on the review of his own paper.

Dr. Ragen empowered NPS to publicly proclaim that the MMC independently validated the NPS science in Dr. Becker's paper – that the MMC Report served as an independent peer-review of that paper – when in fact MMC Dr. Ragen and NPS Dr. Becker knew all along that this was really a self-review of NPS evaluating NPS.

Dr. Ragen's private actions contradicted many of his public principles, and violated many MMC policies and guidelines. As shown in detailed examples in this complaint, Dr. Ragen appears to have engaged in misconduct in the review and release, and later private reversal of the key conclusion, of his MMC Report on Drakes Estero.

"*Ben, as promised*." Those three words – and the implications of what had been promised and what it meant – say it all. Dr. Ragen violated the public trust. Dr. Ragen misled the public and elected officials. Dr. Ragen appears to be guilty of misconduct.

At the conclusion of the MMC review, Dr. Ragen initiated a statistical review of the NPS Becker et al. 2011 paper. Dr. Ragen espoused the principles of transparency, inclusiveness, and equal access. He wrote of open discussion, dialogue, and exchange.

Dr. Ragen directed three scientists, representing three parties, to submit reports to him by close of business on August 29, 2011. Publicly, Dr. Ragen promised to treat all parties equally, and to distribute all three reports simultaneously to all parties at close of business on August 30. He wrote to all parties at 7:37 pm.

Privately, however, Dr. Ragen conducted a secret email conversation with Dr. Becker. One minute before his public email, Dr. Ragen wrote to Dr. Becker (the fifth email below). Throughout that day, beginning in the morning, Dr. Ragen inappropriately shuttled every report to Dr. Becker as soon as it arrived, violating his promises and principles.

- ***"Ben, as promised."*** **11:24 am**
- ***"Ben – this just in – please replace the version I just sent."*** **11:26 am**
- ***"Ben, these two files from Corey are the last of the three reviews."*** **7:27 pm**
- ***"Ben, second part of Corey's analysis"*** **7:31 pm**
- ***"Ben, I sent you two files using YOUSENDIT."*** **7:36 pm**

The messages in red are the ones Dr. Ragen did not include in his FOIA response.

How do we know about these emails? Some of the evidence presented in this complaint was uncovered from two parallel FOIA requests. A nonprofit public advocacy organization, Cause of Action, submitted parallel FOIA requests (with Dr. Goodman's assistance) to both MMC and NPS, seeking all communications between Dr. Ragen and NPS officials and scientists over a time period that included August to November, 2011, the key four months in the review and release of the MMC Report on Drakes Estero.

We compared the responses to the two parallel FOIA requests. Nearly everything in the two responses (for the same time period) was identical. But certain emails and transmittals were missing from Dr. Ragen's response to the parallel FOIA requests. What was missing was not random, and apparently not accidental. The emails and transmittals that Dr. Ragen failed to disclose are key to this complaint (e.g., the three red "Ben" emails above #3-5). Dr. Ragen apparently violated the federal FOIA law.

Five specific allegations are presented here concerning Dr. Ragen's misconduct and deception involving his oversight of the MMC Report on "Mariculture and Harbor Seals in Drakes Estero, California" on November 22, 2011, and his private (concealed) reversal of the key conclusion from his MMC Report in a letter on June 17, 2012. It is alleged that:

1) **Dr. Ragen Violated MMC Policies Established for Scientific Review**
   a. Did Not Treat All Parties Equally But Had Biased Interactions with NPS
   b. Did Not Conduct an Independent Review of NPS Data and Analysis
2) **Dr. Ragen Changed MMC Terms of Reference Without Disclosure or Discussion**
   a. Changed Scope, Title, and Purpose of MMC Report
   b. Accepted Lack of Disclosure of Key Data and Paper by NPS
3) **Dr. Ragen Violated the Federal Freedom of Information Act (FOIA)**
   a. Failed to Disclose and Release Key Communications
   b. Failed to Provide Basis for Failing to Disclose & Release Key Communications
4) **Dr. Ragen Violated MMC Scientific Integrity Policy**
   a. Did Not Follow Open Discussion, Open Dialogue, Open Exchange
   b. Undermined and Avoided Meetings to Discuss Data and Analysis
5) **Dr. Ragen Failed to Properly Disclose Reversal of Key Conclusion of MMC Report**
   a. Reversed MMC Support of Key NPS Paper In a 'Private' Letter
   b. Concealed Reversal While Claiming Key MMC Conclusion Was Unchanged

This complaint focuses on a series of examples of Dr. Ragen's misconduct from August to November 22, 2011 when his MMC Report was released, and from November 29, 2011 (when Dr. Goodman and Mr. Lewis submitted a critique of the MMC Report to Dr. Ragen) until June 17, 2012 when Dr. Ragen sent a 'private' letter to Dr. Goodman (in which he reversed his key conclusion, without public disclosure). The appendix provides a detailed analysis of Dr. Ragen's June 17, 2012 letter to Dr. Goodman. On that basis alone, the MMC Report and the Becker 2011 paper should be retracted.

These examples are not exhaustive. Additional examples, particularly involving events prior to August 2011 (e.g., during the MMC panel meeting in February 2010, when the NPS secret cameras were discovered in summer 2010, and when Dr. Ragen's first draft of his MMC Report in June 2011 accepted the NPS Becker et al., 2011 paper without doing an independent review of it) will be provided during interviews and fact-finding.

MISCONDUCT COMPLAINT AGAINST MMC DR. TIM RAGEN

1. Dr. Ragen Violated MMC Policies Established for Scientific Review

Evidence is presented below that shows that Dr. Ragen did not treat all parties equally, had biased interactions with NPS, and did not conduct an independent review of NPS data and analysis.

1A. Promised Independence of Dr. Ragen's MMC Report

Beginning in 2007, NPS and their supporters claimed that NPS had 'evidence' showing that Drakes Bay Oyster Company (DBOC) boats and workers were disturbing the harbor seals in Drakes Estero (in violation of the Marine Mammal Protection Act). Critics of the NPS, based upon reviews of NPS data and reports, contended that NPS did not have scientific evidence that the oyster farm was harming the harbor seals in Drakes Estero and that the NPS harbor seal database did not support the NPS claims.

On July 21, 2007, then-NPS Director Mary Bomar and Senator Dianne Feinstein directed then-West Regional Director Jon Jarvis (now NPS Director) to engage the National Academy of Sciences (NAS) to conduct an independent study of NPS science to determine the validity of the NPS claims that the oyster farm was causing environmental impacts in Drakes Estero (Pt. Reyes National Seashore, Marin County, California).

The NAS panel released its report "*Shellfish Mariculture in Drakes Estero*" on May 5, 2009. The NAS panel found the NPS misrepresented NPS data in every category of environmental harm including harbor seals. The NAS concluded:

> *"… there is a lack of strong scientific evidence that shellfish farming has major adverse ecological effects on Drakes Estero"*

In June 2009, a month after the NAS Report was released, the Sierra Club and the National Parks Conservation Association (NPCA), with the active support of then-NPS West Regional Director Jon Jarvis, petitioned the MMC. Together they claimed that the NAS Report was wrong concerning the impact of the oyster farm on the harbor seals, and asked the MMC to conduct yet another investigation of the same issue.

On July 1, 2009, the MMC formally notified the petitioners that the MMC would undertake the investigation as requested. Over the next several months, Dr. Ragen prepared a detailed 'Terms of Reference' – a scope of work concurred to by all parties including the NPS – by which the MMC agreed to re-review the NPS harbor seal data.

In January 2010, shortly before a scheduled four-day MMC panel meeting in February, Dr. Ragen promised that the MMC would function independently, be guided exclusively by science, show no bias or favoritism toward any party, treat all parties equally, and arrange for an independent statistician to analyze the NPS data for the MMC.

- Dr. Ragen cautioned his panel members not to socialize with one side or the other – but he violated his own policy by, for example, socializing in the evening with a key NPS scientist during his MMC panel meeting.

- Dr. Ragen assured all parties and the public that his review would be unbiased – but his private actions were biased throughout the process towards NPS.
- Dr. Ragen promised to distribute documents equally to both sides at the same time – but he sent key documents to NPS months before sending them to DBOC.
- Dr. Ragen vowed to conduct an open process with open meetings, discussion, exchange, and dialogue – but he facilitated NPS' scuttling of multiple meetings.
- Dr. Ragen frequently repeated these principles and rules throughout his review – but he secretly violated them in his private interactions with NPS scientists.
- Dr. Ragen assured the public, its elected officials, and all parties that his process would be independent, open, and transparent, neither relying on nor siding with the NPS or its scientific critics. We now know that was not the case.

This complaint provides examples of Dr. Ragen's bias, and of violations of his own policies and guidelines. Additional examples of Dr. Ragen's misconduct will be provided to the DOC OIG by Dr. Goodman, Mr. Weiman, and Mr. Lunny during interviews and fact-finding.

1B. Five Examples of Dr. Ragen's Misconduct and Deception

The five examples presented below provide evidence that Dr. Ragen did not treat all parties equally, had biased interactions with NPS, and did not conduct an independent review of NPS data and analysis.

1B1. Two Critical Days in Late August 2011

An example is presented here that contrasts Dr. Ragen's public vs. his private actions, and shows that Dr. Ragen was deceptive and violated his own policies and guidelines. This example serves as a striking example of Dr. Ragen's misconduct by showing his bias and willful disregard for his own policies and rules. The timeline in Figure 1 below of two critical days in late August 2011 is described in detail in the text.

Public communications equal with all parties

On July 28, 2011, Dr. Ragen sent an email to all parties involved in the statistical review of the NPS Becker, Press, and Allen 2011 paper (herein called the Becker 2011 paper). Dr. Becker, Mr. Press, and Dr. Allen are NPS scientists at Point Reyes National Seashore, and their paper was the key NPS 'evidence' for DBOC harm to harbor seals in Drakes Estero. To this day, this NPS paper remains the basis for "*evidence*" of harm to harbor seals by the DBOC oyster boats and workers.

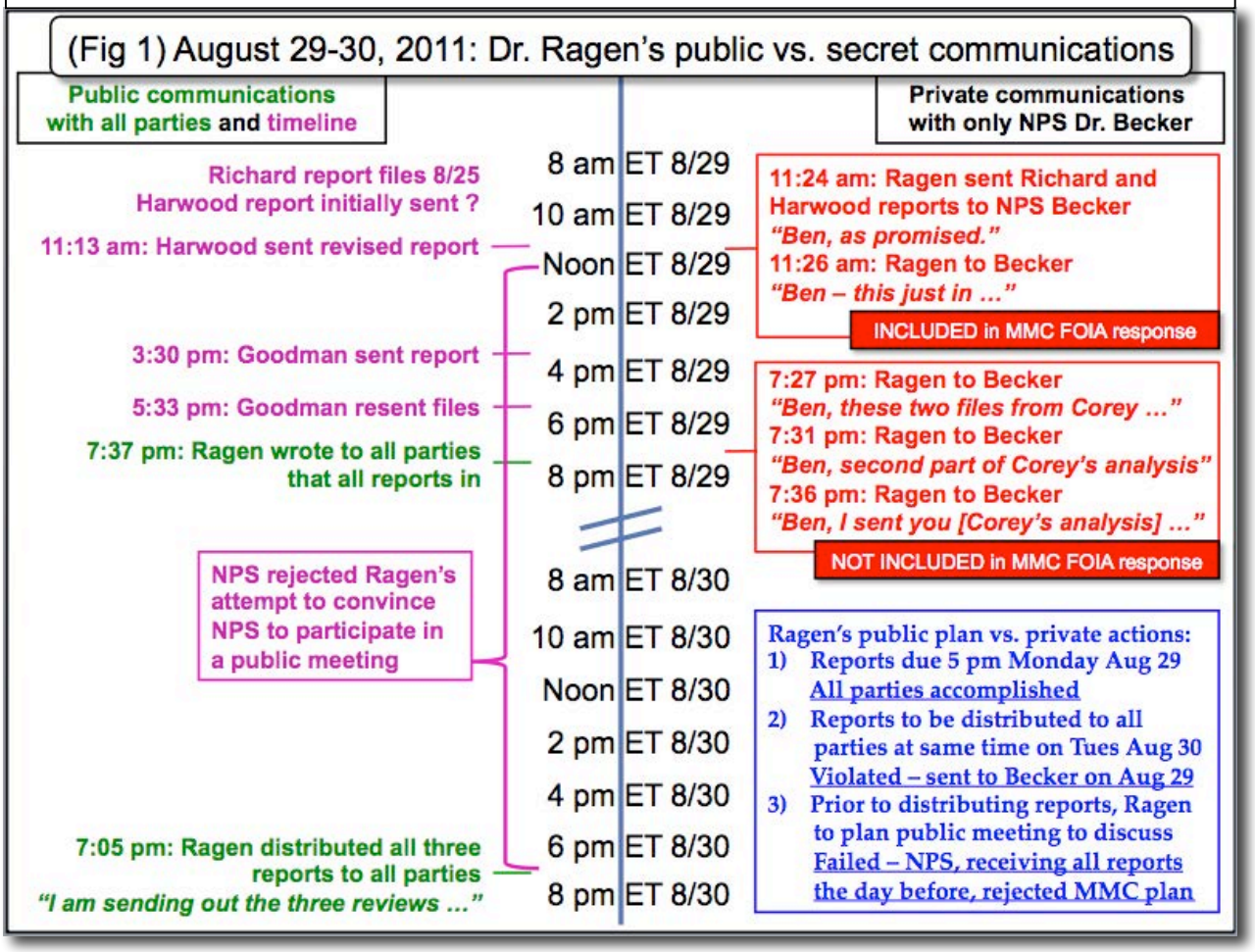
The Becker 2011 paper asserted NPS had "*evidence*" showing the oyster farm caused a spatial displacement of harbor seals out of Drakes Estero. The paper was entitled:

> *Evidence for long-term spatial displacement of breeding and pupping harbour seals by shellfish aquaculture over three decades*

Dr. Ragen set the ground rules for the review of the Becker 2011 paper and the data upon which it was based. He asked that all reviews be completed by August 19 (he

subsequently extended that deadline to August 29). He asked that the reviews be independent.

Figure 1: the two faces of Ragen: public vs. private. Ragen's process over two days in August 2011 (29th-30th). Figure shows public communications and timeline on left, and private communications with NPS Dr. Becker on right. Some of his communications with NPS were not disclosed by MMC in response to a FOIA request. The blue box contrasts Dr. Ragen's public vs. private actions and consequences. Dr. Ragen deceived the public and elected officials to believe he was unbiased and independent, when in fact he had a special relationship with NPS and, as shown in Figures 1-5, gave NPS special access and control.



Dr. Ragen asked the scientists conducting the reviews not to contact the other parties to discuss their reviews and findings prior to submission. Dr. Ragen wrote:

> *"I will distribute all three reviews to all three parties after I receive them all."*

On August 25, Gordon Bennett (originally representing the Sierra Club, one of the two petitioners) wrote to Dr. Ragen:

> *"We would appreciate (and insist) that this Review not be shared with any other party to this matter until all parties' statistical reviews are irreversibly filed with you. It has been our experience over the past years that other parties to this matter have repeatedly gained early and unfair access to documents that have materially helped them hone their lobbying or their public messaging. We thus ask that you take special care that this does not occur with our expert's Report. We expect that after all parties' expert Reports have been filed, there will be the usual amount of*

controversy and attempts to undermine one or the other of the expert Reports. We can accept that only so far as it occurs on an "equal opportunity" basis."

Forty minutes later, on August 25, Dr. Ragen responded:

"I am considering how to go forward from here, but I can assure you that I will not share your experts review until I have discussed that plan with you."

A few hours later, on August 25, Dr. Ragen wrote to all parties, reminding us that all reports were due by Monday August 29 at 5 pm ET. In various conversations, he assured all parties, as he had told us previously, that he would distribute the three reports to all parties simultaneously, just as he had implied to Gordon Bennett in writing earlier that day.

The three reviews were written by Dr. Dominique Richard (an engineer and consultant) on behalf of Mr. Bennett, an NPS supporter; Dr. John Harwood (University of St. Andrews, Scotland) on behalf of Dr. Ragen; and Dr. Corey Goodman (U.C. San Francisco faculty member) on behalf of Steve Kinsey, Marin County Supervisor.

As represented in green on the left-hand side of the figure above, Dr. Dominique Richard's report was submitted (by Mr. Bennett) to Dr. Ragen on August 25, 2011. We don't know when Dr. John Harwood's original report was submitted, but he sent a revised version on Monday August 29 at 11:13 am ET to Dr. Ragen.

Dr. Goodman's report was submitted to Dr. Ragen on Monday August 29 at 3:30 pm ET. The files were submitted to Dr. Ragen using 'YouSendIt' at 4:02 pm ET. At 4:42 pm ET, Dr. Ragen said that he was not able to download the files sent through 'YouSendIt'. Less than an hour later, at 5:30 pm ET, Dr. Ragen asked that the files be sent via 'TransferBigFiles' and instructed Dr. Goodman to use Dr. Ragen's personal email address instead. Dr. Goodman did as requested at 5:33 pm ET.

Two hours later, at 7:37 pm ET on Monday, August 29, Dr. Ragen sent the following to all involved (i.e., Drs. Richard, Harwood, and Goodman, as well as other parties):

"Thanks, All, for getting me your analyses. I will send you a plan for our next steps tomorrow morning."

Twenty-four hours later, at 7:05 pm ET on Tuesday August 30, Dr. Ragen sent the submitted reports to all parties involved with the note:

"I am still working on the next steps for completing this review and the Commission's report. In the meantime, I am sending out the three reviews in a zip file (containing 5 files). I will be in touch with you tomorrow regarding the next steps."

Throughout Monday August 29 and Tuesday August 30, prior to his release of all three critiques at 7:05 pm ET on Tuesday, Dr. Ragen worked with Senator Feinstein's office to arrange for a public meeting sponsored by the MMC to review the NPS Becker 2011 paper and the three critiques of that paper.

Late on Monday afternoon, Dr. Ragen told David Weiman (DBOC consultant) that he was working with Senator Feinstein's staff to develop a short-term plan as follows. All parties would be provided copies of the three reviews, NPS would be asked to respond within 48 hours, and Dr. Ragen would organize a near-term date (next week or two) for the public meeting at Point Reyes (so the community would be afforded the opportunity to listen and judge for itself whether or not the NPS data supported the NPS claims). Dr.

Ragen told Mr. Weiman that he would circulate the plan and timetable on Tuesday morning.

The following afternoon (Tuesday August 30), a few hours before distributing the three reports, Dr. Ragen and Mr. Weiman had another conversation. A short time later (5:46 pm ET), Mr. Weiman informed Dr. Goodman and others of his conversation with Dr. Ragen:

> *" (1) NPS will not agree to review and comment on the three analyses – Goodman, Harwood and Bennett.*
>
> *(2) NPS will not agree to a meeting."*

Twenty-five minutes later (6:13 pm ET, August 30), Mr. Weiman sent a follow up note:

> *"Tim said he would try and circulate all received materials later tonight."*

Indeed, nearly one hour later, at 7:05 pm ET on Tuesday August 30, Dr. Ragen sent all three reports to all parties involved with the note:

> *"I am still working on the next steps for completing this review and the Commission's report. In the meantime, I am sending out the three reviews in a zip file (containing 5 files). I will be in touch with you tomorrow regarding the next steps."*

Dr. Harwood's and Dr. Goodman's reviews had many similarities. Both recognized the same factors that influenced the NPS data and analysis (e.g., the "marauding" elephant seal at Double Point in 2003). Both were critical of the NPS Becker 2011 paper.

The next morning (Wednesday August 31) at 10:03 pm ET, Dr. Goodman talked with Dr. Ragen and took the following notes. Dr. Ragen was highly critical of the NPS. He told Dr. Goodman: "*NPS refused to participate*." This is the "*nail in the coffin*." "*I have no doubt your analysis is going to hold up just fine*." Dr. Ragen told Dr. Goodman that interacting with both NPS and their supporters the day before (Tuesday August 30) was as if he was in "*The Twilight Zone*" (citing the famous 1960's TV series). He called his conversations with NPS and their supporters the day before "*surreal*."

Private communications in secret with only NPS

What happened behind the scenes? Instead of announcing the MMC plan to proceed, Dr. Ragen gave NPS veto power over an open discussion and exchange, and over a true independent review of NPS science – and they exercised it.

Dr. Ragen's 'plan' was to get a commitment from all parties – including NPS in particular – for a public meeting prior to the distribution of the three reports. Why did Dr. Ragen's and Senator Feinstein's plans for a public meeting get turned down by NPS? Why did NPS and their supporters refuse to participate in this meeting? Why didn't Dr. Ragen stick to his plan and organize the meeting (as was his prerogative) and simply announce that NPS refused to participate? Why did Dr. Ragen allow NPS to have veto power?

DBOC requested a public meeting. Senator Feinstein made the same request. So did Dr. Goodman. NPS said no – and their decision was controlling. Dr. Ragen withdrew his plan for a MMC-sponsored public meeting.

The emails obtained pursuant to FOIA reveal that Dr. Ragen was not functioning independently as promised, but rather was secretly working closely with NPS. Dr. Ragen

gave NPS decision-making authority.

The MMC-hosted public meeting to discuss the statistical reviews of the key Becker 2011 paper never occurred. From hereon, as documented later in this complaint, Dr. Ragen never again discussed the substance of the scientific reviews and statistics with either Dr. Goodman or David Lewis, Dr. Goodman's collaborator (Director, University of California Cooperative Extension, Marin County).

Dr. Ragen's last substantive scientific discussion with Dr. Goodman took place on August 25, 2011, when Dr. Goodman made a preliminary presentation by telephone of his report – still in draft form – to Dr. Ragen. As shown later in this complaint, an undisclosed double standard emerged. While excluding Dr. Goodman and Mr. Lewis, Dr. Ragen worked extensively and separately with NPS Dr. Becker and NPS supporter Dr. Richard.

What went on behind the scenes over those two days prior to 7:05 pm ET on Tuesday August 30 when Dr. Ragen sent all three reports to all parties involved? We do not know all of the details, and ask the DOC OIG to investigate and report your findings. Nevertheless, the following is known based upon responses to parallel FOIA requests made to both MMC and NPS.

The MMC and NPS responses to parallel FOIA requests provide evidence that Dr. Ragen was not telling the truth when he said he was treating everyone equally and not showing any bias. Rather, Dr. Ragen was actively violating his own promises and policies.

A nonprofit public advocacy organization, Cause of Action, Washington, DC, submitted parallel FOIA requests (with Dr. Goodman's assistance) to both MMC and NPS, seeking all communications between Dr. Ragen and NPS officials and scientists over a time period that included this critical two-day period of time.

Dr. Ragen provided some – but not all – of the emails and communications between himself and NPS Dr. Becker. In apparent violation of the Federal FOIA law and the President's policy on transparency (January 21, 2009), Dr. Ragen failed to provide certain key communications by withholding and not disclosing documents that revealed his double standard. The MMC neither acknowledged the existence of these communications nor provided a reason for withholding them. The MMC response was silent on the topic. The key transmittals were not provided by MMC, but were provided by NPS in response to the parallel FOIA request submitted to NPS.

From MMC and NPS, Cause of Action received the following two emails, as represented in the top red box on the right-hand side of the figure above.

At 11:24 am ET on Monday August 29, in violation of his policies and promises, Dr. Ragen sent both Dr. Richard's and Dr. Harwood's reports to NPS Dr. Becker with the email note:

> *"Ben, as promised."*

Since the FOIA response provided no previous emails on this topic, we presume that the "*as promised*" refers to a conversation (or conversations) in the previous days. This transmittal and comment "*as promised*" also raises the questions of whether Dr. Ragen had told Dr. Becker ahead of time about the conclusions and criticisms raised by Dr. Harwood, and by Dr. Goodman as well. The comment "*as promised*" is one of the

clearest examples of the two faces of Dr. Ragen, one public and the other private. The comment "*as promised*" supports the hypothesis that selected documents were provided to Dr. Becker in advance of public distribution of them (and in many other cases, as detailed in later sections below, in the absence of public distribution of them).

Two minutes later, at 11:26 am ET on Monday August 29, Dr. Ragen sent another email to Dr. Becker, and wrote:

> *"Ben – this just in – please replace the version I just sent. Thanks, Tim"*

This email included a revised version of Dr. Harwood's report with the cover note from Dr. Harwood. None of this was shared with Dr. Goodman or Mr. Lunny.

Those were the only specific communications between Dr. Ragen and NPS Dr. Becker on August 29, 2011 provided by the MMC in response to the FOIA request. These were not the only communications between them that day.

In contrast, the FOIA response from the NPS provided not only these two emails from Dr. Ragen to Dr. Becker, but an additional four emails and transmittals that day between Dr. Ragen and Dr. Becker, not provided by the MMC FOIA response, as represented in the second red box on the right-hand side of figure 1 above.

At 7:27 pm ET on Monday August 29, Dr. Ragen sent to Dr. Becker via 'YouSendIt' Dr. Goodman's file entitled "*analysis of Becker 2011.CSG.part1.pdf*" with the note:

> *"Ben, these two files from Corey are the last of the three reviews"*

At 7:31 pm ET, Dr. Ragen sent Dr. Becker part 2 of Dr. Goodman's analysis with the note:

> *"Ben, second part of Corey's analysis"*

At 7:36 pm ET, Dr. Ragen sent Dr. Becker the following with subject "*Corey's analysis*":

> *"Ben, I sent you two files using YOUSENDIT. Let me know if you don't get them. Thanks"*

Then finally, at 7:37 pm ET, as reported above, Dr. Ragen sent a note to all parties telling us:

> *Hi All, Thanks, All, for getting me your analyses. I will send you a plan for our next steps tomorrow morning. Best, Tim*

At 8:32 pm ET, Dr. Becker replied to Dr. Ragen's "*Corey's analysis*" with the following:

> *"got them, thanks."*

What is most remarkable about this timeline is that it reveals that around 7:30 pm on Monday evening, August 29, 2011, Dr. Ragen was conducting two simultaneous email conversations – the two faces of Dr. Ragen were communicating nearly simultaneously:

- the first openly with all parties (consistent with the rules Dr. Ragen had established for the review, and what he told Feinstein's office and Mr. Weiman), and
- the second secretly with NPS Dr. Becker (inconsistent with his MMC rules and policies).

At 7:36 pm, Dr. Ragen emailed Dr. Becker and asked him to let him know if he did not receive "*Corey's analysis*" – the report from Dr. Goodman. One minute later, at 7:37 pm,

Dr. Ragen sent a message to all parties involved (including Drs. Becker, Richard, Harwood, and Goodman, as well as other parties), and wrote:

> *"Thanks, All, for getting me your analyses. I will send you a plan for our next steps tomorrow morning."*

Dr. Ragen secretly gave all three reports to Dr. Becker one day before he gave them to the other parties. Why was this secret transmittal of the three reports to NPS Dr. Becker important? The timing was critical.

Dr. Ragen told Senator Feinstein's office and Mr. Weiman that he would spend the next day (prior to distributing the reports) getting commitments from all parties (particularly from NPS) to participate in an MMC-sponsored public meeting to discuss the Becker et al. 2011 paper, and the three critiques of it. Dr. Ragen knew NPS would be reluctant to participate.

Dr. Ragen knew NPS wanted to know what Drs. Harwood and Goodman had concluded before agreeing to such a public meeting. Dr. Ragen promised Feinstein's office that he would hold the reports back for a day until all parties agreed to the meeting.

Thus, when Dr. Ragen secretly sent NPS the statistical reviews ahead of time, he predetermined his efforts would be futile. His attempt to organize a public meeting became a charade. Everything had been given to NPS. When NPS saw how Dr. Harwood's critiques paralleled Dr. Goodman's, they would (and did) surely decline to participate in any public meeting at which the NPS Becker et al. 2011 paper was critiqued.

If Dr. Ragen was committed to the plan of holding a public meeting, his actions certainly did not indicate as much. Were he committed, he would not have secretly given Dr. Harwood's and Dr. Goodman's reports to Dr. Becker while trying to negotiate the meeting with NPS. Were he committed, he would have held the meeting regardless of NPS refusing to participate. Were he committed, he would have behaved in private as he claimed in public – he would have acted independently.

As soon as NPS declined, Dr. Ragen cancelled plans for a public meeting and open discussion, and replaced it instead, as described in detail later in this complaint, with a private and secret one-sided process in which he had no substantive scientific discussions with Dr. Goodman or Mr. Lewis, and instead relied and interacted extensively with Dr. Becker.

NPS officials actively participated in covert interactions with MMC's Dr. Ragen

It is clear from FOIA responses that private, substantive communications were taking place between Dr. Ragen (MMC) and Dr. Becker (NPS). Next is the question of whether NPS officials and scientists were passive recipients of Dr. Ragen's inappropriate and asymmetric distribution of information, or alternatively, whether they were active participants in these covert communications. Based upon the limited (and manipulated) record, it is clear that NPS officials and scientists actively participated in communications not available to other parties.

From what is documented above from the disclosed emails, transmittals, and MMC statements, NPS scientist Dr. Ben Becker was aware that the parties involved in the statistical review of the NPS paper he co-authored and elected officials (e.g., Senator

Feinstein's office and Supervisor Kinsey) believed that all parties were being treated equally, and that the three statistical reviews were being distributed simultaneously to all parties on Tuesday evening August 30.

Dr. Becker knew that it was inappropriate for him to receive these documents in advance of the others, but he accepted Dr. Ragen's 'promise' to provide them early, accepted the information and documents, and remained silent on this topic. He thanked Dr. Ragen for sending them.

Dr. Becker knew he participated in private (and inappropriate) conversations with Dr. Ragen about the reviews, and had been prematurely (and inappropriately) sent the reviews prior to the group distribution. Dr. Becker knew that Dr. Ragen's group distribution on Tuesday August 30 falsely implied to the group that this was the promised simultaneous distribution to all parties.

Did Dr. Becker tell his superior, Superintendent Cicely Muldoon? Did Dr. Becker tell others? With whom did Dr. Becker share the information – either the reviews themselves or his description of them? Did this premature and inappropriate distribution of information influence Superintendent Muldoon's decision to refuse to participate in the MMC-sponsored public meeting to discuss the statistical reviews of the NPS Becker paper? The meeting was intended to allow MMC to reconcile the different analyses.

Superintendent Muldoon, like Dr. Becker, remained silent on the fact that NPS was provided the reviews one day prior to everyone else.

On Tuesday August 30, 2011 at 5:53 pm PT, Kevin Lunny wrote to Ms. Muldoon:

> *"The MMC just informed us that NPS will not review Dr. Goodman's analysis and will not participate in a meeting to review the Becker paper. Is this accurate? Why?"*

On Wednesday August 31, 2011, at 7:20 pm PT, Ms. Muldoon responded:

> *"The NPS is looking at all three of the reviews of the statistical analysis that Tim sent to the group yesterday, as I expect all parties involved are. Just as he did during the review period, Ben will continue to answer any remaining questions about the analysis that Tim asks as he works towards finalizing the Commission's report."*

By this email, Superintendent Muldoon confirmed that NPS would not participate in a public meeting, as Dr. Ragen previously announced. In her email to Mr. Lunny, the Superintendent perpetuated the myth that the three reviews were distributed to the group on Tuesday, as publicly announced and according to MMC guidelines, when in fact Dr. Becker had been given a copy of the three reviews a day earlier (and had possibly known about them earlier still).

In other words, NPS was ***not*** a passive recipient of Dr. Ragen's covert communications. They knew they were participating in the violation of MMC policies and rules. In other words, they were not passive recipients, but rather active co-participants in this private channel of inappropriate transmittals and communications.

Conclusions from example #1 of Dr. Ragen's public policies vs. secret actions

What do we learn from Dr. Ragen's actions over this two-day period from Monday

August 29, 2011 to Tuesday August 30, 2011, and his response to a FOIA request that included a request for his communications with NPS over these two days?

- First, Dr. Ragen violated the very policies he established by prematurely and inappropriately distributing Dr. Harwood's, Dr. Richard's, and Dr. Goodman's analyses to only NPS Dr. Becker on Monday August 29.
    - Dr. Ragen promised all parties that he would distribute the three statistical reviews simultaneously to all parties on Tuesday August 30. Instead, he secretly sent all three reports to Dr. Becker on Monday August 29. He did so just a few minutes before his disingenuous email to all parties telling them that he would send next steps on the following morning. His public policies were in marked contrast to his private interactions with NPS.
    - The following evening, at 7:05 pm ET on Tuesday August 30, Dr. Ragen distributed the three statistical reviews to all parties – including Dr. Becker (as if Dr. Becker were receiving them for the first time). This was the second time in two days that Dr. Becker received these same documents. Dr. Ragen excluded any reference in his public email that the documents were previously provided to Dr. Becker.
- Second, by prematurely – and surreptitiously – sending both Dr. Harwood's and Dr. Goodman's critique of the NPS Becker 2011 paper to NPS Dr. Becker, Dr. Ragen thereby undermined (i.e., scuttled) the opportunity to abide by MMC policies and sponsor an open discussion of the Becker et al. 2011 paper at a public meeting.
    - While publicly stating that MMC wanted to sponsor a public meeting to discuss the Becker 2011 paper, Dr. Ragen secretly allowed NPS to control the so-called 'independent' MMC agenda and veto the public meeting.
    - When Dr. Ragen spoke with Mr. Weiman and Dr. Goodman, he acted surprised and frustrated at the refusal from NPS, when in fact he predestined (and all but predetermined) the NPS refusal by prematurely sending them Dr. Harwood's and Dr. Goodman's critical analyses.
- Third, by failing to provide (and deliberately withholding the disclosure of) the key emails and transfers of Dr. Goodman's report to Dr. Becker in the MMC FOIA response to Cause of Action, Dr. Ragen appears to have violated the Federal FOIA law. Dr Ragen did not provide, pursuant to FOIA, his emails to Dr. Becker that would have revealed his violation of the MMC policies he established for the statistical review.
- Fourth, the transfer of Dr. Goodman's report to Dr. Becker on Monday August 29 represents misconduct – and it was these emails that Dr. Ragen specifically withheld. Absent the Cause of Action parallel FOIA requests to NPS and MMC, Dr. Ragen's misconduct would not be disclosed today.
- Fifth, this secret transfer of documents to NPS Dr. Becker is indicative of the pervasive and inappropriate relationship between the MMC Executive Director and NPS staff in which he favored them, relied on them, and accepted their analysis to the exclusion of other parties.
- Sixth, in the end, there were two faces to Dr. Ragen, one public and the other

private. In public he espoused his fairness, independence, and lack of bias, while in private he established a secret back-channel of communications with NPS Dr. Becker.

"Ben, as promised." This is just one example. Below are further examples of Dr. Ragen's inappropriate and deceptive actions, and his misconduct.

1B2. Dr. Harwood's Response to Dr. Goodman's Critique

The critiques by Drs. Goodman, Richard, and Harwood of the NPS Becker et al. 2011 paper were due to Dr. Ragen by 5 pm on Monday August 29, 2011, and were distributed by Dr. Ragen to all parties at 7:05 pm on Tuesday August 30, 2011. After reading Dr. Harwood's critique on Tuesday night, August 30, Dr. Goodman noticed some striking similarities in Harwood's criticisms and comments compared to his own. The next morning (August 31), Dr. Goodman emailed to Dr. Harwood:

> *Once you've had a chance to read my review, I'd like to compare notes and get your feedback. Could we talk Thursday?*
>
> *Needless to say, there are a lot of similarities in our two reviews, with mine taking a more quantitative approach to many of the issues both of us raised.*

An hour later, Dr. Harwood emailed back to Dr. Goodman:

> *I agree that we do seem to have identified some similar issues with the analysis in Becker et al. However, I think we should wait until Tim Ragen has decided on "the next steps for completing this review and the Commission's report" (as he mentioned in his most recent e-mail) before we compare notes. Once Tim has sorted that out, I'd be happy to talk.*

In a phone conversation later that day, Dr. Ragen confirmed by phone with Dr. Goodman that:

- Dr. Ragen had spoken with Dr. Harwood,
- Dr. Ragen did not want Dr. Goodman talking to Dr. Harwood, and
- Dr. Ragen would let Dr. Goodman know when he could speak with Dr. Harwood.

A few hours later, Dr. Goodman wrote to Dr. Harwood and copied Dr. Ragen:

> *Thanks John. Tim and I just spoke on the phone, and he suggested the same. Looking forward to talking.*

Dr. Ragen never allowed Dr. Goodman to speak with Dr. Harwood. In fact, as shown below, Dr. Ragen went one-step further – prohibiting communications between Dr. Goodman and Dr. Harwood, while secretly sending Dr. Harwood's comments to NPS Dr. Becker (but not to Dr. Goodman). Dr. Ragen controlled the flow of information, and he did so in a biased, asymmetric fashion.

A few days later (September 2), Dr. Ragen received an important set of questions and comments from Dr. Harwood in response to Dr. Goodman's critique. These were Dr. Harwood's written responses to Dr. Goodman's critique. Dr. Ragen sent them within one business day to NPS Dr. Becker, and asked him to respond, but Dr. Ragen never sent Dr. Harwood's response to Dr. Goodman, and only sent them to DBOC consultant Mr. Weiman over two months later (November 4), after Dr. Ragen's draft MMC Report was

nearly finished and ready to be sent out for review (November 8).

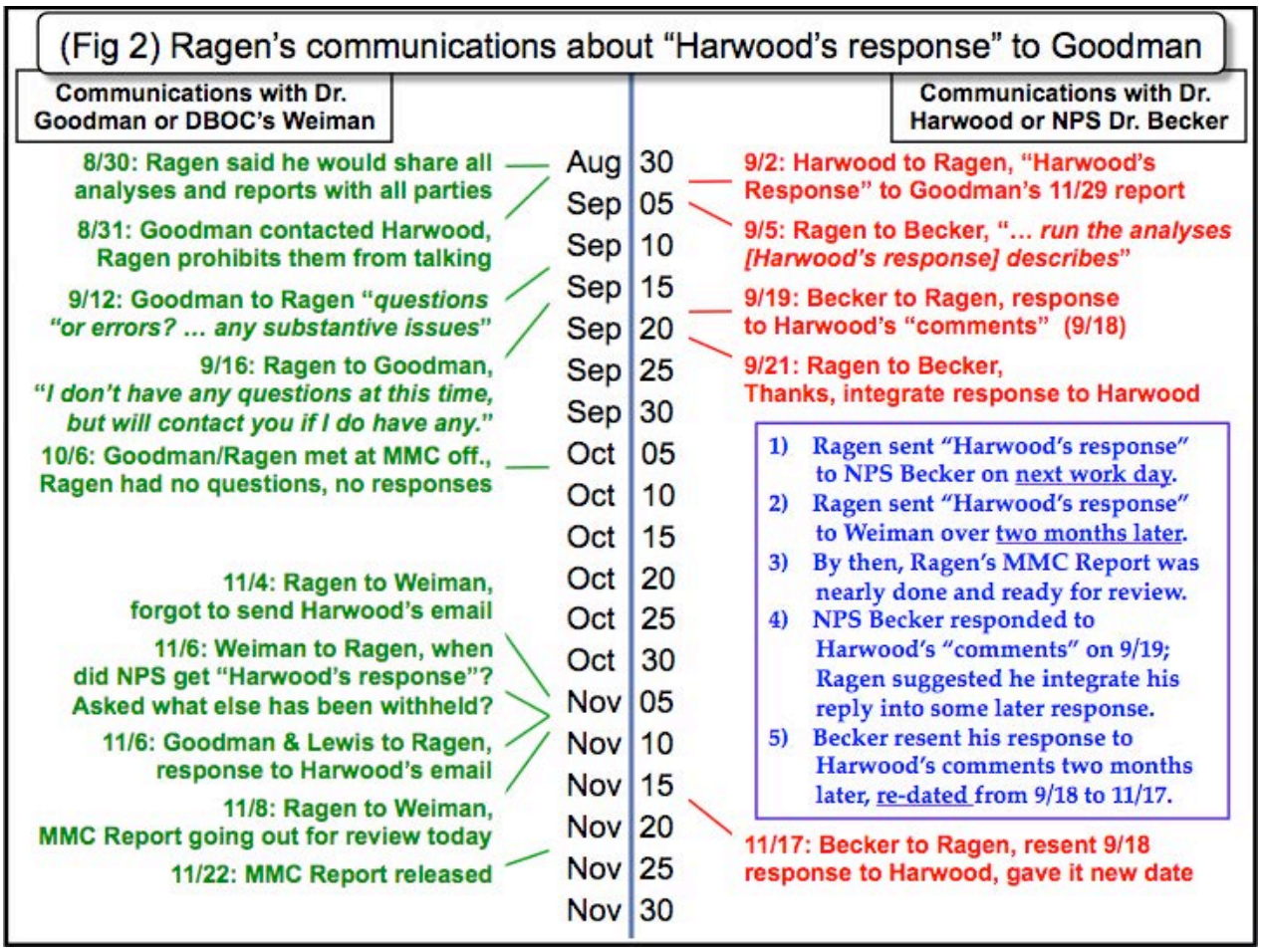
On Friday September 2, 2011, Dr. Harwood emailed his analysis of Dr. Richard's and Dr. Goodman's critiques to Dr. Ragen. Dr. Harwood wrote:

> *In case we can't get in touch, here are my thoughts on the possible next steps:*
>
> *1. Dr Richard's review focuses on the statistical methods used by Becker et al (GLMMs etc). He concludes, correctly in my opinion, that these are appropriate for the kinds of data used in the analyses and that they appear to have been implemented correctly. He does not consider the appropriateness of any of the response variables and covariates used in the analyses.*
>
> *2. Dr Goodman and I agree that there are problems with the covariates used in the regional level analyses of Becker et al., in particular the way in which changes at Double Point are accounted for and the inclusion of survey results from 1982 and 1983. Dr Goodman has rerun these analyses using different covariates and a different analytical approach (simple multiple regression, as far as I can tell). He also provides more detailed information about the impact of the "rogue" elephant seal at Double Point in 2003, which suggest that its impact was greater than described in Becker et al (they simply describe it as "aggressive", not lethal!), and compelling arguments why the data points from 1982 and 1983 are not strictly comparable with those in the rest of the time series.*
>
> *3. I think the statistical approach adopted by Becker et al is more robust than that used by Dr Goodman, so I suggest you ask* [Ben] *to rerun his regional level analyses for pups (as I have pointed out, I don't think the total count data are independently informative) using either the covariates proposed by me or those proposed by Dr Goodman, with and without the 1982 and 1983 values. If, as I suspect, this confirms Dr Goodman results, then I think the only valid conclusion is that there is no evidence for long-term displacement of seals from Drakes Estero that can be related to shellfish aquaculture.*
>
> *4. Dr Goodman is also unimpressed by the results of the intra-colony analysis, mainly because he does not think oyster harvest is a good proxy for disturbance associated with the operation of the oyster farm. I'm not qualified to comment on this, but the magnitude of the effect documented by Becker et al is small and I think even this is an over-estimate. It's hard to see how it would have any measurable effect on the viability of the Drakes Estero colony.*

In point #2, Dr. Harwood noted his agreement with Dr. Goodman concerning the importance of the rogue elephant seal at Double Point in 2003. He also noted his agreement with Dr. Goodman concerning why the data points from 1982 and 1983 should be not included with the rest of the timeline. But most important, Dr. Harwood asked that NPS Dr. Becker re-run his statistical analysis using the covariates proposed by Dr. Goodman (and without 1982 and 1983). He stated:

> "*If, as I suspect, this confirms Dr Goodman results, then I think the only valid conclusion is that there is no evidence for long-term displacement of seals from Drakes Estero that can be related to shellfish aquaculture."*

That was a very important proposal by Dr. Harwood, and, depending upon the outcome of the analysis, a very strong statement as to the conclusion that he would draw. Was this comment sent to Dr. Goodman in a timely fashion? No. Dr. Ragen sent it to Mr. Weiman (but not Dr. Goodman) two months later when his draft MMC Report was essentially complete. Was it sent to Dr. Becker? Yes, within one business day.



