



## Department of Toxic Substances Control

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Arnold Schwarzenegger  
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Linda S. Adams  
Secretary for  
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July 13, 2007

Department of the Navy  
Base Realignment and Closure  
Program Management Office West  
1455 Frazee Road, Suite 900  
San Diego, CA 92108-4310  
Attention: Keith Forman

### **DRAFT PARCEL E2 REMEDIAL INVESTIGATION/FEASIBILITY STUDY, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CALIFORNIA, DATED MARCH 2007**

Dear Mr. Forman,

Thank you for the opportunity to review the draft Parcel E2 Remedial Investigation and Feasibility Study. In this RI/FS the Navy reports their understanding of soil and groundwater contamination at Parcel E2 and evaluates remedial alternatives. Radiological contamination is not within the scope of this RI/FS; however, the Navy will produce a Radiological Addendum to the Parcel E2 RI/FS in the future.

DTSC's review involved toxicologist, geologist, attorneys, scientists and engineers. Please respond to all DTSC comments including comments provided below and comments attached to this letter. This letter also transmits comments of the California Department of Fish and Game.

DTSC appreciates the extensive work and resources of the Navy and its contractors producing the Parcel E2 RI/FS. DTSC looks forward to working with the Navy and the other regulatory agencies as we finalize this report and advance the cleanup of Hunters Point Shipyard.

#### **General Comments:**

1. **Alternatives:** Three alternatives are presented in the draft RI/FS: no action, complete removal, and complete cover. DTSC requests that the Navy consider hybrid alternatives that include removal of contaminated soil and other material at hot spots and along the shoreline. These removal alternatives could be associated with off-site disposal and/or the consolidation of low-level contaminated soil under a constructed cap. Also, please evaluate whether removal areas would require backfilling or placement of a constructed cap; or whether these areas could revert to wetlands, tidal or inundated areas.

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2. **Alternatives:** In 2006, the Navy removed PCB and radiologically contaminated soil through two removal actions. The BRAC Cleanup Team (BCT) has discussed a need to remove further contamination in order to protect public health and the environment. Other hot spots, not included in these removal actions, remain in the panhandle and the east adjacent area. Please evaluate whether these areas should also be subject to removal.
3. **Groundwater Containment:** The Feasibility Study is incomplete in that groundwater remedy alternatives are not considered. The Navy indicates that this evaluation will be included in the draft final Feasibility Study and a meeting is schedule with the BCT to discuss this issue. DTSC supports the evaluation of groundwater remedial alternatives. The BCT should agree to review processes for groundwater remedial alternatives and other major new sections in the RI/FS that allow discussion and review and avoid having material being first presented to the BCT in the draft final or final document.
4. **Wetlands Integration:** The Navy anticipates destroying wetlands during the implementation of the cover and removal alternatives. The Navy is obligated to replace these wetlands. DTSC requests that the Navy consider integrating wetlands restoration into the remedial alternatives: for example, integrating wetlands as part of shoreline protection or groundwater containment and remedial systems. Please evaluate the use of wetlands for managing contained groundwater. Further, please consider the ecological value of different wetlands designs, for example a long linear shoreline wetland versus a compact wetland and the transitions between bay, tidal and upland habitat.
5. **Parcel E2 Boundaries and the landfill cover alternative:** Parcel E2 abuts private property, state park property, UCSF property and Parcel E. Please consider the impact of cover designs on adjacent property, especially on Parcel E and on Candlestick State Park. The landfill cover extends to the Parcel E/E2 boundary and meanders with that boundary line. DTSC suggests that the Navy propose a practical and technically supported termination of the landfill cover and if necessary define a new Parcel E/E2 boundary. Also, at the adjacent Candlestick State Park (southern tip of the panhandle) the state is planning wetland and habitat restoration and park development. Through close coordination with the California State Parks, a seamless transition from the park to open space and habitat at Hunters Point can be created.
6. **Municipal Landfill:** The Navy states that the waste found in the Parcel E2 landfill is similar to waste typical of municipal landfills. DTSC agrees that Parcel E2 landfill contains municipal waste; however, waste not typical of municipal landfills is also present; including but not limited to PCBs, radiological devices, drums containing toxic wastes, and waste oil. The extent of landfill waste is also not fully defined. The

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PCB Hot Spot and Metal Slag Area removal actions are mostly outside the defined landfill area; however, "landfill" type waste was uncovered during those actions. The IR-02 removal action in adjacent Parcel E also uncovered "landfill" type waste. Because of these issues with extent and definition of the landfill, DTSC requests that the alternatives be considered for their ability to remediate all types of waste and meet the substantive requirements of California Code of Regulations, Section 66264.310(a) and (b).