On the next business day, Monday September 5, 2011, Dr. Ragen forwarded Dr. Harwood's email to NPS Dr. Becker with the cover note:

> *Ben, I got the email below from John Harwood. Can you run the analyses he describes? Thanks, Tim*

We do not know what kind of phone conversations Dr. Ragen and Dr. Becker had concerning this communication from Dr. Harwood, or many others. Dr. Ragen never forwarded Dr. Harwood's comments and questions to Dr. Goodman, and he only forwarded them to DBOC consultant Mr. Weiman over two months later (November 4), after his draft MMC Report was nearly finished and ready to be sent off for review (November 8).

One paragraph is key to what Dr. Harwood wrote to Dr. Ragen on September 2:

> *I think the statistical approach adopted by Becker et al is more robust than that used by Dr Goodman, so I suggest you ask* [Ben] *to rerun his regional level analyses for pups (as I have pointed out, I don't think the total count data are independently informative) using either the covariates proposed by me or those proposed by Dr Goodman, with and without the 1982 and 1983 values. If, as I suspect, this confirms Dr Goodman results, then I think the only valid conclusion is that there is no evidence for long-term displacement of seals from Drakes Estero that can be related to shellfish aquaculture.*

Dr. Harwood wrote that if in fact the models were re-run using Dr. Goodman's covariates and Dr. Becker's statistical method (generalized linear model or GLM), and if that

analysis showed that Dr. Goodman's models were indeed superior to Dr. Becker's, that "*… the only valid conclusion is that there is no evidence for long-term displacement of seals from Drakes Estero that can be related to shellfish aquaculture."*

- Dr. Ragen never allowed that "*no evidence*" conclusion to be drawn – he protected NPS from Dr. Harwood's hypothetical conclusion by preventing the analysis Dr. Harwood proposed from being conducted. Alternatively, if NPS ran the analysis and submitted it to Dr. Ragen, then he failed to disclose it pursuant to FOIA.
- Dr. Ragen did not disclose the existence of Dr. Harwood's comments and questions and did not submit them to Dr. Goodman during the critical two months of September and October 2011.
- Dr. Ragen allowed Dr. Becker (without the knowledge of all other parties involved) to respond to Dr. Harwood's comments in private without ever re-running the models in the precise way that Dr. Harwood proposed. To our knowledge, there was no NPS written response to Dr. Harwood's September 2 request.
- Transparency and equal access were denied by MMC and NPS actions, in violation of MMC policies and guidelines.
- Dr. Ragen apparently did not require NPS Dr. Becker to run the analysis as recommended by Dr. Harwood using the NPS statistical method and Dr. Goodman's covariates. Instead Dr. Ragen permitted Dr. Becker to change the covariates, data, and the metrics. Dr. Harwood's specific request was not run (or if it was, it was not disclosed).
- Dr. Harwood was not informed by Dr. Ragen that Mr. Lewis had collaborated with Dr. Goodman and had in fact run the analysis using the same statistical method as Dr. Becker, and gotten the same results as reported by Dr. Goodman.
- Dr. Harwood was not informed that minor statistical modifications of Dr. Goodman's covariates (to eliminate what NPS Dr. Becker called "*overfitted models*") led to the same results as reported by Dr. Goodman.
- When Dr. Goodman asked Dr. Ragen by email on September 12 if he or Dr. Harwood had any comments or questions or critiques of his analysis, Dr. Ragen responded 'no.' Dr. Ragen was specifically asked, and he gave a false answer.
- When Dr. Goodman met with Dr. Ragen in his MMC office on October 6 and asked if he or Dr. Harwood had any comments or questions or critiques of his analysis, Dr. Ragen responded 'no.' Dr. Ragen did not disclose Dr. Harwood's comments and questions concerning Dr. Goodman's analysis, and prevented Dr. Goodman from speaking with Dr. Harwood.
- The first time that Dr. Ragen asked NPS Dr. Becker to re-run his analysis using modified versions of Dr. Goodman's covariates (although allowed to do so using different data and metrics) was for his June 17, 2012 'private' letter to Dr. Goodman (seven months after releasing the MMC Report).
    - In his June 17, 2012 letter, Dr. Ragen did not admit what is clearly shown in Table 2 of his letter, namely, that the only model of Dr. Goodman's that Dr. Becker re-ran (Dr. Goodman's 7th best model) was superior to Dr. Becker's

own best model.

- Had Dr. Ragen asked Dr. Becker to re-run Dr. Goodman's best model (as Dr. Harwood requested on September 2, 2011), he would have found – and been compelled to admit in Table 2 and the text of his June 17, 2012 letter – that Dr. Goodman's best model was far superior to Dr. Becker's best model.

In summary, Dr. Harwood was correct in what he requested on September 2, but Dr. Goodman was never informed, and Dr. Becker's response to Dr. Harwood's comments became a private conversation between Dr. Ragen and NPS Dr. Becker and was not properly disclosed. Dr. Ragen violated the MMC Scientific integrity Policy. Dr. Harwood's instinct was right. In fact, when Dr. Goodman's models were run using Dr. Becker's statistical method, they remained superior to Dr. Becker's models, and thus, as Dr. Harwood wrote, "*… the only valid conclusion is that there is no evidence for long-term displacement of seals from Drakes Estero that can be related to shellfish aquaculture."*

The manipulation of the MMC process – the privatizing of it among two federal agencies – fundamentally altered the conclusions in the MMC Report (November 22, 2011).

Dr. Ragen did not require a full and complete review as recommended by Dr. Harwood. Instead, Dr. Ragen allowed NPS Dr. Becker (to the exclusion of Dr. Goodman) to conduct further analysis in secret. Dr. Ragen also allowed NPS Dr. Becker to alter what Dr. Harwood requested. Dr. Ragen allowed Dr. Becker to change the data, metrics, and covariates. Dr. Ragen allowed NPS to call the shots.

It was also not what Dr. Ragen concluded at the end of his 'private' letter to Dr. Goodman on June 17, 2012, but buried in the text of Dr. Ragen's letter, and clearly presented in Table 2, is the analysis that confirmed Dr. Harwood's hypothetical conclusion. In other words, buried in Table 2 in Dr. Ragen's June 17, 2012 letter was finally presented the response to Dr. Harwood's key question from over nine months earlier.

All of this shows the profound bias, lack of transparency, and lack of independence that Dr. Ragen brought to his review, in contrast to what he publicly announced would guide the MMC process, statistical review, and ultimate MMC Report. Moreover, it reveals that Dr. Ragen violated his own policies and guidelines in allowing NPS to effectively privately review NPS, while publicly asserting that he was independent and unbiased.

This complaint is based on a partial, limited, and restricted access to the record. The DOC OIG may find additional evidence of misconduct if additional emails are released. We know of at least one additional key email from Dr. Harwood that the DOC OIG may wish to obtain – a key email that MMC refused to provide in response to our FOIA request, claiming exemption (b)(5) – pre-decisional deliberations. This email was sent by Dr. Harwood to Dr. Ragen on February 13, 2012 and, according to MMC, "*contained John Harwood's substantive comments on the review questions from Corey Goodman*." This email may further reveal Dr. Harwood's response to Dr. Goodman's analysis and questions – responses that Dr. Ragen prevented Dr. Goodman from seeing.

MMC withheld this email from Dr. Harwood, citing pre-decisional deliberations. MMC was not engaged in decision-making. It was engaged in statistical analysis. Data analysis is not decisional. It is analytical. This should have been disclosed. It should

now be disclosed.

Beginning on September 5, 2011, when Dr. Ragen forwarded Dr. Harwood's comments to NPS Dr. Becker and not to Dr. Goodman, communications between Drs. Ragen and Becker occurred as shown by the NPS and MMC responses to the FOIA requests. These communications are described below in the context of Dr. Goodman's interactions with Dr. Ragen.

On September 12, 2011, Dr. Goodman wrote to Dr. Ragen (in an email titled "*questions or errors?*"):

> *It's been two weeks since I submitted my analysis of Becker 2011 to you and it was forwarded to Dr. Harwood, Dr. Richard, and Dr. Becker. Have you, Dr. Harwood, or anyone else found any errors with my report, or require any clarification or additional analysis? Have any substantive issues for disagreement with the report emerged? Thanks. I look forward to hearing from you.*

On September 16, 2011, Dr. Ragen responded to Dr. Goodman:

> *Corey, sorry to be slow responding. I don't have any questions at this time, but will contact you if I do have any. Thanks, Tim*

Dr. Ragen gave no indication of having received Dr. Harwood's questions or comments concerning Dr. Goodman's analysis. Dr. Ragen had shared Dr. Harwood's questions concerning Dr. Goodman critique with Dr. Becker on September 5, but did not disclosure their existence to Dr. Goodman eleven days later on September 16.

Three days later, on September 19, 2011, Dr. Becker responded to Dr. Ragen (and cc'ed NPS Dr. Allen and Mr. Press) concerning Dr. Harwood's review of the Becker et al. 2011 paper:

> *Here are the requested analyses and comments in response to John Harwood's review of Becker 2011. Please let me know if you need any clarification or more detail. I believe that these analyses also address the bulk of comments found in the other reviews.*

Dr. Becker included an attachment (labeled: "*Becker MMC Stats Review Response.pdf*") that was co-authored by Dr. Becker, Mr. Press, and Dr. Allen – the three NPS scientists.

This NPS response to Dr. Harwood's critique was never provided to Dr. Goodman during the two key months of September and October 2011. Dr. Goodman was given neither Dr. Harwood's response nor Dr. Becker's response.

The September 19, 2011 response from Dr. Becker et al. was focused on Dr. Harwood's August 29, 2011 critique of the Becker et al. 2011 paper, and did not include a response to Dr. Harwood's specific comments, questions, and requests on September 2, 2011. Dr. Becker et al. did not provide point-by-point responses to Dr. Harwood's requests and questions in his September 2, 2011 email. Dr. Becker and colleagues clearly did not provide the requested re-run of Dr. Goodman's covariates using Dr. Becker's statistical model.

Nevertheless, Dr. Ragen responded in such a manner as to give the impression that Dr. Becker had indeed responded to Dr. Harwood's September 2 questions. On September 21, 2011, Dr. Ragen responded to Dr. Becker:

> *I have your responses. I'll be getting back to you with at least one more list of questions. I am compiling it now. I may integrate John Harwood's questions into*

my next list, and might ask you to insert these responses there. I think it will be far simpler to have one set of questions and responses than multiple sets.

The key phrase is "*John Harwood's questions*" which appears to refer to Dr. Harwood's September 2, 2011 letter. Dr. Ragen wrote about integrating Dr. Harwood's questions into his next list with other questions, all of which would have arisen after the three August 29, 2011 critiques. Thus, Dr. Ragen's email to Dr. Becker gives the impression that he interpreted Dr. Becker's September 19 email as a response in part to Dr. Harwood's September 2 questions.

In both the NPS and MMC responses to our FOIA request, we received no other communication between Dr. Becker and Dr. Ragen that was a separate response to Dr. Harwood's September 2, 2011 email to Dr. Ragen.

Given the absence of other documents in the FOIA responses from NPS and MMC, I assume that Dr. Ragen incorrectly interpreted this September 19, 2011 email from Dr. Becker as being in part the NPS response to Dr. Harwood's September 2 response to Dr. Goodman's critique. If this is not the case, then (i) Dr. Ragen did not require that Dr. Becker respond in writing to Dr. Harwood's September 2 questions (requested on September 5), or alternatively, (ii) Dr. Becker responded by some other form of communication that was not disclosed by either NPS or MMC to our FOIA requests.

In either case, there is no evidence that Dr. Becker ever performed the precise analysis recommended by Dr. Harwood– an analysis that, if performed, would have confirmed Dr. Goodman's analysis – namely that "*… the only valid conclusion is that there is no evidence for long-term displacement of seals from Drakes Estero that can be related to shellfish aquaculture."*

On October 6, Dr. Goodman met with Dr. Ragen (along with Mr. Weiman and his assistant Melissa Cichantek) at his MMC office for over one hour. Dr. Goodman asked Dr. Ragen several times over the course of the conversation if he had any questions or comments concerning his critique of the Becker et al. 2011 paper, or whether he had received any responses to his critique, particularly from Dr. Harwood. Dr. Ragen answered multiple times that he had no questions and no responses (as Mr. Weiman and Ms. Cichantek can verify), with one exception.

A few weeks earlier, Dr. Ragen said that he had received a response to Dr. Goodman's critique from Mr. Bennett and Dr. Richard. They had since retracted that response and asked that it not be shared with Dr. Goodman (even though it was publicly release in West Marin – selectively – and quoted in a local newspaper). According to Dr. Ragen, just that day (i.e., October 6), he received an email from Mr. Bennett that he believed was the revised version of the retracted critiques, but he said he had not yet read them (the following day, those documents were provided).

In repeated questions from Dr. Goodman concerning Dr. Harwood and Dr. Becker, Dr. Ragen denied having received any responses or questions or comments from them, and said that he had no questions or comments from his own analysis. Two months later, on November 4, 2011, Dr. Ragen sent Dr. Harwood's September 2, 2011 email (his response to Dr. Goodman's critique) to DBOC consultant Mr. Weiman with the following note:

David, - this is another email that I couldn't find in my sent files. If I haven't sent, you should have it. Tim

Although largely a response by Dr. Harwood to Dr. Goodman's critique, and a request for further analysis, Dr. Ragen never sent this email to Dr. Goodman. Moreover, he waited until November 4 to send it to Mr. Weiman, just a few days before Dr. Ragen indicated on November 8 that he was sending his draft MMC Report out for review.

Dr. Ragen's email made it seem as if he simply forgot to send Dr. Harwood's email to Mr. Weiman, that he "*couldn't find [it] in my sent files*." Given the level of communication that occurred from late August through October – the sharing of everything with Dr. Becker, the private communications with Dr. Becker, and the refusal to share any questions or comments with Dr. Goodman in spite of his public promises to do so and repeated requests from Dr. Goodman -- Dr. Ragen's note to Mr. Weiman was disingenuous.

Dr. Ragen created an interesting pair of emails to make it seem as if his biased behavior was innocent. Just three minutes before sending his 12:40 pm ET email to Mr. Weiman as shown above, at 12:37 pm ET he sent another email to Mr. Weiman and wrote:

> *David, I couldn't find in my email records an indication that I had forwarded to you these pictures from Ben. At the risk of being redundant, I'm sending this now (possibly again). My apologies if I did not. Tim*

This email included two (largely irrelevant) photographs that Dr. Becker had sent Dr. Ragen on August 19, 2011. Why did Dr. Ragen do this? Why did he realize he hadn't shared those items during those past several months? Given the many (more substantive) communications and documents between Dr. Becker and Dr. Ragen (e.g., see 1B3 below), and multiple communications and documents that were never shared, this seemed liked an odd email, and only makes sense now in the context of what was sent three minutes later – Dr. Harwood's September 2, 2011 email with his response to Dr. Goodman's critique.

All of this has the appearance of being an attempt by Dr. Ragen to cover-up his inappropriate behavior of having prevented Dr. Goodman from talking with Dr. Harwood, and then having shared Dr. Harwood's September 2 comments and questions with Dr. Becker and not with Dr. Goodman. This is just one more example of Dr. Ragen's misconduct – his violation of his own MMC policies and guidelines concerning this review.

On Sunday November 6, 2011, Mr. Weiman responded to Dr. Ragen's November 4 email concerning Dr. Harwood's response, and wrote:

> *Tim. Thank you for sending the September 2 Harwood evaluation of Goodman's review of Becker. I immediately forwarded it to the Lunnys and Dr. Goodman.*
>
> *We find ourselves hopelessly confused by the MMC review process. Analyses of Becker, by MMC direction, were submitted on August 29. On August 30, the next day, we learned that the NPS rejected the MMC review process. NPS informed you that they would not comment on Goodman or any other analysis. And further, they would not participate in the MMC-recommended statisticians review meeting. The MMC did not offer an alternative – and we have largely been in the dark since.*
>
> *We had to ask about the Gordon Bennett-Neal Desai review (after we read about it in the local papers and you were unaware that a Scientific Misconduct Complaint was filed against Kevin Lunny and Dr. Goodman). And notwithstanding requests that you address and resolve the matter, it remains unaddressed.*

Then, on Friday, you provide a critique from Dr. Harwood – from September 2.

Given the lack of an identified process, and the lack of interaction with Kevin and Nancy Lunny and/or Dr. Goodman, I am compelled to ask the following:

(1) The Harwood email to MMC on September 2 indicates that you and Harwood were about to have a telephone call to discuss his recommendations. Please provide a summary of each recommendation provided by Dr. Harwood (in addition to his email).

(3) The email transmittal below was sent only to me. It was not sent to NPS and/or Gordon Bennett-Neal Desai. I infer that it the Harwood document was shared with them prior to November 4. To whom was this first distributed and when? Please send copies of (a) each transmittals, and (b) all responses.

(4) Did the MMC discuss the Harwood concerns with NPS – Superintendent Muldoon, Dr. Becker or others – and if so, what was discussed? On numerous occasions, you indicated that all parties would get the same information at the same time. Was that policy adhered to – or modified? If it was modified, when and why?

(5) In light of the release of the Harwood paper, we are now compelled to ask – what other comments, evaluations, analyses or other reports on Becker or Becker analysis have been received and ask that they all be shared immediately.

Tim, these developments are serious and require your immediate attention. Thank you. Dave W.

Even though Mr. Weiman had called these developments "*serious*" and requiring "*your immediate attention*," Dr. Ragen never responded to his email, and never answered Mr. Weiman's (highly appropriate, given the circumstances) questions. The key questions were #4 and #5 – essentially, what did NPS know, and when did they know it?

Mr. Weiman reminded Dr. Ragen that "*on numerous occasions, you indicated that all parties would get the same information at the same time."* He asked whether Dr. Ragen had adhered to that policy. The documents obtained by FOIA confirm that the answer is no.

It is telling that Dr. Ragen refused to tell Mr. Weiman when he had sent Dr. Harwood's September 2, 2011 email to NPS Dr. Becker, and whether NPS had responded to it. Dr. Ragen's silence spoke volumes.

As described above, on September 21, 2011, two days after receiving Dr. Becker's response to Dr. Harwood's comments, Dr. Ragen responded to Dr. Becker:

> *I have your responses. I'll be getting back to you with at least one more list of questions. I am compiling it now. I may integrate John Harwood's questions into my next list, and might ask you to insert these responses there. I think it will be far simpler to have one set of questions and responses than multiple sets.*

This "*one more list of questions*" was supposedly going to include a set of seven questions for Dr. Becker sent by Mr. Lunny to Dr. Ragen on September 12 (see example #5 below) to go along with Dr. Harwood's questions, which Dr. Ragen assumed Dr. Becker had just responded to. Dr. Becker was not required to respond to either Mr. Lunny's questions or Dr. Harwood's questions. We have no record of a list of additional questions from other parties ever being forwarded to Dr. Becker for the purpose of him answering (Dr. Ragen's behavior is actually more complicated and includes another

violation of the FOIA law; see example #5 below).

Dr. Ragen suggested that Dr. Becker "*insert these responses there*" – in other words, put his response to Dr. Harwood into a later document. Keep in mind that Dr. Ragen, based on previous communications, thought that Dr. Becker had responded to Dr. Harwood's September 2 questions (which he had not).

Whatever the explanation, something very odd occurred on November 17, 2011. Dr. Becker resubmitted the same response (with a few small changes in individual words) that he had previously submitted two months earlier on September 19 (the attachment dated September 18). Dr. Becker wrote:

> *Hi Tim, See attached for requested document. Please let me know if you have questions or comments. Thanks, -Ben*

The original attachment had been called "*Becker MMC Stats Review Response.pdf*". The new version (virtually identical) was called: "*Becker Re MMC Stats Comments 11-17-2011.docx*". Dr. Becker had gone to the trouble to re-name and re-date a document that he had sent to Dr. Ragen two months earlier. Why? What was the purpose?

We do know one place the re-dated November 17,2011 version was sent – to Senator Feinstein's staff on November 23.

This raises a whole series of questions. Dr. Ragen's MMC Report was finished and about to be released in a few days (November 22, 2011). Why the charade with changing the date and title? Why resend the same document when the MMC Report was finished? What were Dr. Ragen and Dr. Becker doing and why?

On this matter, I can only speculate, but these questions should be addressed by the OIG:

- Could it be that Dr. Ragen thought this was Dr. Becker's response to Dr. Harwood's questions concerning Dr. Goodman's critique?
- Could it be that Dr. Ragen already knew he had done something inappropriate back in September when he sent Dr. Harwood's September 2 email to Dr. Becker and not Dr. Goodman?
- Could it be that Mr. Weiman's November 6 email to Dr. Ragen, in which he asked what did NPS know and when did they know it, had raised Dr. Ragen's concern that his behavior was indeed inappropriate and that Mr. Weiman was probing the truth?
- Why was the document re-dated and resubmitted?
- Does it reveal that Dr. Ragen and Dr. Becker were working together?
- Does it indicate that Dr. Ragen knew MMC policies and guidelines had been violated?

<u>Conclusions from example #2 of Dr. Ragen's public policies vs. secret actions</u>

What do we learn from Dr. Ragen's actions over this two and one-half month period from September 2, 2011 to November 17, 2011?

- First, Dr. Ragen violated the very policies he established by inappropriately

distributing Dr. Harwood's September 2, 2011 response to Dr. Goodman's critique to NPS Dr. Becker (one business day after receiving it) but not to Dr. Goodman.

  - Dr. Ragen promised all parties and elected officials (e.g., Senator Feinstein and Marin County Supervisor Kinsey) that he would treat all parties equally, would have open communication, and would share all correspondence, critiques, and documents with all parties. His public policies were in marked contrast to his private, undisclosed interactions with NPS.
  - Dr. Ragen eventually sent Dr. Harwood's September 2, 2011 response to Mr. Weiman (but not Dr. Goodman) on November 4. Dr. Ragen offered an excuse that he forgot to send Dr. Harwood's email to Mr. Weiman in a timely fashion. This explanation is not credible in light of the ongoing communications between Dr. Ragen and Dr. Becker, and the many documents not shared with Dr. Goodman or Mr. Weiman.

- Second, Dr. Ragen permitted Dr. Becker to avoid answering Dr. Harwood's September 2, 2011 questions and comments.
  - Dr. Ragen interpreted Dr. Becker's September 19 response to Dr. Harwood's comments as if he had responded to Dr. Harwood's September 2 questions and requests, when in fact he had not.
  - Dr. Harwood had asked that Dr. Goodman's models be re-run using Dr. Becker's statistical method. He reasoned that if Dr. Goodman's models remained superior to Dr. Becker's models, then "*… the only valid conclusion is that there is no evidence for long-term displacement of seals from Drakes Estero that can be related to shellfish aquaculture."*
  - Dr. Ragen never received written answers to Dr. Harwood's questions and requests. Dr. Ragen shielded NPS from Dr. Harwood's September 2 questions, never requiring a response, prior to release of the MMC Report.
  - Only for his 'private' June 17, 2012 letter to Dr. Goodman did Dr. Ragen ask Dr. Becker to partially replicate Dr. Goodman's models (although using different data and metrics). Table 2 of Dr. Ragen's letter revealed that Dr. Harwood's instincts were correct, and that Dr. Goodman's models were indeed superior to Dr. Becker's models. Thus, the correct conclusion of the MMC Report should have been, as Dr. Harwood suggested, that "*… there is no evidence for long-term displacement of seals from Drakes Estero that can be related to shellfish aquaculture."*

- Third, when Mr. Weiman asked Dr. Ragen on November 6 why he had not forwarded Dr. Harwood's September 2 response for two months, and what NPS knew and when they knew it, Dr. Ragen failed to respond. Dr. Ragen had been challenged for his inappropriate behavior, and he refused to answer.
- Fourth, Drs. Ragen and Becker did something odd on November 17 that is difficult to explain unless both Drs. Ragen and Becker were attempting to avoid disclosure of their September undisclosed communications between them. Dr. Becker resubmitted his September 18, 2011 document (his response to Harwood's comments) that he had previously submitted to Dr. Ragen on September 19, but he gave it a new title and a new date on the document – November 17. The MMC

Report was finished and about to be released in a few days (November 22).

- Fifth, on two occasions, Dr. Goodman specifically asked Dr. Ragen if he had received any feedback from Dr. Harwood, and whether Dr. Harwood or anyone else had found errors with Dr. Goodman's report, or required any clarification or additional analysis, and Dr. Ragen responded an emphatic no.
    - The first exchange took place in writing. On September 9, Dr. Goodman wrote to Dr. Ragen: "*Have you, Dr. Harwood, or anyone else found any errors with my report, or require any clarification or additional analysis?"* Dr. Ragen responded 'no.'
    - The second was in person on October 6 when, in the presence of Mr. Weiman and his assistant Ms. Cichantek, Dr. Goodman once again asked Dr. Ragen if he had received any feedback or critiques on Dr. Goodman's report, and whether he had any questions or requests for additional analysis. Dr. Ragen responded 'no.'
    - Dr. Ragen did not disclose Dr. Harwood's response to Dr. Goodman on both occasions, and was not truthful when he answered 'no.'
- Sixth, in the end, there were two faces to Dr. Ragen, one public and the other private. In public he espoused his fairness, independence, and lack of bias, while in private he maintained regular, undisclosed communications with NPS Dr. Becker in violation of the MMC rules for the review. He withheld Dr. Harwood's comments from Dr. Goodman, prevented them from speaking with one another, and when specifically asked if Dr. Harwood had sent any comments said 'no,' but Dr. Ragen sent Dr. Harwood's comments to NPS Dr. Becker.

This is a second example of Dr. Ragen's misconduct and deception. Below are further examples of Dr. Ragen's misconduct.

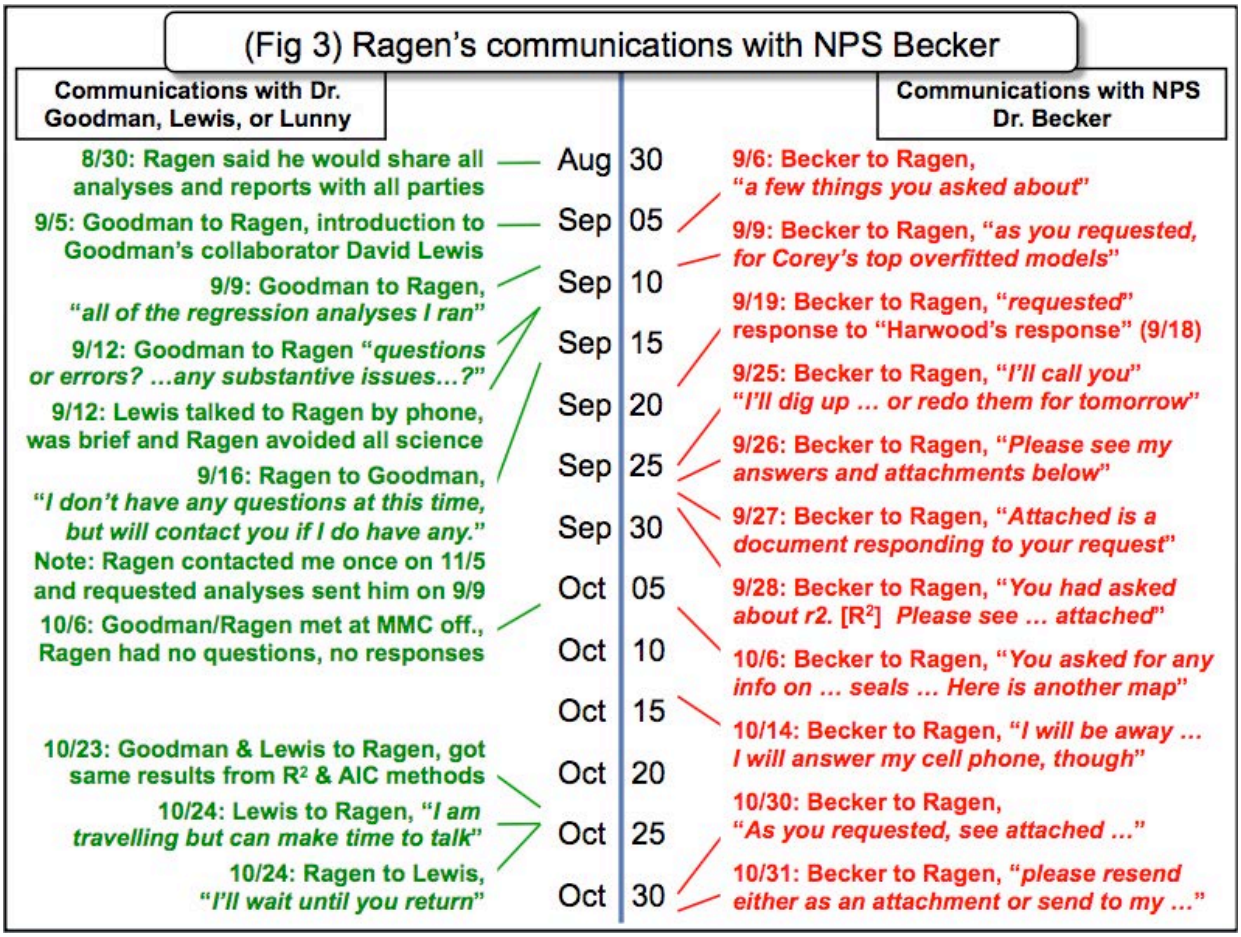
1B3. Dr. Ragen's asymmetric communications with NPS Dr. Becker

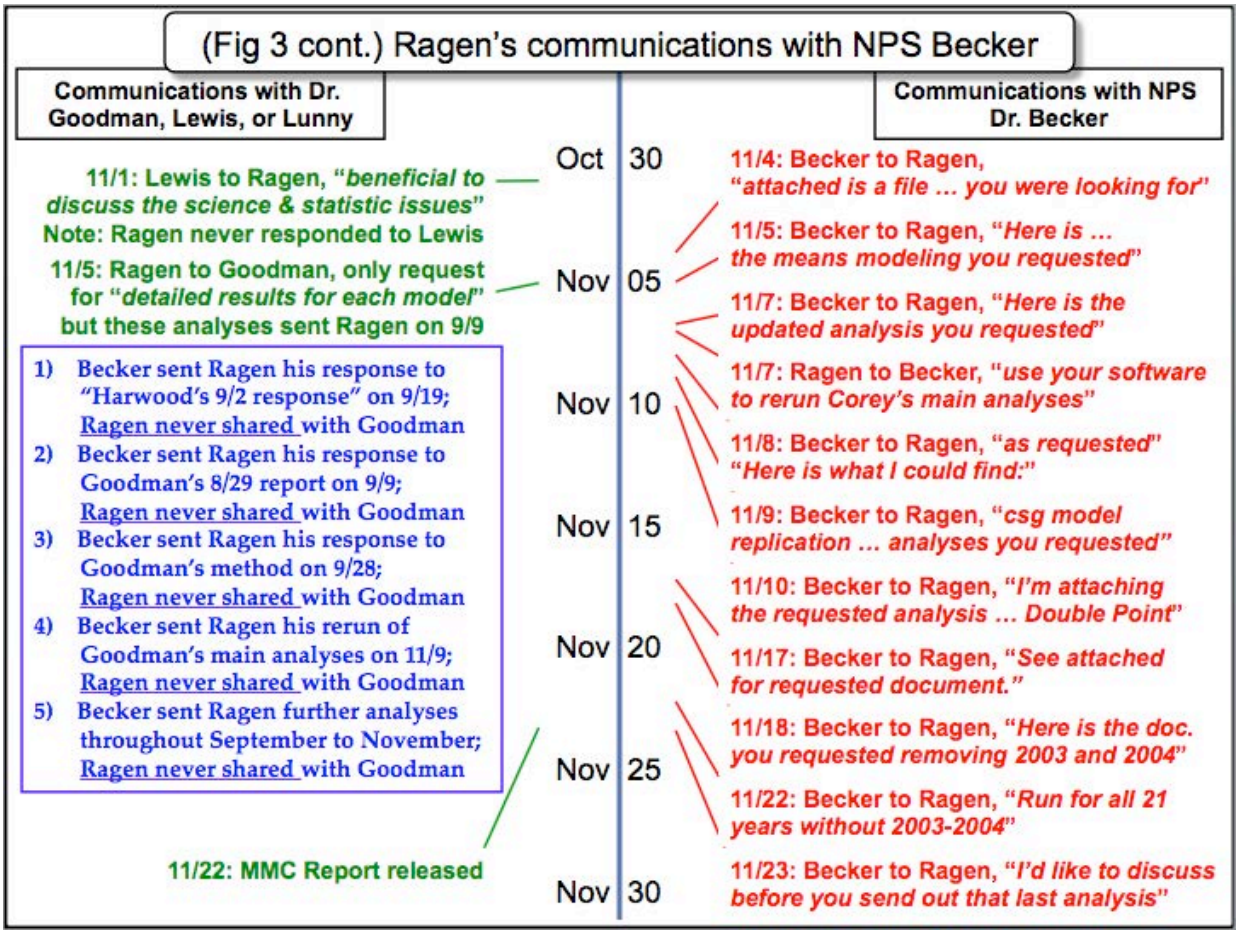
There is a pattern emerging from the examples provided above – the two faces of Dr. Ragen – and this section provides a third example.

As shown below, Dr. Ragen also withheld Dr. Becker's responses to Dr. Goodman's report from Dr. Goodman, and gave Dr. Goodman no opportunity to discuss or rebut these criticisms. This too violated Dr. Ragen's policies and promises, and belied his public statements that he would share all submitted comments with all parties.

There were so many private emails between Dr. Ragen and NPS Dr. Becker between August 29 (when the three critiques of the Becker et al. 2011 paper were submitted) and November 22 (when the MMC Report was released) that only some of them are shown below as a single timeline in two parts in Figure 3.

As shown below, most of the information and analyses and reports sent by Dr. Becker to Dr. Ragen were in response to specific requests from Dr. Ragen, requests that Dr. Goodman never knew about, with both questions and answers that Dr. Goodman was never privy to, and yet concerning statements and conclusions that were found throughout the final MMC Report.


(Fig 3) Ragen's communications with NPS Becker
Communications with Dr. Goodman, Lewis, or Lunny
Communications with NPS Dr. Becker
8/30: Ragen said he would share all analyses and reports with all parties
Aug 30
9/6: Becker to Ragen, "a few things you asked about"
9/5: Goodman to Ragen, introduction to Goodman's collaborator David Lewis
Sep 05
9/9: Becker to Ragen, "as you requested, for Corey's top overfitted models"
9/9: Goodman to Ragen, "all of the regression analyses I ran"
Sep 10
9/19: Becker to Ragen, "requested" response to "Harwood's response" (9/18)
9/12: Goodman to Ragen "questions or errors? ...any substantive issues...?"
Sep 15
9/25: Becker to Ragen, "I'll call you" "I'll dig up ... or redo them for tomorrow"
9/12: Lewis talked to Ragen by phone, was brief and Ragen avoided all science
Sep 20
9/26: Becker to Ragen, "Please see my answers and attachments below"
9/16: Ragen to Goodman, "I don't have any questions at this time, but will contact you if I do have any."
Sep 25
9/27: Becker to Ragen, "Attached is a document responding to your request"
Note: Ragen contacted me once on 11/5 and requested analyses sent him on 9/9
Sep 30
9/28: Becker to Ragen, "You had asked about r2. [R2] Please see ... attached"
10/6: Goodman/Ragen met at MMC off., Ragen had no questions, no responses
Oct 05
10/6: Becker to Ragen, "You asked for any info on ... seals ... Here is another map"
Oct 10
10/14: Becker to Ragen, "I will be away ... I will answer my cell phone, though"
Oct 15
10/23: Goodman & Lewis to Ragen, got same results from R2 & AIC methods
Oct 20
10/30: Becker to Ragen, "As you requested, see attached ..."
10/24: Lewis to Ragen, "I am travelling but can make time to talk"
Oct 25
10/31: Becker to Ragen, "please resend either as an attachment or send to my ..."
10/24: Ragen to Lewis, "I'll wait until you return"
Oct 30


(Fig 3 cont.) Ragen's communications with NPS Becker
Communications with Dr. Goodman, Lewis, or Lunny
Communications with NPS Dr. Becker
Oct 30
11/4: Becker to Ragen, "attached is a file ... you were looking for"
11/1: Lewis to Ragen, "beneficial to discuss the science & statistic issues"
Note: Ragen never responded to Lewis
11/5: Ragen to Goodman, only request for "detailed results for each model" but these analyses sent Ragen on 9/9
Nov 05
11/5: Becker to Ragen, "Here is ... the means modeling you requested"
11/7: Becker to Ragen, "Here is the updated analysis you requested"
1) Becker sent Ragen his response to "Harwood's 9/2 response" on 9/19; Ragen never shared with Goodman
2) Becker sent Ragen his response to Goodman's 8/29 report on 9/9; Ragen never shared with Goodman
3) Becker sent Ragen his response to Goodman's method on 9/28; Ragen never shared with Goodman
4) Becker sent Ragen his rerun of Goodman's main analyses on 11/9; Ragen never shared with Goodman
5) Becker sent Ragen further analyses throughout September to November; Ragen never shared with Goodman
Nov 10
11/7: Ragen to Becker, "use your software to rerun Corey's main analyses"
11/8: Becker to Ragen, "as requested" "Here is what I could find:"
Nov 15
11/9: Becker to Ragen, "csg model replication ... analyses you requested"
11/10: Becker to Ragen, "I'm attaching the requested analysis ... Double Point"
Nov 20
11/17: Becker to Ragen, "See attached for requested document."
11/18: Becker to Ragen, "Here is the doc. you requested removing 2003 and 2004"
Nov 25
11/22: Becker to Ragen, "Run for all 21 years without 2003-2004"
11/22: MMC Report released
11/23: Becker to Ragen, "I'd like to discuss before you send out that last analysis"
Nov 30

Not only had Dr. Ragen told all parties involved that he would treat all parties equally and distribute all documents and critiques to everyone involved, but he made the same assertions to elected officials.

In lieu of an open public meeting to discuss the critiques of the Becker et al. 2011 paper, Dr. Ragen promised an open distribution of further responses and analyses. As shown below, Dr. Ragen did not keep that promise, but rather had a separate private channel of communication with NPS Dr. Becker.

On November 1, 2011, Dr. Ragen responded to Mr. Weiman's request (made over one month earlier) for a copy of Dr. Richard's September 13, 2011 critique of Dr. Goodman's analysis of the NPS Becker et al. 2011 paper. Dr. Ragen wrote:

> *David, As discussed, I have decided to send this to you and am doing so with the understanding that I won't deny any requests for other materials that people have asked me to withhold. That seems the fairest approach. Tim*

While Dr. Ragen wrote to Mr. Weiman about his principles of fairness and equal access to materials, he had steadfastly ignored Dr. Goodman's requests throughout September and October – both in writing and in person – for any critiques and comments on his analysis from Drs. Harwood and Becker. Dr. Ragen was anything but fair and honest and unbiased in his responses to Dr. Goodman's requests for other materials.

As will be shown in a later section (1B5. Mr. Lunny's Questions for NPS Dr. Becker), Dr. Ragen went so far as to tell Mr. Lunny that he had not asked a specific question of Dr. Becker from Mr. Lunny, when in fact, one day after telling Mr. Lunny that he had not asked Dr. Becker to run a certain analysis (i.e., Dr. Becker's best model without the 2003 and 2004 data), Dr. Becker sent Dr. Ragen that precise analysis and wrote that it was as requested by Dr. Ragen. Dr. Becker's analysis was never shared with either Dr. Goodman or Mr. Lunny.

On September 6, Dr. Becker sent Dr. Ragen "*a few things you asked about*," all pertaining to specific issues raised by Dr. Goodman's report. Some of these answers effectively became part of the ultimate MMC Report. This communication was never shared with Dr. Goodman. To a large extent, these issues were never discussed with Dr. Goodman or Mr. Lunny. This is another example of undisclosed communication between Dr. Ragen and Dr. Becker.