7. Presumptive remedy: The Navy identifies containment as the presumptive remedy for landfills similar to the Hunters Point Parcel E2 landfill. Because of the types of waste found in Parcel E2 and its proximity to sensitive areas, a presumptive remedy is not appropriate for Parcel E2 landfill. Further, the Parcel E2 RI/FS evaluates alternatives other than containment and therefore the Navy is not within a presumptive remedy selection process. Please clearly state in the document that the discussion of presumptive remedy in the E2 Feasibility Study is for information purposes and although the containment alternative is considered, the Navy is not invoking the presumptive remedy for Parcel E2 landfill.

**Comments provided by DTSC legal office:**

1. Section 10.3.7 Action Specific ARARs for Institutional Controls:

First bullet – Please remove "(a)(3)" and just cite to section 1471.

Third bullet – Please replace the sentence following the code citation with the following sentence: "This section provides a process for obtaining variances from land use restrictions."

Fourth bullet - Replace the sentence following the code citation with the following sentence: "This section provides a process for removing land use restrictions."

Fifth bullet - Replace the sentence following the code citations with the following sentence: "These sections provide DTSC the authority to enter into voluntary agreements with land owners to restrict use of property."

Sixth bullet – Please delete "(e)(1)" and site the regulation in its entirety. Replace the sentence following the citation with, "This regulation provides for the placement of a land use covenant on property where contamination is left in place at levels that are unsuitable for unrestricted use. The covenant shall be executed by the land owner and recorded in the county where the property is located."

If you have any questions regarding these comments please call me at 510-540-3776.

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Sincerely,



Thomas P. Lanphar  
Senior Hazardous Substance Scientist  
Office Military Facilities  
Department of Toxic Substances Control

**Attachments**

cc: Mr. Mark Ripperda  
U.S. Environmental Protection Agency  
Region IX  
75 Hawthorne Street  
San Francisco, California 94105-3901

Mr. James Ponton  
Regional Water Quality Control Board  
San Francisco Bay Region  
1515 Clay Street, Suite 1400  
Oakland, California 94612

Mr. Gino Yetka  
California Integrated Waste Management Board  
1001 I Street  
Sacramento, California 95812

Mr. Frank Gray  
California Department of Fish and Game  
Office of Spill Prevention and Response  
1700 K Street, Suite 250  
Sacramento, California 95811

Mr. Steve Bockman  
California State Parks and Recreation  
Diablo Vista District  
845 Casa Grande  
Petaluma, California 94954-5804

cc: VIA EMAIL

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Ms. Amy Brownell  
City of San Francisco

Ms. Karla Brasaemle  
Tech Law, Inc.

Mr. Steve Hall  
Tetra Tech EMI

Dr. Ray Tompkins  
Hunters Point Restoration Advisory Board

Ms. Barbara Bushnell  
Hunters Point Restoration Advisory Board

Ms. Melanie Kito  
Department of the Navy



Linda S. Adams  
Secretary for  
Environmental Protection



## Department of Toxic Substances Control

Maureen F. Gorsen  
700 Heinz Avenue, Suite 100  
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Arnold Schwarzenegger  
Governor

### MEMORANDUM

**TO:** Tom Lanphar  
Project Manager  
Office of Military Facilities

**FROM:** Michelle Dalrymple, PG  
Engineering Geologist  
Geologic Services Unit

**REVIEWED  
BY:** Michael O. Finch, PG  
Senior Engineering Geologist  
Geologic Services Unit

**DATE:** June 5, 2007

**SUBJECT: REVIEW OF THE DRAFT PARCEL E-2 REMEDIAL  
INVESTIGATION/FEASIBILITY STUDY, HUNTERS POINT SHIPYARD,  
SAN FRANCISCO, CALIFORNIA, DATED MARCH 2007**

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#### ACTIVITY REQUESTED

Per your request, the Northern California Geological Services Unit (GSU) has reviewed the *Draft Parcel E-2 Remedial Investigation/Feasibility Study, Hunters Point Shipyard, San Francisco, California*, dated March 2007. The Remedial Investigation (RI)/Feasibility Study (FS) Report was prepared by Engineering/Remediation Resources Group and Shaw Environmental, Inc. for the U.S. Department of the Navy, Naval Facilities Engineering Command, Southwest Division (Navy). GSU reviewed the document with respect to geologic and hydrogeologic interpretations and technical adequacy. The review consisted of reading the document, and reviewing the DTSC project file for background information.