On September 9, Dr. Becker sent Dr. Ragen "*as you requested*" an analysis of Dr. Goodman's models from his critique of the Becker et al. 2011 paper, and concluded that some of Dr. Goodman's models were "*overfitted*." The way it as written – "*as you also requested, for Corey's top overfitted models (Slide #44) which were ranked with R2 …*" – made it clear that Dr. Ragen and Dr. Becker previously discussed these criticisms of Dr. Goodman's models.

Dr. Ragen never shared Dr. Becker's September 9 criticisms of Dr. Goodman's models with Dr. Goodman, criticisms that Drs. Ragen and Becker had clearly already discussed by phone. There was a vibrant scientific discussion underway, but Dr. Goodman was excluded from it. Yet these were the very criticisms (the ones Dr. Goodman and Mr. Lewis were never given an opportunity to discuss and rebut) that Dr. Ragen featured in the final MMC Report in Figure 20 in which Dr. Ragen wrote (concerning Dr. Goodman's models): "*The models are confounded because terms in the dependent variable are also part of the independent variable; thus the models have a built-in dependency*."

Dr. Becker's word "*overfitted*" is another descriptor of Dr. Ragen's "*built-in dependency*" – they mean the same. Dr. Ragen thus dismissed Dr. Goodman's and Mr. Lewis' models without ever discussing the issues with either of them – not once. Dr. Ragen never discussed these issues with Dr. Goodman or Mr. Lewis, even though he discussed them with Dr. Becker prior to September 9, and Dr. Becker put them in writing to Dr. Ragen on September 9. Dr. Ragen never gave Dr. Goodman and Mr. Lewis an opportunity to respond, or to modify their models.

On September 12, when Dr. Goodman wrote to Dr. Ragen and asked him if there were any "*questions or errors*" or any "*substantive issues*" that had arisen, Dr. Ragen answered no. Surely the notion that Dr. Goodman's models were "*overfitted*" and had "*built-in dependency*" rose to the level of "*questions or errors*" or "*substantive issues*." After all, they were substantive enough for Dr. Ragen and Dr. Becker to have discussed, for Dr. Ragen to have requested further analysis from Dr. Becker, and that took up several pages of Dr. Ragen's final MMC Report. But they were not substantive enough to discuss with either Dr. Goodman or Mr. Lewis, even though both asked him repeatedly for feedback, criticisms, errors, and substantive issues concerning Dr. Goodman's report.

On September 13, Dr. Goodman wrote to NPS Superintendent Muldoon and asked for a "*written critique of my analysis*" and with which conclusions NPS disagreed. He wrote:

> *Is there anything in my statistical analysis that he [Dr. Becker] believes is wrong, and if so, how?*

Dr. Goodman also asked to get together with Superintendent Muldoon and Dr. Becker to discuss the Becker et al. 2011 paper and Dr. Goodman's analysis of it.

On September 14, Superintendent Muldoon wrote back to Dr. Goodman, saying that this was a question "*more appropriate to the ongoing work of the Marine Mammal Commission*" and saying that NPS "*will continue to work with Dr. Ragen as requested*."

We now know that as of September 9, Dr. Becker had submitted his first of several critiques of Dr. Goodman's analysis to Dr. Ragen, but neither MMC Dr. Ragen nor NPS Superintendent Muldoon would share those critiques with Dr. Goodman. Dr. Goodman was told nothing about them. None of Dr. Becker's responses were shared with him.

On October 6, when Dr. Goodman met with Dr. Ragen in his MMC office and asked him the same questions, Dr. Ragen answered 'no.' Yet during that time, in private Dr. Ragen had a secret channel of communication with Dr. Becker about the so-called fatal errors in Dr. Goodman's analysis, errors that, once they read the publicly released MMC Report, Dr. Goodman and Mr. Lewis showed were not fatal, and were easily adjusted with minor revisions. Dr. Ragen got it wrong – but he never gave either Dr. Goodman or Mr. Lewis an opportunity to discuss these issues, and thus never allowed for open discussion, exchange, and dialogue, in violation of his Scientific Integrity Policy.

On September 28, Dr. Becker wrote to Dr. Ragen: "*You had asked about r2. [R^2] Please see … attached*." The "r2" refers to the statistical method Dr. Goodman had used to analyze the Becker et al. 2011 paper. Dr. Becker criticized that method, and Dr. Ragen followed Dr. Becker's lead in the final MMC Report.

Not only did Dr. Ragen never share Dr. Becker's criticism with Dr. Goodman, he also ignored the collaborative reports submitted jointly by Dr. Goodman and Mr. Lewis on both October 23 and November 6 in which they used both statistical methods in parallel (i.e., that used originally by Dr. Becker and that used by Dr. Goodman) and showed that

they both led to the same results and conclusions.

Dr. Ragen never discussed this issue or analysis with Dr. Goodman or Mr. Lewis, and he falsely concluded in his final MMC Report that Dr. Goodman used the wrong method (when in fact Goodman/Lewis had used both methods and derived the same results).

Dr. Ragen finally admitted in his 'private' June 17, 2012 letter (discussed in detail in section 5 below), in Table 2 that both methods gave the same results, even though in the text of his letter he made the same criticism of Dr. Goodman's method as he had in the MMC Report. It is difficult to determine if Dr. Ragen was deceiving the reader in the text of his letter, or if he himself did not fully understand what was presented in Table 2.

Regardless, this whole issue could have been scientifically resolved had Dr. Ragen (i) shared Dr. Becker's analysis with Dr. Goodman and Mr. Lewis (as his policy and promises dictated should have been done), (ii) read Dr. Goodman and Mr. Lewis' letters of October 23 and November 6 (which he cleared should have done), and (iii) had an open discussion of these issues with Drs. Becker and Goodman and Mr. Lewis (as dictated by his MMC Scientific Integrity Policy, and as he promised he would do with both the public and elected officials throughout his review process).

Without going into the same level of detail, I refer you to subsequent emails from Dr. Becker to Dr. Ragen (as summarized in the two parts of Figure 3), in which, throughout September to November, considerable further analysis was submitted by Dr. Becker to Dr. Ragen (never shared with Dr. Goodman). A couple of highlights are:

- On November 9, Dr. Becker sent Dr. Ragen his "*csg* [Dr. Goodman's initials] *model replication … analyses you requested*" (never shared with Dr. Goodman),
- On November 7, Dr. Ragen asked Dr. Becker to "*use your software to rerun Corey's main analyses*" (neither the request nor the answer was ever shared with Dr. Goodman, even though Dr. Goodman and Mr. Lewis had already used Dr. Becker's software to rerun Dr. Goodman analyses and had reported them to Dr. Ragen on October 23 and again in more detail on November 6), and
- On November 18, Dr. Becker sent Dr. Ragen "*Here is the document you requested removing 2003 and 2004*" (never shared with Dr. Goodman), even though this was central to Dr. Goodman's critique of the Becker et al. 2011 paper, and was also one of the key seven questions Mr. Lunny asked Dr. Ragen to ask Dr. Becker (and that the day before – November 17 – Dr. Ragen told Mr. Lunny that he had not and would not ask of Dr. Becker).

Conclusions from example #3 of Dr. Ragen's public policies vs. secret actions

What do we learn from Dr. Ragen's actions over this two and one half month period from August 29, 2011 to November 22, 2011?

- First, Dr. Ragen violated the very policies he established by inappropriately asking for and obtaining multiple reports and analyses from NPS Dr. Becker in response to Dr. Goodman's August 29, 2011 critique of the Becker et al. 2011 paper, and not sharing them with either Dr. Goodman or his collaborator Mr. Lewis, and not discussing the issues arising from them with Dr. Goodman and Mr. Lewis.
- Second, when asked in writing and in person on multiple occasions (in writing on

September 9 and in person in Dr. Ragen's office on October 6 by Dr. Goodman, and separately by Mr. Lewis) if Dr. Ragen had been sent any critiques of Dr. Goodman's report, and whether any questions, errors, or substantive issues had arisen, Dr. Ragen said no. That was false. Dr. Ragen kept all of his private communications with Dr. Becker just that – undisclosed.

- Third, the very criticisms of Dr. Goodman's analysis that appeared in several pages and in Figure 20 in the final MMC Report released on November 22 were already being discussed in writing by Dr. Becker and Dr. Ragen as early as September 9, but Dr. Ragen refused to share these criticisms with Dr. Goodman or Mr. Lewis, failed to have any open discussion or dialogue, failed to provide an opportunity to rebut them, and thus published criticisms in his MMC Report that could have (and subsequently were) easily answered.
- Fourth, consider all of the key reports and documents from Dr. Becker that were never shared with Dr. Goodman:
    - Dr. Becker sent Dr. Ragen his response to "Harwood's 9/September 2 response to Goodman" on September 19, but Dr. Ragen never shared this response with Dr. Goodman,
    - Dr. Becker sent Dr. Ragen his response to Goodman's August 29 report on September 9, but Ragen never shared this response with Dr. Goodman,
    - Dr. Becker sent Dr. Ragen his response to Goodman's August 29 method on September 28, but Dr. Ragen never shared this response with Dr. Goodman,
    - Dr. Becker sent Dr. Ragen his rerun of Goodman's main August 29 analyses on November 9, but Dr. Ragen never shared this response with Dr. Goodman,
    - Dr. Becker sent Dr. Ragen his rerun of his own analysis without 2003 and 2004 on November 18 (as proposed by Dr. Goodman in his August 29 report and requested by Mr. Lunny), but Dr. Ragen never shared this response with Dr. Goodman, and
    - Dr. Becker sent Dr. Ragen further analyses throughout September to November, but Dr. Ragen never shared any of these responses with Dr. Goodman.
- Fifth, this third set of examples further supports the complaint that there were two faces to Dr. Ragen, one public and the other private. In public Dr. Ragen espoused his fairness, independence, and lack of bias, and he said he would and was sharing all documents and materials equally with all parties involved. In contrast, in private Dr. Ragen had a secret back channel of communications with NPS Dr. Becker. He withheld all of Dr. Becker's responses to Dr. Goodman's August 29 report from Dr. Goodman, many of which found there way into prominent places in the final MMC Report.
- Sixth, these emails between Dr. Ragen and Dr. Becker give us a glimpse as to the extent to which NPS Dr. Becker was, in effect, secretly staffing Dr. Ragen's review and his MMC Report. We get glimpses of what must have been extensive telephone conversations because everything Dr. Becker sent to Dr. Ragen he

cited "*as requested*" even though for very few are their records of email requests. From the outset, Dr. Ragen promised the public and elected officials that he would be fair, independent, and unbiased, and that one way to accomplish that mission was to get his own independent statistician to run all of his analysis. Dating back to February 2010, Dr. Ragen promised all parties that he would get an independent statistician to do a complete independent analysis of the data in the Becker paper. Whether he did so, we do not know. Dr. Becker performed much of the MMC 'independent' analysis.

We now know that NPS Dr. Becker essentially 'staffed' Dr. Ragen's analysis. According to FOIA materials, much of Dr. Ragen's analysis was done by NPS Dr. Becker. This analysis was not independent. Co-variants changed, metrics changed, years and data changed. By relying so heavily on Dr. Becker, Dr. Ragen effectively allowed NPS to review NPS. Today what NPS cites as the independent MMC Report was actually a self-review of NPS by NPS.

This is the third example of Dr. Ragen's misconduct and deception. Below are further examples of Dr. Ragen's misconduct.

1B4. Dr. Richard's Response to Dr. Goodman's Critique

Dr. Ragen did not share important communications from Dr. Richard (the scientist working with NPS supporter Gordon Bennett to criticize Dr. Goodman) involving responses and critiques of Dr. Goodman's analysis. On September 15, Dr. Ragen received Dr. Richard's September 13 critique of Dr. Goodman's analysis of the Becker et al. 2011 paper.

Vibrant discussions were apparently going on between Dr. Ragen and Dr. Richard, Mr. Bennett, and Mr. Desai that Dr. Goodman was unaware of. For example, Mr. Desai wrote to Dr. Ragen:

> *Gordon and I spoke Saturday. As follow up on a key point of Dominique's critique of Goodman and hopefully to assist your work and maybe even cut down on some potentially unnecessary analysis: R2 vs AIC is important to address, and we believe Dominique does, but the foundation is that the model should be logical. In Goodman's case, Dominique finds that the models used by Goodman are significantly flawed as he introduces a dependent variable as a covariant (making them meaningless tautologies). Thus we suggest if you look at the foundation first and concur that the models used by Goodman are flawed, the r2 vs AIC analysis is potentially unnecessary.*

Mr. Desai's email suggests that two topics already under major discussion were the choice of method by Dr. Goodman (R2 vs. AIC) and the potential flaws in Dr. Goodman's models. This was yet another private conversation that Dr. Ragen was conducting concerning Dr. Goodman's analysis to the exclusion of Dr. Goodman. Dr. Ragen made mistakes concerning both of these issues in his November 22, 2011 MMC Report.

The first Dr. Goodman knew that Dr. Richard had submitted a critique of Dr. Goodman's report was not from Dr. Ragen, but rather when Dr. Goodman read about Dr. Richard's submission on September 22 in The West Marin Citizen, a local weekly newspaper. Amy Trainer, Executive Director of the Environmental Action Committee of West Marin (EAC), wrote:

> *According to professional statistician Dr. Dominique Richard, Goodman's latest critique of Dr. Becker's 2011 research "is fundamentally flawed and arbitrarily removes relevant data points in an attempt to explain the dynamics of the Estero seals population as merely the "work of mother nature." Dr. Richard put Goodman's approach in laymen's terms by saying "If the only tool you have is a hammer, everything looks like a nail." He also characterized Goodman's review as "deserving an F in a college level introductory statistics class" as well as an insult to the very diligent and fairly sophisticated analyses that the park provided. Dr. Richard has submitted a technical response to Dr. Goodman's critique to the Marine Mammal Commission. Dr. John Harwood, the Commission's independent statistician from Scotland, writes in the first sentence of his review of Becker's peer-reviewed research: "The analyses reported in Becker et al (2011) provide convincing evidence that the proportion of harbour seals and pups counted at the three haul-out sites closest to oyster cultivation in Drakes Estero was lower in years of high oyster production."*

Both Mr. Weiman and Dr. Goodman subsequently asked Dr. Ragen for copies of Dr. Richard's critique, and Dr. Ragen turned them down, saying that Mr. Bennett and Dr. Richard did not want it released to Dr. Goodman. Mr. Weiman and Dr. Goodman found this puzzling, since Dr. Richard's critique had already been released to the EAC, publicly disclosed in the local newspaper, and used to publicly criticize Dr. Goodman (in rather derisive words including "*deserving an F in a college level introductory statistics class*") and yet Dr. Ragen refused to release Dr. Richard's critique to Dr. Goodman.

One week later, on September 29, Mr. Bennett formally retracted Dr. Richard's critique from Dr. Ragen (the same critique distributed to Amy Trainer, EAC).

Some of Dr. Ragen's principles were repeated on September 29, 2011 in an email to David Weiman (DBOC consultant) when he wrote concerning his conversation with Mr. Gordon Bennett and Mr. Neal Desai:

> ***I reminded them that the Commission won't use anything they send unless it is available for all to review.***

That was an excellent re-statement of Dr. Ragen's principles of inclusion and equal access. The problem is that Dr. Ragen did not follow his own principles. Much of what was submitted and discussed with Dr. Ragen by Dr. Richard, Mr. Bennett, and Mr. Desai, during September-October 2011 was not shared with Dr. Goodman.

On October 6, a few hours before meeting with Dr. Goodman, Mr. Weiman, and Ms. Cichantek in his MMC office, Dr. Ragen received from Mr. Bennett a new revised version of Dr. Richard's critique of Dr. Goodman's analysis. When they met in Dr. Ragen's office later that day, Dr. Ragen claimed he had not yet read the new critique, and did not comment to Dr. Goodman about any of the criticisms of his analysis from Dr. Richard.

Even though Dr. Richard's criticisms had already been published (without the scientific details) in the local newspaper two weeks earlier, Dr. Ragen would share none of the science and none of the statistics with Dr. Goodman. Dr. Ragen remained silent when asked by Dr. Goodman on October 6 if he had received any critiques or had been informed of errors or substantive issues.

On October 7, Dr. Ragen sent Dr. Richard's October 6 critique to Mr. Weiman who

forwarded it to Dr. Goodman (note – even though it was a critique of Dr. Goodman's analysis, Dr. Ragen did not send it directly to Dr. Goodman). Dr. Goodman and Mr. Lewis answered each and every point in Dr. Richard's critique in a lengthy letter to Dr. Ragen on October 23.

This was the same report in which they showed Dr. Ragen that they got the same results using either Dr. Becker's method (AIC) and Dr. Goodman's method (R^2), a finding Dr. Ragen ignored in his final MMC Report and in his communications with the press after his MMC Report was released on November 22.

Dr. Ragen had subsequent email communications and phone calls with Dr. Richard, none of which he shared with Dr. Goodman. In late October, Dr. Ragen spoke with Dr. Richard by phone, and Dr. Ragen's notes show that Dr. Richard raised the issue of Goodman's models being flawed due to built-in dependencies (not shared with Dr. Goodman), the same criticism that Dr. Becker had made in writing on September 9 (also not shared with Dr. Goodman), and that Dr. Ragen featured in Figure 20 in his final MMC Report. This may or may not have been the October 31 phone call, as described below.

On October 31, Dr. Richard sent Dr. Ragen a more detailed analysis of Dr. Goodman's models in which he claimed to show that the models were flawed due to built-in dependencies. This analysis was never shared with Dr. Goodman, even though it is this analysis from Dr. Richard that was featured in Dr. Ragen's final MMC Report.

Also on October 31, 2011, Dr. Ragen had a phone call with Dr. Richard, Mr. Bennett, and Mr. Desai to discuss Dr. Richard's statistical criticisms of Dr. Goodman's analysis. Mr. Bennett wrote on October 29 to confirm the October 31 phone call:

> *Confirming Monday 10/31/11 at 2:00 PM PST.*
>
> *We will have Dr. Richard on the line with us to follow up on the three statistical criticisms of Dr. Goodman's analysis that he raised in his letter (SOS-4) and any other statistical issues remaining on Becker 2011. . Gordon*

Neither the documents submitted by Dr. Richard in late October and early November, nor the content of their discussions about these issues, was shared with Dr. Goodman.

In contrast to what Dr. Ragen wrote to Mr. Weiman on September 29 ("*… the Commission won't use anything they send unless it is available for all to review."*), in fact Dr. Ragen was influenced by Dr. Richard's input and did not make it available for all to review.

On November 6, Mr. Bennett submitted yet another report from Dr. Richard to Dr. Ragen, further analyzing the errors in Dr. Goodman's analysis of the Becker et al. 2011 paper. This analysis was never shared with Dr. Goodman, and it went into even further detail on the issue Dr. Ragen featured in his final MMC Report.

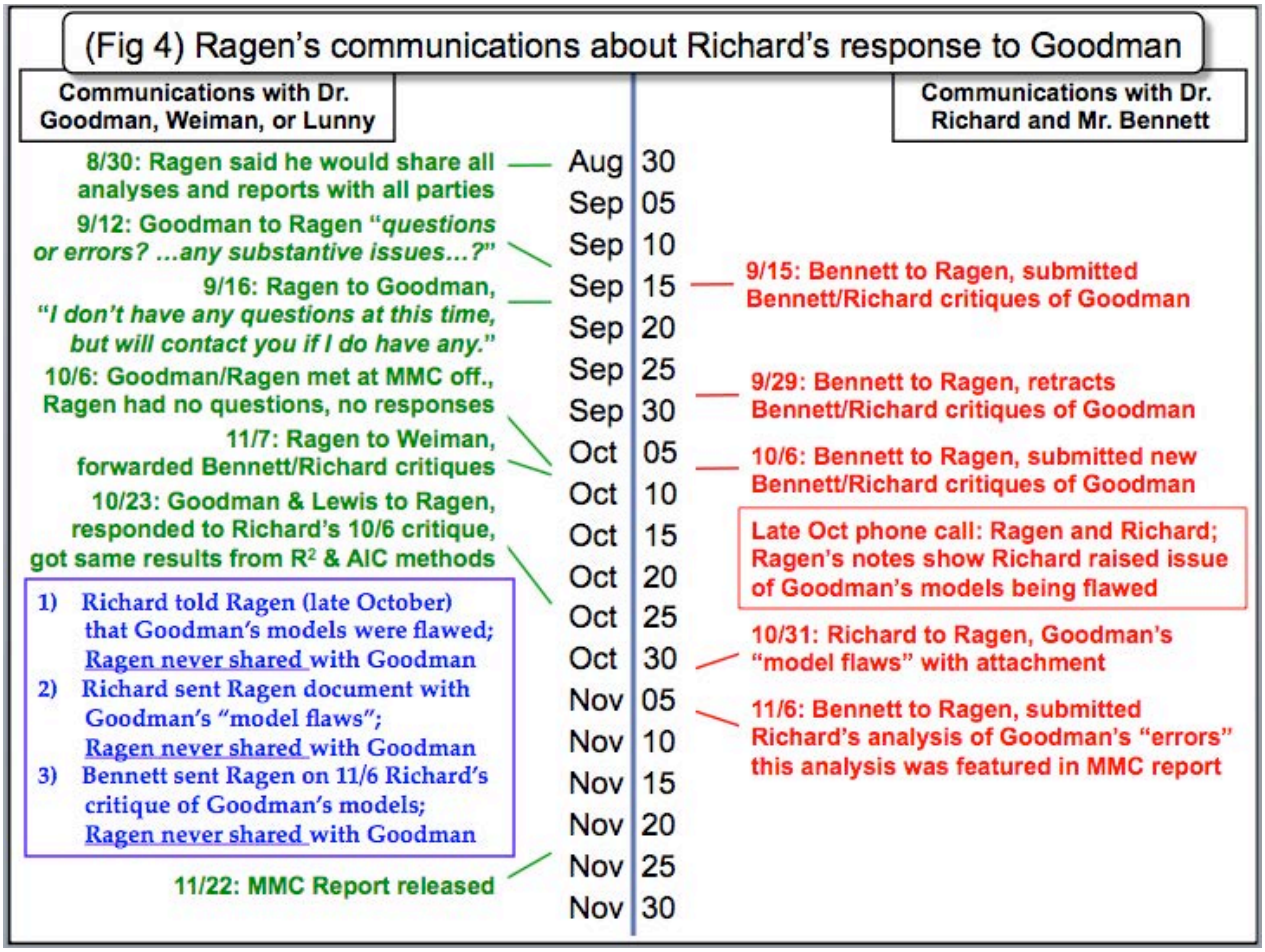
Interestingly, on November 1, 2011, Dr. Ragen finally sent Mr. Weiman the original September 15 analysis from Dr. Richard that Mr. Bennett had refused to share with Dr. Goodman. Dr. Ragen wrote:

> *As discussed, I have decided to send this to you and am doing so with the understanding that I won't deny any requests for other materials that people have asked me to withhold. That seems the fairest approach. Tim*

Following his principles of inclusiveness, equal access, and fairness, Dr. Ragen sent Dr. Richard's September 15 critiques to Mr. Weiman (but not Dr. Goodman)

on November 1, and wrote of "*the fairest approach*." However, Dr. Ragen did not follow his own principles. He did not distribute Dr. Richard's October 31 and November 6 critiques, just as he did not distribute Dr. Becker's many critiques, to Dr. Goodman.

Below in Figure 4 is a timeline of Dr. Richard's communications with Dr. Ragen concerning his critiques of Dr. Goodman's analysis, critiques that in large part were not shared with Dr. Goodman.



In summary, Dr. Richard both talked to Dr. Ragen by phone in late October, and submitted several reports to him on October 31 and November 6, offering detailed statistical criticisms of Dr. Goodman's analysis. These criticisms paralleled the written comments from Dr. Becker to Dr. Ragen on September 9.

These criticisms were highlighted in Dr. Ragen's final MMC Report on November 22, 2011. None of these criticisms were ever shared with Dr. Goodman or his collaborator Mr. Lewis.

There was no open discussion, open exchange, and open dialogue, as dictated by the MMC Scientific Integrity Policy. Dr. Ragen violated his own policies and promises by not sharing and having an open discussion about these critiques. Nevertheless, Dr. Ragen featured Dr. Richard's criticisms in Figure 20 in his MMC Report on November 22, 2011.

Here is a summary of the three key critiques from Dr. Richard that were never shared with Dr. Goodman:

- Dr. Richard told Dr. Ragen (late October) that Dr. Goodman's models were

flawed, but Dr. Ragen never shared this critique with Dr. Goodman,

- Dr. Richard sent Dr. Ragen a document on October 31 saying that Goodman's models were flawed but Dr. Ragen never shared this critique with Dr. Goodman, and
- Mr. Bennett sent Dr. Ragen on November 6 Dr. Richard's critique of Dr. Goodman's models, but Ragen never shared this critique with Goodman.

These examples of Dr. Ragen withholding Dr. Richard's criticisms of Dr. Goodman's analysis further support the complaint that there were two faces to Dr. Ragen, one public and the other private.

In public Dr. Ragen espoused his fairness, independence, and lack of bias, while in private he organized a channel of undisclosed communications with both NPS Dr. Becker and NPS supporter Dr. Richard. He withheld most of Dr. Richard's responses to Dr. Goodman's August 29 report from Dr. Goodman, many of which found their way into prominent places in the final MMC Report on November 22, 2011.

This is yet another example of Dr. Ragen's misconduct and deception. Below are further examples of Dr. Ragen's misconduct.

1B5. Mr. Lunny's Questions for NPS Dr. Becker

To recap: at the end of the day on August 29, 2011, the three critiques of the NPS Becker et al. 2011 paper were due in Dr. Ragen's office. All parties complied with that policy. Dr. Ragen said he would distribute all three critiques to all parties at the end of the day on August 30, 2011. Dr. Ragen publicly complied with that policy, but privately violated it. Dr. Ragen secretly sent all three reports to NPS Dr. Becker – author of the scientific paper and claims under question – on August 29, allowing NPS the right to an exclusive preview of both the Goodman and Harwood analyses.

On August 30, NPS refused to participate in an MMC-sponsored public meeting to openly discuss the NPS Becker et al. 2011 paper and the three critiques of it.

On the same day, Dr. Ragen assured Mr. Weiman that he would share all analyses and reports with all parties. He made a similar promise to Senator Feinstein's office.

On August 30, Kevin Lunny (owner, DBOC) wrote to NPS PRNS Superintendent Cicely Muldoon:

> *Dear Cicely, The MMC just informed us that NPS will not review Dr. Goodman's analysis and will not participate in a meeting to review the Becker paper. Is this accurate? Why? Kevin*

The next day, Superintendent Muldoon responded:

> *Hi Kevin - The NPS is looking at all three of the reviews of the statistical analysis that Tim sent to the group yesterday, as I expect all parties involved are. Just as he did during the review period, Ben will continue to answer any remaining questions about the analysis that Tim asks as he works towards finalizing the Commission's report. I'm copying Tim on this as the MMC is referenced. Cicely*

Superintendent Muldoon told Mr. Lunny that NPS would not meet publicly to discuss the NPS Becker paper, would not respond to Dr. Goodman's review (although they did so

secretly to Dr. Ragen on multiple occasions throughout September-November), and would not answer Mr. Lunny's or Dr. Goodman's questions or critique, but they would answer questions from MMC Dr. Ragen. Ms. Muldoon wrote:

> "*Ben* [NPS Dr. Ben Becker] *will continue to answer any remaining questions about the analysis that Tim* [MMC Dr. Tim Ragen] *asks …*"

Based upon this reply from Superintendent Muldoon, on September 12, Mr. Lunny sent the following email to Dr. Ragen with seven key questions for NPS Dr. Becker:

> *Dear Dr. Ragen,*
>
> *On Tuesday, 8/31/11, I sent Superintendent Muldoon an email after you told us that NPS informed the MMC that NPS would not provide a review of Dr. Goodman's analysis of NPS-Becker 2011 and further, would not participate in a MMC meeting to review the statistical analysis asking if this was true.*
>
> *A day later, on Wednesday, I received a reply in which Muldoon said, "**The NPS is looking at all three of the reviews of the statistical analysis that Tim sent to the group yesterday, as I expect all parties involved are. Just as he did during the review period, Ben (Becker) will continue to answer any remaining questions about the analysis that Tim asks as he works towards finalizing the Commission's report.**"*
>
> *Notwithstanding the challenges before all involved, I am encouraged that Muldoon is reassuring us that **"Dr. Becker will continue to answer all additional questions…"** asked by you. We ask that the MMC please submit the following questions pertaining to NPS-Becker 2011 to Dr. Becker:*
>
> *(1) I have reviewed the materials made available by NPS for the Statistical review. I was not able to locate the data cited and used in NPS-Becker 2011 for the years 1982 and 1983, 22 and 23 years before the Lunny family purchased DBOC. If the data was provided, please advise where it can be located. If it wasn't provided, why not? And if it was not provided, please provide the data from its original source.*
>
> *(2) Is your OYST independent variable on its own, when run against the proportion of pups in Drakes Estero, still statistically significant when you exclude the years 1982 and 1983? When you exclude 2003 and 2004? Or when you exclude all four years? Is this a robust model that predicts the variation in the proportion of pups at Drakes Estero?*
>
> *(3 Is your best model (OYST and Double Point seal counts), when run against the proportion of pups in Drakes Estero, still statistically significant when you exclude the years 1982 and 1983? When you exclude 2003 and 2004? Or when you exclude all four years? Do you still believe that your best model is robust in that it best predicts the variation in the proportion of pups at Drakes Estero?*
>
> *(4) Do you agree or disagree with the conclusion that there was no long-term spatial displacement of pups out of Drakes Estero, but rather a short-term transient spatial displacement of pups into Drakes Estero in 2003 and 2004? Do you agree or disagree that the marauding elephant seal at Double Point accounts for most of this spatial displacement shown in your paper, and that the oyster farm was not involved?*
>
> *(5) Did you run total regional seals against the proportion of pups in Drakes Estero? If not, why not? Did you run the proportion of pups at Double Point against the proportion of pups at Drakes Estero? If not, why not? Are these*

models better or worse than your best model? How many different ways did you analyze the impact of the events at Double Point on the seals in Drakes Estero? On Table 3 you look at total seal count, whereas on Table 5 you look at pups. Did you run many possible models involving pups and seals at Double Point?

(6) Would you please replicate Dr. Goodman's top six models and let us know if you agree or disagree that they are far superior to your best model in terms of both the adjusted R squared and the P-value. In light of Dr. Goodman's and Dr. Harwood's reports, please provide us with a corrected ranking of best models.

(7) In light of these findings, do you stand by the title of your paper or would you revise it, and if so, how would you word it today?

We request that the MMC, as part of its on-going review, submit these questions to Dr. Becker.

Thank you,

Kevin and Nancy Lunny

Some of Mr. Lunny's questions were similar to the questions posed by Dr. Harwood to Dr. Ragen on September 2 (questions never shown to Mr. Lunny or Dr. Goodman until November 4, when the MMC Report was nearly finished). Mr. Lunny's questions were precisely the kind of specific questions that Dr. Ragen should have asked of NPS Dr. Becker. The public deserved to see the NPS answers to those questions, but Dr. Ragen refused to require NPS to do so.

Some of Mr. Lunny's questions were very similar to questions asked of Dr. Ragen a few days later on September 15, 2011 in the Senate Department of Commerce Appropriations Bill, 2012 (112-78). The Congressional language stated:

The Committee appreciates the Marine Mammal Commission's willingness to assess the 2011 statistical analysis prepared by the National Park Service [NPS] regarding the potential displacement of breeding and pupping harbor seals by shellfish aquaculture at Point Reyes National Seashore. As part of this on-going review, the Committee urges the Commission to thoroughly examine the reviews and analyses prepared by other statisticians on the NPS study to ensure a comprehensive assessment of all viewpoints. This should include a response to criticisms that the study: (1) should not have used data points for 1982–1983; (2) did not account fully for the impact of an aggressive elephant seal in the Double Point area on 2003 and 2004 harbor seal populations in Drake's Estero; and (3) did not accurately interpret aerial photographs and public health records when converting oyster harvest records to high/low values for further analysis. It also should include an analysis of the study's statistical significance if the 1982–1983 and/or 2003–2004 data are removed.

By both phone and in writing, Mr. Weiman was persistent in asking Dr. Ragen to send the questions to NPS Dr. Becker, and to ask for specific answers.

On September 16, Mr. Weiman wrote to Dr. Ragen:

Do you have a response from Ben yet?

On September 26, Mr. Weiman wrote to Dr. Ragen:

Do you have a response from Ben yet?

On September 28, Mr. Weiman wrote to Dr. Ragen:

We have not received Ben's analysis yet.

On September 28, Dr. Ragen responded to Mr. Weiman:

> *I haven't submitted it to them yet.*

Mr. Weiman asked Dr. Ragen this same question by phone several times during October. For example, on October 24, Mr. Weiman asked Dr. Ragen by phone if he had submitted Mr. Lunny's questions to Dr. Becker, and Dr. Ragen responded 'no.'

On November 17 (6:09 am), Mr. Weiman wrote to Dr. Ragen:

> *Tim. You indicated that the MMC requested that Becker address the Lunny questions and that Becker had completed the analysis as requested. When we spoke on Tuesday, you stated that the NPS Becker response would be forwarded to us following the call. Please send the MMC request to Becker and the response from NPS. Thank you. Dave W.*

On November 17, over two months after Mr. Lunny submitted the questions to Dr. Ragen, and just 5 days before the MMC Report was publicly released, Dr. Ragen sent answers to Mr. Lunny – answers written by Dr. Ragen and not by Dr. Becker.

Dr. Ragen let NPS Dr. Becker off the hook for many of Mr. Lunny's questions. When Mr. Lunny asked Dr. Ragen to ask NPS Dr. Becker:

> *Do you still believe that your best model is robust in that it best predicts the variation in the proportion of pups at Drakes Estero?*

Over two months later, Dr. Ragen replied:

> *I believe the Park Service should be allowed to see the results of the Commission's analysis before it forms its conclusions.*

In other words, the authors of the NPS paper were not asked to publicly respond to Dr. Goodman's critique and models, and would not be asked to evaluate the relative strengths of the different models. Instead, Dr. Ragen asserted, NPS "*should be allowed to see the results of the Commission's analysis*," an analysis that Dr. Ragen – and NPS – knew was secretly staffed by NPS. NPS was secretly helping Dr. Ragen review itself, but Dr. Ragen protected the NPS scientists from having to provide public answers to key questions.

Nothing about Dr. Ragen's process was open or transparent. Rather, his process was secretive and biased towards allowing NPS to control the assessment of its own faulty science. Dr. Ragen allowed the NPS to review the NPS.

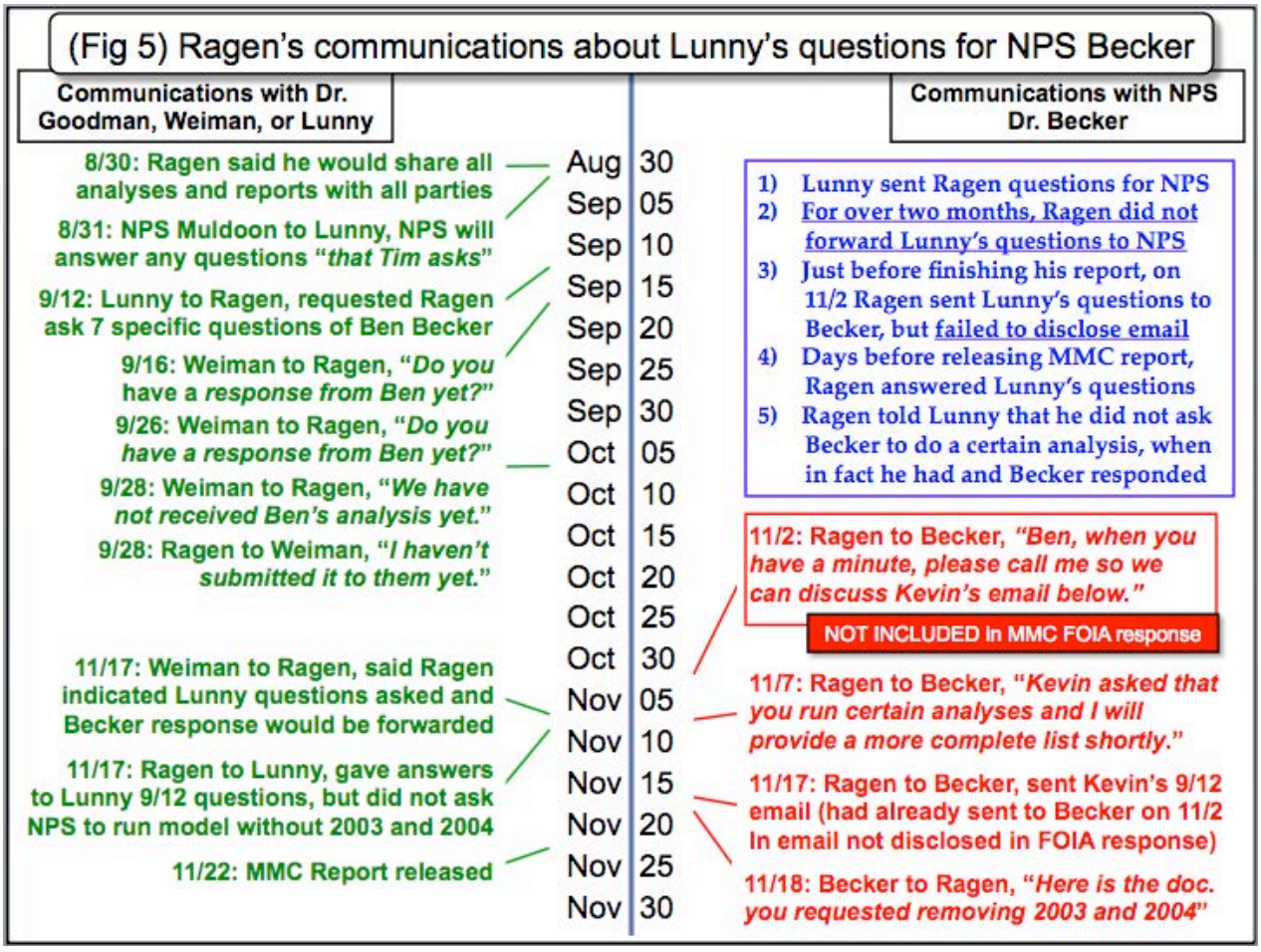
Interestingly, in Dr. Ragen's November 17 response to Mr. Lunny's September 12 questions, Dr. Ragen cites certain analyses done by NPS Dr. Becker in response to Dr. Harwood. However, Dr. Ragen did not provide some of those analyses, analyses in one case done by Dr. Becker on September 18 and submitted to Dr. Ragen on September 19. None of this was ever shared with Mr. Lunny or Dr. Goodman. In other words, analysis done by Dr. Becker and submitted to Dr. Ragen on September 19 was still not shared with Mr. Lunny on November 17.

Private communications in secret with only NPS

Concerning Mr. Lunny's seven questions from September 12, Dr. Ragen was carrying on a secret communication with NPS Dr. Becker. We do not know what was discussed by phone, but we get a glimpse of the Ragen-Becker interactions by the emails provided by

the parallel FOIA requests to MMC and NPS.

Below in Figure 5 is a timeline of communications with Dr. Ragen concerning Mr. Lunny's seven questions, showing the communications with Dr. Goodman, Mr. Weiman, and Mr. Lunny on the left, and with NPS Dr. Becker on the right.



In response to the FOIA request to MMC, Dr. Ragen included an email to NPS Dr. Becker on November 7 in which Dr. Ragen wrote to Dr. Becker:

> *Kevin asked that you run certain analyses and I will provide a more complete list shortly.*

Keep in mind that Dr. Ragen told Mr. Weiman that the draft MMC Report was being sent out for review on the next day, November 8, so clearly, Dr. Ragen did not take either Mr. Lunny's questions, or the parallel Congressional questions, very seriously.

MMC neglected, however, to provide a key email from Dr. Ragen to Dr. Becker five days earlier, on November 2. We obtained this email from a parallel FOIA request to NPS. No reason was given as to why this email was withheld by Dr. Ragen. By withholding this key email, Dr. Ragen appears to have violated the Federal FOIA law. Dr. Ragen wrote to Dr. Becker:

> *Ben, when you have a minute, please call me so we can discuss Kevin's email below.*

By "*Kevin's email below*," Dr. Ragen was citing Mr. Lunny's September 12 email with the seven questions for Dr. Becker. Clearly, before Dr. Ragen was going to ask those seven questions of Dr. Becker, he was going to give Dr. Becker – secretly – the right to decide

which ones to answer, and how to answer them. This email reveals that the MMC was not functioning independently, openly, without bias, and treating all parties equally and fairly. Rather, Dr. Ragen was secretly collaborating with NPS. Dr. Ragen did not provide this email in his FOIA response.

At 6:09 am on November 17, as described above, Mr. Weiman wrote to Dr. Ragen:

> *You indicated that the MMC requested that Becker address the Lunny questions and that Becker had completed the analysis as requested. When we spoke on Tuesday* [November 15]*, you stated that the NPS Becker response would be forwarded to us following the call. Please send the MMC request to Becker and the response from NPS.*

As best as we can tell from the email record, Dr. Ragen was not truthful with Mr. Weiman. As of November 15 (when Dr. Ragen and Mr. Weiman spoke by phone), Dr. Ragen had neither requested that Dr. Becker address the Lunny questions, nor had Dr. Becker completed the analysis requested by Mr. Lunny. The record shows that on November 2, Dr. Ragen had sent the questions to Dr. Becker and asked that he call him so they could "*discuss Kevin's email …*" This is the secret email that Dr. Ragen failed to disclose in violation of the Federal FOIA law. We do not know what transpired in that phone conversation. We were given no analysis or written answers from Dr. Becker to Mr. Lunny's requests prior to November 17.

At 1:44 pm on November 17, Dr. Ragen once again sent Dr. Becker the September 12 email from Mr. Lunny with the seven questions. This email was included in response to the FOIA request to the MMC. We do not know why Dr. Ragen sent them for a second time. Four and one half hours later, Dr. Ragen sent his response to the questions to Mr. Lunny (questions asked nearly two months previously), largely letting Dr. Becker ignore Mr. Lunny requests.