#### PROJECT SUMMARY

Hunters Point Shipyard (HPS) is divided into six parcels, Parcel B through F and E-2. Parcel E-2 comprises 47.4 acres of land in the eastern portion of HPS. Parcel E-2 was

formerly included in Parcel E but was separated from Parcel E in September 2004 to facilitate closure of the Landfill and its adjacent areas. The Landfill comprises approximately 22 acres in Parcel E-2. The remaining areas are referred to as the Panhandle Area, the East Adjacent Area, and the Shoreline Area.

The RI/FS for Parcel E-2 is part of an ongoing process performed by the Navy to address contamination in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). The RI/FS process is a mechanism for evaluating the nature and extent of contamination, characterizing risks to human health and the environment, and evaluating remedial alternatives. The purpose of the RI/FS for Parcel E-2 is as follows:

- Characterize the nature and extent of contamination,
- Develop a conceptual site model,
- Conduct a quantitative risk assessment for human health and the environment to identify areas that require remediation,
- Develop remedial action objectives (RAOs) that specify the contaminants and media of interest, exposure pathways, and remediation goals,
- Develop general response actions (GRAs) for each medium that will satisfy the RAOs,
- Identify and screen remedial technologies and process options for each GRA, and
- Develop and evaluate remedial alternatives in accordance with the NCP.

## **GENERAL COMMENTS AND RECOMMENDATIONS**

- A. The Draft RI/FS Report states that the goal of the document is to "strike a balance between a presumptive remedy RI/FS and a standard RI/FS." Therefore, it is unclear why the FS "focuses on containment technologies and includes excavation and disposal technologies as a point of comparison." Only approximately 22 of the 47.4 acres that comprise Parcel E-2 are technically a landfill by definition. The remaining areas are not technically landfills, although landfilling activities have occurred in these areas. The range of alternatives developed in the Draft RI/FS Report (Section 12) is not sufficient for the site conditions. The FS should attempt to develop and evaluate a suitable range of remedial alternatives to address the contaminated media in each area. The FS should not attempt to "strike a balance" as indicated, but should present a standard RI/FS with the development and evaluation of a containment alternative as one of the proposed remedial alternatives.

Recommendation

It is requested that additional alternatives be developed and evaluated in the Draft Final RI/FS including focused excavation (especially along the shoreline) combined with containment. Excavation and disposal technologies should also be considered for portions of the East Adjacent Area that are not proposed for recreational reuse.

- B. Several groundwater containment process options were retained as viable options that may be appropriate to implement in the future, but these were not included in any of the proposed remedial alternatives. The Draft RI/FS Report states that the reason for this is that the need for their implementation cannot be supported by the existing data. However, because groundwater is not addressed in the development and evaluation of remedial alternatives, the FS is considered incomplete (see Specific Comment 21).

Recommendation

Remedial alternatives for groundwater should be developed and evaluated in the FS. The Navy should provide a timeframe and reporting mechanism for this evaluation. The Navy should continue to work with the regulatory agencies to establish an acceptable method of evaluating groundwater discharge to the Bay.

- C. Historical landfill activities have resulted in widespread contamination of soil and groundwater throughout Parcel E-2. Elevated levels of several metals and inorganic compounds were found in soil, and some of this contamination is in direct contact with groundwater. Because of the heterogeneous and unpredictable nature of the source and contaminant distribution from landfills and landfilling activities, GSU questions the sufficiency of the monitoring well network to adequately detect contaminant migration in groundwater. Elevated levels of contamination have been found consistently in some wells and sporadically in others throughout the parcel. In some areas, perimeter monitoring wells are widely spaced and it appears that groundwater contamination may be missed. Additional monitoring wells may be needed along the Parcel E-2 perimeter.