On November 17, in response to Lunny's question #3 from September 12, Dr. Ragen wrote:

> *Lunny question #3: (3) Is your best model (OYST and Double Point seal counts), when run against the proportion of pups in Drakes Estero, still statistically significant when you exclude the years 1982 and 1983? When you exclude 2003 and 2004?*
>
> *Ragen answer #3:* ***I did not ask the Park Service to run this model because I do not see a basis for removing 2003 and 2004*** *when it can be explicitly modeled as per Dr. Harwood's suggestion.* **[bold added for emphasis]**

Dr. Ragen did not tell the truth to Mr. Lunny. As obtained under FOIA, the next day, on November 18, Dr. Becker sent just this requested analysis (i.e., excluding 2003 and 2004) to Dr. Ragen with the note:

> *"Here is the document you requested removing 2003 and 2004."*

Dr. Becker's requested analysis (i.e., excluding 2003 and 2004) did not support Dr. Becker's 2011 paper, Dr. Becker's models, and the conclusions in the upcoming MMC Report. Dr. Ragen suppressed Dr. Becker's analysis. Dr. Ragen told Mr. Lunny that he had not asked Dr. Becker to conduct the analysis, when in fact he had done so.

In summary:

- Dr. Ragen refused to let Dr. Goodman and Dr. Harwood directly communicate with one another to discuss their critiques and the analysis of the data (August 31).

- NPS refused to publicly respond to Dr. Goodman's critique of the Becker 2011 paper, refused to participate in a public meeting to discuss the paper and critiques, but said it would respond to questions sent to it from Dr. Ragen (August 31).
- As a result, Mr. Lunny submitted seven questions for NPS Dr. Becker to Dr. Ragen (September 12). At the time, little did Mr. Lunny know that Dr. Ragen would not submit the questions to Dr. Becker in a timely fashion (i.e., while the MMC Report was being written during September and October) and would allow Dr. Becker to avoid responding altogether.
- The Senate, in the Department of Commerce Appropriations Committee Report, asked similar questions of Dr. Ragen, which, to my knowledge, were also not answered.
- Mr. Weiman asked over and over again for Dr. Ragen to submit the questions to Dr. Becker (September to November).
- For nearly two months, Dr. Ragen did not ask Dr. Becker the questions submitted by Mr. Lunny (September 12 to November 2).
- Dr. Ragen secretly sent Mr. Lunny's questions to Dr. Becker and asked to discuss them with him (November 2). He gave Dr. Becker the opportunity to decide how MMC should handle Mr. Lunny's questions for NPS.
- Dr. Ragen apparently violated the Federal FOIA law by withholding this email – an email that shows Dr. Ragen's undisclosed communications with Dr. Becker.
- Dr. Ragen told Dr. Becker that he would send Mr. Lunny's questions (November 7) on the even of sending his draft MMC Report out for review (November 8).
- Dr. Ragen sent his own answers, not Dr. Becker's answers, to Mr. Lunny's questions on November 17, just six days before public release of the MMC Report.
- Dr. Ragen said he had not asked Dr. Becker to run his analysis without 2003 and 2004 (November 17). On the very next day (November 18), Dr. Becker sent just such an analysis to Dr. Ragen, writing "*here is the document you requested removing 2003 and 2004.*" Clearly the analysis had been requested. That document was hidden – and Dr. Ragen told Mr. Lunny that he had not requested it – because it did not support Dr. Becker's analysis or the MMC Report conclusions. Dr. Ragen suppressed the results of this analysis, results that did not support the NPS correlation and the MMC Report support of that correlation.

These examples show how Dr. Ragen made sure that Dr. Becker either was not asked to answer Mr. Lunny's questions (and parallel questions from Congress), or suppressed Dr. Becker's answers that did not support either Dr. Becker or the MMC Report. This example further supports the complaint that there were two faces to Dr. Ragen, one public and the other private.

In public Dr. Ragen espoused his fairness, independence, and lack of bias, while in private he had a secret back channel of communications with NPS Dr. Becker. Dr. Ragen protected NPS Dr. Becker from publicly answering Dr. Goodman's questions, Mr. Lunny's questions, or Congressional questions.

This is yet another example of Dr. Ragen's misconduct and deception. Below are further examples of Dr. Ragen's misconduct.

1C. Dr. Ragen Assured Elected Officials That He would be Fair and Would Discuss Substantive Issues with Dr. Goodman and Mr. Lewis

Throughout August, September, and October, members of Senator Feinstein's staff told me that Dr. Ragen had assured them that he would be fair, unbiased, independent, and would discuss all substantive issues with Dr. Goodman and Mr. Lewis. Just the opposite happened. Below are some excerpts of what Dr. Goodman wrote to members of the Senator's staff on October 27:

> ***September 6****:* [the Senator's staff] *assured me that Ragen promised them that he would be fair, would read my review and ask me questions, would ask for clarification, would share any criticisms of my review and let me respond, and would reach out to both me and David Lewis (Director of U.C. Cooperative Extension Marin, the scientist who had independently -- at the request of Supervisor Steve Kinsey -- reviewed and supported my analysis and conclusions). At the time, I told you that I was concerned that Ragen didn't understand the statistics, didn't read what I sent to him, was intimidated by me, and appeared to be talking with NPS Dr. Ben Becker and the NPS supporters but not to me. With regret, that concern was correct and Ragen's promises to you were broken (see below).*
>
> ***The rest of September****: I never heard from Ragen. Ragen never asked a single question. …*
>
> ***September 12****: David Lewis told me that Ragen had called him, that they had a pleasant, short conversation, but that Ragen had avoided all discussion of science, statistics, data, and conclusions. Ragen told Lewis that if he had any questions, he would call Lewis back. He never did. Lewis told me he was concerned that Ragen was avoiding the science and substance.*
>
> ***October 6****: at around 5 pm that day, I met with Tim Ragen at his office, along with Dave Weiman and his assistant Melissa Cichantek. Ragen told me that he received an email with an enclosure earlier that day from Gordon Bennett and that is was likely to be a new version of Richard's review, but Ragen had not yet read the email or opened the enclosure. I ask Ragen if he had any questions about my analysis. He says that he did not. I asked him if he would have any questions. He was non-committal. Ragen declined to engage on the science. Ragen asked no questions about my analysis. He said he had another statistician looking at it, but refused to say who or how. He said that his final report would likely be critical of both my review and Becker 2011, but he refused to say how it would be critical of my review, what was wrong with my review, and he refused to commit to allowing me to respond to any criticisms on my review. As we were standing up to shake hands and say goodbye, Ragen said in passing that he was struggling with trying to resolve the difference between the AIC analysis done by Becker and the adjusted R squared analysis done by me (two different methods of analyzing a set of variables). I said that my two consultants -- the Stanford statistician* [name withheld to protect privacy] *and the UC Davis statistician* [name withheld to protect privacy] *-- had both told me, given the simple data set, that multiple linear regression (MLR) was fine for this analysis and would give the same result as AIC. Regardless, I reminded Ragen that we had done both*

analyses -- that David Lewis had done the GLM analysis using AIC (just as the Becker 2011 paper) and that it gave rise to the same conclusions as my MLR analysis using adjusted R squared. Ragen asked no questions. He mentioned he had talked to David Lewis. What he didn't mention was that he had avoided all science and substance when he talked with David Lewis. It was clear to me that Ragen did not understand the statistics, and that someone had planted a seed with him that I had done the wrong analysis (I had not, of course). I couldn't engage Ragen in the science and substance. He asked no questions.

***October 24**: David Lewis wrote to Tim Ragen and offered to talk to him by phone about our response and analyses, even though Lewis was traveling all week. Ragen responded by thanking Lewis and saying he would wait until the following week. Interestingly, on the same day, Tim Ragen told Dave Weiman that he planned on submitted his report to his panel on Friday October 28, before he had even talked with David Lewis. In other words, it became clear to David Lewis and me that Tim Ragen had no intention of talking with either one of us about the science and substance.*

***October 24**: Dave Weiman talked to Tim Ragen by phone. … Ragen had no questions or comments about my analysis, the rebuttal to it, or my response with David Lewis. He told Weiman that he had not read most of what had been sent to him. Nevertheless, he planned on filing his report on Friday October 28 with his panel. He once again told Weiman that everyone was at fault, and everyone was wrong in one way or another. Finally, when Weiman asked him whether he had submitted Kevin Lunny's September 12 question to Dr. Becker, Ragen said he had not.*

Dr. Ragen made similar assurances to Marin County Supervisor Steve Kinsey during September. Rather than share any of the emails from the Senator's staff or Supervisor's staff in this public document, I encourage the DOC OIG to interview both offices to learn what Dr. Ragen told them about his process, and what assurances he gave them.

1D. Dr. Ragen Did Not Treat All Parties Equally While Having Biased Interactions with NPS

This assertion is supported by the five examples in 1B1-5 above. Further examples will be provided during interviews and fact-finding.

1E. Dr. Ragen Did Not Conduct an Independent Review of NPS Data and Analysis

This assertion is supported by the five examples in 1B1-5 above. Further examples will be provided during interviews and fact-finding.

2. Dr. Ragen Changed MMC Terms of Reference Without Disclosure or Discussion

2A. Changed Scope, Title, and Purpose of MMC Report

After the MMC agreed to conduct an investigation of the marine mammals in Drakes Estero, it's first tasks were to assemble a panel and prepare a Term of Reference (scope of work). The Terms of Reference (TOR) was circulated to all parties, including NPS, the NPS supporters (i.e., the petitioners), and Mr. Lunny, and went through several iterations.

On July 21, 2010, the MMC circulated its proposed Terms of Reference and stated:

> *"Although we plan to "finalize" the terms of reference document in the next two weeks, it will remain a working document and may require modification as the review proceeds. However, as we are doing now, we intend to consult with you about any changes that are made throughout the process."*

Dr. Ragen distributed the final MMC Drakes Estero Report Terms of Reference for the MMC review on Drakes Estero on January 19, 2010, a month in advance of the four-day MMC panel meeting. Dr. Ragen established specific procedures for review developed with input from all parties, backed by the promise to consult with all parties if a modification was required.

Dr. Ragen held a MMC panel meeting (February 21-24, 2010) and solicited panel reports (spring 2010) in accord with MMC policies and Terms of Reference.

Dr. Ragen and his staff promised all parties that any changes to the Terms of Reference or the scope of the MMC process would be discussed and reviewed with all parties. Nevertheless, at the conclusion of the process, Dr. Ragen made significant changes to the overall scope of the MMC process without disclosure.

In January, 2010, after extensive discussions with all parties – NPS, DBOC, Dr. Goodman, NPCA's Neal Desai and then Sierra Club Representative, Gordon Bennett – the MMC approved the title for their investigation and review:

> *"Review of Harbor Seal and Human Interactions, Drakes Estero, California."*

On November 22, 2011, the MMC released its report, but the title was changed to:

> *"Mariculture and Harbor Seals in Drakes Estero in California."*

The term "human interaction" was deleted and "mariculture" was added. In so doing, MMC altered the entire framework of this report. All parties were never consulted about this change in the title of the review.

MMC also altered the scope of the work in the review. The MMC Report, on the very first page, stated:

> *"The present report by the Marine Mammal Commission addresses the first issue only, and only as it pertains to potential mariculture effects on harbor seals. Other human activities in the estuary affect harbor seals, and those activities also warrant review and appropriate management. In fact, the terms of reference for this review (Appendix A) indicate that the Commission's original intent was to conduct a broader review. However, as the review proceeded, it became clear that the primary question, strongly contended, is whether mariculture has affected or*

is affecting the seals. The Commission therefore sharpened the focus of its review on the potential effects of mariculture on harbor seals."

The MMC decision to alter the title and change the entire scope of the study was not disclosed to DBOC or Dr. Goodman.

On November 10, 2009, the MMC sent a letter to all parties (NPCA's Neal Desai, Sierra Club's Gordon Bennett, DBOC, Marin County Supervisors Kinsey and Adams, and others that stated:

Dear All, As you are aware the Marine Mammal Commission is moving ahead with its review of harbor seal interactions with aquaculture and other human activities in Drake's Estero, California. Since the Executive Director and Assistant Scientific Program Director visited Point Reyes National Seashore in August, we have formed a steering committee, drafted terms of reference for the review, and selected a review panel. Please find attached the DRAFT terms of reference that outlines the scope and planned execution of the review.

Although we plan to "finalize" the terms of reference document in the next two weeks, it will remain a working document and may require modification as the review proceeds. However, as we are doing now, we intend to consult with you about any changes that are made throughout the process.

MMC pledged to consult with the parties if changes were made to the "Terms of Reference" (scope of work). The scope was changed, but the promised disclosure was not forthcoming.

The change in the Title and Scope of the MMC review was profound and substantive. As a practical matter, this meant that MMC excluded more than 99% of the known disturbances as set forth in the NPS Inventory and Monitoring Harbor Seal Database and elected to study less than 1% of the NPS "claims" of disturbances.

The narrow scope was initially requested by NPCA, the Sierra Club and NPS. After significant discussion during the Fall, 2009, the scope was broadened to include all human interactions with the harbor seals. MMC panel members, in their statements (MMC Report, Appendix F) repeatedly referenced other impacts to marine mammals. The MMC Report does not fulfill its obligations pursuant to its original Terms of Reference. In the end, Dr. Ragen did exactly what the NPS and their supporters had wanted from the outset – he narrowed the title and scope – but he did so without the promised disclosure and discussion.

Dr. Ragen changed the formal Terms of Reference (TOR) without disclosure, in violation of MMC rules, including changing the name, scope, and structure of the MMC Report, and how he used the reports from the panel members (June 2010 to November 2011).

2B. Accepted Lack of Disclosure of Key Data and Paper by NPS

The MMC Terms of Reference and policies established for the MMC review by Dr. Ragen included the agreement that NPS would provide all data and analysis to MMC. NPS violated that MMC policy on multiple occasions, but Dr. Ragen did not address these violations in the final MMC Report.

Dr. Ragen accepted the discovery of the undisclosed NPS secret cameras, 271,000 photographs, and the details NPS logs of those photos without participation of his MMC

panel members (June 7, 2010 to November 2011). Dr. Ragen did not actively request full disclosure, and did not question why NPS had not disclosed the cameras and photos to MMC, given that the MMC had asked for all of the data, was told in writing NPS had given MMC all the data, and panel members had specifically suggested such a camera during the public panel meeting (February 2010). The final MMC Report (November 22, 2011) made no mention of the fact that the NPS had failed to disclose the cameras and photos to the MMC, even though Dr. Ragen made use of the photos in his MMC Report.

Dr. Ragen also accepted the lack of disclosure by NPS of the submission and ultimate publication of the NPS Becker, Press, and Allen 2011 paper. When an earlier version of the paper – Becker et al. 2010 – was presented to the panel members at the MMC panel meeting in February 2010, both Dr. Ragen and panel members told NPS that their analysis was flawed, and recommended that NPS not publish the paper.

On June 28, 2010, Mr. Weiman wrote to Dr. Becker, Mr. Press, and Dr. Allen, and copied Superintendent Muldoon, and asked:

> *All. Several weeks prior to the four days of MMC meetings last Fall, David Graber submitted your new report, Becker III* [Becker et al. 2010*]. It was peer reviewed. Has this paper or report been submitted to a professional journal, or do you plan to do so? If so, please identify that journal. Thank you. dave w.*

On the same day (June 28, 2010), Dr. Becker (copying Mr. Press, Dr. Allen, and Ms. Muldoon) responded:

> *Hi Dave W., Assuming you mean the Becker et al. 2010 report, no, we haven't submitted it to a journal and don't plan to until we hear back from the Marine Mammal Commission's peer review process. Best, -Ben*

Dr. Ragen reported to Mr. Weiman that he had told NPS again over the summer of 2010 not to submit the Becker et al. paper for publication. As the email above shows, NPS Dr. Becker told Mr. Weiman on June 28, 2010 that they would not submit the paper until after the end of the MMC review process.

Nevertheless, without telling either the MMC or Mr. Lunny, the NPS scientists submitted their paper for publication on October 14, 2010. Revisions to the paper were submitted on February 15, 2011. The paper was accepted for publication on February 28, 2011. Dr. Ragen and the MMC were not told. DOI Field Solicitor Gavin Frost (conducting an investigation of NPS science at the time) was not told. Mr. Lunny was not told.

Although the data and analysis remained largely identical between the 2010 version of the paper (Becker et al. 2010) and the 2011 publication (Becker et al. 2011), the title changed from suggesting a correlation to claiming causation.

The original title of this paper, as submitted to Dr. Tim Ragen, Executive Director, Marine Mammal Commission (MMC), on February 6, 2010 by NPS Dr. Dave Graber, in preparation for the February 21-24 MMC panel meeting, was:

> *"Spatial use of Drakes Estero, California, by harbor seals correlated to anthropogenic disturbance and natural variation during 1982-2009"*

The title as submitted on October 14, 2010 and published online on April 4, 2011 in *Aquatic Conservation: Marine and Freshwater Ecosystems* journal:

> *"Evidence for long-term spatial displacement of breeding and pupping harbour seals by shellfish aquaculture over three decades"*

The same data that were presented as a correlation in February 2010 became a causation when submitted for publication in October 2010. The title started as a correlation of spatial use and then was changed to "*evidence for long-term spatial displacement*" by mariculture activity.

When these data were first presented by Dr. Ben Becker to the Marine Mammal Commission panel at their February 21, 2010 meeting, there was much discussion by MMC panel members concerning why the NPS scientists should be careful to not conclude causation from their multi-variant correlative statistics. The NPS scientists were cautioned not to jump to conclusions about causation. The NPS scientists were cautioned not to publish the paper. But they did so without telling Dr. Ragen and the MMC, or Field Solicitor Gavin Frost.

We learned of the publication of the NPS Becker et al. 2011 paper by reading about it in The West Marin Citizen newspaper on April 7, 2011. Amy Trainer, Executive Director of the Environmental Action Committee of West Marin (EAC), disclosed the publication of the Becker et al. 2011 paper in a guest column in the newspaper.

Mr. Weiman notified Dr. Ragen of the publication the next day – on April 8, 2011. Dr. Ragen said he was surprised, and admitted to Mr. Weiman that he knew nothing about the paper having been either submitted, accepted, or published. Dr. Ragen repeated to Mr. Weiman that he had cautioned NPS against publishing the paper.

Dr. Goodman notified Field Solicitor Gavin Frost about the publication of the Becker et al. 2011 paper. Mr. Frost acknowledged that he knew nothing about the paper. Mr. Frost said he asked for all data, reports, and publication when he interview the NPS scientists in early December 2010, and they had failed to give him a copy of the Becker et al. 2011 paper which was already out being reviewed. NPS, Mr. Frost told Dr. Goodman, had not been honest with him, and had failed to disclose this paper.

3. Dr. Ragen Violated the Federal Freedom of Information Act (FOIA)

3A. Failed to Disclose and Release Key Communications

and

3B. Failed to Provide Basis for Failing to Disclose & Release Key Communications

On February 13, 2012, Cause of Action, an independent 501(c)(3) public interest group based in Washington, DC, with assistance from Dr. Corey Goodman, submitted parallel FOIA requests to both the MMC and the NPS asking for all communications between MMC Dr. Ragen and NPS Dr. Becker from June 1, 2011 to the present (February 2012). On March 19, 2012, the MMC responded to that FOIA request. The NPS responded to the parallel FOIA request around the same time.

Most of the emails and documents provided by MMC and NPS concerning communications between MMC Dr. Ragen and NPS Dr. Becker over the same time period were identical. Several key communications, however, from Dr. Ragen to Dr.

Becker were provided by NPS, but were withheld, without disclosure or explanation, by MMC, in apparent violation of the Federal FOIA law.

As described in detail in section 1B1 above, Dr. Ragen failed to provide several key transmittals from Dr. Ragen to Dr. Becker on Monday, August 29, 2011. These were not random communications. They did not represent a trivial oversight. Rather, these key communications revealed that Dr. Ragen was violating his own policies, and was conducting a second, secret line of communication with NPS Dr. Becker.

Dr. Ragen provided some – but not all – of the emails and communications and communications between himself and NPS Dr. Becker. In violation of the Federal FOIA and the President's policy on transparency (January 21, 2009), Dr. Ragen failed to provide certain key communications by withholding and not disclosing documents that revealed his double standard. We only learned about these communications from the NPS response to a parallel FOIA request.

The MMC neither acknowledged the existence of these communications nor provided a reason for withholding them. Disclosure that documents were being denied was not provided as required by FOIA. The MMC response was omission by silence. Dr. Ragen failed to provide or disclose the following.

At 7:27 pm ET on Monday August 29, Dr. Ragen sent to Dr. Becker via YouSendIt Dr. Goodman's file entitled "*analysis of Becker 2011.CSG.part1.pdf*" with the note (not disclosed in Dr. Ragen's response to the FOIA request):

> *"Ben, these two files from Corey are the last of the three reviews"*

At 7:31 pm ET, Dr. Ragen sent Dr. Becker part 2 of Dr. Goodman's analysis with the note (not disclosed in Dr. Ragen's response to the FOIA request):

> *"Ben, second part of Corey's analysis"*

At 7:36 pm ET, Dr. Ragen sent Dr. Becker the following with subject "*Corey's analysis*" (not disclosed in Dr. Ragen's response to the FOIA request):

> *"Ben, I sent you two files using YOUSENDIT. Let me know if you don't get them. Thanks"*

Then finally, at 7:40 pm ET, Dr. Ragen sent a note to all parties telling us (this note was disclosed in Dr. Ragen's response to the FOIA request):

> *Hi All, Thanks, All, for getting me your analyses. I will send you a plan for our next steps tomorrow morning. Best, Tim*

What is most remarkable about this timeline is that it reveals that around 7:30 pm on Monday evening, August 29, 2011, Dr. Ragen was conducting two simultaneous email conversations – the two faces of Dr. Ragen were communicating nearly simultaneously:

- the first openly with all parties (consistent with the rules Dr. Ragen had established for the review, and
- the second secretly with NPS Dr. Becker (inconsistent with his MMC rules and policies).

Dr. Ragen appears to have violated FOIA by withholding key documents and failing to disclose specific key emails and communications documenting his secret communications with Dr. Becker, namely, his inappropriate release of Dr. Goodman's

analysis to NPS Dr. Ben Becker on August 29, 2011.

Dr. Ragen failed to provide or disclose another key email sent by him to NPS Dr. Becker. On September 12, 2011, Mr. Lunny had sent a series of seven questions to Dr. Ragen, and asked Dr. Ragen to forward them to Dr. Becker and request answers to all seven. For over six weeks, Dr. Ragen failed to do so.

Finally, on November 17, just six days before the public release of the MMC Report, Dr. Ragen sent Mr. Lunny answers to his questions – written by Dr. Ragen and not Dr. Becker. Many of his answers were simply reasons why he never asked the questions of Dr. Becker.

It winds up that Dr. Ragen did send the questions to Dr. Becker on November 2, and asked him to give Dr. Ragen a call to discuss them. This is another example of Dr. Ragen was secretly working with Dr. Becker.

MMC neglected to provide that key email from Dr. Ragen to Dr. Becker on November 2. We obtained this email from a parallel FOIA request to NPS. No reason was given as to why this email was withheld by Dr. Ragen. By withholding this key email, Dr. Ragen appears to have violated the Federal FOIA law. Dr. Ragen wrote to Dr. Becker:

> *Ben, when you have a minute, please call me so we can discuss Kevin's email below.*

By "*Kevin's email below*," Dr. Ragen was citing Mr. Lunny's September 12 email with the seven questions for Dr. Becker. Clearly, before Dr. Ragen was going to ask those seven questions of Dr. Becker, he was going to give Dr. Becker – secretly – the right to decide which ones to answer, and how to answer them. This email reveals that the MMC was not functioning independently, openly, without bias, and treating all parties equally and fairly. Rather, Dr. Ragen was secretly collaborating with NPS. Dr. Ragen withheld this email and knowledge of its existence.

In summary, Dr. Ragen withheld key communications from both August 29, 2011 and November 2, 2011. The emails and transmittals withheld by Dr. Ragen – and not disclosed by him – were discovered in a response from NPS to a parallel FOIA request.

These were not random emails or transmittals. They were central communications in which Dr. Ragen violated the very policies he and the MMC established for this review.

In withholding these emails and transmittals, Dr. Ragen appears to have violated the Federal FOIA law, and to have broken the President's policy on openness and transparency in government.

4. Dr. Ragen Violated MMC Scientific Integrity Policy

4A. Did Not Follow Open Discussion, Open Dialogue, Open Exchange

This assertion is supported by the five examples in 1B1-5 above. Further examples will be provided during interviews and fact-finding.

4B. Undermined and Avoided Meetings to Discuss Data and Analysis

This assertion is supported by the five examples in 1B1-5 above. Further examples will

be provided during interviews and fact-finding.

5. Dr. Ragen Failed to Properly Disclose Reversal of Key Conclusion of MMC Report

5A. Reversed MMC Support of Key NPS Paper In a 'Private' Letter and 5B. Concealed Reversal Within Claim that Key MMC Conclusion Was Unchanged

Dr. Ragen's MMC Report was released on November 22, 2011. Dr. Goodman and Mr. Lewis were excluded, contrary to MMC policy, from the announced MMC process for several months leading up to the release of the report, neither being asked questions nor being part of any open scientific discussions.

When the MMC Report was released, Dr. Goodman and Mr. Lewis immediately recognized that it was full of errors, omissions, and misrepresentations. At the request of Marin County Supervisor Kinsey (who originally asked both Dr. Goodman and Mr. Lewis to get involved in this issue), Dr. Goodman and Mr. Lewis wrote two detailed critiques, and submitted them to Dr. Ragen one week later on November 29, 2011. Dr. Goodman's third critique was dated January 6, 2012.

On December 14, 2011, Dr. Ragen wrote and agreed to meet with Dr. Goodman and Mr. Lewis to discuss their comments on the MMC Report. Dr. Goodman and Mr. Lewis immediately responded and asked to make sure that NPS Dr. Becker was also present at the meeting, since Dr. Becker prepared most if not all of the statistical analysis for Dr. Ragen.

Dr. Goodman and Mr. Lewis had limited discussions with Dr. Ragen over the next few months, and those discussions were limited strictly to process and not substance. Dr. Ragen never engaged them in a single substantive discussion about the science, the analysis of the NPS data, or their critiques of Dr. Ragen's MMC Report. The promised meeting with Dr. Ragen and Dr. Becker never took place. Dr. Ragen once again allowed NPS to veto a MMC-sponsored meeting for open discussion of the science.

Dr. Ragen told Dr. Goodman and Mr. Lewis that NPS refused to meet with them. Without Dr. Becker, Dr. Ragen would not meet with them alone. Why couldn't Dr. Ragen meet alone and defend his own MMC Report? Why did he need NPS Dr. Becker to be present?

By February, Dr. Ragen said he would not meet with Dr. Goodman and Mr. Lewis, but rather would send them a written response. Before the release of Dr. Ragen's June 17, 2012 letter, the last they had heard from Dr. Ragen was on March 20 (a three-month gap in communication). It is now clear that Dr. Ragen's ultimate written response relied heavily on further analysis and input from Dr. Becker.

On Sunday June 17, 2012, six months after Dr. Goodman and Mr. Lewis submitted their critiques to him, Dr. Ragen sent what he called a 'private' letter to Dr. Goodman (not Mr. Lewis), undated and not on letterhead, in response to the Goodman-Lewis critiques

(November 29, 2011 and January 6, 2012) of Dr. Ragen's MMC Report on Drakes Estero (November 22, 2011).

In his June 17 'private' letter to Dr. Goodman, Dr. Ragen acknowledged – in a disguised and all but invisible fashion – that new analysis by NPS Dr. Becker led him to reverse the major conclusion of his November 22, 2011 MMC Report and thus refute the major conclusion of the NPS Becker, Press, and Allen 2011 paper.

In a 20-page 'privte' letter to Dr. Goodman, Dr. Ragen acknowledged that there was not sufficient evidence to support the NPS correlation claimed in the Becker et al. 2011 paper that mariculture activities are spatially displacing harbor seals out of Drakes Estero.

In a dramatic reversal, Dr. Ragen agreed with what Dr. Goodman and David Lewis (Director, U.C. Cooperative Extension) told him for nearly one year in their critique of the Becker paper – namely, that NPS does not have evidence to support the NPS conclusion in their peer-reviewed paper published in a scientific journal.

It would be very difficult if not impossible for anyone not familiar with the data, analysis, and context to recognize Dr. Ragen's reversal in his June 17, 2012 letter, but it is there on page 2 and in Table 2 on page 4. The Appendix attached here describes that reversal in detail.

In brief, the NPS Becker, Press, and Allen 2011 paper claimed to have conclusive "*evidence*" to prove that as oyster farm activity increased, harbor seals were spatially displaced out of Drakes Estero. The paper not only claimed strong evidence for this correlation, but also concluded evidence for causation as well.

For the previous year, Dr. Goodman and Mr. Lewis contended that there was insufficient evidence to conclude that oyster farm activity had displaced seals. The Goodman-Lewis analysis of the NPS data compelled them to conclude that there was insufficient evidence to prove causation, and insufficient evidence to prove a meaningful correlation of oyster activity with seal distribution.

Rather, the NPS data revealed that the transient increase in the total regional seal population and a random, lethal event at Double Point had transiently displaced seals into Drakes Estero. Dr. Goodman and Mr. Lewis showed that statistical models relying on these forces of nature were superior to Becker's best models relying on an artificial and inaccurate categorical designation of oyster farm activity called OYST Hi/Low in the Becker paper.

In simple terms, acts of nature caused the harbor seals to increase in Drakes Estero in 2003 and 2004, and then return to baseline in 2005 and thereafter. NPS decided to 'blame' the oyster farm for the return to baseline in 2005. Given their open opposition to the oyster farm, NPS used 'science' to advance their political and policy agenda that was otherwise unsupportable.

In the MMC Report, although acknowledging that the data were "*scant and have been stretched to their limit*," Dr. Ragen nevertheless accepted that the NPS data provide support for the NPS correlation.

In his June 17, 2012 'private' letter, six months after Dr. Goodman and Mr. Lewis submitted a critique challenging that main conclusions from Dr. Ragen's November 22, 2011 MMC Report, Dr. Ragen reversed himself (something the reader would only know if

they read the text carefully, examined the tables in detail, and understood the implications).

For the first time, on page 2 and in Table 2 on page 4, Dr. Ragen acknowledged that:

- a model relying on total regional seal population and the lethal event at Double Point is better than models relying on oyster farm activity (without acknowledging that this is not our best model, but rather our 7th best model in statistical ranking);
- "*the Double Point event and regional population size may have had a significant influence on harbor seals in Drakes Estero*,"
- the OYST Hi/Low categorical variable may have had "*a potential influence*," and
- "*the results are not proof of a correlation*."

Concluding that "*the results are not proof of a correlation,"* that the regional population size and Double Point event (i.e., the forces of nature) "*may have had a significant influence,*" and that the OYST Hi/Low variable may have had "*a potential influence*" is a far cry from concluding, as he did in the MMC Report, that the NPS data provide support for the OYST Hi/Low NPS correlation.

If the NPS "*evidence*" is that weak, then the Becker 2011 paper – which went beyond proof of correlation to claim causation – should never have been published (and should now be retracted) and the MMC Report should have simply concluded that the data are too scant and thin to draw any meaningful conclusions concerning the oyster farm activity.

Moreover, had Dr. Ragen properly tested and ranked the Goodman-Lewis six best models, rather than the Goodman-Lewis 7th best model as was done in Table 2, his conclusions would have been stronger and less ambiguous – the ranking would have shown seven models that were superior to any of Becker's OYST Hi/Low models.

These data and further analysis should have led Dr. Ragen to conclude that the evidence provides support for regional seal population and the lethal event at Double Point having had a significant influence on harbor seals in Drakes Estero, and moreover, that it is impossible to ascertain whether oyster activity does or does not have any additional influence on the distribution of harbor seals in Drakes Estero.

In December 2011, Congress directed the National Academy of Sciences (NAS) to review the NPS science as presented in the DEIS. Dr. Ragen was invited and participated in the July 11, 2012 NAS panel meeting, but he failed to disclose the MMC reversal sent to Dr. Goodman only a few weeks prior. Numerous NPS staff participated in the NAS meeting as well, and they too failed to disclose the analysis by NPS Dr. Becker that led to the reversal in Dr. Ragen's letter.

In light of these revelations, we must now consider the November 22, 2011 MMC Report on Drakes Estero to be fatally flawed, and the main conclusion to be incorrect. Dr. Ragen reversed himself based upon NPS Dr. Becker's analysis of the Goodman-Lewis models. Both he and NPS know that the MMC Report is fatally flawed.

Dr. Ragen's letter was written in such a way that the lay public would not be expected to ferret out the scientific truth – namely, that Dr. Ragen reversed the major conclusion of his MMC Report.

Dr. Ragen's June 17, 2012 'private' letter contained significant errors, omissions, and misrepresentations, as well as gratuitous, unsubstantiated, and personal criticisms aimed at discrediting his major critic – Dr. Goodman. This was unbecoming behavior for the Executive Director of the Marine Mammal Commission.

Most importantly, Dr. Ragen's June 17, 2012 letter contained a reversal of the major conclusion in his MMC Report.

Dr. Ragen's June 17, 2012 letter, although disguised as a criticism (of the Goodman-Lewis critiques of the MMC Report), was actually in agreement with the Goodman-Lewis critiques and their models, and contained a reversal of the major conclusion from Dr. Ragen's MMC Report and the NPS Becker et al. 2011 paper concerning the evidence that oyster farm activity led to a spatial displacement of harbor seals in Drakes Estero.

Dr. Ragen's June 17, 2012 letter offered new NPS analysis in Table 2 on page 4 (and described in a paragraph in the middle of page 2). This new analysis effectively nullified any notion of evidence or proof of the correlation between oyster farm activity and harbor seals in Drakes Estero as concluded in the NPS Becker 2011 paper, and the acceptance of that correlation by Dr. Ragen in the MMC Report.

Causation was gone. Strong support for the NPS correlation was similarly gone. While selecting his words carefully, Dr. Ragen essentially said so in the middle of page 2 of his letter.

5C. Dr. Ragen's June 17, 2012 'Private' Letter Belied the MMC Scientific Integrity Policy

In hindsight, the timing of Dr. Ragen's letter (six months after the Goodman-Lewis critiques) coincided with the announcement of the NAS panel and panel meeting – designed to review the NAS science in the DEIS.

Dr. Ragen said his letter was 'private', not for public distribution, and not to be shared with others. He told Mr. Weiman, DBOC consultant, that he "*wanted to keep it contained*" and would not send it to Mr. Weiman or Mr. Lunny. He indicated that, once sent, he would not further correspond on this issue, but would turn to other matters and signaled that this was his last word on the subject.

Dr. Ragen's assertion about the privacy of his June 17, 2012 letter – and his admonishment that Dr. Goodman not respond – was inconsistent with his actions. Without disclosure to Dr. Goodman, less than 21 hours after sending his private letter to Dr. Goodman, at 8 am the next morning (Monday June 18, 2012), Dr. Ragen sent the letter to NPS Superintendent Cicely Muldoon. History tells us that sending it to Ms. Muldoon was tantamount to a public release of the letter less than one day after sending it to Dr. Goodman as a 'private' letter.

One day later, on June 19, Neal Desai (National Parks Conservation Association or NPCA) submitted a FOIA for documents including Dr. Ragen's private letter. Whereas MMC responses to FOIA requests, in our experience, take more than one month and are transmitted by MMC's General Counsel, the MMC response to Mr. Desai's FOIA was transmitted by Dr. Ragen himself the following week.

You can imagine Dr. Goodman's surprise to discover that Dr. Ragen's 'private' letter was

public within less than one day and, within a few weeks, NPCA's Mr. Desai submitted it to the NAS panel. Mr. Desai submitted Dr. Ragen's letter at the very end of their panel's public comment period, ensuring that Dr. Goodman and Mr. Lewis would be denied an opportunity to respond. Regardless of intent, this constituted a manipulation of the scientific record and a distortion of the 'scientific information' available to the NAS panel.

Although Dr. Ragen said he would neither discuss the private letter with Dr. Goodman nor respond to correspondence from him, Dr. Ragen's behavior was quite different in regard to the press. While not discussing the science with Dr. Goodman, he gave interviews to the press about his letter – interviews with people who did not understand statistics and certainly would not be prepared to ferret out deceptions or misrepresentations, if such existed.

Given the technical nature of many of the issues raised in Dr. Ragen's letter, and the difficulty of critically analyzing his letter in isolation without the context of the key papers, reviews, reports, and critiques that came before the letter, it has been nearly impossible for laypeople to see through the strong, assertive language and to ferret out the deceptions and misrepresentations – and major reversal – in his letter.

Given the misleading nature of Dr. Ragen's letter, and the manner in which the 'private' letter was immediately circulated, we are compelled to ask: for whom was it written, and was it truly intended to be a 'private' letter? The manner in which Dr. Ragen publicly released it – a letter he told Mr. Weiman was 'private' and not to be distributed – is inappropriate for the Executive Director of a federal science-based agency.

Although Dr. Ragen has claimed repeatedly since 2009 that the MMC under his leadership is science-based, and that the MMC conducted an independent analysis, his actions (and reliance upon NPS Dr. Becker for much of his analysis) reflect a bias and preoccupation with protecting the NPS scientists – and his relationship with NPS – at the expense of good science, and at the expense of truth.

Since last August 25, 2011, Dr. Ragen refused over and over again to talk with Dr. Goodman or Mr. Lewis about the science, notwithstanding repeated written requests to meet, review, evaluate, and analyze the issues raised in our critiques. Dr. Ragen certainly did not talk with Dr. Goodman or Mr. Lewis about their original August 29, 2011 reviews, their October 23 or November 4 supplemental reviews, or their November 29 critiques of Dr. Ragen's MMC Report. Most recently Dr. Ragen announced he would not speak with them about his June 17, 2012 letter. Throughout this same period of time, he talked to NPS and their supporters repeatedly, as documented in this complaint. And he talked to the press.

Dr. Ragen's conduct undermined his MMC Scientific Integrity Policy that promised open discussion, open dialogue, and open exchange. Dr. Ragen's scientific integrity policy assured the White House of "*honest investigation, open discussion, refined understanding, and a firm commitment to evidence.*" Dr. Ragen wrote: "*the Commission actively seeks input from and open dialogue among all parties engaged in all issues …*" Furthermore, Dr. Ragen wrote that the MMC seeks "*open exchange of information and viewpoints ...*" Dr. Ragen's actions belied the MMC scientific integrity policy that he filed with the White House OSTP.

5D. Role of NPS Becker 2011 paper and MMC Report on NPS EIS

The NPS Drakes Estero Draft Environmental Impact Statement (DEIS) was released in September 2011 and was over 700 pages in length. It addressed fourteen areas of potential environmental impact. It had very scant data demonstrating actual impacts. Two of the few places in which the DEIS claimed to have data or evidence for impacts are the soundscape and the harbor seal sections. The soundscape section of the DEIS has come under intense scrutiny and criticism in both the August 2012 NAS Report and in an ongoing DOI OIG investigation.

The harbor seal analysis in the DEIS cited and depended upon the validity of the conclusion in the NPS Becker 2011 paper (i.e., the correlation of oyster activity with harbor seal distribution). The NPS has announced that the final EIS will rely on the MMC Report acceptance of the correlation in that paper as its peer review and validation.

We now know that the central issue of the harbor seal analysis – the evidence for a correlation between oyster activity and harbor seal distribution, is incorrect, in that, based upon new analysis by NPS Dr. Becker, Dr. Ragen concluded in his June 17, 2012 'private' letter that there is no proof of a correlation. Dr. Ragen overturned the NPS correlation and the MMC Report's support of that correlation. These new revelations are central to the NPS EIS, and the NPS reliance upon the MMC Report to validate their conclusion.

Concerning harbor seals, the NPS DEIS stated:

> *"In a recent review of the long term data at Drakes Estero, Becker, Press, and Allen (2011) used a model-based approach to show that harbor seals preferentially use haul-out sites less when located near active oyster mariculture sites during years of high vs. low oyster harvest."*

The Becker 2011 paper asserted NPS had "*evidence*" showing the oyster farm caused a spatial displacement of harbor seals out of Drakes Estero. The paper was entitled:

> *Evidence for long-term spatial displacement of breeding and pupping harbour seals by shellfish aquaculture over three decades*

The NPS Becker 2011 paper is cited in the DEIS as the basis for claiming that the oyster farm has a moderate negative impact on the harbor seals in Drakes Estero.

Since the release of the MMC Report, the NPS announced that it plans to attach the MMC Report to the final EIS and to cite it in the EIS. The NPS did not ask Atkins to review the harbor seal section of the DEIS because it claimed that the MMC Report served as that peer review. The MMC Report is thus part of the NAS review of the DEIS.

The November 22, 2011 MMC Report concluded:

> *"The Marine Mammal Commission believes that the data supporting the above analyses are scant and have been stretched to their limit. Nevertheless, the analyses in Becker et al. (2011) provide some support for the conclusion that harbor seal habitat-use patterns and mariculture activities in Drakes Estero are at least correlated."*

This was Dr. Ragen's key conclusion in his report. Dr. Ragen accepted the NPS correlation that increased oyster activity led to a displacement of harbor seals out of Drakes Estero.

In Dr. Ragen's June 17, 2012 letter, he reverses this conclusion and states:

> *"The results (Table 2) indicate that the Double Point event and regional population size may have had a significant influence on harbor seals in Drakes Estero. The results also identify the oyster low/high variable as a potential influence. Given the uncertainty associated with the analyses, the results are not proof of a correlation, but they also do not provide a basis for dismissing such a relationship."*

As described in detail in the Appendix attached here, this carefully worded statement from Dr. Ragen reverses the major conclusion of his MMC Report. More background and context is required to understand the reversal. The Appendix describes how this statement, and Table 2, in Dr. Ragen's letter reversed the major conclusion of the MMC Report and refuted the conclusion of both correlation and causation in the NPS Becker paper.