Recommendation

The RI/FS should evaluate the sufficiency of the current monitoring network to ensure that perimeter monitoring is adequate to detect any significant migration of contaminants off-site. Soil chemical data combined with the site-specific hydrogeology and groundwater contaminant distribution should be evaluated to demonstrate the adequacy of the monitoring network and evaluate the need for additional wells. Perimeter monitoring wells should be identified in the RI/FS

report, and additional perimeter monitoring wells should be proposed, as necessary (see Specific Comment 17).

- D. GSU agrees that the heterogeneous nature of the landfill source distribution makes complete delineation of soil contamination impractical. However, delineation at the perimeter of Parcel E-2 is necessary to ensure that contamination at adjacent parcels is adequately characterized. GSU requests that the Draft Final RI/FS report discuss data gaps related to inadequate delineation at the Parcel E-2 boundary and provides a mechanism for resolution of such data gaps. The following data gaps for soil have been identified, but additional data gaps may exist:

- Arsenic and lead require additional delineation to the north and northwest of boring IR72B037 in the East Adjacent Area.
- PAHs require additional delineation to the north and northwest of boring IR72B038 in the East Adjacent Area.
- Chromium requires further delineation to the east of boring IR12MW11A in the East Adjacent Area.
- Metals, TPH, and PAHs require further delineation to the west of IR01B366 through IR01B368 in the Panhandle Area.
- PCBs require further delineation to the east of the eastern boundary of Parcel E-2.

## **SPECIFIC COMMENTS AND RECOMMENDATIONS**

1. Section 1.4 – Report Purpose and Goals. It is not clear from the discussion in this section that groundwater remedial alternatives are not included in the development and evaluation of remedial alternatives in this Draft RI/FS Report. Please provide clarification as to the approach for groundwater in this section.
2. Section 2.1.1 – Landfill Area. Please clarify the depth of the sheet-pile wall and groundwater extraction trench. Does this feature primarily target the A-Aquifer? Please clarify why the groundwater extraction system was shut off in April 2005 and whether or not groundwater mounding behind the sheet-pile wall has occurred since that time.
3. Section 2.2.1.2 – Bay Mud – The Aquitard. The Navy states in this section that the Bay Mud Aquitard has a relatively level base; however, this is not evident from a review of the cross-sections. Please clarify how many borings were drilled entirely through the Bay Mud Aquitard at Parcel E-2 to determine this character of this feature. If sufficient data are available, a map of the elevation at the base of the aquitard should be provided to support this conclusion.

4. Section 2.2.1.3 – Undifferentiated Sediments - The B-Aquifer. Based on a review of the cross-sections in the Draft RI/FS Report, it appears that only a few broadly-spaced borings were drilled through the B-Aquifer Undifferentiated Sediments. Therefore, little data is available to support statements about the lateral continuity and thickness of the B-Aquifer Undifferentiated Sediments. Please discuss the limits to the data and uncertainty of the conclusion, further support the conclusion, or remove the statement from the RI/FS report.
  
5. Section 2.2.2.1 – Horizontal Groundwater Flow. The data presented in the Draft RI/FS Report is not sufficient to support discussions about horizontal groundwater flow. GSU requests that the Draft Final RI/FS Report include the following for all Parcel E-2 monitoring wells:
  - A table of historical water level data,
  - A table of monitoring well construction details,
  - Water level elevation data (values) on groundwater elevation contour maps, and
  - Water level hydrographs.Anomalous water level measurements identified on hydrographs should be evaluated and discussed in terms of possible causes.
  
6. Section 2.2.2.2 – Vertical Groundwater Flow Potential. GSU does not find the contour data shown on Figure 2-17 to be useful or sufficiently supported. In particular, there is insufficient spatial data in the B-zone aquifer to support the interpretation. GSU recommends removing the contour data from the figure. GSU also recommends the use of hydrographs to evaluate vertical hydraulic gradients for existing well pairs.
  
7. Section 2.2.2.4 – Seasonal Groundwater Effects. This section discusses data from four water level measurement events taken during 2000 through 2002. The actual data for these events, however, are not presented in the Draft RI/FS Report. GSU requests that seasonal groundwater elevation maps are included in the Draft Final RI/FS Report. Ideally, at least one relatively recent year of quarterly data should be mapped to illustrate typical seasonal changes in groundwater flow directions and gradients. Water level hydrographs should be presented and discussed in terms of seasonal fluctuations. Features such as “mounding” or “sinks” should be evaluated using hydrographs.