One final note about the NPS data and metrics. The data and metrics keep changing in various NPS and MMC reports and letters. The only data in their entirety that are publicly available are those that were used in the NPS Becker 2011 paper. At the very end of the MMC Report, and now in Dr. Ragen's June 17, 2012 letter, the NPS switched from maximum counts over the three-month pupping season to mean counts over a one-month period, and have included an additional year, and made other adjustments.

These changes are not trivial, and led to significant shifts in the ranking and relative strengths of the various NPS models. Since we (i) do not have those data, (ii) were asked to review the Becker paper, and (iii) it is the Becker paper that is cited in both the MMC Report and the DEIS, we have continued to use that NPS dataset (provided to us by Dr. Becker) as the basis for our analysis.

5E. Conclusions From Dr. Ragen's June 17, 2011 'Private' Letter

The attached appendix offers a detailed analysis of Dr. Ragen's June 17, 2012 'private' letter to Dr. Goodman, along with its implications for the MMC Report and the pending NPS EIS. Ten conclusions follow from this analysis of Dr. Ragen's letter.

1) The NPS Becker, Press, and Allen 2011 paper claimed to have conclusive evidence to prove that as oyster farm activity increased, harbor seals were spatially displaced <u>out</u> of Drakes Estero. The paper not only claimed strong evidence for this correlation, but it went so far as to conclude evidence for causation as well.

2) Since August 2011, Dr. Goodman and Mr. Lewis contended that there was insufficient evidence to conclude that oyster farm activity had displaced seals. Rather, they concluded that the transient increase in the total regional seal population and a random, lethal event at Double Point had transiently displaced seals <u>into</u> Drakes Estero. They showed that statistical models relying on these forces of nature were superior to Becker's best models relying on an artificial, categorical designation of oyster farm activity called OYST Hi/Low.

3) In the MMC Report, although acknowledging that the data were "*scant and have been stretched to their limit*," Dr. Ragen nevertheless accepted that the NPS data provided support for the NPS correlation.

4) In Dr. Ragen's June 17 'private' letter to Dr. Goodman, Dr. Ragen reversed his

major conclusion in the MMC Report. For the first time, on page 2 and in Table 2 on page 4, he acknowledges that:

a. a model relying on total regional seal population and the lethal event at Double Point is better than models relying on oyster farm activity (without acknowledging that this is not our best model, but rather our 7th best model in statistical ranking);

b. "*the Double Point event and regional population size may have had a significant influence on harbor seals in Drakes Estero*,"

c. the OYST Hi/Low categorical variable may have had "*a potential influence*," and

d. "*the results are not proof of a correlation*."

5) Concluding that "*the results are not proof of a correlation,"* that the regional population size and Double Point event (i.e., the forces of nature) "*may have had a significant influence*," and that the OYST Hi/Low variable may have had "*a potential influence*" is a far cry from concluding, as he did in the MMC Report, that the NPS data provide support for the OYST Hi/Low NPS correlation.

6) If the evidence is that weak, then the NPS Becker 2011 paper – which went beyond proof of correlation to claim causation – should never have been published (and should now be retracted) and the MMC Report should have simply concluded that the data are too scant and thin to draw any meaningful conclusions concerning the oyster farm activity. The MMC Report should be revised and re-released.

7) Had Dr. Ragen properly tested and ranked the Goodman-Lewis six best models, rather than the Goodman-Lewis 7th best as was done in Table 2 of his June 17 letter, his conclusions would have been stronger and less ambiguous – the ranking would have shown seven models that were superior to any of Becker's OYST Hi/Low models.

a. These data and further analysis should have led Dr. Ragen to conclude that the evidence provides support for regional seal population and the lethal event at Double Point having had a significant influence on harbor seals in Drakes Estero, and

b. that it is impossible to ascertain whether oyster activity does or does not have any additional influence on the distribution of harbor seals in Drakes Estero.

8) Dr. Ragen participated in the July 11 NAS panel meeting, but he failed to disclose the MMC reversal. Numerous NPS staff participated in the NAS meeting as well, and they too failed to disclose NPS Dr. Becker's analysis and reversal.

9) In light of these revelations in Dr. Ragen's June 17, 2012 'private' letter to Dr. Goodman, the November 22, 2011 MMC Report should be retracted, revised, re-reviewed, and re-released.

10) In light of these revelations in Dr. Ragen's June 17, 2012 'private' letter to Dr. Goodman, the NPS Becker et al. 2011 paper should be retracted. Moreover, the harbor seal section of the NPS EIS should not cite either the Becker et al. 2011

paper or the MMC Report. There is no scientific evidence for an environmental impact of the oyster farm on the harbor seals in Drakes Estero. This should be clearly stated in the NPS EIS.

APPENDIX TO MISCONDUCT COMPLAINT AGAINST MMC DR. RAGEN

Implications of Dr. Ragen's June 17, 2012 'Private' Letter

The Becker, Press, and Allen 2011 paper asserted that NPS had "evidence" showing that the oyster farm caused a spatial displacement of harbor seals out of Drakes Estero. The paper was entitled:

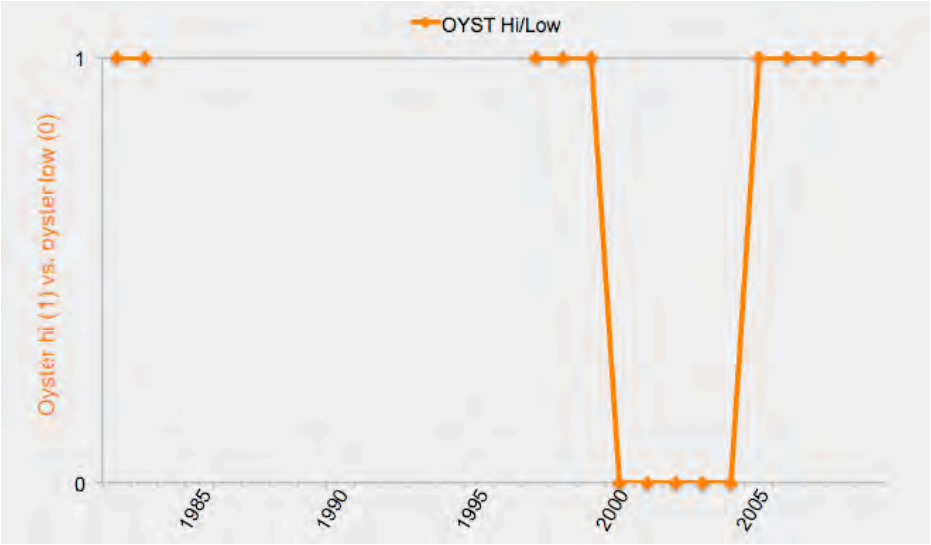
> *Evidence for long-term spatial displacement of breeding and pupping harbour seals by shellfish aquaculture over three decades*

The paper used statistical analysis based upon fifteen years of harbor seal data (1982 and 1983, then a thirteen year gap, and 1997 to 2009) to conclude that as oyster farm activity increased (i.e., oyster boat and worker activity at sandbars UEN and OB during the three month pupping season March-May), harbor seals were displaced out of Drakes Estero as measured by the proportion of seal pups in Drakes Estero.

In the previous Becker et al. paper in 2009 (as reviewed by the previous NAS panel), oyster activity had been measured as annual oyster harvest (in pounds) for the entire estero. Put another way, Becker attributed 100% of the harvest from 43 designated growing areas to five designated beds at UEN and OB, a significant statistical distortion.

At public meetings, both the NAS panel in 2008, and the MMC panel in 2010, recognized that annual oyster harvest for the entire estero was not an appropriate statistical measure of oyster farm activity at sandbars UEN and OB (the harvest sites closest to – i.e. 600-700 yards from – the seal haul-out sites in Drakes Estero) during the three month pupping season (March-May). The estero contains over 40 sites for growing oysters. Having been told by two scientific panels, including the original NAS panel, that such a method was inappropriate, Becker nevertheless proceeded to do it anyway.

The Becker 2011 paper went one step further in coming up with an abstraction of oyster activity. Becker represented oyster activity as a categorical measure called OYST Hi/Low in which each year was assigned either a one (high activity) or a zero (no activity). The years 2000 to 2004 were assigned "low" or zero (activity at sandbars UEN and OB during pupping season), and all other years were assigned "high" or one. The entire NPS analysis in the Becker 2011 paper is contingent upon the validity of this categorical OYST Hi/Low designation. This categorical (and arbitrary) designation for oyster activity at sandbars UEN and OB during pupping season is shown below.



This OYST Hi/Low designation was the basis for the NPS Becker 2011 paper. Is it an accurate reflection of oyster activity at sandbars UEN and OB during pupping season? The answer is no.

Did OYST Hi/Low drive the best models in the Becker paper? The answer is yes.

Table 3. A priori models ranked by delta QAICc for the proportion of Point Reyes seal pups and total seals using Drakes Estero. Δi indicates QAICc distance from the best model and wi indicates model weight. Modeling oyster harvest as a continuous variable or low oyster during 1999–2004 gives similar results. Models ranking within the lowest 4 QAICc units (in bold) were used for multimodel inference in table 5. Oyst: low oyster harvest from 2000–2004; DP: Double Point Counts; A: proportion of Drakes Estero seals using subsite A; Dist: anthropogenic disturbance rate. Rankings are similar if using continuous oyster harvest rather than *categorical*

Age class	Model	Δi	wi	r^2
Pup	**Oyst+Double Point (DP)**	**0.0**	**0.35**	**0.51**
	Oyst+DP+A	**1.3**	**0.18**	**0.63**
	Oyst+A	**1.4**	**0.18**	**0.46**
	Oyst+ENSO	**2.6**	**0.09**	**0.42**
	Oyst	**3.3**	**0.06**	**0.26**
	Year	5.0	0.03	0.20
	Oyst+Dist	5.6	0.02	0.32
	Oyst+DP+Dist+A	6.3	0.01	0.66
	DP+Year	6.4	0.01	0.29
	DP	7.3	0.01	0.12
	Null	7.7	0.01	0.00
	Regional pup count	10.3	0.00	0.02

As shown above (Figure 3 from the Becker 2011 paper), all of the top five models in this ranking included the "Oyst" (OYST Hi/Low) independent variable. It was this ranking of models that led Becker et al. to conclude that they had evidence to show a correlation between oyster activity and harbor seals in Drakes Estero.

Goodman-Lewis review of the NPS Becker 2011 paper

On August 29, 2011, and again on October 23 and November 6, Dr. Goodman and Mr. Lewis submitted reviews of the Becker 2011 paper. Goodman-Lewis concluded that:

(1) The OYST Hi/Low categorical designation was arbitrary and incorrect in that ample oyster activity took place at sandbars UEN and ON during 2000-2004 and oyster activity did not increased at those sites in 2005 (based upon aerial photos, DBOC records, statements from previous owners and employees, and CA Department of Public Health records),

(2) The so-called NPS correlation was in fact driven by a general trend in the regional population (that increased in 2000-2004 and then returned to baseline in 2005), and by a single stochastic (random) event that took place in 2003 (and that drove hundreds of seals into Drakes Estero during 2003 and 2004, away from danger),

(3) The data were highly leveraged (unduly influenced) by a single year – 2003 – in which the confluence of both natural forces (the transient increase in the regional population and the lethal event at Double point) coincided,

(4) The inclusion of 1982 & 1983 (with the subsequent thirteen year gap) biased the

data because of the intervening 1992 multi-agency protocols that prohibited the oyster boats from entering the lateral channel via the east end (and thus travelling within ten yards of the seals) and mandated that they enter via the west end of the lateral channel (and thus stay 600-750 yards away from the seals), and

(5) The data were too thin (confirmed by MMC Report) – and too highly influenced by forces of Mother Nature (confirmed by Dr. Ragen's June 17 letter) and the 92 protocol changes – to draw any meaningful conclusions about the impact of the oyster farm.

Goodman-Lewis concluded that the so-called NPS negative correlation of the proportion of seal pups in Drakes Estero with oyster activity (as modeled using OYST Hi/Low) was actually not driven by oyster activity (as concluded in the Becker 2011 paper), but rather driven by the total regional seal population and the 2003 lethal event at Double Point.

Inexplicably, Becker and his co-authors also excluded data (and the possibility of impact) in their analysis from shark predation, ocean food conditions, and other environmental factors about which some of the same authors were addressing in separate, unrelated reports (and about which the MMC panel members commented in Appendix F).

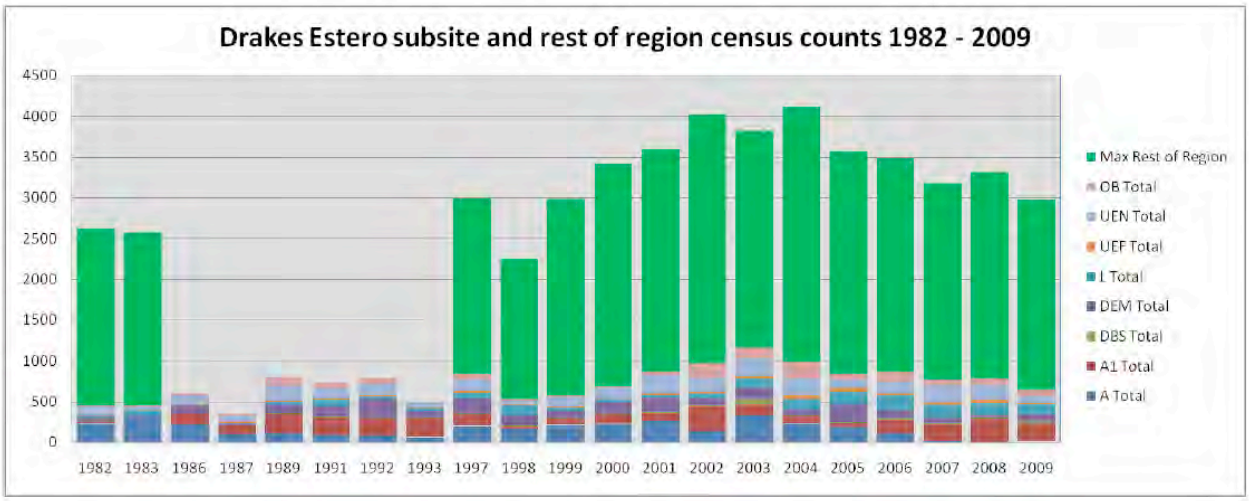
In brief, the NPS data showed that as the total regional seal population increased, due to the near-saturation of the coastal haul-out sites shared with elephant seals, a greater proportion of moms and pups entered into Drakes Estero. The regional population increased in 2000-2004, and then went back to normal in 2005 (coincidentally matching the arbitrary – and incorrect – "low" years in the NPS OYST Hi/Low categorical designation of oyster activity).

Dr. Goodman and Mr. Lewis were not the first scientists to point out that the regional population increased in 2000-2004 and then returned back to baseline in 2005. This was first noted by Dr. Francis O'Beirn (NAS panel member) in 2008 and further highlighted by Dr. Brian Kingzett (MMC panel member) in 2010.

For example, Dr. O'Beirn (Trinity College Dublin and leader at the Marine Institute in Galway) said the following after NPS Dr. Becker's presentation at the September 4, 2008 NAS panel meeting. Dr. O'Beirn noted that regional seals increased in 2002-2004 and then decreased in 2005 throughout the region, and was thus unlikely to be due to the oyster farm. Concerning the decreased in pups in Drakes Estero beginning in 2005, Dr. Francis O'Beirn said:

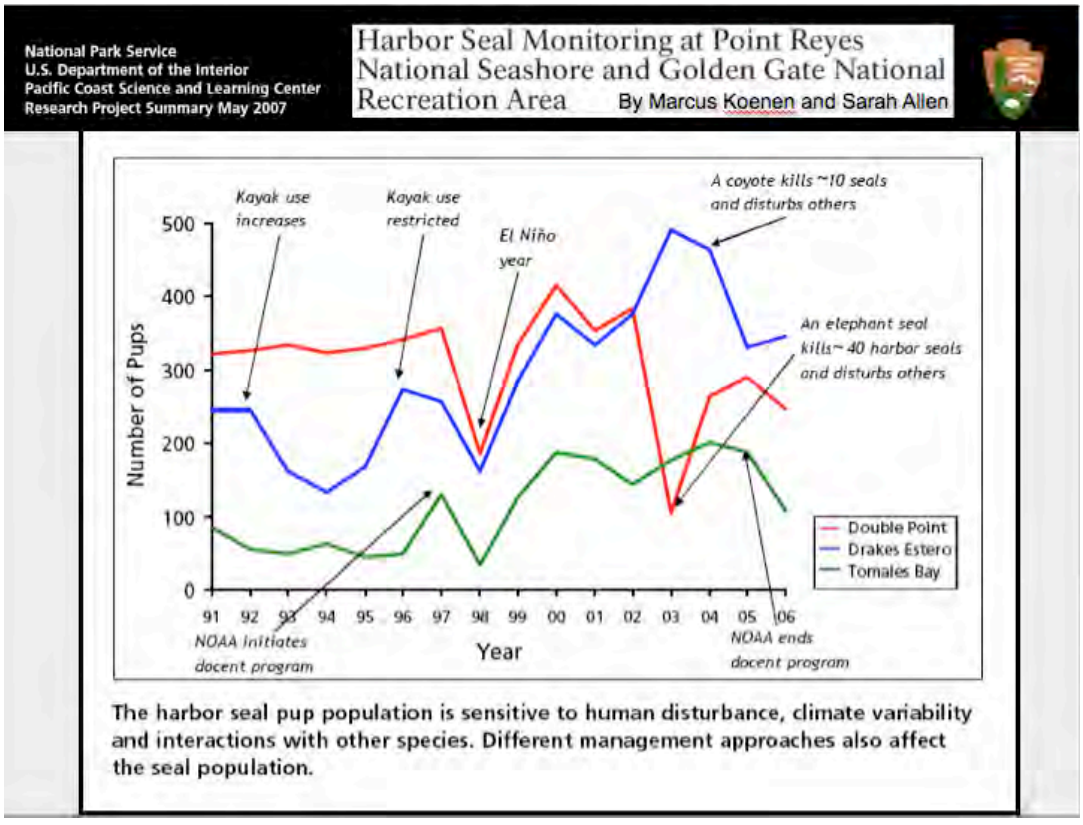
> *"My point is that during the period that you're apportioning it to aquaculture, which is the latter years, 2005, 2006, and 07, a similar decrease has been observed [at other regional sites]."*

Below is the figure from Dr. Brian Kingzett from Appendix F of the MMC Report showing the increase in the total regional seal count in 2002-2004 and the proportional increase in seal counts in Drakes Estero in those years.



On top of this ebb and flow that drove more seals into Drakes Estero from 2000-2004, was another dramatic – and more highly impactful – event. In 2003, according to NPS records, a single rogue elephant seal at Double Point (a shared haul-out site along the coast just outside the entrance to Drakes Estero) killed ~ 40 harbor seals and drove 600 off of the haul-out site; about 50% of those seals entered Drakes Estero. The normal population did not return to Double Point and re-establish the normal harbor seal distribution until 2005.

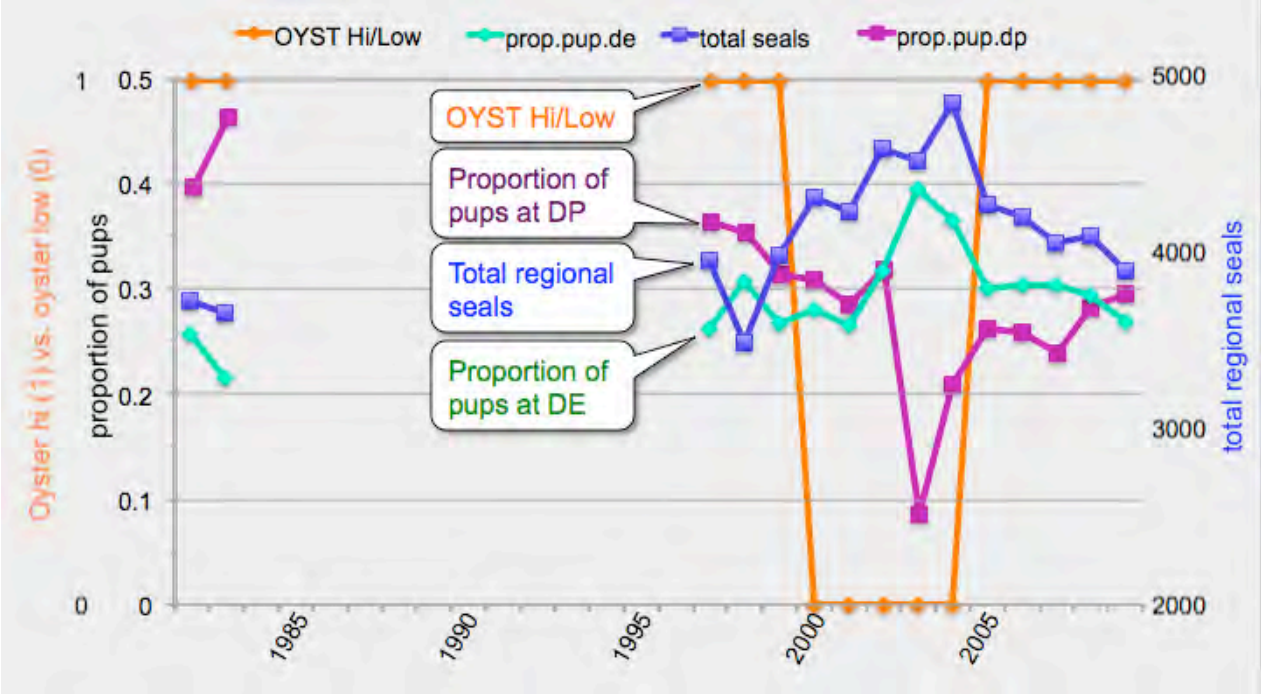
The importance of the event at Double Point is 2003 was first pointed out by NPS Dr. Sarah Allen and colleague in a May 2007 report, as shown below. Notice how the Double Point pup count (shown in red; the total seal count would be much greater) dramatically decreased in 2003, while the Drakes Estero pup count (shown in blue) increased by about 50% of the Double Point decline. Both returned back in 2005.



The Goodman-Lewis critique argued that those two natural factors – the ebb and flow of the regional population and the random lethal event at Double Point – led to the modest changes in the proportion of pups in Drakes Estero as measured in the Becker 2011 paper. The proportion went up between 2000-2004, particularly in 2003 and 2004, and then went down again in 2005, but this was not driven by the oyster activity at UEN and OB (which did not change in 2005), but rather by the forces of nature – the regional population and the lethal event at Double Point.

The arbitrary OYST Hi/Low model just happened to coincide with these natural trends by (incorrectly) designating 2000-2004 as "low" years and 2005 as a "high" year.

These relationships are shown in the figure on the next page.



The Goodman-Lewis review went on to show that better statistical models could be constructed that were far superior to NPS Becker's best models, and that did not include OYST Hi/Low as an independent variable, but rather were based upon the total regional seal population, the pups at Double Point (DP), and the 92 protocols (i.e., before 1992, oyster boats went near seals during pupping season, whereas after 1992, they did not).

Goodman-Lewis used two methods – both generalized linear model (GML as run by Lewis) and multiple linear regression (MLR as run by Goodman) – to analyze these models. Given the small NPS dataset, the two methods gave the same results in terms of the ordering of models, R^2 of the models, and relative significance of the models and individual terms.

The Goodman-Lewis best model for the proportion of pups in Drakes Estero (DE) was:

DP pups + total regional seals + 92 protocols adjusted $R^2 = 0.87$

The NPS Becker paper best model for proportion of pups in DE was:

OYST Hi/Low + DP seals adjusted $R^2 = 0.42$

Goodman-Lewis also showed, using standard diagnostic outlier analysis, that when 2003 alone was removed from the statistics (to determine to what extent it had undue influence on the statistics), out model remained highly significant whereas the best Becker model did not.

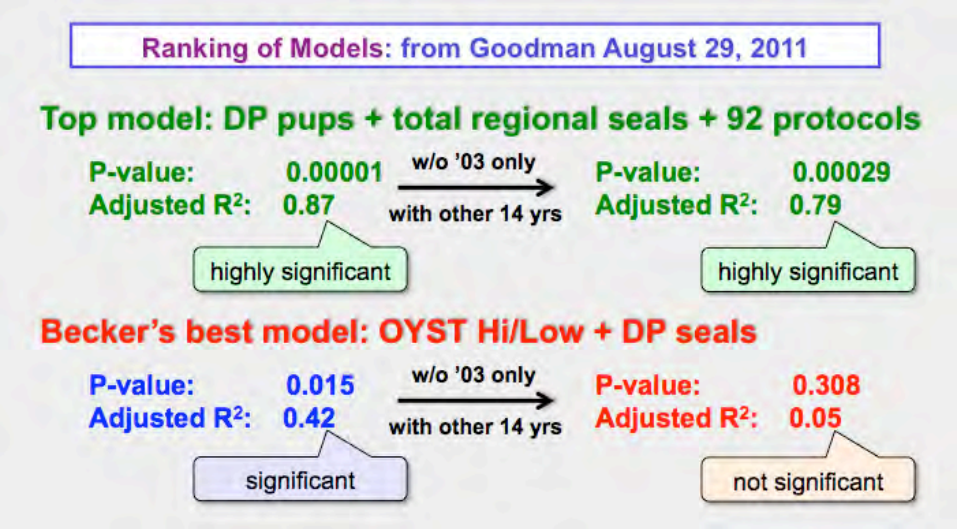
The Goodman-Lewis best model for the proportion of pups in DE without 2003 was:

DP pups + total regional seals + 92 protocols adjusted $R^2 = 0.79$

The NPS Becker paper best model for proportion of pups in DE without 2003 was:

OYST Hi/Low + DP seals adjusted $R^2 = 0.05$

This is shown in the diagram on the next page. All together, we showed six models that were superior to any model that included OYST Hi/Low as a statistically significant, independent variable.



Put another way, NPS correctly observed in 2000-2004 (immediately before the Lunnys purchased the oyster farm) a spike in Drakes Estero harbor seal numbers, and then a dip in 2005 (immediately after the Lunnys took over the farm). NPS blamed the oyster farm for this return to normal levels. It conveniently fit the NPS "narrative of harm," but was not supported by reasonable statistical analysis. Nature frequently pits one species against another and that happened along the Point Reyes coast. The numbers showed an ebb and flow of the total regional seal population in the middle of the decade – but when the threat (rogue elephant seal) subsided, the harbor seal herd returned to a more normal pattern of distribution.

Although under new management, little if anything changed operationally at sandbars UEN and OB in 2005. Rather, in March to May 2005, the Lunnys continued to harvest the oysters established by the Johnsons from whom they purchased the farm a few months earlier, in January 2005. They began growing new oyster seed in 2005, but those activities were not near OB or UEN (or anywhere near harbor seal haul-out areas). The new seed being processed would be transferred to UEN and OB beginning one and a half to two years later. The entire claimed correlation by NPS was manufactured. The regional seal population was ignored. The lethal event at Double Point was under-estimated. DBOC operations were misrepresented.

November 22, 2011 Marine Mammal Commission Report

The November 22, 2011 MMC Report concluded:

> *"The Marine Mammal Commission believes that the data supporting the above analyses are scant and have been stretched to their limit. Nevertheless, the analyses in Becker et al. (2011) provide some support for the conclusion that harbor seal habitat-use patterns and mariculture activities in Drakes Estero are at least correlated."*

This was Dr. Ragen's key conclusion in his report. Dr. Ragen accepted the OYST Hi/Low designation in spite of many criticisms that there was both ample oyster activity at UEN and OB during the years 2000-2004, and that activity at those sites did not increase in 2005. Although Dr. Ragen's panel members were critical of this categorical designation, Dr. Ragen nevertheless accepted it in his MMC Report and failed to explain how or why he contradicted conclusions from his MMC panel members.

Dr. Ragen then concluded that although the NPS data are "*scant*" and "*stretched to their limit*," the Becker et al. 2011 paper is still correct and provides support for the NPS correlation. He went on to say that there was not sufficient evidence to prove causation, but he did find sufficient evidence – or proof – for the NPS correlation. [It is worth noting that since the release of the MMC Report, various media reports and NPS supporters have publicly equated correlation with causation, and concluded that the Becker paper showed causation, and the MMC Report agreed with NPS.]

Dr. Ragen criticized Dr. Goodman for having used the wrong method (multiple linear regression analysis) and said Dr. Becker's method (generalized linear model) was better, when in fact Goodman-Lewis had used both methods and derived the same rank ordering, R^2, and relative statistical significance (as submitted to Dr. Ragen on October 23, 2011 and November 4, 2011). Dr. Ragen, in his MMC Report (and subsequently in his June 17 letter), either did not realize that Dr. Goodman and Mr. Lewis had conducted their analysis using both methods (including the method used by Dr. Becker), or he elected to exclude that knowledge for reasons only he can explain. The Goodman-Lewis work was not properly represented in either his MMC Report or his June 17 letter.

Dr. Ragen also dismissed the diagnostic outlier analysis as inappropriate, even though he presented such an analysis (removing 1982 and 1983) on pages 55-56 of his report. This diagnostic outlier analysis was in accord with statistics faculty at Stanford University and U.C. Davis, and multiple statistics textbooks (see our November 29, 2011 critique).

For example, the Rockefeller lecture "*Regression Diagnostics*" states:

> *"Outliers can sometimes cause problems with regression results."* The problem is when *"one observation is allowed to have too much influence over the regression (and any research or policy conclusions that flow from it). One solution is to report findings with and without outliers so that fair readers can make up their own minds."*

Numerous other endorsements of the diagnostic outlier analysis are presented in the Goodman-Lewis November 29, 2011 critique of the MMC Report.

Dr. Ragen also heavily criticized the Goodman-Lewis models on page 52 of his report for having built-in co-dependencies (i.e., using the same term in more than one independent variable, or in a dependent and independent variable).

Models to explain the proportion of pups in DE

1) Explanatory variables: DP pups plus total regional seals plus '92 protocols

$Pups_{DE}/Pups_{Reg} = Pups_{DP} + Seals_{Reg} + 92$

$Pups_{DE}/Pups_{Reg} = Pups_{DP} + (Adults_{Reg} + Pups_{notDE} + Pups_{DE}) + 92$ (expand $Seals_{Reg}$)

2) Explanatory variables: DP pups plus total regional seals

$Pups_{DE}/Pups_{Reg} = Pups_{DP} + Seals_{Reg}$

$Pups_{DE}/Pups_{Reg} = Pups_{DP} + (Adults_{Reg} + Pups_{notDE} + Pups_{DE})$ (expand $Seals_{Reg}$)

3) Explanatory variables: DP proportional pups

$Pups_{DEprop} = Pups_{DPprop}$

$Pups_{DEprop} = Pups_{DE}/Pups_{Reg}$ and $Pups_{DPprop} = Pups_{DP}/Pups_{Reg}$ (note)

$Pups_{DP} = Pups_{Reg} - Pups_{notDP,\ notDE} - Pups_{DE}$ (note)

$Pups_{DE}/Pups_{Reg} = (Pups_{Reg} - Pups_{notDP,\ notDE} - Pups_{DE})/Pups_{Reg}$ (substitute)

$Pups_{DE}/Pups_{Reg} = 1 - (Pups_{notDP,\ notDE}/Pups_{Reg}) - (Pups_{DE}/Pups_{Reg})$ (simplify)

4) Explanatory variables: DP pups plus total regional pups

$Pups_{DE}/Pups_{Reg} = Pups_{DP} + Pups_{Reg}$

$Pups_{DE}/Pups_{Reg} = Pups_{DP} + (Pups_{notDE} + Pups_{DE})$

5) Explanatory variables: DP seals plus total regional seals

$Pups_{DE}/Pups_{Reg} = Seals_{DP} + Seals_{Reg}$

$Pups_{DE}/Pups_{Reg} = (Adults_{DP} + Pups_{DP}) + (Adults_{Reg} + Pups_{Reg})$

$Pups_{DE}/Pups_{Reg} = (Adults_{DP} + Pups_{DP}) + (Adults_{Reg} + (Pups_{notDE} + Pups_{DE}))$

6) Explanatory variables: DP proportional seals

$Pups_{DE}/Pups_{Reg} = Seals_{DP}/Seals_{Reg}$

$Pups_{DE}/Pups_{Reg} = Seals_{DP}/(Adults_{Reg} + Pups_{notDE} + Pups_{DE})$

Figure 20. Statistical models (single or combined explanatory variables used by Dr. Corey Goodman to explain the proportion of regional pups in Drakes Estero. The models are confounded because terms in the dependent variable are also part of the independent variable; thus, the models have a built-in dependency. (DE = Drakes Estero; DP = Double Point; Reg = Regional; notDE = not at DE; notDP = not at DP; notDP,notDP = not at DP or DE)

The problem with Dr. Ragen's comments in his MMC Report is that, in contrast to what he said, Goodman-Lewis did not make errors or mistakes in their models. It is common in systems analysis – whether looking at the human body, complex environmental systems, social science, or economics – to find some correlation between different variables – what is called multicollinearity or correlated independent variables. It is a common statistical challenge that cannot be avoided in complex systems.

It is incumbent upon the scientist doing the analysis to make sure he/she understands what the variables are measuring, how they might inter-relate, to examine each variable alone as well as together, to make sure each variable maintains its statistical significance, and to conduct certain diagnostics to look at the impact. Typically, collinearity would lead to a lower significance of particular terms, not a higher significance, and yet our models were far superior to Becker's, and all of our independent variables were statistically significant in our models.

Below are a few simple examples of common-sense statistics in which there are correlated variables.

> Example #1: if we examine the percentage of male babies in China vs. the total Chinese population, we find that as the Chinese population increased, the percentage of male babies increased. This has led to the speculation of infanticide of female babies. We have all heard about this finding. But it contains a relationship that Dr. Ragen claims is fatal, when in fact it is not. The term "male babies" is included in the dependent variable

(percentage of male babies) and is also included in the independent variable (total Chinese population), but on one side it is part of a percentage, whereas on the other side, it is part of a numerical term. This is no different than what Goodman and Lewis did in correlation the proportion of pups in Drakes Estero to the total regional population.

Example #2: if we examine the percentage of Hispanics in California vs. the total California population, we find that as the California population increased, the percentage of Hispanics increased. This has led to the speculation that Hispanics are having more children (on average) than are Caucasian families. We have all heard about this finding as well. But it too contains the same relationship that Dr. Ragen claims is fatal, when in fact it is not. The term "Hispanics" is included in the dependent variable (percentage of Hispanics) and is also included in the independent variable (total California population), but on one side it is part of a percentage, whereas on the other side, it is part of a numerical term. This too is no different than what Goodman and Lewis did in correlation the proportion of pups in Drakes Estero to the total regional population.

Example #3: if we examine human blood pressure vs. age and number of blood pressure pills, we observe that together, these two independent variables explain some of the variability of blood pressure in the human population (along with other factors, including genetics, etc.). Blood pressure has a positive correlation with age, and a negative correlation with number of blood pressure pills. But age and number of pills are themselves highly correlated: as age increases, in general people take more blood pressure pills. But not everyone takes the medication, and the medication does not work perfectly in all people, especially as they get older, and thus the regulation of blood pressure depends upon both age and medication.

Even though these are correlated independent variables, this relationship is both valid and very informative (as are many similar statistical relationships considered in human health). It is hard to get away from correlated independent variables when considering the systems biology – the holistic interrelationships – of the human body. The natural world around us is no different.

This too is no different than what Goodman and Lewis did in looking at the relationship between the proportion of pups in Drakes Estero (our dependent variable) vs. the 2003 Double Point event (as measured by Double Point pups) and the total regional seal population. The first independent variable (Double Point pups, negatively correlated with proportion of pups in Drakes Estero) contains Double Point pups, as does the second independent variable (Total regional seals, positively correlated with proportion of pups in Drakes Estero). The sign of their correlation is opposite, so in principle, if this was a problem, they should cancel each other out. But they both make sense from a biological perspective. As shown below, when pups were removed from the second variable (by changing total regional seals to total regional adults), it made no difference – we observed the same correlation and strength of the model. Moreover, taking Double Point counts out of the total regional seal term also made no difference.

In complex systems such as medicine, the environment, social science, and economics, it is not uncommon to find multicollinearity or correlated independent variables. There are no absolute rules. Scientists must be cautious. Scientists have to carefully look at their variables individually and together, understand the relationships, look for significance of each variable, and consider the implications. In other words, it requires a deeper analysis. Dr. Goodman and Mr. Lewis did just that. Moreover, in the end, as explained below, it made no difference – the Goodman-Lewis models remained superior.

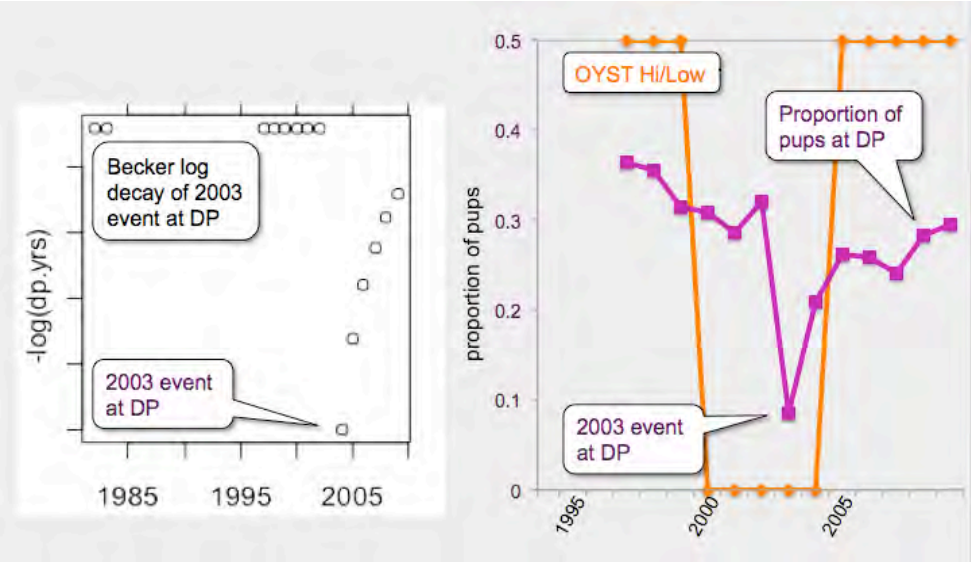
Dr. Goodman and Mr. Lewis did not have to argue about this point or get into a deep discussion of statistics: it was easy for us to modify the independent variables, get rid of

the built-in dependencies (what we viewed as non-errors), and show that the models were still far superior to Becker's top model. Essentially, nothing changed. The top model remained DP pups + total regional adults + 92 protocols, and the adjusted R^2 did not change (the second best model remained DP pups + total regional adults).

In summary, Dr. Goodman and Mr. Lewis submitted to Dr. Ragen on November 29, 2011 a modification of their models (something Dr. Ragen never gave them the chance to do prior to the MMC Report being published) – and it made no difference in the relative significance of the models. See the Goodman-Lewis critique below for a description of these models.

While Dr. Ragen did not accept the importance of the total regional seal population in his MMC Report, he did accept the importance of the event at Double Point in 2003. Having dismissed our modeling of the Double Point event, Dr. Ragen asked NPS to model the 2003 event using two different methods (either a logarithmic = log, or exponential decay = exp) and as presented on page 55 of the MMC Report, these two methods of modeling the 2003 event had R^2 values of 0.72 and 0.67, far greater than the 0.26 shown in Becker's paper for OYST Hi/Low alone.

Dr. Ragen failed to point out how much better was the model for the 2003 Double Point event than OYST Hi/Low. He also failed to point out that whereas he had criticized the Goodman-Lewis use of proportion of pups at Double Point as an independent variable, that the NPS model that he accepted in his report was essentially a mathematical model for the proportion of pups at DP (as shown statistically by showing the high correlation between the two). They are essentially the same (correlation with adjusted R^2 = 0.70).



Finally, Dr. Ragen showed that when OYST Hi/Low was added on top of either the log or exp model of the 2003 Double Point event, that the r^2 value went up (as shown below the R^2 goes from 0.72 to 0.83, see Table 9 on page 55 in the MMC Report).

Table 9. QAICc ranking of models with exponentially decaying function for Double Point

Model	QAICc	ΔQAICc	r^2
Oyster (High/Low) + log(Double Point.yrs)	81.3	0.0	0.83
Oyster (continuous)+ log(Double Point.yrs)	84.1	2.8	0.78
Log(Double Point.yrs)	84.7	3.4	0.72
Exp(Double Point.yrs)	88.2	6.9	0.67

The problem is that Dr. Ragen broke a basic statistics rule when he accepted and published the NPS data in Table 9 in the MMC Report. The OYST Hi/Low independent variable, when added on top the exp DP variable, was not on its own statistically significant (not shown in the MMC Report, but repeated by us). Thus, the correct conclusion from Table 9 should have been that a model of the 2003 event (just as Goodman and Lewis had shown with their model based upon the proportion of pups at DP – the very relationship the mathematical models were mimicking) is far more significant than OYST Hi/Low, and that the addition of OYST Hi/Low is not meaningful because it is not significant. Dr. Ragen, however, failed to draw this conclusion.

Finally, although Dr. Ragen wrote that the MMC did not endorse the diagnostic outlier analysis, on page 55, Dr. Ragen asked NPS to perform an outlier analysis – he asked them to eliminate 1982 and 1983 and rerun their model. We had already shown that if you run their model (as in the Becker 2011 paper) without 1982 and 1983, the NPS correlation disappears. But Dr. Ragen let them run their model using new data and new metrics.

NPS did not run their models based upon the data used in their published Becker 2011 paper (the paper cited in the DEIS and the MMC Report). Rather, NPS altered the data and metrics and used numbers to which we were not provided access.

Dr. Ragen let NPS change from the maximum count during the three-month pupping season to the mean count during a one-month period. Under these conditions, the OYST Hi/Low model was still statistically significant. Notice that the OYST Hi/Low variable on its own had increased from 0.26 using the data and metrics in the Becker paper, to 0.42 using the new data and metrics (note – data never provided to us).

Thus, it was a switch of data and metrics that allowed Dr. Ragen to conclude that the NPS correlation was not dependent upon 1982 and 1983. This was no longer an analysis of the Becker 2011 paper, but rather Dr. Ragen allowed NPS to determine under what conditions of data and metrics they could still achieve statistical significance (using data we had never reviewed, and thus analyses we could not replicate).

November 29, 2011 Goodman-Lewis critiques of MMC Report

On November 29, 2011, David Lewis and I submitted two detailed scientific critiques to Dr. Ragen concerning the MMC Report.

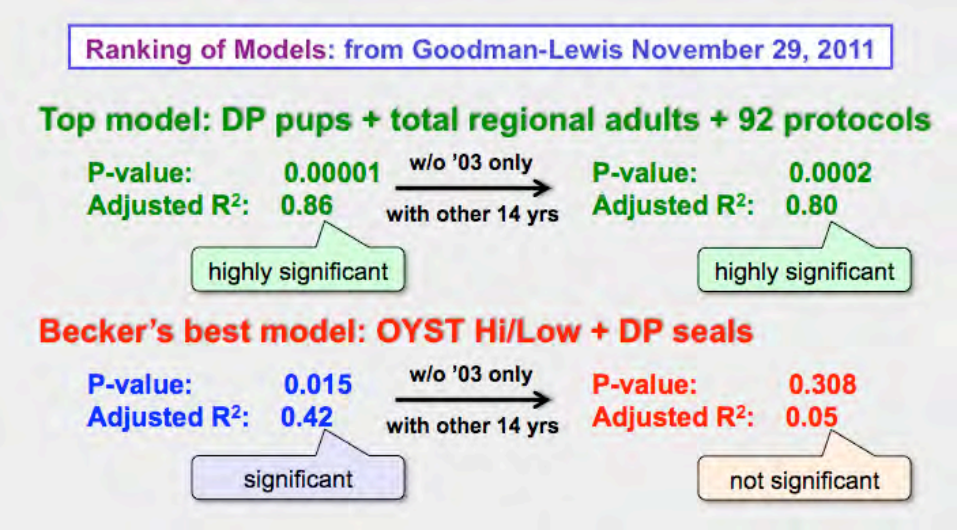
In part 1 of the Goodman-Lewis critique, we reaffirmed that the so-called NPS negative correlation of the proportion of seal pups in Drakes Estero with oyster activity (as modeled using OYST Hi/Low) was actually not driven by oyster activity, but rather driven by the total regional seal population and the 2003 lethal event at Double Point.

In part 2 of the Goodman-Lewis critique, they modified their models (according to the criticisms of them in the MMC Report, although they did not agree that such modifications were necessary) and came up with the same ranking of models:

- DP pups + total regional adults + 92 protocols was first,
- DP pups + total regional adults was second, and
- Both were far superior to any of the OYST Hi/Low models in Becker's paper.

They also showed that the exp model of the 2003 event at DP, as presented in the MMC

Report, was simply a substitute for the proportion of pups at DP (as shown above).



Dr. Goodman also submitted part 3 of their critiques to Dr. Ragen on January 6, 2012. In part 3, he examined the so-called disturbance events that Dr. Ragen accepted in the MMC Report, and showed that neither he nor NPS had the scientific evidence to conclusively support those disturbance events (more on that below).

It is worth taking a look at the conclusions Dr. Goodman and Mr. Lewis sent to Dr. Ragen on November 29, 2011. In light of his June 17, 2012 letter, they are as correct today as they were on November 29. In fact, Dr. Ragen's June 17, 2012 letter validated many of these – i.e., he has retracted his MMC Report.

Dr. Goodman and Mr. Lewis stand by every one of these conclusions, and Dr. Ragen's June 17, 2012 letter to Dr. Goodman largely confirms the Goodman-Lewis conclusions.

To conclude part 1 on November 29, 2011, Dr. Goodman and Mr. Lewis wrote:

1) *The elimination of the outlier data point (2003) to determine if this event highly leveraged (i.e., unduly influenced) the NPS correlation was a legitimate and appropriate diagnostic test. MMC was incorrect to reject this diagnostic test.*

2) *The Becker 2011 statistics are leveraged (i.e., unduly influenced) by a single stochastic (random) event -- the rogue elephant seal at Double Point in 2003: when 2003 alone is eliminated, Becker's best models are no longer significant.*

3) *The same conclusions are derived regardless of statistical method: Goodman and Lewis provided head-to-head comparison of GLM using AIC vs. MLR using R squared analysis, and derived the same conclusion: the NPS oyster activity model is entirely supported by the stochastic (and lethal) 2003 event.*

4) *Having rejected the request to ask NPS to do the outlier diagnostic test of their model, MMC instead accepted a different analysis from NPS that was purported to determine the leverage of the 2003 event on the NPS correlation. Rather than subtracting the 2003 event from their correlation, NPS instead added another independent variable that was leveraged by the 2003 event. Instead of effectively testing 2 – 2 = 0, NPS in essence tested 2 + 2 = 4. MMC accepted an incorrect test.*

5) *By adding another independent variable entirely leveraged by the lethal 2003 event, NPS essentially doubled down – they tested two variables that were both leveraged by the same event – and no surprise, found an increased R squared.*

6) *Although MMC stated to Kevin Lunny that it had not asked NPS to do the outlier diagnostic test, it actually had asked NPS to test their model without 2003 and 2004. In the*

absence of 2003, the NPS model was no longer significant.

7) *The MMC mistakenly accepted the NPS correlation that was highly leveraged by the random 2003 event at Double Point. The MMC made two compounded errors. First, MMC did not request the outlier diagnostic test. Second, MMC allowed NPS to do an inappropriate test that added rather than subtracted the 2003 event and never determined whether it leveraged the oyster activity model.*

8) *The NPS data are too thin, and too highly leveraged by a stochastic event in 2003, to be able to support the NPS correlation between harbor seals and oyster activity. Moreover, the NPS data are inadequate for MMC to affirm the NPS claim of a correlation between harbor seals and oyster activity.*

9) *What was called a long-term displacement OUT of Drakes Estero was actually a short-term displacement INTO Drakes Estero caused by events at Double Point. There is no evidence for long-term spatial displacement of seals and pups OUT of Drakes Estero that can be related to shellfish aquaculture.*

10) *The MMC mistakes could have been avoided had the MMC proceeded with their original open process rather than the insular closed process they conducted. Open dialogue, open discussion, and open exchange could have helped avoid these mistakes. Unfortunately, the closed process led to a flawed MMC Report.*

To conclude part 2 on November 29, 2011, Dr. Goodman and Mr. Lewis wrote:

1) *The Becker 2011 statistics are leveraged (i.e., unduly influenced) by a single stochastic (random) event -- the rogue elephant seal at Double Point in 2003: when 2003 alone is eliminated (the diagnostic outlier test), Becker's best models are no longer significant.*

2) *In his August 29 report to the MMC, Goodman presented models relying on the seals at Double Point, the total regional seal population, and the 1992 protocols that were three orders of magnitude (1000X) more statistically significant than Becker's best models, and remained statistically significant when 2003 alone was removed (i.e., were robust to the diagnostic outlier test).*

3) *The MMC panel members in their reports in Appendix F of the MMC report sited the ecologic importance of both the total regional harbor seal population dynamic (peaking in 2002-2004) and the stochastic event at Double Point (in 2003 with residual impact in 2004) as potential major influences on the harbor seal population in Drakes Estero, and cautioned that both tended to artificially coincide with the NPS measure of oyster activity.*

4) *The MMC Report rejected Goodman's top models due to built-in and linked dependencies. It is troubling that Dr. Ragen failed to raise the issue with either Dr. Goodman or Mr. Lewis. It is equally troubling that neither MMC nor NPS modified the models themselves.*

5) *The variable dependencies in Goodman's original models were not fatal as stated by the MMC, were easily adjusted, and when modified, gave rise to the same overall statistics and conclusions. In other words, MMC dismissed the Goodman analysis based upon variable dependencies that in the end made no difference. At the same time, when NPS contained similar dependencies, MMC was silent.*

6) *Goodman's modified best model (DP pups + total regional adults + 92 protocols), substituting adults for seals, has an adjusted $R^2 = 0.86$ and a P-value = 0.00001. These values are virtually identical to those generated from the original model, and drive the same overall statistics and conclusions as in Goodman's August 29 report and the Goodman and Lewis October 23 report.*

7) *Dr. Goodman's top model (modified from seals to adults) is three orders of magnitude more statistically significant than Becker's best model (from Becker 2011). Moreover, it remains statistically significant when 2003 alone is removed (the diagnostic outlier test), whereas Becker's best models fail that test.*

8) *Becker's new models, including a mathematical model of the 2003 event at Double Point, may be guilty of the same linked dependency as Goodman's top models, but it appears as if they were not scrutinized in the MMC Report. By adding another independent variable entirely leveraged by the stochastic 2003 event, NPS essentially doubled down – they tested two variables that were both leveraged by the same event – and no surprise, found an increased R squared.*

9) *The NPS data are too thin, and too highly leveraged by a stochastic event in 2003, to be able to support the NPS correlation between harbor seals and oyster activity. Moreover, the NPS data are inadequate for MMC to affirm the NPS claim of a correlation between harbor seals and oyster activity.*

10) *What was called a long-term displacement OUT of Drakes Estero was actually a short-term displacement INTO Drakes Estero caused by events at Double Point. There is no evidence for long-term spatial displacement of seals and pups OUT of Drakes Estero that can be related to shellfish aquaculture.*

11) *The MMC mistakes could have been avoided had the MMC proceeded with their original open process rather than the insular closed process they conducted. Open dialogue, open discussion, and open exchange could have helped avoid these mistakes. Unfortunately, the closed process led to a flawed MMC Report.*

Dr. Tim Ragen's June 17, 2012 letter to Dr. Corey Goodman

Buried in Dr. Ragen's 20-page letter of June 17, 2012, Dr. Ragen reversed the major conclusion of the MMC Report.

Below is the major conclusion from the MMC Report:

> *"The Marine Mammal Commission believes that the data supporting the above analyses are scant and have been stretched to their limit. Nevertheless, the analyses in Becker et al. (2011) provide some support for the conclusion that harbor seal habitat-use patterns and mariculture activities in Drakes Estero are at least correlated."*

Dr. Ragen concluded in the MMC Report that the Becker 2011 paper provided some support for the conclusion that harbor seal distribution was correlated with oyster activity in Drakes Estero.

Does Dr. Ragen still support that conclusion? Does Dr. Ragen's letter support that conclusion? The answer is no. The quote below is from page 2 in Dr. Ragen's letter. It needs to be compared to Table 2 on page 4 of Dr. Ragen's letter (see below).

> *"I asked the Park Service to analyze the mean values from counts conducted from 4/15 to 5/15 each year using their methods (generalized linear models) and yours (multiple regression). The results (Table 2) indicate that the Double Point event and regional population size may have had a significant influence on harbor seals in Drakes Estero. The results also identify the oyster low/high variable as a potential influence. Given the uncertainty associated with the analyses, the results are not proof of a correlation, but they also do not provide a basis for dismissing such a relationship."*

Dr. Ragen states that there is no proof of a correlation, a far cry from what NPS Becker, Press, and Allen said in their 2011 paper, and what Dr. Ragen supported in his MMC Report.

Dr. Ragen states that the regional population size and Double Point event may have had a significant influence on the harbor seals in Drakes Estero (an understatement – see the

best models below). This is the first time Dr. Ragen acknowledged the impact of the total regional population size.

Dr. Ragen states that the OYST Hi/Low variable is only a potential influence – a reversal of his earlier acceptance of the Becker 2011 paper claim of evidence and proof, and the way in which his MMC Report supported that correlation. What was solid is now potential, and a lesser potential than the regional population and the event at Double Point. Below is Table 2 (page 4) from Dr. Ragen's June 17, 2012 letter. The "*evidence*" as Becker claimed in the title of his paper is now gone and replaced by "potential."

Circled in green is the top model based upon regional population and Double Point counts (the 7th best model from Goodman-Lewis). Circled in red are the two methods (on the left, Becker's generalized linear model as also run by David Lewis, and on the right, multiple linear regression as run by me). In the NPS analysis shown here, both methods give the same rankings and values. This is in agreement with what Dr. Goodman and Mr. Lewis previously showed, i.e. that both models give the same ranking and relative significance.

Table 2. Potential factors influencing the hauling patterns of harbor seals in Drakes Estero in 1982, 1983, and 1997 to 2010 based on mean counts of all harbor seals during the period from 15 April to 15 May (inclusive) at the main colonies in the Point Reyes area. Results are based on generalized linear models that produce corrected Akaike Information Criteria (AICc) or multiple regression models that produce p values. The models are ordered by their AICc values. Data and analytical results are from the National Park Service. The oyster values were updated by the California Department of Fish and Game after the Park Service requested the Department review its numbers.

				Summer 2011 oyster harvest values				Updated oyster harvest values			
Model	AICc	ΔAICc	r^2	P cov 1	P cov 2	P model	Adj r^2	P cov 1	P cov 2	P model	Adj r^2
Regional population[1]+ Double Point counts	213.2	0.0	0.50	0.01	0.01	0.01	0.50	0.01	0.01	0.01	0.50
oyst(L/H) + log(Double Point event)	214.2	1.0	0.46	0.01	0.06	0.01	0.46	0.01	0.01	0.01	0.46
oyst(L/H) + regional population size	214.8	1.6	0.44	0.02	0.08	0.01	0.44	0.02	0.08	0.01	0.44
oyst(L/H)	215.0	1.8	0.34	0.01		0.01	0.34	0.01		0.01	0.34
year	217.2	4.0		0.03		0.03	0.24	0.03		0.03	0.24
oyst(L/H) + exp(Double Point event)	217.5	4.3		0.02	0.36	0.03	0.34	0.02	0.36	0.03	0.34
regional population size	218.3	5.1		0.05		0.05	0.19	0.05		0.05	0.19
ENSO	219.4	6.2		0.09		0.09	0.13	0.09		0.09	0.13
oyster harvest lag + regional population	220.0	6.8		0.17	0.06	0.06	0.25	0.22	0.05	0.07	0.23
exp(Double Point event)	220.6	7.4		0.17		0.17	0.07	0.17		0.17	0.07
log(Double Point event)	220.7	7.5		0.19		0.19	0.06	0.19		0.19	0.06
oyster harvest	220.8	7.6		0.07		0.07	0.15	0.19		0.19	0.05
oyster harvest + regional population size	221.1	7.9		0.15	0.10	0.06	0.26	0.41	0.10	0.11	0.17
oyster harvest lag	221.3	8.1		0.15		0.15	0.08	0.26		0.26	0.02
oyster harvest lag + log(Double Point event)	221.8	8.6		0.06	0.07	0.07	0.23	0.15	0.12	0.15	0.14
oyster harvest + double point counts	222.2	9.0		0.04	0.19	0.09	0.21	0.08	0.18	0.17	0.12
Double Point counts	222.3	9.1		0.51		0.51	-0.04	0.51		0.51	-0.04
oyster harvest + log(Double Point event)	222.4	9.2		0.07	0.17	0.08	0.21	0.22	0.21	0.20	0.10
oyster harvest + exp(Double Point event)	223.1	9.9		0.07	0.17	0.08	0.21	0.22	0.21	0.20	0.10
oyster harvest lag+ exp(Double Point event)	223.2	10.0		0.21	0.23	0.18	0.12	0.38	0.02	0.27	0.06
oyster harvest lag + Double Point counts	224.0	10.8		0.10	0.28	0.20	0.10	0.21	0.37	0.37	0.01

[1] *Excludes seal counts at Drakes Estero and Double Point. All other references to "regional population" exclude only Drakes Estero counts.*

[Keep in mind that all of the analysis in Dr. Ragen's June 17 letter uses data and metrics that we do not have, and that are not the same as in the Becker 2011 paper. NPS is no longer using the maximum count during pupping season (three months March-May), but rather than mean values during one month (4/15 to 5/15). A new year (2010) has been added. As a result, the OYST Hi/Low model has gotten much stronger, going from an r^2 of 0.26 in the Becker paper to 0.34 here in Table 2.

I remain puzzled as to how this value keeps changing, and why. If you look at the MMC Report on page 55, you will find the OYST Hi/Low model has an r^2 of 0.42. Perhaps this

is due to the addition of a further year in Dr. Ragen's letter compared to the MMC Report. I am not completely sure why their single most important independent variable keeps changing in every report and letter. It is a moving target, impossible for us to replicate, and difficult to compare between each new iteration and to determine precisely what NPS has done. What we have are the NPS data used for the Becker paper, and that is what we continue to use.]

Although cleverly written, this is a reversal and is in agreement with what Dr. Goodman and Mr. Lewis wrote beginning last August 2011.

Dr. Ragen's statement on page 2 is an eye-opener. It should be his key sentence and in bold font. He should have told the NAS panel on July 11, 2012. It is a cleverly written reversal. Between that paragraph and Table 2, Dr. Ragen admited (without saying as much) that Goodman-Lewis were right all along, that the MMC Report got it wrong, and that the NPS Becker 2011 paper got it wrong.

In light of this complete change in Dr. Ragen's conclusions, it is difficult to reconcile with what he writes at the very end in his summary when he states:

> *My view of this case has not changed—I continue to believe the Commission's report summarized the situation accurately. The Park Service has provided "some support for the conclusion that harbor seal habitat-use patterns and mariculture activities in Drakes Estero are at least correlated." The evidence is not overwhelming, but also cannot be dismissed.*

It is puzzling how Dr. Ragen could write this conclusion when on page 2, and in Table 2, he acknowledged that the best model (our 7th best model) contained regional seal population and the Double Point event, but not OYST Hi/Low, and that OYST Hi/Low was only a "potential" influence, and that there was no proof of correlation – the NPS claim of evidence for a correlation between oyster activity and harbor seals had collapsed.

In the complaint, I used the 'two faces of Tim Ragen' as a metaphor to describe Dr. Ragen's conduct that was contradictory and inexplicable. This is a perfect example of that phenomenon. Dr. Ragen said one thing in the MMC Report, contradicted himself in a 20-page (overdue) response letter, and then masked his reversal in the summary to that letter.

It is not necessary for us to dismiss a potential influence, but rather the burden is on NPS and Dr. Ragen to provide sufficiently strong evidence to demonstrate a correlation, which they have not. Given what is written in Dr. Ragen's June 17, 2012 letter, the Becker 2011 paper would not be published (and should be retracted), and the MMC Report should simply conclude that the NPS data are too scant and thin to draw any conclusions.

In the first sentence of Dr. Ragen's comment on page 2, he told us that he asked NPS to run their models using both methods (what Dr. Ragen cites as Becker's generalized linear method (AIC) vs. Goodman's multiple linear regression analysis (MLR). In the next paragraph, he claims that Dr. Goodman and Mr. Lewis had both run the multiple regression analysis. How did Dr. Ragen get it so wrong? Did he not read what was submitted to him? Keep in mind that Dr. Goodman and Mr. Lewis reported to Dr. Ragen on October 23, 2011, November 4, 2011, and November 29, 2011 that they had indeed run both methods in parallel, and had derived the same answer.

On October 23, Dr. Goodman and Mr. Lewis wrote to Dr. Ragen:

"In contrast to Dr. Richard's criticism that Dr. Goodman should have used AIC analysis (with the implied suggestion that the analysis would have been different than Dr. Goodman's MLR analysis), we find that both statistical methods give the same answer when comparing the models: Goodman's top models are valid and far superior to those in Becker 2011, regardless of whether one analyzes them using MLR vs. GLM. The unique influence of 2003 is clear regardless of what method is used (MLR vs. GLM) – what was called a long-term displacement OUT of Drakes Estero was actually a short term displacement INTO Drakes Estero caused by events at Double Point."

On November 6, Dr. Goodman and Mr. Lewis wrote to Dr. Ragen:

"We disagree that any one statistical method is more robust given the relatively small dataset used for this analysis (15 years at most). Nevertheless, there is no need to debate the relative merits of the different approaches, since we have done parallel analysis and find both give the same results, as reported to Dr. Ragen on October 23.

In summary, we find that both statistical methods give the same answer when comparing the models."

Dr. Ragen continually criticized Dr. Goodman and Mr. Lewis for using multiple regression analysis. What is shown in Table 2 of Dr. Ragen's June 17 letter is that both models give precisely the same result. The AIC method is shown in the left-hand three columns, and the multiple regression method is shown in the middle four columns under the banner "Summer 2011 oyster harvest values." Note that both the order of the top four models and the precise r^2 vs. adjusted R^2 are identical. It makes no difference. That is what Dr. Goodman and Mr. Lewis had been telling Dr. Ragen since last October, and now Dr. Ragen and NPS Becker have agreed with them, without saying so. Why didn't Dr. Ragen acknowledge that it made no difference which method was used? Dr. Ragen remained silent on this, but continued to claim that Dr. Goodman and Mr. Lewis used only one method. Why did Dr. Ragen misrepresent this point, and mislead the reader?

Now let's focus on Dr. Ragen's reversal. As shown at the top of Table 2, one of the Goodman-Lewis models (Regional population + Double Point counts) was the best model on Becker's new table, even using the switched data and metrics. The Becker 2011 paper said that the top five models all included OYST Hi/Low. The fact that OYST Hi/Low was included in all of Becker's top five models was the reason Becker and his colleagues concluded that they had evidence to conclude that increased oyster activity led to a spatial displacement of harbor seals out of Drakes Estero.

Dr. Ragen's MMC Report supported the NPS correlation by concluding that the top models all included OYST Hi/Low. Here for the first time, Dr. Ragen shows a new version of the NPS top models with the top model being "Regional population + Double Point counts." That is one of our weaker models (dating back to my August 29 review of the Becker paper), not one of the models from Becker's paper, and it does not include OYST Hi/Low.

[To account for the so-called error of including pups and adults from the same location in different terms, Becker excludes Drakes Estero and Double Point from the "Regional population" here – thus weakening the relationship by excluding a lot of the numbers – this was unnecessary – as the Chinese proportion of male babies vs. Chinese population example shows – but nevertheless, we have now done the same, just to silence Dr. Ragen's final criticism. This is not a problem, but we have done it regardless, just to show that our models are superior to

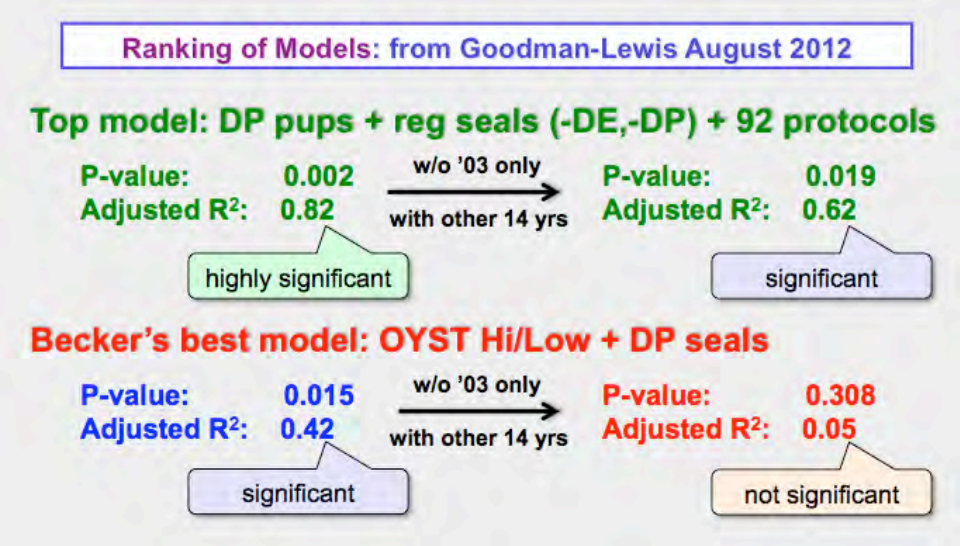
Becker's.]

In other words, on page 2 of his letter, Dr. Ragen acknowledged that the best model includes regional population and the 2003 Double Point event. That is precisely what David Lewis and I have been saying since August 29, 2011. Both Drs. Ragen and Becker have embraced one of our weaker models as better than any of Becker's models, but they don't explicitly say so, and don't point out the implications of such a revelation.

It winds up that Drs. Becker and Ragen have only included one of the Goodman-Lewis weaker models. Dr. Goodman and Mr. Lewis have six models that are stronger yet, and far superior to Becker's best model.

If they make the same correction for pups vs. adults (and thus exclude Drakes Estero and Double Point from the regional seals variable) for their best model, they come up with the following:

DP pups + regional seals (-DE, -DP) + 92 protocols = adjusted R^2 0.82



Ranking of Models: from Goodman-Lewis August 2012

notes	In Becker 2011?	model	P-value	Adj R^2
Goodman model	no	DP pups + reg seals (-DE,-DP) + 92 protocols	0.002	0.82
Goodman model	no	exp DP + 92 protocols	0.001	0.77
Goodman model	no	exp DP + reg seals (-DE,-DP) + 92 protocols	0.005	0.75
Goodman model	no	DP pups + reg seals (-DE,-DP)	0.005	0.66
Goodman model	no	exp DP + reg seals (-DE,-DP)	0.006	0.65
MMC Report model	no	exp DP	0.002	0.63
Goodman model, Ragen letter	no	DP total + reg seals (-DE,-DP)	0.01	0.58
Ragen letter	no	OYST Hi/Low + log DP	0.01	0.46
Ragen letter	no	OYST Hi/Low + reg seals (-DE)	0.01	0.44
Ragen letter	yes	OYST Hi/Low	0.01	0.34
Ragen letter	no	OYST Hi/Low + exp DP	0.03	0.34

With each round of Dr. Ragen's criticism, and each modification from Dr. Goodman and Mr. Lewis, we've seen the Goodman-Lewis top model remain the top model:

- August 29, 2011 (Goodman):
  - DP pups + regional seals + 92 protocols adjusted R^2 0.87
- November 29, 2011 (Goodman and Lewis):
  - DP pups + regional adults + 92 protocols adjusted R^2 0.86
- August 2012 (Goodman and Lewis):
  - DP pups + regional seals (-DE, -DP) + 92 protocols adjusted R^2 0.82

For all of Dr. Ragen's repeated criticisms, the Goodman-Lewis best model remains the best model, and is far superior to any of Becker's best models that include OYST Hi/Low. Becker and Dr. Ragen just happened to use a lesser Goodman-Lewis model [Regional population (-DE, -DP) + Double Point counts] that wasn't as good as the best models (using Double Point pups instead of total seals, and the 92 protocols), and yet they still found that it was the best model.

Dr. Ragen and Dr. Becker should be asked to explain their justification for selecting a lesser Goodman-Lewis model to include in Table 2, and not the best model or models.

Dr. Goodman and Mr. Lewis have been saying over and over again since August 29 that the best models included Double Point pups (not adults or total seals), and the 92 protocols. Drs. Ragen and Becker chose to ignore our best models, but still found that a weaker Goodman-Lewis model was better than Becker's.

That is what has happened over the past year. None of these modifications made any difference, and none of them was necessary. Dr. Ragen was wrong about the statistics. Nevertheless, Dr. Goodman and Mr. Lewis changed from total regional seals (adjusted R^2 = 0.87) to total regional adults (adjusted R^2 = 0.86) and now to total regional seals

minus Drakes Estero and Double Point (adjusted $R^2 = 0.82$). It didn't made any difference. That model – involving the 2003 Double Point event, the total regional population, and the 92 protocols – reigns supreme over any of the NPS Becker model involving OYST Hi/Low.

Keep in mind, the OYST Hi/Low categorical measurement is not an appropriate measure of oyster activity, so the Becker models are irrelevant to begin with. All of this is much ado about nothing, since the basic tenet of the NPS correlation – that the OYST Hi/Low categorical model is a reasonable measure of oyster activity at sandbars UEN and OB during pupping season – is incorrect, and NPS and MMC have been told this.

Imagine what Dr. Ragen might have been compelled to write on page 2 of his letter had he and Becker included the Goodman-Lewis best models (of which they have six models that are superior to the one Dr. Becker picked). Dr. Ragen would have found it impossible to say that OYST Hi/Low was still a potential influence. But even writing that it was a potential influence is far different from the Becker 2011 paper concluding that they had conclusive evidence to support the correlation, and also to suggest causation.

Moreover, Dr. Ragen's MMC Report supported the NPS correlation, something Dr. Ragen now admits is only a "potential influence," does not constitute "proof of a correlation," but cannot yet be completely dismissed. How would those words change when confronted with six better models?

In summary, Dr. Ragen's statement, and the results shown in Table 2 (June 2012), constituted a reversal of his major conclusion from the MMC Report (November 2011), and were in agreement with what Goodman and Lewis had been saying for nearly one year (August 2011).

Goodman's so-called statistical mistakes highlighted in Dr. Ragen's June 17 letter

Dr. Ragen's reversal is cleverly disguised in a document that claims to show that Goodman made errors. The major errors are documented on page 6 (see below).

What is shown as Dr. Goodman's errors on page 6 of Dr. Ragen's letter are in fact not from the Goodman-Lewis November 29, 2011 critiques, but from Dr. Goodman's August 29, 2011 review of Becker's paper. Dr. Ragen presented his analysis as if he were analyzing the Goodman-Lewis November 29 critique, but he did not. Dr. Ragen switches documents. Dr. Ragen comments in his June 17, 2012 letter are on the August 29, 2011 review of NPS data in Becker 2011, not the November 29, 2011 critique of his MMC Report that he was asked to respond to, and said his June 17 letter addressed.

Dr. Ragen misled the readers of his June 17, 2012 letter. This is simply a repeat (cut and paste) of the exact equations in Figure 20 on page 52 of the MMC Report. Dr. Ragen misled the readers of his letter to think that we had made these so-called mistakes in our November 29, 2011 critiques, but Dr. Ragen got it wrong. It's not clear that Dr. Ragen understands what he was reviewing. This doesn't matter.

Dr. Goodman and Mr. Lewis made the modifications, and it made no difference, and they said so in part 2 of their November 29, 2011 critiques. Thus, why did Dr. Ragen repeat these criticisms in his June 17 letter and mislead the reader to think they were relevant to the Goodman-Lewis November 29 critique? They were not. The fact that their (7^{th} best)

model comes to the top of Dr. Ragen's Table 2 shows just how irrelevant all of this is.

Below are Dr. Ragen's criticisms on page 6 of his June 17, 2012 letter.

- First, you included built-in dependencies between the dependent and independent variables (as illustrated in Figure 20 of our report). For example, your analysis of the "independent" variables $Pups_{DP}$ plus total regional seals can be written—

$$Pups_{DE}/Pups_{Reg} = f(Pups_{DP} + Seals_{Reg})$$

or expanded to—

$$Pups_{DE}/Pups_{Reg} = f(Pups_{DP} + (Adults_{Reg} + Pups_{Reg}))$$

or to—

$$Pups_{DE}/Pups_{Reg} = f(Pups_{DP} + (Adults_{Reg} + Pups_{notDE} + Pups_{DE}))$$

In essence, your dependent and independent variables are mathematically linked, rendering your interpretation of R^2 and associated *p*-value incorrect and invalid.

- Second, in other cases you linked your independent variables. For example, your analysis of the "independent" variables $Seals_{DP} + Seals_{Reg}$ can be written—

$$Pups_{DE}/Pups_{Reg} = f(Seals_{DP} + Seals_{Reg})$$

or expanded to—

$$Pups_{DE}/Pups_{Reg} = f(Seals_{DP} + (Seals_{DP} + Seals_{notDP}))$$

In this case, the linkage between independent variables means that the same data are used in fitting more than once—a violation of the usual assumptions for this kind of model. The linkage does not bias the magnitude of the relationship between the dependent and "independent" variables, but it does need to be taken into account to calculate correct *p*-values.

Dr. Ragen's assertion that Dr. Goodman and Mr. Lewis made a mistake is gratuitous and misleading. Dr. Ragen intentionally spent an entire page of his letter talking about mistakes Dr. Goodman had made, when in fact, the issue (or non-issue) had long since been addressed in the Goodman-Lewis November 29, 2011 critiques. These criticisms did not apply to what Dr. Goodman and Mr. Lewis submitted on November 29, 2011. Why did Dr. Ragen mislead the readers of his letter? Did Dr. Ragen understand what was being reviewed? What was his intention here?

Dr. Ragen accused Dr. Goodman of misrepresenting DBOC data and NPS testimony

There are two issues concerning disturbance records, and how they are described in Dr. Ragen's June 17, 2012 letter. First, was Dr. Ragen correct in accepting a few of the NPS disturbance records? Second, was Dr. Ragen correct is his harsh criticisms?

In the MMC Report, Dr. Ragen wrote:

> *"After examining individual disturbance records, the Commission concludes that, from time to time, mariculture activities have disturbed the seals."*

Dr. Ragen accepted four mariculture-related disturbances over the past seven and one half years as evidence that, from time to time, mariculture-related activities have disturbed the seals.

In spite of what Dr. Ragen wrote in his June 17, 2012 letter, the evidence continues to be

very weak, and in many cases both controversial and suspicious, concerning these four so-called disturbance events. Two of them were previously examined by the NAS panel back in 2008-2009 and were not accepted. Dr. Ragen did a poor job of defending his acceptance of these disturbances. Perhaps to deflect attention from the records themselves, and his arguments for accepting them, his letter was full of harsh criticisms – and accusations of bias and lack of integrity directed against Dr. Goodman.

Here is brief synopsis of the four disturbance events that Dr. Ragen continues to support.

April 26, 2007: Sarah Allen's Trip Report -- Dr. Ragen says Dr. Goodman misrepresented the DBOC electronic time clock records. One of his main examples involved the time clock record of Jorge Mata Jr. as shown below. It was Dr. Ragen who misrepresented the DBOC records. Dr. Goodman carefully scrutinized them and interviewed DBOC owner Kevin Lunny. Dr. Ragen got it wrong. There are many reasons why this record is highly suspicious. The engine was broken and the oyster workers had clocked out by the time the so-called disturbance took place. Many details in the Trip Report are inconsistent with the physical conditions of the lateral channel and with the NPS photographic record. It may have been fabricated. NAS called it controversial. The MMC Report should have said the same. See Dr. Goodman's January 6, 2012 critique to Dr. Ragen for further details.

April 29, 2007: This was a Sunday. DBOC records show that none of the oyster workers were working that Sunday (which is typical – they rarely work on Sundays). There are many other reasons why this record is suspicious at best. NAS called it controversial. The MMC Report should have said the same. See Dr. Goodman's January 6, 2012 critique to Dr. Ragen for further details.

March 14, 2008: A NPS volunteer claimed a disturbance took place right as she arrived at her viewpoint nearly one mile away. A second person, NPS staffer Sarah Codde, was at the same time 1000 feet away (~ one fifth the distance) from the seals, witnessed the oyster boat come and go, was focused on the seals and potential disturbances, and said no disturbance took place. The volunteer arrived late. Sarah Codde wrote down that no disturbance took place. Her written records are clear. She gave testimony under oath to DOI Field Solicitor Gavin Frost and told him that no disturbance took place. DOI Field Solicitor Gavin Frost wrote this in his scientific misconduct report. Nevertheless, Dr. Ragen concluded that this was a bonafide disturbance.

May 15, 2008: This NPS disturbance was NOT presented at Dr. Ragen's June 7, 2010 MMC meeting with NPS to discuss all disturbance records. The NPS scientists never mentioned it, and never put it on their disturbance list. This so-called disturbance was not asserted in Dr. Ragen's June 2011 draft version of his MMC Report. Rather, it suddenly appeared in the final MMC Report as evidence for a disturbance. The NPS scientists Dr. Sarah Allen and Sarah Codde told Gavin Frost that the NPS photographs did not show any bona fide DBOC disturbances, yet this assertion of a disturbance is based upon the NPS photographs. Nevertheless, without discussion with Kevin Lunny or me, Dr. Ragen uses the NPS photographs to claim a disturbance. He is wrong. Dr. Ragen bases his conclusion on Sarah Codde's photos. In this case, Sarah Codde told Gavin Frost that none of her photos showed a bona fide disturbance. Nevertheless, Dr. Ragen concluded that this was a bonafide disturbance based upon Ms. Codde's photos.

Dr. Ragen claimed Dr. Goodman misrepresented DBOC records concerning the April 26, 2007 disturbance record

In the final paragraph of Dr. Ragen's letter on page 20, he accused Dr. Goodman of having misrepresented the information on time cards. He was citing the DBOC records from April 26, 2007 as shown on page 11 of his letter.

It was his criticism of Dr. Goodman's lack of scrutiny of the DBOC records from April 26, 2007 that led the Point Reyes Light, on the front page of its July 26, 2012 issue, to paraphrase Dr. Ragen as saying:

> *"He also argued that Dr. Goodman did not apply the same level of scrutiny to the oyster company's records as he did to those of the National Park Service."*

If this were a true statement, then it would show that Dr. Goodman is biased and failed to review DBOC business and operational records. But it is not correct.

Concerning April 26, 2007, Dr. Ragen asserted that Dr. Goodman did not properly scrutinize the DBOC records. The fact is that it was Dr. Ragen who did not properly scrutinize the DBOC records, and misrepresented them in his June 17 letter. The case in point is the time card of Jorge Mata Jr. on the bottom of page 11 on Dr. Ragen's letter.

Dr. Ragen told us that Jorge Jr. clocked out at 6:54 pm, well after the so-called disturbance that took place between 4:30 and 5 pm. But look at the "in" column to the left of the "out" column. Jorge Jr. clocked in at 5:11 pm, and the location of the so-called disturbance was 20 minutes away by boat, and it took place long before he clocked in on shore.

Jorge Mata Jr., as Dr. Ragen was told, is the deliveryman. He does not work on the oyster boats. He is not an oyster worker. He was loading his truck for delivery to restaurants and distributors throughout the Bay Area the next morning.

The NAS panel in 2009 did not accept the April 26, 2007 Trip Report for a plethora of reasons. Dr. Ragen insists upon considering it valid, and so he misrepresented the DBOC records, and incorrectly accused me of being biased in my analysis of data.

Dr. Ragen's whole analysis of disturbance records on pages 11-20 is suspect. The more you dig into the details, the more Dr. Ragen's statements fall apart. Some of Dr. Ragen's explanations are so far-fetched as to make you scratch your head and wonder what Dr. Ragen is thinking, and whether this is politically- rather than scientifically-motivated. He is on very thin ice in his defense of the NPS disturbance records.

Below are the time card records shown on page 11 of Dr. Ragen's letter. Below that is a larger image of Jorge Mata Jr.'s time card. Look at the seventh line that is the April 26 record.

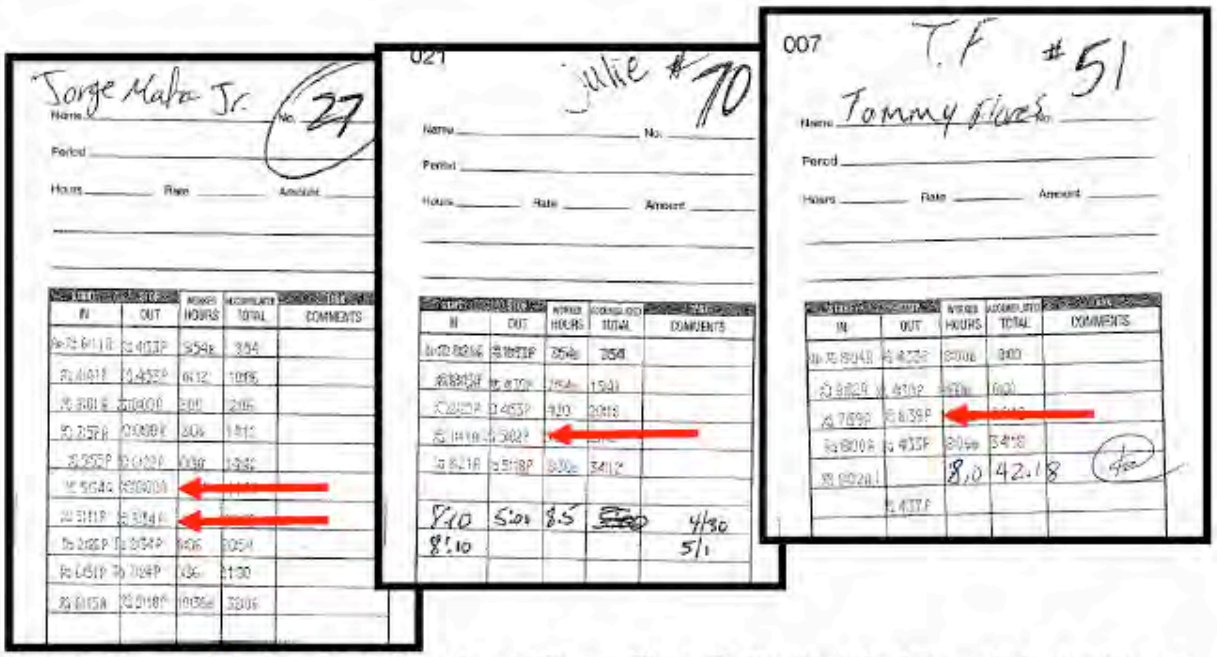
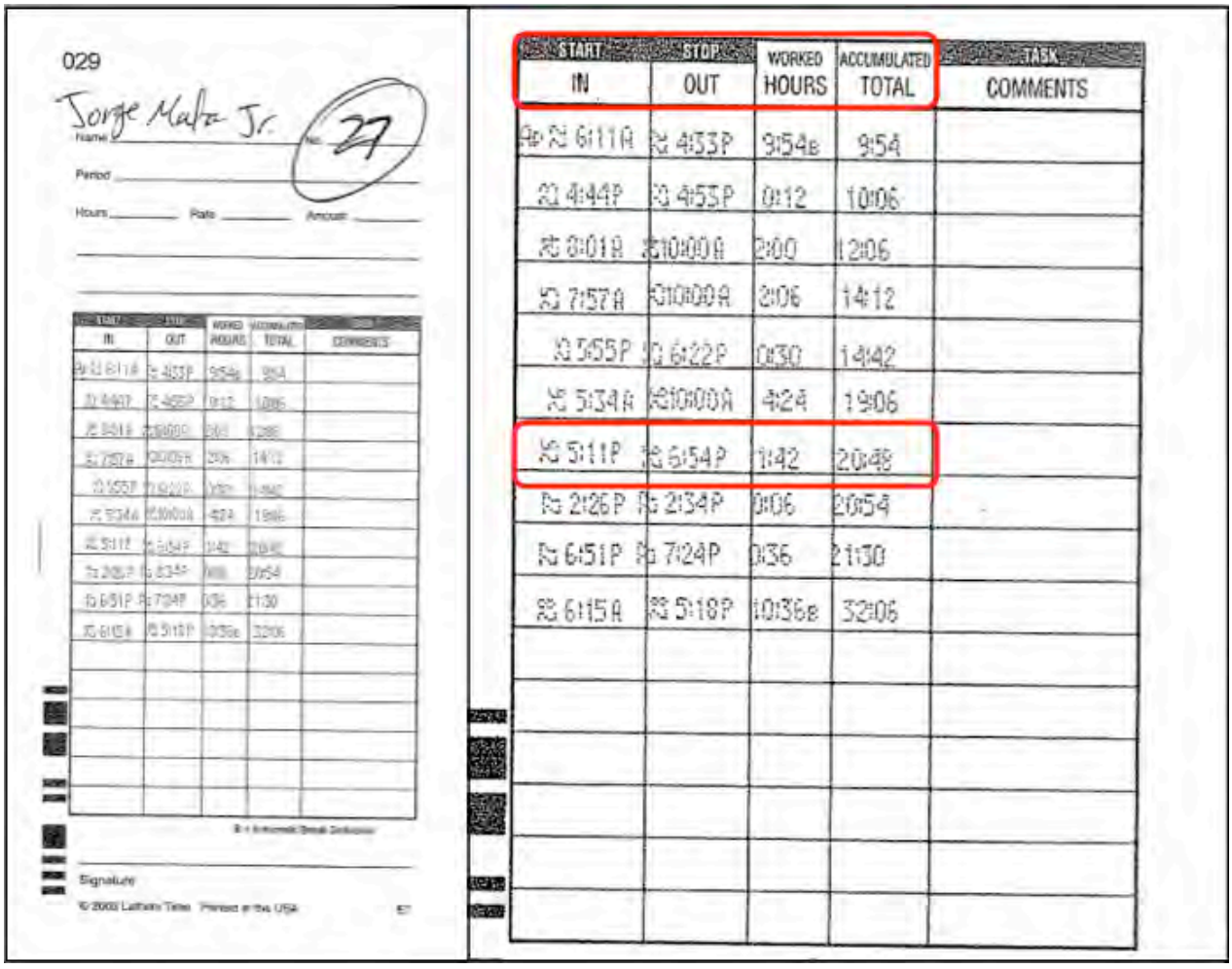


Figure 5. Time cards for Jorge Mata, Jr., Julie, and Tommy Flores. On 26 April they last punched out at 6:54 pm, 5:02 pm, and 6:39 pm, respectively. Day of month is located in "IN" column and rotated 90° counterclockwise.



Dr. Ragen claimed Dr. Goodman mischaracterized statements by NPS scientists concerning the March 14, 2008 disturbance record

In the final paragraph of Dr. Ragen's letter, he wrote:

> *"In my view, your arguments against that conclusion misrepresent mariculture activity in the OB/UEN area from March to August 2007, misrepresent the information on time cards, and mischaracterize statements by Park Service staff as to the utility of their data on disturbance events."*

His statement that Dr. Goodman mischaracterized statements by NPS staff refers to the March 14, 2008 event. On page 15 of Dr. Ragen's letter, he accused Dr. Goodman of mischaracterizing the Park Service views and says this is "*more troubling*." More troubling? What Dr. Goodman concluded in his January 6, 2012 critique concerning the March 14, 2008 event was the following:

- *This disturbance record from an NPS volunteer is inconsistent with the photographs.*
- *This record is contradicted by the observations of NPS Sarah Codde who was closer in distance to the harbor seals and noted no disturbance in her database.*
- *Sarah Codde told Field Solicitor Gavin Frost that no disturbance took place.*
- *The Frost Report stated this record was not supported by Codde's observations.*
- *This record is suspicious and controversial, and should not be included in the MMC conclusion.*

These conclusions are as true today as they were on January 6. The basis for Dr. Goodman's conclusions came largely (but not entirely) from the Frost Report from DOI Field Solicitor Gavin Frost. All of the details can be found in Dr. Goodman's January 6, 2012 critique of these disturbance records. Quotes from the Frost Report are included below. Does Dr. Goodman's critique deserve to be called a mischaracterization and troubling? Was this a fair and reasonable statement on Dr. Ragen's part?

According to Gavin Frost, NPS scientists Dr. Sarah Allen and Sarah Codde told him that NPS had no record of disturbances in both the photographs and Sarah Codde's independent database (videos and logs). Concerning the March 14, 2008 disturbance record in the MMC Report, the Frost Report is clear: Sarah Codde told Frost that her mission was to observe disturbances, that she witnessed the oyster boat come and go that day, that she was close to the seals, and that no disturbance took place.

Dr. Ragen's letter implied that NPS scientists told him something else. Did NPS scientists tell Field Solicitor Gavin Frost one thing under oath, and then tell the MMC Executive Director something else? Dr. Ragen then criticized Dr. Goodman (and called Dr. Goodman's actions "troubling") for raising their testimony as reason to question the validity of this so-called disturbance record.

The volunteer who claimed to witness the disturbance arrived right at the beginning of the so-called event, was 4500 feet from the seals (Sarah Codde was 1000 feet away), got the arrival time of the oyster boat wrong (Sarah Codde got it right as verified by the NPS photographs), got other details wrong, but said a disturbance took place. Sarah Codde was much closer to the seals – nearly five-fold closer.

The volunteer who got the times wrong authored another controversial disturbance record – May 8, 2007 – that Dr. Ragen did not support and that was not verified by the

NPS photographs. The volunteer at 4500 feet claimed to witness a disturbance whereas the NPS staffer at 1000 feet and focused on potential disturbances noted that no disturbance took place. Moreover, these records are being treated as if they are regulatory records, when they are not. NPS disturbance records are part of a long-term monitoring program, with the data being entered largely by community volunteers.

Below is what Dr. Goodman wrote about March 14, 2008 in his January 6, 2012 critique.

> Ragen concluded that the NPS photographs for March 14, 2008 neither confirmed nor refuted the reported disturbance (the photos show the oyster boat but not the seals), and thus he apparently accepted the observer's record of a mariculture-related disturbance. Ragen's narrative made his conclusion a bit ambiguous.
>
> DBOC acknowledged that this was likely its oyster boat and workers, but pointed out that although the observer got the time of departure of the boat correct (as indicated by the time-stamped photos), that the observer's records were otherwise inconsistent with many other aspects in the photos, including the arrival time of the boat (i.e., when the disturbance was said to have occurred). The boat arrived ten minutes after the observer recorded the arrival. The observer wrote that the "man in white jacket does all work" whereas the man in the dark blue jacket did all of the work at the beginning. There are many inconsistencies at the beginning of this record, right when the disturbance was said to have occurred, and right when the observer said she first arrived at the distant observation point. Given these inconsistencies, we did not find the record "*sufficient*" to conclude that a mariculture-related disturbance took place.
>
> But you need not take our word for it. The NPS scientists refuted this disturbance record in one of their databases (appendix E of MMC report), and told DOI Field Solicitor Gavin Frost (March 22, 2011 Frost Report), that no disturbance took place. The NPS denial of the disturbance to Gavin Frost raises serious questions about the veracity of this observer (the same person responsible for the controversial May 8, 2007 record that Ragen concluded was inconclusive and that we have disputed).
>
> In December 2010, NPS released yet another photographic and observer database for the 2008 pupping seasons (that they had never disclosed to the NAS), this one focused solely on the potential disturbance of harbor seals by the oyster farm. The person responsible was Sarah Codde who reported to Dr. Sarah Allen. Codde was responsible for taking care of the two secret cameras which were in a location on the east shore of Drakes Estero far closer to the OB seals and oyster boats and workers at UEN/OB than the normal volunteer observation point on the western bluffs across from sandbar A. According to documents obtained through FOIA, Codde and others helping her spent many hours, many days each week, at the camera location, watching, recording, and filming the oyster boats and seals.
>
> In the Frost Report, S1 = Dr. Sarah Allen and V1 = Sarah Codde. On page 11 of the Frost Report, Gavin Frost wrote:
>
> > *"SI also takes full responsibility for the 2008 actions of, and data gathered by VI, whom S1 had instructed to attend the cameras three to four times each week from March-June 2008, to replace batteries and memory cards as needed, to adjust the focus and angle of the cameras as needed, to review the photographic images collected, and to prepare a written log of that review, through which VI strictly confined her/his attention to DBOC mariculture activities, disturbances, and potential disturbances of harbor seals in upper Drakes Estero. As part of a now discontinued pilot study, S1 further directed VI to monitor (while at, approaching, and departing the cameras) the harbor seals visually for population increases and decreases at favored haul-out subsites, to document observations, to monitor and memorialize all visible DBOC mariculture operations, and to record, in writing and with still camera and video equipment, all pinniped disturbances that V1 observed in upper Drakes Estero."*

As shown on page E-2, Sarah Codde (the observer whose name is blackened out on the left hand margin) wrote in records 6-8 that she was present from 12:33 pm to 13:02 pm, the time period fully including the arrival and departure of the oyster boat and the occurrence of the so-called disturbance. Yet in the column marked "disturbance" at the right, Codde marked N, N, N (N = no). She fully acknowledged the arrival and departure of the oyster boat, noting in the "route #" column the boat traveling down route 1A, 1B, and 2 between 12:33 to 12:41, and then returning up route 2, 1B, and 1A from 12:50 to 13:02. She was clearly focused on the oyster boat, and much closer to it and the seals than the observer at the distant observation point. Codde witnessed the arrival and departure of the oyster boat.

According to the Frost Report, Codde's job was to "*monitor and memorialize all visible DBOC mariculture operations, and to record, in writing and with still camera and video equipment, all pinniped disturbances …*" that she observed at OB and UEN. Yet Codde wrote that she observed no disturbance.

The Frost Report went one step further. Gavin Frost interviewed Sarah Codde specifically about the March 14, 2008 so-called disturbance event. Frost wrote:

> *Notably, the absence of any mariculture-caused disturbances observed or documented by V1 and the cameras applies to March 14,2008, the date on which a volunteer observer, standing a significant distance away from the camera locations on the opposite side of Drakes Estero, witnessed a DBOC boat disturb four seals from a group of nineteen in upper Drakes Estero. Without question, V1 was present at the camera locations on that date, at the exact time, and was closer to the disturbance site than the volunteer observer, but s/he neither saw nor documented or filmed any compatible anthropogenic disturbance. The PC85 camera, aimed at the area of alleged pinniped disturbance, confirmed the presence of a DBOC boat at the relevant time, but photos did not confirm any harassment of harbor seals on that date. With regard to the harbor seal disturbance on March 14, 2008, the only date during that pupping season when DBOC activities allegedly harassed pinnipeds, SI relied heavily, but without clear explanation, on the volunteer observer's report and completely dismissed, without timely analysis or review, the direct or indirect contradiction of that data as presented by the negative implications of VI's observations, the photographic images, and the video clips.*
>
> *Indeed, much like the approach to digital photos taken in 2007, S1 accorded little weight to the 2008 photographic data and related information gathered by V1. Deemed "incompatible" with the long term data collected from the traditional visual monitoring site in the southwest comer of Drakes Estero, the 2008 camera project and information associated therewith received little scientific attention from S1 and did not alter SI's subjective belief that DBOC mariculture operations either disturb harbor seals in upper Drakes Estero or dissuade the marine mammals from using established haul-out subsites.*

In summary, there are three reasons why the March 14, 2008 so-called disturbance record cannot be accepted and is suspicious and controversial.

1. The March 14, 2008 observer record is inconsistent with the photographic data in terms of the time of arrival of the oyster boat and which worker got out of the boat and did the initial work.
2. The March 14, 2008 observer record is inconsistent with Sarah Codde's database (appendix E in MMC report) which covered the entire time period, from a closer vantage point, and documented the arrival and departure of the oyster boat, and yet recorded no disturbance.
3. The March 14, 2008 observer record is inconsistent with Sarah Codde's interview with Gavin Frost, and what is reported in the Frost Report: "*Without question, V1* [Sarah Codde] *was present at the camera locations on*

that date, at the exact time, and was closer to the disturbance site than the volunteer observer, but s/he neither saw nor documented or filmed any compatible anthropogenic disturbance."

The data from and interview with Sarah Codde refute the March 14, 2008 NPS observed disturbance record. Sarah Codde's database was included in the MMC report (appendix E), but Ragen failed to cite it. Moreover, Ragen failed to cite the Frost Report, even though he was alerted by me in early January 2011 that, according to Gavin Frost, both Dr. Sarah Allen and Sarah Codde told Frost during extensive interviews in December 2010 that the photographic evidence showed no harbor seal disturbances caused by the oyster farm.

What is troubling about that characterization? Why did Dr. Ragen use this characterization to raise questions concerning Dr. Goodman's integrity? Why did Dr. Ragen attack his major critic in this fashion?

NPS Sarah Codde's notes (see Appendix E in the MMC Report) and her testimony under oath to DOI Field Solicitor Gavin Frost raised enough concern to disqualify this disturbance record. Dr. Ragen, on the other hand, believed the volunteer, said the NPS staff told him something different, and is highly critical of Dr. Goodman. This is the basis for Dr. Ragen's assertion that Dr. Goodman mischaracterized the views of NPS scientists. It sounds as if the NPS scientists gave two different answers – one under oath to DOI Field Solicitor Gavin Frost, and the other in private discussions with Dr. Ragen.

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MARINE MAMMAL COMMISSION

Photo courtesy of the National Park Service

MARICULTURE AND HARBOR SEALS IN DRAKES ESTERO, CALIFORNIA

A Report by the Marine Mammal Commission

22 November 2011

EXECUTIVE SUMMARY

In 2012 the Secretary of the Interior will determine whether to renew a Reservation of Use and Occupancy and a Special Use Permit issued to Drakes Bay Oyster Company for operations in Drakes Estero, an estuary on the West Coast just north of San Francisco, or convert the estuary to full wilderness status. The Secretary's determination is a matter of policy. Science, however, has a role in informing the Secretary about the potential consequences of his decision for resources within the estuary.

In 2009 the Marine Mammal Commission agreed to review the science pertaining to whether mariculture activities in Drakes Estero have affected or are affecting Pacific harbor seals (*Phoca vitulina richardsi*). The seals use the estuary for resting, breeding, pupping, and rearing their pups. The Commission was assisted in the first stage of its review by a panel of scientists with expertise in mariculture and in harbor seal health and ecology. The review objectives were to (1) evaluate the best available scientific information pertaining to harbor seals and mariculture effects; (2) evaluate the strengths and weaknesses of those data, (3) identify information gaps, and (4) recommend research and management activities to reduce scientific uncertainty and ensure the protection of harbor seals and their habitat. The Commission also agreed to review the Park Service's management of the harbor seal population.

The two proximate concerns regarding mariculture activities are that they might disturb seals or displace them from the habitat that they would otherwise use absent such disturbance. The broader concern, more difficult to measure, is that disturbance and displacement could reduce the seals' fitness—a measure of their ability to survive and reproduce.

The main data types available for the review include counts of seals within Drakes Estero and surrounding colonies, observations of disturbance events collected during those counts, and oyster harvest records kept by Johnson Oyster Company and its successor, Drakes Bay Oyster Company. Other useful or potentially useful documentation include photographs taken by automated cameras and videos taken during camera maintenance, observations of harbor seal mortality within the estuary, and aerial photographs of the estuary that were used by the National Park Service to assess the spatial extent (acreage) of mariculture activities in years dating back to 1993.

The review focused on three analyses conducted by the Park Service. The first was a preliminary analysis presented orally to the Marin County Board of Supervisors in May 2007. That analysis suggested that mariculture activities caused a large (80 percent) decline of harbor seal mothers and pups at one of the haulout sites (oyster bar, or OB) compared to previous observations at that site. Those results were based on counts conducted before 4 May 2007 and at the end of May the Park Service revised its estimate downward to a 55 to 60 percent decline. The Commission agrees that the number of seals using that site declined substantially in 2007. However, it also notes that the comparison was based on data from 2004, when the number of seals using the site was the highest on record. Given the natural variability of counts at that site, the Commission does not believe that the 2004 data constitute the appropriate basis for estimating the expected number of seals in 2007. The Commission also does not believe that the existing information is sufficient to determine the factor(s) that caused the change in seal numbers at the site.

The Park Service's second analysis was published as Becker et al. (2009) and is comprised of two parts. The first part examined the annual disturbance rate (i.e., reported disturbances per survey) as a function of the total annual oyster harvest. After examining individual disturbance records, the Commission concludes that, from time to time, mariculture activities have disturbed the seals. However, the data used in the analysis are not sufficient to support firm conclusions regarding the rate and significance of such disturbance.

The second part of Becker et al. (2009) analyzed factors that might explain harbor seal haulout patterns within the estuary during the seals' reproductive period. Importantly, this analysis shifted emphasis from individual disturbance records to use of the annual oyster harvest level as a proxy for mariculture activity (i.e., including the presence of boats, human activities, and mariculture materials). The results indicated that El Niño-southern oscillation (ENSO) events and annual oyster harvest levels best explain the seals' haulout patterns at the upper estuary haulout sites. The panel convened by the Commission in the early stages of this review raised strong concerns about this analysis and the use of annual oyster harvest levels as a proxy for mariculture effort. Their concerns were based on the fact that mariculture activity has varied by ownership and management, growing method, location within the estuary, and season and, therefore, may not be related to annual harvest level.

The Park Service responded to various criticisms of the Becker et al. (2009) paper by revising and expanding the analyses and publishing the results as Becker et al. (2011). This paper consists of three main parts. The first, not controversial, examines the haulout patterns of seal mothers and pups based on site isolation from land-based sources of disturbance.

The second part of Becker et al. (2011) is a reanalysis of harbor seal habitat use within Drakes Estero. The reanalysis examines whether seal haulout patterns in the upper (near mariculture) versus lower (away from mariculture) estuary are related to ENSO events, oyster harvest level, the spring (March–May) pooled disturbance rate (disturbances/number of surveys) in either the upper or lower estero, or the pooled maximum annual seal counts of all other Point Reyes area colonies (regional population size). The Park Service used two types of statistical analysis and incorporated new data dating back to 1982. As with Becker et al. (2009) the results suggest that ENSO events and mariculture harvest levels best explain the seals' use of haulout sites within Drakes Estero. The paper suggests that mariculture may have caused about an 8 ± 2 percent decline in harbor seal use of the upper estuary sites.

The third part of Becker et al. (2011) investigates harbor seal use of Drakes Estero versus neighboring colonies within the Point Reyes area as a function of multiple possible explanatory variables, including year (as a linear trend), the portion of Drakes Estero seals using subsite A (which was effectively lost to the seals between 2004 and 2007), the maximum annual seal count at Double Point (which experienced a rapid decline in 2003 because of a marauding elephant seal), annual spring human-related disturbance rate (all sources), years since the last ENSO event, regional annual maximum seal count (less seals at Drakes Estero), annual oyster harvest, and annual oyster harvest converted to a (high/low) binary variable. The Park Service also supported its contention that annual oyster harvest is a reasonable proxy for mariculture effort by analyzing relationships between annual harvest levels and the frequency of boats in the estuary, seasonal harvest patterns, and the acreage devoted to mariculture annually as estimated from aerial photographs of the estuary taken

since 1993. The results indicate that the 2003 event at Double Point, ENSO events, annual oyster harvest, and the loss of subsite A all may have influenced the distribution of seals between Drakes Estero and the neighboring colonies during the period in question.

The findings of Becker et al. (2011) have been challenged on a number of grounds, and the last phase of the Commission's review examined in detail the statistical methods used by the Park Service. The Commission structured this statistical review to allow the conservation organizations (National Parks Conservation Association and Save Our Seashore), Drakes Bay Oyster Company, and the Commission each to choose a statistician to review the methods. The statistician representing the conservation organization found that Becker et al. (2011) uses appropriate statistical methods and provides support for an inverse correlation between annual oyster harvest levels and the use of upper estuary haulout sites by harbor seals. The scientist chosen by Drakes Bay Oyster Company completed a set of analyses that he believed countered the results of Becker et al. (2011). He pointed toward the elephant seal event at Double Point in 2003 and the total number of seals in the area as the dominant factors explaining harbor seal haulout patterns both regionally and within Drakes Estero. However, his analyses are difficult to evaluate because his statistical models are confounded by built-in dependencies that are inconsistent with the statistical procedures he used. The third statistician, chosen by the Commission, found the statistical methods in Becker et al. (2011) to be generally appropriate but also made several suggestions for improving them. The Park Service concurred with those suggestions and conducted several additional analyses, reported in preliminary form in this report.

The Marine Mammal Commission believes that the data supporting the above analyses are scant and have been stretched to their limit. Nevertheless, the analyses in Becker et al. (2011) provide some support for the conclusion that harbor seal habitat-use patterns and mariculture activities in Drakes Estero are at least correlated. However, the data and analyses are not sufficient to demonstrate a causal relationship. Additional, carefully guided study would be required to determine if the apparent relationship is one of cause and effect.

To meet its objectives, the Commission describes in this report a number of shortcomings in the data used in the above analyses. Improvements are needed in the procedures used to collect disturbance data and to characterize mariculture activities and effort in the upper estuary. Photographs taken between 2007 and 2010 warrants further review to assess their usefulness for characterizing the rates and consequences of disturbance. Also, studies are needed to characterize harbor seal haulout patterns in the absence of disturbance, and to assess the biological significance of disturbance when it occurs.

Whether and to what extent the above shortcomings are addressed will depend, in part, on the decision by the Secretary of the Interior. If the Secretary determines that the estuary should be converted to full wilderness status, then the Park Service should continue to study the seals to determine if and how they may change in abundance or alter their habitat-use patterns. If the Secretary decides to renew the Reservation of Use and Occupancy and a Special Use Permit issued to Drakes Bay Oyster Company, then the Commission believes that he also should require the Park Service to implement an adaptive management approach that, if done well, should address the various weaknesses and gaps in the available data.

The Commission would be pleased to advise the Secretary in either case.

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Corey,

The following is my response to your criticisms of the Marine Mammal Commission's report on Drakes Estero, as described in your 27 and 28 November 2011 and 6 January 2012 memos to Steve Kinsey. You focused first on the Park Service's analyses of harbor seal hauling patterns and the Commission's statement that those analyses "provide some support for the conclusion that harbor seal habitat-use patterns and mariculture activities in Drakes Estero are at least correlated." You then focused on the Commission's interpretation of disturbance data. I'll address those two topics separately and then summarize my responses.

Before I begin with your assessment of the Park Service's analyses, let me clarify the nature and extent of Dr. Frances Gulland's recusal from Commission deliberations of this issue. Dr. Gulland works for The Marine Mammal Center, which has cooperated with the Park Service on various studies. The Marine Mammal Center also has expressed some views on the issue of mariculture and harbor seals in Drakes Estero. In fact, it was Dr. Gulland's association with The Marine Mammal Center and the fact that the Center had taken positions on the Drakes Estero situation that prompted her recusal. The Commission staff and Dr. Gulland thought that her participation in this issue on behalf of the Commission could create the appearance of a conflict of interest. In accordance with her recusal agreement, she was not involved in any way in drafting or reviewing the Commission's report and has not engaged in any substantive discussions of the matter with the Commission staff or the other Commissioners. Her only involvement has been to forward articles to the Commission when they appeared in the local press, to listen in on status updates regarding the timing, but not the content of, the Commission review, and to comment on whether the Drakes Bay Oyster Company should be given time at the Commission's 2012 annual meeting in Anchorage to respond to the Commission's report.

This does not mean that Dr. Gulland is prohibited from commenting on the issue in some other capacity, for example as an employee of The Marine Mammal Center. Even in that capacity, I think that she has been judicious. The example you cite in your 6 January 2012 memorandum—that if photographs show a boat's wake and seals nearby being disturbed at the same time, it is not unreasonable to conclude a potential relationship between the two—reflects an objective, scientific assessment of the facts presented, rather than a statement advocating for any side. It also should be noted that the quotation you cite was made at a time when Dr Gulland was a member of our Committee of Scientific Advisors on Marine Mammals (i.e., before she was appointed as a Commissioner) and before a recusal pertaining to Drakes Estero had been established. Dr. Gulland's recusal does not mean that she cannot express her views on the subject and certainly puts no constraints on what her employer and co-workers can do in this regard. In addition, she has no responsibility for or authority to tell others what they can and cannot put on their web sites.

ANALYSIS OF HARBOR SEAL HAULING PATTERNS

Maxima and means

The challenge at the center of this controversy is to explain, as best we can, the hauling patterns of harbor seals in Drakes Estero. Those patterns can be characterized in a number of ways. To date, many of the analyses have focused on the reproductive season because of its importance to maintaining the harbor seal population. The analyses also have focused on the total population or components of it (i.e., adults or pups) as hauling patterns vary by group. All of this is reasonable.

To date, the analyses generally have used the seasonal maximum count to represent hauling patterns for a given year or reproductive period (e.g., Figures 2 and 3A in Becker et al. (2011) and your analyses). As the Commission's report noted, the maximum count is, by nature, an extreme value that can vary markedly as a function of environmental or other conditions. Figure 1 below depicts the 2003 and 2004 total counts (15 April to 15 May) at Drakes Estero and Double Point and illustrates that the maximum count in a small sample of counts is not a stable indicator of seasonal hauling patterns (particularly obvious in 2004 at both sites). Count means (Table 1, Figure 2) also are not a perfect measure but, in my view, they are a more stable indicator than maxima in a small sample because they are less sensitive to daily fluctuations in environmental conditions, as is apparent in the daily counts within each season. For the kinds of analyses that the Park Service and you have conducted, I view count means as a more stable index of harbor seal hauling patterns and a more reliable basis for evaluating potential changes in seal use of the estuary from these data.

I asked the Park Service to analyze the mean values from counts conducted from 4/15 to 5/15 each year using their methods (generalized linear models) and yours (multiple regression). The results (Table 2) indicate that the Double Point event and regional population size may have had a significant influence on harbor seals in Drakes Estero. The results also identify the oyster low/high variable as a potential influence. Given the uncertainty associated with the analyses, the results are not proof of a correlation, but they also do not provide a basis for dismissing such a relationship.

Your position

Your position appears to be that (1) in 2003 a marauding elephant seal disrupted the Double Point colony of harbor seals, killing some seals (at least 40) and driving many others away from that site; (2) about half of those harbor seals (~300) moved into Drakes Estero; (3) the influx of seals into Drakes Estero was the dominant factor driving the hauling patterns of seals in that area; and (4) the year 2003 is an outlier that should be excluded from any analysis of a possible relationship between mariculture and harbor seals in Drakes Estero. You argue that all of this is confirmed by various forms of evidence, including figures from Becker et al. (2011) and Koenen and Allen (2007), and multiple regression analyses conducted by you and David Lewis.

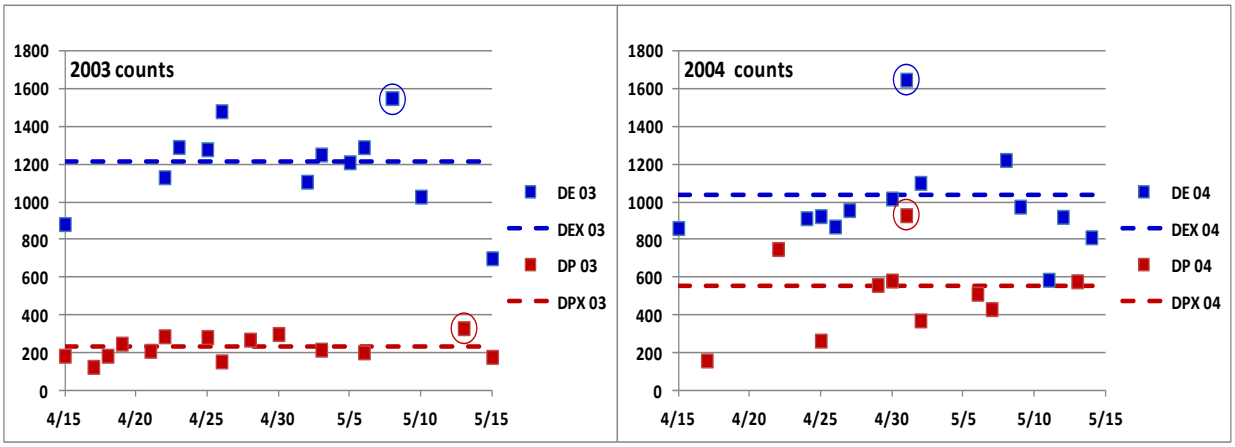


Figure 1. Harbor seal counts at Drakes Estero (DE) and Double Point (DP) and means of those counts (DEX and DPX) in 2003 and 2004. Maximum values are circled, means are represented by dashed lines. Based on National Park Service data.

Table 1. The mean counts (total seals) at the main colonies in the Point Reyes Area are as follows. (DE=Drakes Estero, DP=Double Point, TB=Tomales Bay, TP=Tomales Point, BL=Bolinas Lagoon, PRH=Point Reyes Headlands). Point Bonita and Duxbury Reef were not included because data are lacking for the late 1990s.

Year	DE	DP	TB	TP	BL	PRH	Total – DE
1982	437	517	213	376	74	105	1285
1983	420	501	156	337	82	82	1158
1997	834[1]	639	378	340	177	141	1674[3]
1998	523	544	202	232	118	98	1194[3]
1999	575	702	399	230	147	90	1568[3]
2000	679	755	435	227	241	130	1788
2001	867	636	492	152	246	90	1615
2002	968	758	424	235	282	86	1785
2003	1158[2]	226	365	284	322	108	1305
2004	985	514	427	390	271	135	1736
2005	841	607	465	298	317	85	1772
2006	863	625	393	296	311	91	1715
2007	766	533	372	350	308	94	1657
2008	781	545	381	389	282	206	1803
2009	642	551	398	275	213	182	1618
2010	624	490	279	275	346	85	1473

[1] *Previous value = 691 (change = +143)*
[2] *Previous value = 1091 (change = + 67)*
[3] *Total mean counts (and some of the member colony counts) also changed slightly (range= 16 – 80) for 1997-1999 based upon averaging all surveys rather than just the maximum of each week.*

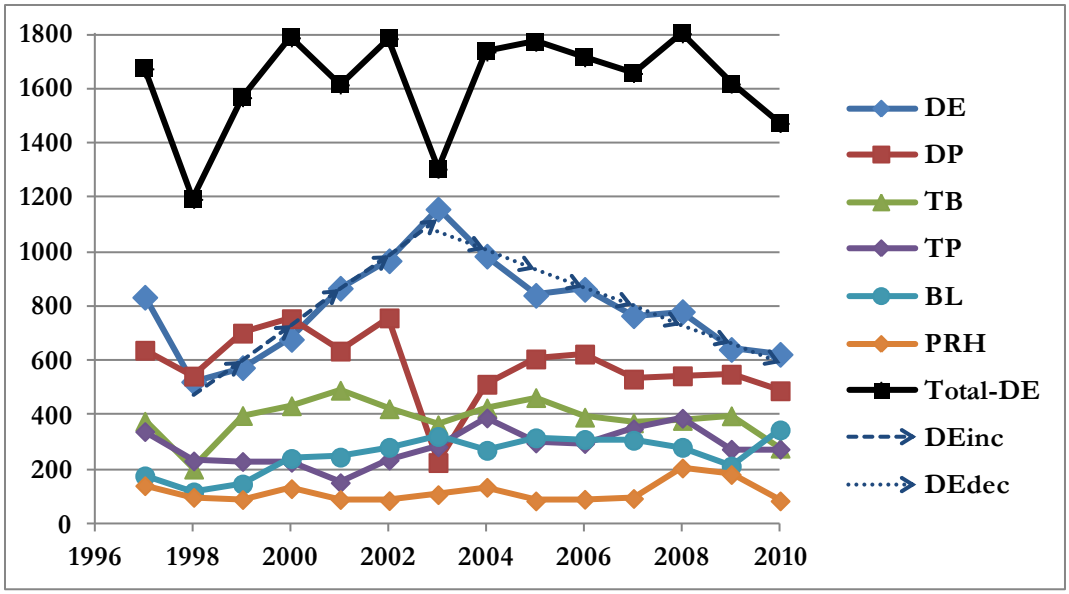


Figure 2. Graphically, the counts means(including the total minus Drakes Estero) are illustrated as follows. DEinc and DEdec are linear regressions fit to the DE data from 1998 to 2003 (DEinc) and from 2003 to 2010 (DEdec).

Table 2. Potential factors influencing the hauling patterns of harbor seals in Drakes Estero in 1982, 1983, and 1997 to 2010 based on mean counts of all harbor seals during the period from 15 April to 15 May (inclusive) at the main colonies in the Point Reyes area. Results are based on generalized linear models that produce corrected Akaike Information Criteria (AICc) or multiple regression models that produce p values. The models are ordered by their AICc values. Data and analytical results are from the National Park Service. The oyster values were updated by the California Department of Fish and Game after the Park Service requested the Department review its numbers.

				Summer 2011 oyster harvest values				Updated oyster harvest values			
Model	**AICc**	**ΔAICc**	**r^2**	**P cov 1**	**P cov 2**	**P model**	**Adj r^2**	**P cov 1**	**P cov 2**	**P model**	**Adj r^2**
Regional population[1]+ Double Point counts	213.2	0.0	0.50	0.01	0.01	0.01	0.50	0.01	0.01	0.01	0.50
oyst(L/H) + log(Double Point event)	214.2	1.0	0.46	0.01	0.06	0.01	0.46	0.01	0.01	0.01	0.46
oyst(L/H) + regional population size	214.8	1.6	0.44	0.02	0.08	0.01	0.44	0.02	0.08	0.01	0.44
oyst(L/H)	215.0	1.8	0.34	0.01		0.01	0.34	0.01		0.01	0.34
year	217.2	4.0		0.03		0.03	0.24	0.03		0.03	0.24
oyst(L/H) + exp(Double Point event)	217.5	4.3		0.02	0.36	0.03	0.34	0.02	0.36	0.03	0.34
regional population size	218.3	5.1		0.05		0.05	0.19	0.05		0.05	0.19
ENSO	219.4	6.2		0.09		0.09	0.13	0.09		0.09	0.13
oyster harvest lag + regional population	220.0	6.8		0.17	0.06	0.06	0.25	0.22	0.05	0.07	0.23
exp(Double Point event)	220.6	7.4		0.17		0.17	0.07	0.17		0.17	0.07
log(Double Point event)	220.7	7.5		0.19		0.19	0.06	0.19		0.19	0.06
oyster harvest	220.8	7.6		0.07		0.07	0.15	0.19		0.19	0.05
oyster harvest + regional population size	221.1	7.9		0.15	0.10	0.06	0.26	0.41	0.10	0.11	0.17
oyster harvest lag	221.3	8.1		0.15		0.15	0.08	0.26		0.26	0.02
oyster harvest lag + log(Double Point event)	221.8	8.6		0.06	0.07	0.07	0.23	0.15	0.12	0.15	0.14
oyster harvest + double point counts	222.2	9.0		0.04	0.19	0.09	0.21	0.08	0.18	0.17	0.12
Double Point counts	222.3	9.1		0.51		0.51	-0.04	0.51		0.51	-0.04
oyster harvest + log(Double Point event)	222.4	9.2		0.07	0.17	0.08	0.21	0.22	0.21	0.20	0.10
oyster harvest + exp(Double Point event)	223.1	9.9		0.07	0.17	0.08	0.21	0.22	0.21	0.20	0.10
oyster harvest lag+ exp(Double Point event)	223.2	10.0		0.21	0.23	0.18	0.12	0.38	0.02	0.27	0.06
oyster harvest lag + Double Point counts	224.0	10.8		0.10	0.28	0.20	0.10	0.21	0.37	0.37	0.01

[1] *Excludes seal counts at Drakes Estero and Double Point. All other references to "regional population" exclude only Drakes Estero counts.*

(1) The elephant seal at Double Point—I believe everyone agrees that the elephant seal at Double Point had a significant effect on harbor seals at that site in 2003, with recovery occurring over the next few years. The mean counts (adults and pups combined) dropped from 758 in 2002 (the high recorded from 1997 to 2010) to 226 in 2003 (the low during that period; see the preceding table). The change in mean count was 758-226=532 seals, a clear and substantial decrease.

(2) The Double Point effect on Drakes Estero—The Double Point effect on harbor seal hauling patterns in Drakes Estero is not so clear. The regional total of mean counts (not including Drakes Estero) declined by 360 seals, indicating a substantial number of seals left the region in 2003. The net change to be accounted for is 532-360=173 seals. The mean count at Drakes Estero increased by 190 seals (i.e., from 968 in 2002 to 1158 in 2003). Although one might infer that those two numbers correspond closely enough to reflect a simple migration, such may not be the case. At Drakes Estero, the annual mean count increased an average of 118 seals per year from 1998 to 2002. If that trend continued into 2003, it may well be that the Double Point event accounts for no more than about one-third (~70 seals) of the observed change in mean annual counts from 2002 to 2003 in Drakes Estero. Given the available data, it simply is not possible to describe with confidence just how many seals moved from Double Point to Drakes Estero in 2003.

You also wrote that a figure (Figure 3) from Koenen and Allen (NPS Research Project Summary Report, May 2007) supports the idea that "…Double Point in 2003 had a major influence on seals and pups in Drakes Estero in 2003 & 2004." Here, too, I do not agree with your assessment. As is the case with the preceding figure showing mean counts, this figure also shows an increasing trend in the number of pups in Drakes Estero from the mid or late 1990s to 2003. The information presented in the figure is not sufficient to distinguish between a movement of seals from Double Point versus a continuation of an increasing pattern that has been observed since the mid or late 1990s. Thus, I see no basis for concluding with confidence that this figure confirms your hypothesis about the movement of seals from Double Point to Drakes Estero.

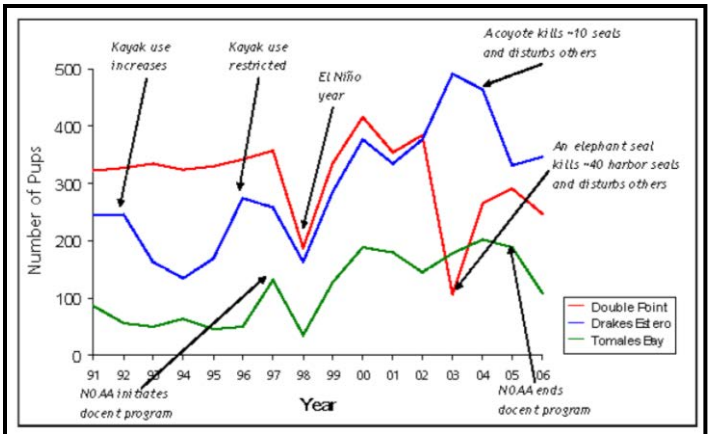


Figure 3. Increase in the number of pups at Drakes Estero from the early 1990s to 2006 (from Koenen and Allen 2007).

(3) Your analysis of harbor seal hauling patterns—You supported your claim about the influence of the 2003 Double Point event on Drakes Estero using statistical analyses conducted by you and David Lewis. You used data and graphics from Becker et al. (2011) and multiple regression to generate R^2_{adj} and p values. Your approach and the generalized linear modeling approach used by the Park Service vary in a number of ways, but I did not expect your results and theirs to differ substantially based on the models alone. After your review of Becker et al. (2011), I spent a considerable amount of time trying to determine why your results were so different if you and the Park Service used the same data, asked similar questions, and used statistical analyses that differ, but not enough to explain the large differences in results.

Upon close examination, I discovered that the differences in results were not based on the models, but on your application of them. In your initial review of Becker et al. (2011) you made two fundamental errors in applying the multiple regression model.

- First, you included built-in dependencies between the dependent and independent variables (as illustrated in Figure 20 of our report). For example, your analysis of the "independent" variables $Pups_{DP}$ plus total regional seals can be written—

$$Pups_{DE}/Pups_{Reg} = f(Pups_{DP} + Seals_{Reg})$$

or expanded to—

$$Pups_{DE}/Pups_{Reg} = f(Pups_{DP} + (Adults_{Reg} + Pups_{Reg}))$$

or to—

$$Pups_{DE}/Pups_{Reg} = f(Pups_{DP} + (Adults_{Reg} + Pups_{notDE} + Pups_{DE}))$$

In essence, your dependent and independent variables are mathematically linked, rendering your interpretation of R^2 and associated *p*-value incorrect and invalid.

- Second, in other cases you linked your independent variables. For example, your analysis of the "independent" variables $Seals_{DP} + Seals_{Reg}$ can be written—

$$Pups_{DE}/Pups_{Reg} = f(Seals_{DP} + Seals_{Reg})$$

or expanded to—

$$Pups_{DE}/Pups_{Reg} = f(Seals_{DP} + (Seals_{DP} + Seals_{notDP}))$$

In this case, the linkage between independent variables means that the same data are used in fitting more than once—a violation of the usual assumptions for this kind of model. The linkage does not bias the magnitude of the relationship between the dependent and "independent" variables, but it does need to be taken into account to calculate correct *p*-values.

- Finally, in your response to the Commission's report, you added a third type of error. In this case, you again linked the dependent variable and an independent variable, not by shared identical components, but by components known to be correlated—specifically, $Pups_{DE}$ and $Adults_{DE}$. One would reasonably expect a correlation between maximum annual counts of adults and maximum annual numbers of pups (as you analyzed them). I asked the Park Service to analyze those two variables for a correlation and, indeed, adult and pup trends are correlated with an r^2 of 0.82 and a P value <0.001. In these cases, you based your response on a variation of the first error noted above and, again, it renders your statistical analysis unreliable.

The majority of analyses you have sent me prior to and after publication of the Commission's report contain at least one of the types of errors described above. To be clear, such errors are not trivial in any regard. They are fundamental flaws in your application of the multiple regression model and they invalidate your results. The whole purpose of this type of analyses is to determine if a relationship may exist between the dependent and independent variables. By incorporating common or related elements in the dependent and independent variables, you artificially increased the likelihood of a significant result when, in fact, the mathematical linkages in the variables mean your results cannot be used for their intended purpose unless the statistical assessment accounts for the constructed linkage. It did not.

You assured me, repeatedly, that you were getting solid, expert advice on your statistical analyses, but you also argued that I should have informed you about your errors before the Commission completed its report. In fact, on 7 October 2011 I emailed you a copy of comments from Dr. Dominique Richard, who described errors in your analyses. You responded by email on 23 October 2011, but your email response and subsequent analyses confirm that you chose to dismiss his comments without serious consideration of their merit.

(4) Your assertion that 2003 is an outlier—Based on your analyses, you have argued that—

- 2003 is an outlier with disproportionate influence (or leverage) on the Park Service's analyses of potential mariculture effects on harbor seals;
- therefore, the 2003 data should be removed from the analysis; and
- a correlation (or any such statistical relationship) should not be destroyed by removing a single data point.

The Commission noted in its report that data can be excluded from statistical analyses under certain conditions, but those conditions should be based on an inherent problem with the data rather than the influence of the data point on the outcome of those analyses. In every analysis of this type, one can sort the data based on their relative influence on the analytic results. If we allow ourselves to start rejecting data on the basis of that influence, we violate statistical assumptions and undermine the very purpose of using statistical methods. Post hoc selection or removal of individual data points based on their influence is a form of cherry picking.

You also asserted that removing a single data point should not destroy an apparent statistical relationship. I disagree and think your assertion reflects a misunderstanding of statistical principles. The term "power" is used in statistics to indicate the likelihood of detecting a significant effect if one exists (i.e., rejecting a false null hypothesis). The three key determinants of statistical power are

the significance criterion to be used, the size of the effect of interest, and the sample size (or the number of data to be collected and analyzed). Scientists regularly conduct power analyses to determine the sample sizes needed in their experiments or analyses to detect a meaningful effect with a given probability—the addition of each data point increases the likelihood of correctly detecting a significant effect if such an effect occurs. Conversely, the removal of each data point decreases the likelihood of correctly detecting a significant effect if such an effect occurs. Thus, removing data points is not a trivial matter.

Importantly, in this case, the 2003 data are relevant not only to evaluation of the Double Point event, but also to evaluation of the mariculture harvest. In 2003 the harvest was 118,643 pounds, a small fraction of the harvests of the early to mid 1990s or the mid to late 2000s. Thus, removal of the 2003 data might seriously reduce the likelihood of detecting a significant mariculture effect if one exists.

That being the case, the Commission considers it important to retain the 2003 data. We concur that other events in 2003 may have been important factors, but we also believe that the best approach is to model those events in the best possible way and then let the results speak for themselves. We therefore included the Double Point event in the analyses by treating it as a single sharp decline in seal numbers at Double Point, followed by either an exponential or logarithmic recovery from that decline after 2003. Such an approach ensures that the Double Point effect is evaluated in the analyses, but also retains the 2003 harvest data that may be critical to assessing a potential mariculture effect.

You objected to the use of this statistical model for Double Point, describing it as "doubling down." Your argument appears to be that the oyster harvest and the Double Point event are related and, therefore, including both variables is "doubling down" or essentially duplicating an effect. First, the Double Point counts were never included when either the exponential or logarithmic approach was analyzed, so the relevant analyses would not have duplicated the influence of Double Point. Second, if, by "doubling down" you meant that there was an influence of Double Point on the oyster harvest rate (or vice versa), I don't see the mechanism for such a relationship. Both Double Point and oyster harvesting may have influenced harbor seal hauling patterns and, with the available data, there is no basis for dismissing the possible influence of one based on the possible influence of the other. That is, I see no reasonable basis for assuming that these two variables are linked or for concluding that they should not be included in the same model.

DISTURBANCE OF SEALS

In your 6 January 2012 memorandum on the Marine Mammal Commission report, you took issue with the report's statement that "…from time to time, mariculture activities in the estuary do disturb harbor seals." Your analysis focused on four dates: 26 April 2007, 29 April 2009, 14 March 2008, and 15 May 2008. By date (or disturbance record), your main arguments and my responses to them are as follows.

26 April 2007

(1) CSG[1]—The records were collected by Dr. Sarah Allen who, among other things, did not record/enter them on time, on the correct forms, or into the Park Service database as protocols require.

The fact that Dr. Allen did not immediately enter her observations in the database is not surprising or unusual based on scientific practices in other marine mammal research programs. What is important is that, on the day after her observation, she reported it orally and prepared a trip report to document the incident. This alone seems ample justification for not rejecting the observation on the basis of the criticisms you raise.

Marine mammal scientists, including those who work for government agencies, often do not manage their data on a daily, weekly, or even monthly basis. Many marine mammal studies are long-term (i.e., multiple years) and scientists may manage and organize their data on a yearly basis if yearly reporting is involved or even a less frequent basis if there is no immediate requirement for data analysis. To conduct analyses or write papers, marine mammal scientists may draw from data collected over a period of years and they begin by pulling their data together from logs, field notebooks, and other sources. Often they do not have the resources or time to enter and/or transcribe data as it comes in and, in most cases, data entry is not urgent as long as a reliable record is kept. Again, in this case, Dr. Allen documented her observations and thereby provided a sufficient record. If you were to review other marine mammal research programs, I am confident that, in many cases, you would see the same pattern of data collection over a period of weeks or months, followed by further data organization and analysis over a period of months or years. That type of practice does not constitute a basis for rejecting her notes, especially given her contemporaneous trip report.

(2) CSG—The disturbance could not have been caused by Drakes Bay Oyster Company (DBOC) because they were not working in that area during that period.

In your discussion of this record, you stated repeatedly that disturbances between 30 March 2007 and 7 August 2007 could not have been related to DBOC. As an example, you wrote:

> "Kevin Lunny instructed his workers to stop going out to the west end of the lateral channel during pupping season – to avoid any harvest at UEN and OB from the west end of the lateral channel. DBOC harvest and boat records show that after March 30, the next harvest trip to UEN/OB was on August 7. Thus, the April 26,

[1] I will use this notation (short for Corey S. Goodman) to identify my interpretation of your arguments and to separate them from my responses.

2007 record could not have been a DBOC boat, just as April 29, 2007 record could not, and yet both claimed to have observed oyster workers throwing out bags."

Your statements mischaracterize oyster activity in 2007, as did statements in your earlier review of Becker et al. (2011). Your statements imply or explicitly state that DBOC could not have been involved because it did not harvest from those areas during the period in question. However, (1) Kevin Lunny has told me that they did visit that area (i.e., at least OB)—not for harvesting oysters, but for tending them, (2) the Park Service database includes records of boat sightings in that area during that period, (3) the Park Service also has photographs of boats in that area during that period, and (4) the disturbance records did not indicate that the activity involved harvesting. On 26 April 2007 the described activities included checking some bags and adding others. Your insistence that DBOC could not have been involved because no harvesting occurred and DBOC workers were not in the area from 30 March to 7 August is therefore incorrect on multiple grounds.

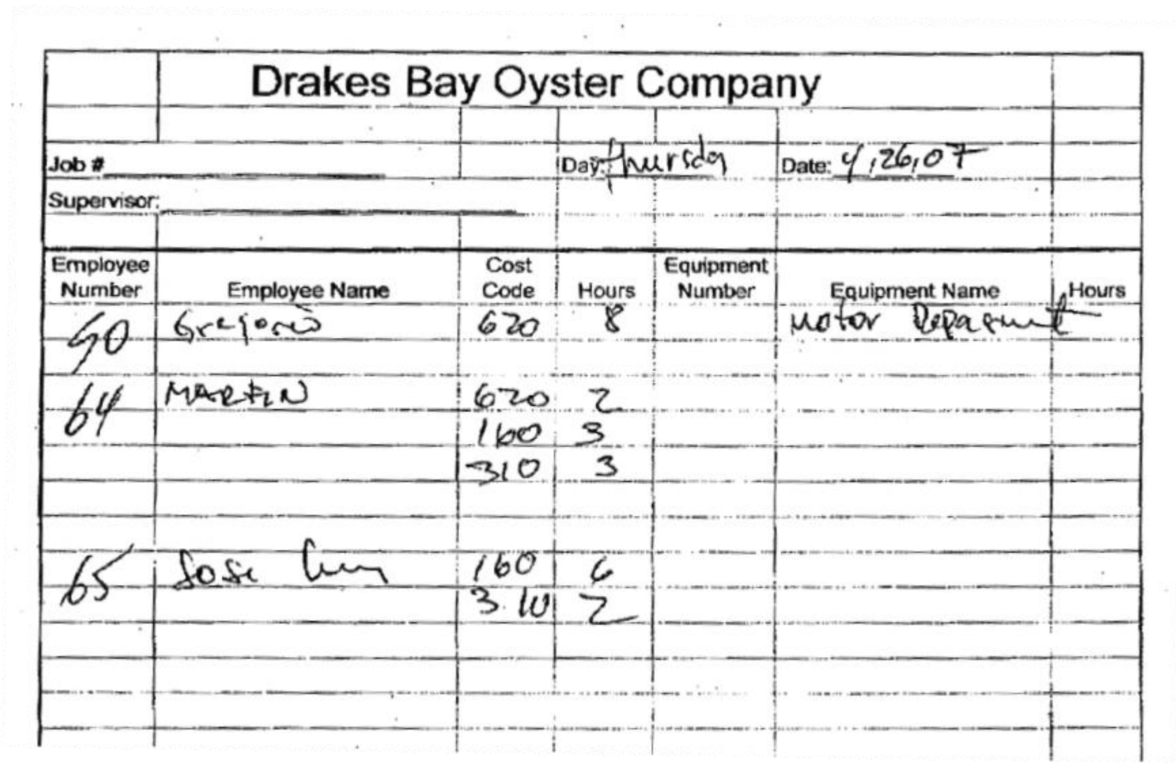
(3) CSG—The DBOC boat was broken on 26 April 2007 and the engine was not fixed until the next day.

Your point gets to the nature of evidence that the parties have provided and the question of what constitutes adequate proof. Both the Park Service and DBOC have "records" to support their view of what occurred on 26 April 2007. Your have discounted the Park Service report based, in part, on DBOC's time card and payroll records. The Park Service has attributed this reported disturbance to mariculture based on Dr. Allen's observations as recorded in her trip report.

The DBOC record (Figure 4) indicates that Gregorio (employee number 90) worked 8 hours on "General Facility Maintenance/Repairs" (cost code 620) on that day. The equipment name consisted of two words, the first being "Motor" and the second was not clear to me, but could have been "Repairment." The record does not describe what kind of motor was involved, what actions occurred (e.g., maintenance, parts replacement, testing), or where they occurred (e.g., in a dockside facility, on the water). By itself, the record falls short of providing conclusive evidence that this reported disturbance could not have been attributable to DBOC.

(4) CSG—Electronic time clock records show that the oyster workers had clocked out on 26 April 2007 by the time Dr. Allen says that the disturbance occurred at a location far away from the onshore facility.

You have argued that time clock and payroll records prove that the boat described in this disturbance report could not have been from DBOC because all workers had clocked out on that day by 4:37 pm. The time clock records do not support that claim (Figure 5). The records indicate that Jorge Mata Jr. worked from 5:34 am to 10:00 am, and then again from 5:11 pm to 6:54 pm. Julie clocked out at 5:02 pm, and Tommy Flores clocked out at 6:39 pm. As a general matter, time clock and payroll records provide a record of when a time card was punched in to start or end a work period, as well as the number of hours worked that day and week. However, they are not absolute proof of workers' activities when "on the clock." For example, Tommy Flores clocked in at 7:59 am and out at 6:39 pm for a total of 10 hours and 12 minutes (assuming a half-hour lunch break). The record showing cost codes account for 8 hours, but do not account for the other 2 hours plus. Such records also do not address whether workers might enter the estuary when they are "off the clock."



Drakes Bay Oyster Company

Job #

Day: Thursday

Date: 4/26/07

Supervisor:

Employee Number	Employee Name	Cost Code	Hours	Equipment Number	Equipment Name	Hours
60	Gregorio	620	8		Motor Repairment	
64	MARTIN	620	2			
		160	3			
		310	3			
65	Jose Luis	160	6			
		3.10	2			

Figure 4. DBOC record put forth as evidence that the company's boat could not have been involved in a reported disturbance on 26 April 2007. Cost code 620 indicates "General Facility Maintenance/Repairs."

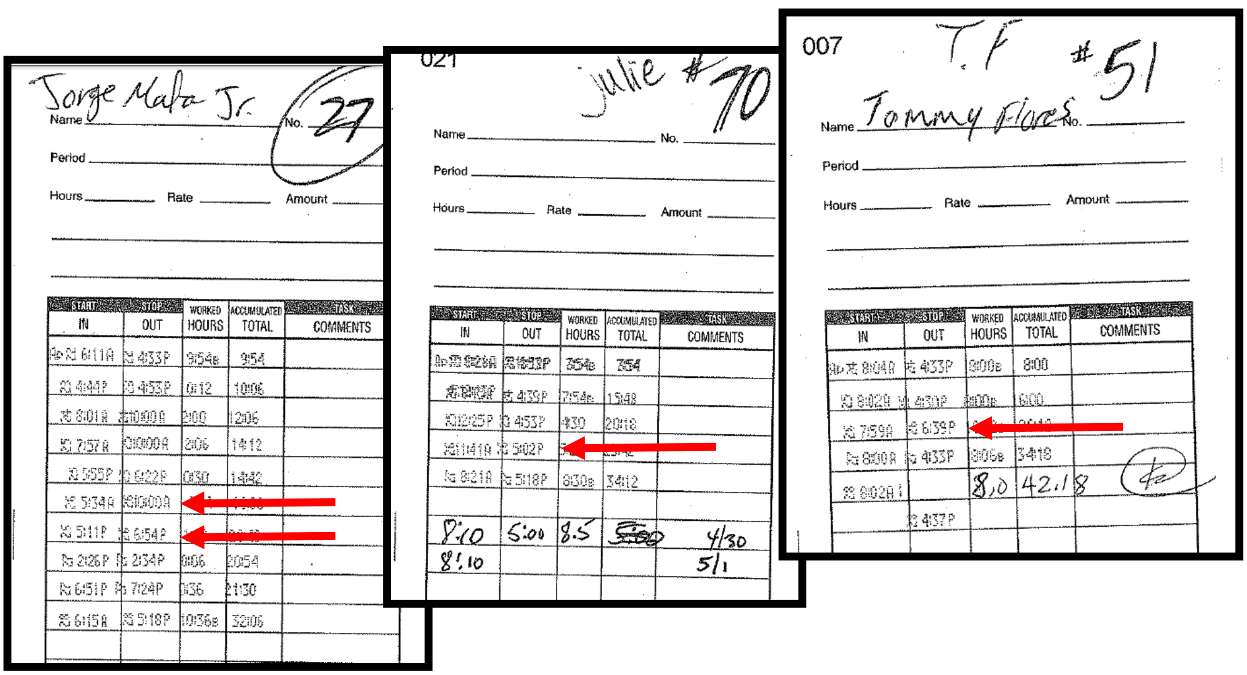


Figure 5. Time cards for Jorge Mata, Jr., Julie, and Tommy Flores. On 26 April they last punched out at 6:54 pm, 5:02 pm, and 6:39 pm, respectively. Day of month is located in "IN" column and rotated 90° counterclockwise.

(5)-(8) CSG—Eelgrass does not grow in the east end of the lateral channel and the boat could not have been fouled there, the boat would not have taken 20 minutes to go a distance that it could have covered in 2 minutes, DBOC boats do not have poles or oars and only lift their engine in very shall water where they can get out of the boat, and no one else would have added more bags.

Without having been there, or without a more complete record (e.g., a video of the events), it simply is not possible to know exactly what happened off OB on 26 April 2007. Your argument suggests that the record should be rejected completely if any of the details are uncertain or inconsistent with expectations. I do not agree that such an absolute standard should be applied. A record like this contains a number of elements and may be substantively correct when taken on the whole even if some of the details are not in line with our expectations. For example, it is not possible to go back and determine exactly where the boat was in the lateral channel. You wrote that the channel is 10-15 feet deep, but that statement is an oversimplification in several respects. Its depth varies with the tides and it may be 10 to 15 feet deep at its deepest point under certain tidal conditions, but under no conditions is it 10 to 15 feet deep across the entire channel. At its confluence with the main channel, the concave (southern) side of the lateral channel tapers off in depth from 0 feet deep at the waterline to its maximum depth. If the boat was not in the deepest part of the channel, then it might have become entangled in eelgrass or other aquatic plant matter. The photographs I have seen support the view that eelgrass is denser in the channel's western end and I do not doubt that is the case, but the maps also indicate that eelgrass or other plant matter also occur in some parts of the channel's eastern end.

I do not know why the boat took 20 minutes to go a distance it might have gone in 2 minutes, but the time might be explained in a number of ways. For example, the operators may have been slowed by the need to clean the propeller or they may have been having trouble with the engine. Alternatively, they simply may not have been in that much of a hurry. One might conclude that the observation that the operators used poles or oars was an error, but one also could reasonably consider that observation and DBOC's statements that they do not use oars or poles as supporting the hypothesis that the boat was not DBOC's. Regarding the question of who would add bags to the tidal flats on which haulout OB is located, the information is not sufficient to confirm whether or not it was DBOC. The disturbance record did not include the information needed to evaluate that possibility. Lacking a reliable indication that it was or was not DBOC, the Commission simply concluded that the activity observed—checking and adding bags—was related to mariculture.

In essence, this debate boils down to your analysis of why this data point is inconsistent with expectations versus Dr. Allen's first-hand observations and trip report. Later in your memorandum (regarding the reported disturbances of 29 April 2007) you indicate that it was time the observers were questioned under oath regarding their observations. In fact, Dr. Allen has been questioned under oath regarding the 26 April 2007 incident (11 July 2008 Inspector General report) and she reported it as documented.

Your argument implies that either DBOC is wrong or the Park Service is wrong, and you seem emphatic that it is the latter. However, it does not appear that you applied the same level of scrutiny to the DBOC records. In addition, in its report the Commission described a third alternative. That is, a boat did cause this disturbance (as the Park Service asserted), but the boat was not related to DBOC (as DBOC asserted). Both the Park Service and DBOC have argued that other boats are uncommon in the estuary, but nothing in the data I have seen or the arguments I have

heard rules out the possibility that, on occasion, there are other boats in the estuary. In fact, observations by Park Service staff and volunteers, coupled with assertions by DBOC, provide supporting evidence that other boats do enter the estuary on occasion. A 25 March 2010 memo to me from DBOC states: "We also point out, as discussed at the MMC meetings, that we have observed unidentified motorized boats in the Estero. Doesn't happen very frequently, but it has, from time to time, occurred." In your writing you also have referred to other boats in the estuary.

29 April 2007

(1) GSC—Kevin Lunny had instructed his workers to avoid any harvest at UEN and OB from 30 March to 7 August; therefore, DBOC workers could not have been involved.

For the reasons described above, this argument is an insufficient basis for discounting the Park Service's observations, and by itself does not rule out the presence of an oyster boat or oyster workers.

(2) CSG—I (TJR) "accepted the DBOC payroll and harvest records that showed that this disturbance could not be due to DBOC…."

Actually, the Commission's report did not accept the DBOC records as proof that DBOC could not have been involved. The report simply stated that the "Commission considers the available information sufficient to document that harbor seals were disturbed by activities related to mariculture, but not to ascribe the disturbance to Drakes Bay Oyster Company." That is, the information was not sufficient to determine whether or not the disturbance might be attributed to DBOC.

(3) GSG—I (TJR) accepted ambiguity by refusing to entertain the possibility that the record was not authentic.

For the most part, this seems to be the approach that you have taken on all of these records. In essence, your argument is that all of the observers who documented these records are mistaken or are deliberately providing inaccurate information (i.e., they are lying). Simply put, I do not consider your argument plausible. Instead, I chose to look for alternative hypotheses that might explain the inconsistencies between DBOC and the Park Service accounts without resorting to such accusations. As noted above, I came up with a hypothesis that might explain some of these inconsistencies—that, on occasion, boats other than those of DBOC enter the estuary. And as also just noted, in your writing on this topic, you have acknowledged the presence of other boats in the estuary. I also would add that this record was collected by two observers and, in my view, that lends strength to their record of disturbance—two people are less likely to be mistaken than one.

14 March 2008

(1) CSG—"Ragen's narrative made his conclusion a bit ambiguous."

I do not see anything ambiguous about the Commission's conclusion. The Commission's report recounts the information pertaining to the record, acknowledges an inconsistency in the time records, but then points out that the photographs pertaining to this record—

> "do not provide a basis for concluding that the activities were or were not related to Drakes Bay Oyster Company. The photographs also do not show any seals, including those that were recorded as having been disturbed by the incident. Therefore, it is not possible to confirm or refute the reported disturbance based on the photographs."

If the ambiguity you refer to pertains to the inconsistency in the time records, I do not consider that a serious problem. Having worked in the field and collected thousands of data records, I can tell you that all observers make such errors. For example, in the Hawaiian monk seal program, we followed a standard practice of scouring our database using computerized programs to identify such inconsistencies so that they could be resolved. A ten-minute difference in the records is, in my view, a small inconsistency and might reasonably be attributed to a number of factors. For example, the observer might have observed the boat for the first time some minutes before it came into view of the camera and marked her data sheet with the time of first sighting. If that were the case, one would expect her record to precede the time stamped on the photograph. Would that indicate a degree of imprecision?—yes. But would it constitute a serious error?—no.

(2) CSG—"The NPS scientists refuted this disturbance record in one of their databases (appendix E of the MMC report), and told DOI Field Solicitor Gavin Frost (March 22, 2011 Frost Report) that no disturbance took place. The NPS denial of the disturbance to Gavin Frost raises serious questions about the veracity of this observer (the same person responsible for the controversial May 8, 2007 record that Ragen concluded was inconclusive and that we have disputed)." (Emphasis added.)

In your discussion of the National Park Service photographs you indicate that Park Service staff members told Gavin Frost that the photographs do not provide any "bona fide" evidence of disturbance. Importantly, you used those statements to assert that the Park Service's own interpretation refutes the possibility of several reported disturbances. Your characterization of the photographs and statements by those staff members is, in my view, incomplete, inaccurate, and misleading.

Based on my discussions with Park Service staff[2], they simply were acknowledging that the photographs can never confirm—with absolute certainty—all the details surrounding a disturbance. The photographs were taken once per minute and each provides only an instantaneous snapshot of the estuary. For that reason, one could assert from the outset that it is impossible to be absolutely certain about any particular interpretation of a single photograph or series of photographs. In my view, your analysis repeatedly and mistakenly attributes this black-and-white view to Park Service staff without putting their statements in context.

By their very nature, photographs can almost never provide a complete basis for characterizing a disturbance. That does not mean that they are of no value in examining the circumstances surrounding a particular disturbance record. It simply means that care is required to

[2] You also criticized me for not relying on your discussions with Gavin Frost regarding his discussions with Park Service staff. I believe the truth is much better served by my going directly to the staff themselves and asking them how they describe these photographic records. I did so and, in my view, their answers comport with a common sense interpretation that the photographs do not provide absolute or definitive evidence, but that they can provide useful or supportive information in some cases or under certain circumstances.

interpret the photographs in a reasonable manner and include some measure of confidence in that interpretation. To varying degrees, the photographs may give a sense of the weather and lighting conditions, the presence of a boat, the presence of people on or near the oyster beds, and/or the presence and behavior of harbor seals. Photographs are available for the 8 May 2007, 14 March 2008, and 15 May 2008 disturbance records. Consistent with the Commission's report, I do not believe the 8 May 2007 photographs are sufficient to conclude, with complete confidence, that the DBOC boat did or did not cause a disturbance. As explained below, I found the 14 March 2008 photographs useful for documenting the presence of a boat and oyster-related activity on UEN. As noted in the Commission's report, the 14 March 2008 photographs were not sufficient to verify or refute the reported disturbances because the seals reportedly disturbed were outside the camera's range of view. As discussed in detail below, I disagree completely with your interpretation of seal behavior in the 15 May 2007 photographs.

Your mischaracterization of Park Service views regarding this report is more troubling. You wrote that NPS scientists refuted this disturbance and denied to Gavin Frost that it occurred. Your characterization is wrong for two reasons. First, the database collected by the Park Service staff person maintaining the cameras does not include documentation of this disturbance, but that does not mean that it did not occur—the lack of a record is not a refutation of the disturbance. In such cases, observers cannot monitor their entire search area at the same time they are performing other duties. She may have been scanning another part of the estuary, working with or making adjustments to her gear, or inattentive while she addressed personal needs. The idea that she would see every disturbance in the estuary is entirely inconsistent with all survey experience. It is common knowledge among scientists who conduct these kinds of surveys that the observers only see a portion of their search targets. In fact, the standard approach for assessing bias in survey results is to use two independent observers (or two independent teams of observers) to survey the same area at the same time and then compare results to see how many targets one team identified that the other did not. The fact that the scientist maintaining the cameras did not see the disturbance reported by the other observer is not surprising and is certainly not proof that the disturbance did not occur.

Second, as just noted, you state that NPS scientists refuted this disturbance record when, in fact, they have not done so. In essence, you are improperly attributing your assessment to them. You used the statement "the NPS denial of the disturbance to Gavin Frost" and, again, I believe you have mischaracterized what Park Service scientists told Gavin Frost. When I asked Park Service scientists if they denied that disturbance occurred, they stated that they did not. They simply clarified that the evidence for this disturbance comes from the observations and records of the volunteer who reported the incident.

15 May 2008

You cited 10 reasons why this disturbance record should be dismissed. I'll address each of those reasons.

(1) CSG, points 1 through 4—You wrote that this disturbance record was not included in lists provided by the Park Service prior to the 7 June 2010 meeting and it was not discussed at that meeting. You also wrote that this record was not included in our draft report, and that I did not discuss it with you and/or Kevin Lunny before including it in the Commission's report.

Your first two points are correct—this reported disturbance was not included in the lists provided by the Park Service and was not discussed at the 7 June 2010 meeting. The 7 June 2010 meeting was intended to focus on the data points in the Park Service volunteer/staff database that were used in the Becker et al. (2009) paper and in the 2010 draft paper that was later published as Becker et al. (2011). The 15 May 2008 disturbance record was not used in those papers. I do not know when Park Service scientists became aware of the data point. Certainly, the scientist that collected the record would have been aware of it, but she also would have been aware of a number of disturbance records that were not included in those discussions as they were not collected by the volunteers or staff from the same observation site and, instead, were collected from a different site during activities primarily aimed at maintaining the cameras.

Your latter two points are not correct. In your email to me of 1 January 2011 you wrote about this disturbance record, describing it as follows.

> "It [the disturbance record] is the set of photos I described to you many months ago of a few pups swimming on the surface of the water with their buddies who are about to haul out. They swim on the surface for 1-2 minutes. Their moms don't raise their heads. Nobody on shore is concerned. The DBOC boat had left 4-5 minutes prior and was over 1/2 mile away."

I discounted this record at first because much of the discussion to that point had focused on the disturbance records used in the two Becker et al. papers and the analyses in them. In addition, as evident in your quote, you were quite dismissive of it. I began to pay more attention when I learned that the scientist who maintained the cameras took videos of the estuary on her trips to the site and that the Park Service had made those videos available on its web site. I watched all 43 of the videos and concluded that only two of them pertained to possible interactions between oyster activities and the seals. One of them involved the 15 May 2008 record. The video shows the animals after their flush and flush to water, and then pans to the boat moving up the west channel. I was still somewhat skeptical because the video did not show the actual disturbance. It wasn't until later that I realized that one of the cameras might have captured the disturbance. I retrieved the images, reviewed them, and discussed them with the scientist who took the video and witnessed and documented the whole event. It was on the basis of all that information combined that I concluded that this was "convincing evidence of seal disturbance that likely was caused by the sound of the boat as it left OB and moved up the west channel (a distance of hundreds of meters)."

Points 5 and 6—As already discussed in this response, I consider your characterization of discussions between Park Service scientists and Gavin Frost to be inaccurate. I have no doubt that they recognized the limitations of the photographs but, as you know, they have not dismissed this record as unfounded.

Point 7—You wrote that you offered on multiple occasions to examine the May 15, 2008 photos with me, but that I declined, including in writing on January 1, 2011. The following is the text from an email that refutes your statement. The email was sent from Dave Weiman to me on 19 August 2011. His email includes text from you to him regarding the 15 May 2008 incident as discussed on 19 September 2010. The text from you to Mr. Weiman states the following.

“On Friday September 10, 2010, at around 11 am PT, Kevin and I had a telephone call with Tim to go over the logs and photos. It was a conference call with you and Melissa joining in as well.

We noted that the photos and logs showed six dramatic examples of 50-100% of the seals getting flushed into the water by kayakers who had gotten within around 50-75 yards of the harbor seals at OB.

We also discussed the fact that the logs of 2008 and 2009 included one incident of a "possible" flush of seals into the water by an oyster boat on May 15, 2008. I should note that Field Solicitor Gavin Frost told me on December 15, 2010, that he had interviewed both Sarah Allen and Sarah Codde a few days earlier, and that both of them told him that there were no bona fide examples in the 281,000 photos or the Sarah Codde records and photos of seals getting flushed into the water by the oyster operation. He said there was no reason to examine the photos because Allen and Codde had told him that they had no evidence for DBOC disturbances in the photos.

In the log, under May 15, 2008, is described as "2:07," "Boat leaves and some seals flush into water. " In the June 6, 2008 cover letter to Sarah Allen (presumably from Sarah Codde), the volunteer writes:
"Here are the images from the stationary cameras that might be of interest ...
2008 - 5 - 15, 2:07 Boat leaves OB and some seals flush into the water"

In our phone call on 9/10/10, I discussed with Tim what Kevin and I observed in the 5/15/08 photos.
1:55 pm: the oyster boat appears out of the west channel as always
1:57 pm: the oyster boat parks at UEN along the west end of the lateral channel
1:58 - 2:02 pm: oyster workers walk back and forth twice to bed 17 oyster bags
2:03 pm: oyster boat pulls away from UEN
2:04 pm: oyster boat in west channel, out of site by 2:05 pm
2:07 pm: several seal pups go into water, swim around at surface, joining several other seal pups in the water (hauling out?); mother seals do not move; birds are moving all around the seals
2:08 pm: all seal pups are back in beach having swum around at surface of water for about one minute; birds continue to move around the seals
2:18 pm: all seals still on beach

I explained all of this to Tim and asked him if a few seal pups going into the water, swimming at the surface (not diving) with a few other pups, and all hauling out one minute later (with their mother's sunning on the beach without moving) didn't sound like "play" rather than "alarm" and Tim agreed. All of this happened four minutes after the oyster boat pulled away from UEN (at a distance of 750 yards) and travelled further away from the seals. They only stayed in the water for about one minute. I explained to Tim that Kevin and I had found other examples of pups swimming the water and playing while their mother's sunned on the beach at other times, but that this one was picked out by the volunteer because it happened a few minutes after an

oyster boat had left UEN. Tim agreed that this type of behavior did not sound like a flush into the water as an alarm to a threat, but rather sounded like play by seal pups.

The photos in question are IMG_1585.JPG to IMG_1614.JPG from May 15, 2008.

I hope that helps.

Best,

Corey"

This quote from you illustrates two things. First, it counters your statement that we never discussed this incident. Second, it illustrates how you misrepresented my views by writing that I agreed with your interpretation of the 15 May 2008 event. Why would I do that without looking at the photographs myself? In fact, you described to me pups swimming in the water and playing while their mother's sunned on the beach and I agreed that, if that was all there was to it, then that would not constitute a disturbance. But I did not agree at that time (or any other time) that your interpretation was the correct one. In fact, I disagree completely with your interpretation of the seal behavior documented in these photographs.

Point 8—Your eighth point was that I misinterpreted the photographs. That may be, but if I did, the misinterpretation you refer to was trivial. In my minute by minute description I wrote the following:

2:03	the boat just starting to pull back from where it was parked
2:04	the boat moving west in the lateral channel creating a visible wake, a seal on the far left raising its head
2:05	the boat appears to have crossed the lateral channel and parked at OB
2:06	the boat has backed away from OB
2:07	the boat has left the area photographed and is moving up the west channel, seals in the water and flushing on land.

Your argument that I misinterpreted the photographs appears to be based on my statement that at 2:05 the "boat appears to have crossed the lateral channel and parked at OB" and at 2:06 it "has backed away from OB." I would agree that the boat may not have parked at OB, but it certainly moved in that direction. However, I do not think the question of whether it did or did not park at OB has any significant bearing on the issue at hand, which is the noise made by the boat as it left the lateral channel and moved up the east channel.

Point 9—You then argue that the seals could not have seen or heard the boat from their relative positions. I disagree. The following picture (Figure 6) shows the relative positions of the seals and the boat at 2:00 pm on 15 May 2008. At least a portion of the seals have a direct line of sight to the boat from their position on the beach. That does not mean that the sight of the boat was the final stimulus that startled them, but it is feasible that some of the seals were aware of the boat and, therefore, at a heightened sense of alert; that is, more likely to respond to the boat's noise.

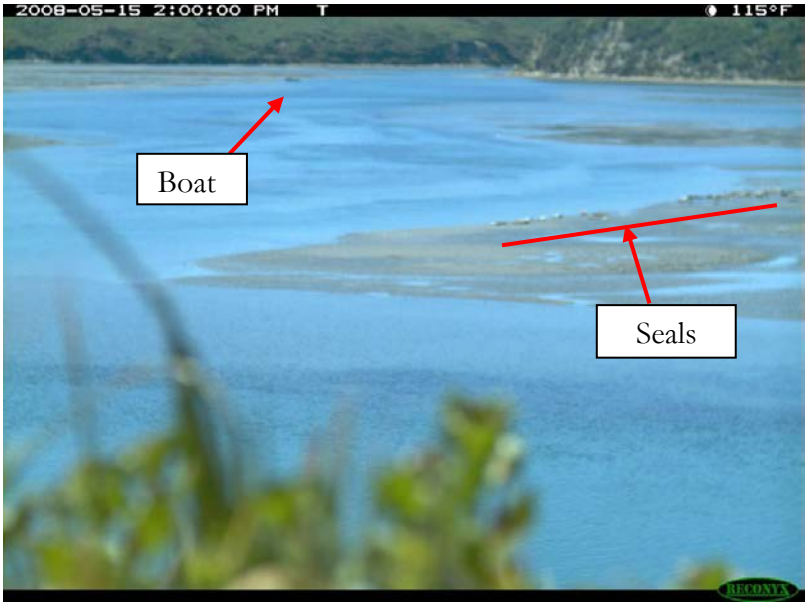


Figure 6. Seals and a DBOC boat on the lateral channel on 15 May 2008, just prior to a flushing of the seals.

With regard to your analysis of the boat's noise, I consider it incomplete, oversimplified, and unreliable. First, anyone who works around boats knows that they generate a wide range of noise levels. Your suggestion that the boat generates 59 dBA at 50 feet suggests that you have somehow condensed that wide range of sound levels into a single level, without describing how you determined that level and the basis for considering it representative of the noise that may have been generated by the boat as it started up the eastern side of the estuary on 15 May 2008.

Second, you indicated that the ambient noise level in the estuary is 41 dBA, but you called that level the average level without providing any measure of the variation about that level, or describing what the level was on 15 May 2008.

Third, you failed to provide information on the frequency spectrum for ambient noise as well as the frequencies of noise generated by the boat. You indicate that the boat noise is masked by ambient noise, but whether or not that is the case would depend, in part, on the overlap of the broad spectrum of ambient and boat-generated frequencies.

Fourth, you used a simple propagation (i.e., transmission) model that may represent transmission loss under ideal conditions, but you provide no basis for assuming those were the conditions in the estuary at that time. Presumably, you are aware of the shortcomings of your equation because you have lived on the water. I would be surprised if anyone who has spent time around the water is not aware that, under certain conditions, sound can travel remarkably well over the water. In this case, the sound also may travel well because of the shape of the estuary and the surrounding hills. In my view, your basic equation is an oversimplified, unreliable model for actual sound transmission in the estuary.

Point 10—Finally, your argument seems to suggest that the boat could not have disturbed the seals because some large white birds did so about 20 minutes after the boat left the area. About all I can glean from this argument is that you are suggesting that it might have been something else that startled them. Of course, one could rule out disturbance by any cause if all you had to do was to

find some other subsequent factor regardless of the plausibility that it would cause the type of disturbance observed. In my view, that hypothesis falls in the realm of unreasonable or highly unlikely speculation.

A final point—Your description of the seals on OB during this disturbance event is, in my view, woefully inadequate. You characterized those seals and their activity as—

> "…a few pups swimming on the surface of the water with their buddies who are about to haul out. They swim on the surface for 1-2 minutes. Their moms don't raise their heads. Nobody on shore is concerned."

From 2:00 to 2:03 I see little evidence of movement that might be from changes in lighting conditions or from the presence and movements of birds. At 2:04, when the boat is leaving the oyster bed on the south side of the lateral channel, I see a head alert by the seal on the far left. It may well be that the seal both sees and hears the boat. From 2:06 to 2:07 I see a marked change in the seals orientation and position on the beach and evidence of perhaps a dozen or more seals in the water. Obviously, seals in the water can only be detected in the photographs when they are at or near the surface (i.e., close enough to distort the surface) and additional seals may have dived well below the surface. After that, I see the seals start to calm and return to a resting position on the beach. Compare the photograph at 2:00 to the photograph at 2:14 and you will see a clear change in the distribution of the seals on the beach.

SUMMARY

My view of this case has not changed—I continue to believe the Commission's report summarized the situation accurately. The Park Service has provided "some support for the conclusion that harbor seal habitat-use patterns and mariculture activities in Drakes Estero are at least correlated." The evidence is not overwhelming, but also cannot be dismissed.

Unfortunately, your analysis of the data indicates to me that you did not take the time to understand fully the statistical methods you used. As a result, I believe that you misapplied those analyses, generating unreliable results.

I also consider the existing data sufficient to conclude that, from time to time, mariculture activities have resulted in disturbance of the seals in the estuary. In my view, your arguments against that conclusion misrepresent mariculture activity in the OB/UEN area from March to August 2007, misrepresent the information on time cards, and mischaracterize statements by Park Service staff as to the utility of their data on disturbance events. I also believe your description of the behavior of seals on the OB haulout site on 15 May 2008 is simply inaccurate.

EXHIBIT

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UNITED STATES DEPARTMENT OF COMMERCE
The Inspector General
Washington, D.C. 20230

December 19, 2012

Marine Mammal Commission
4340 East-West Highway, Suite 700
Bethesda, Maryland 20814

Dear Commissioners Boness, Gulland, and Tillman,

The Office of Inspector General (OIG) is in receipt of multiple communications from the Marine Mammal Commission (MMC) regarding a complaint filed with the OIG against the MMC on November 7, 2012. We applaud your efforts to seek independent investigatory services for this matter, but, regrettably, we are not in a position to assist in that endeavor.

The MMC has referenced, and provided to the OIG, a 1990 document captioned "Memorandum of Understanding Between the Marine Mammal Commission and the Office of the Inspector General, Department of Commerce." Executed more than 22 years – and two prior IGs – ago, this document is not a binding agreement[1] under which the OIG, without more, can initiate an investigation. Further, the constrained budget environment, coupled with the paucity of prior work requested under the 1990 agreement, yields a situation in which resources are not currently available for the requested investigatory services.

Again, we fully support your efforts at oversight, and regret any inadvertent misrepresentation of our relationship that might have been communicated to third parties. Depending on a number of factors, we may be in a position in the future to discuss representation in matters such as this. For present purposes, we encourage you to contact the Council of the Inspectors General on Integrity and Efficiency, at cigie.information@cigie.gov or (202) 292-2600, to pursue independent oversight arrangements.

Sincerely,

D. Smith, for
Todd J. Zinser

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[1] Absent specific payment or funding terms, and with no termination date, the MOU is not a binding agreement according to which federal funds can properly be appropriated. *See* 31 U.S.C. § 1501(a)(1) (requiring specificity in contracts in order to properly record obligations); *see also* GAO, *Principles of Federal Appropriations Law*, p. 7-10 (3d ed. Feb. 2006). Rather, the MOU constitutes a letter of intent, which, in this case, is "nothing more than an 'agreement to agree.'" GAO, *Principles of Federal Appropriations Law*, p. 7-13 (3d ed. Feb. 2006); *see also* Comp. Gen. B-201035, (Feb. 15, 1984). The character of a letter of intent turns on the intent of the parties, as evidenced by the terms of the agreement itself. In the instant case, the uncertainty surrounding the terms in the MOU undermines any potential manifestation of intent, resulting in nothing more than an agreement to reach a future agreement. In particular, vagueness with regard to critical terms such as authority to enter the agreement, funding and payment mechanism (including availability of funds and not-to-exceed amount), exclusivity (the MOU does not prohibit the MMC from obtaining investigative services from other sources), and timing of the supposed obligations of each party, not only present practical difficulties regarding compliance, but also evidence the non-binding nature of the MOU. *Cf.* RESTATEMENT (SECOND) OF CONTRACTS, § 33.

UNITED STATES DEPARTMENT OF COMMERCE
The Inspector General
Washington, D.C. 20230

December 19, 2012

Dr. Corey S. Goodman
P.O. Box 803
Marshall, CA 94940

Dear Dr. Goodman,

The Department of Commerce Office of Inspector General (OIG) is in receipt of your November 7, 2012 letter, and November 9, 2012 follow-up email, requesting an OIG investigation of the Marine Mammal Commission (MMC). As described in the enclosed letter to the MMC, the OIG is not in a position to investigate this matter. However, we support efforts at independent oversight to ensure proper stewardship of taxpayer money, and encourage you to seek alternative avenues for resolution.

Sincerely,

D Smith, for

Todd J. Zinser

Enclosure