8. Section 2.2.3 – Hydraulic Characteristics.
  - a. Several slug tests were performed on wells in Parcel E-2 but the results are not presented in the Draft RI/FS Report. Only the results from the constant-rate discharge tests are provided and used. GSU understands that constant-rate discharge tests are more representative of a larger area of the aquifer than slug tests. However, slug testing, when done properly, provides a more direct measurement of the aquifer properties in the immediate vicinity of a well. These data can be valuable as an indication of the spatial variability of hydraulic conductivity across the area. GSU requests that the results from the slug tests be tabulated and included in the Draft Final RI/FS Report.
  - b. Based on groundwater elevation contour maps provided in the Draft RI/FS Report, the horizontal hydraulic gradient in the A-Aquifer is highly variable, ranging over roughly an order-of-magnitude between the center of the landfill and the edges. Therefore, GSU questions the single hydraulic gradient value was selected for estimating groundwater flow velocities. GSU requests that a more rigorous analysis be performed using a range of site-specific values for hydraulic gradient. A discussion of the range of potential velocities at different locations is recommended. GSU also requests further support for the value chosen for effective porosity.
9. Section 3.4.2 – Groundwater Data Gaps Investigations (2000 to 2002). According to the report, three wells (IR01MW-10 through IR01MW-12A) and one piezometer (IR01P-04A) were installed to replace wells that were decommissioned during construction of the landfill gas control system. Please provide the well identification numbers for the decommissioned wells. Please also identify the report that documents the decommissioning of these wells and any well decommissioning logs that were prepared.
10. Section 3.8.3 – Groundwater Extraction System and Containment Barrier (1997 to 1998). The Navy states that groundwater mounding and surface water ponding occur in the area upgradient of the sheet-pile wall at various times of the year, and that surface water management controls and passive groundwater control measures should be evaluated as an alternative to the current groundwater extraction system. GSU questions whether the FS for groundwater remedial alternatives will include such an evaluation, or where this evaluation is planned to occur.
11. Section 3.10.1 – Metal Slag Area Removal Action (2005 to 2006). Waste characterization data for the five drums recovered from the removal area was not available for this Draft RI/FS but will be provided in the removal action completion report. GSU requests that, if available, these data also be included and discussed in the Draft Final RI/FS Report.

12. Section 3.10.2 – PCB Hot Spot Soil Excavation Site Removal Action (2005 to 2006). Waste characterization data for the 110 drums and 537 assorted waste containers recovered from the removal area is not available for this Draft RI/FS but will be provided in the removal action completion report. GSU requests that, if available, these data also be included and discussed in the Draft Final RI/FS Report.
13. Section 4.2.4 – Analytes Detected in Soils. Throughout the subsections within this section, a blanket statement is used which states that soil samples that exceeded the RIECs are “surrounded” by “nearby” samples with concentrations below the RIEC. However, in many cases the nearest samples appear to be more than 100 to 200 feet away from the samples with elevated concentrations. In some cases, there appear to be no samples surrounding the sample in question for several hundred feet. Horizontal and vertical delineation of the extent of elevated metals and organics in soil in Parcel E-2 is largely incomplete. It is requested that additional clarification regarding the lack of delineation of soil contamination is provided in the Draft Final RI/FS Report and that statements about “nearby” samples are removed, clarified, or supported with additional information.
14. Section 4.4.2.2 – East Adjacent Area Subsurface Soils (2 to 10 feet). There appears to be a source of arsenic in soil and groundwater in the northeastern portion of Parcel E-2. Arsenic was found in soil at a maximum concentration of 106 mg/kg at approximately 4 feet below ground surface in boring IR72B037 which is located at the Parcel E/E-2 boundary. Elevated levels of arsenic in soil in this area do not appear to be delineated to the north and northwest (on Parcel E). Levels of arsenic in downgradient monitoring well IR04MW36A are also consistently elevated. It is requested that elevated levels of arsenic in soil and groundwater in this area be further evaluated and delineated.
15. Section 4.5.4 – Data Gaps. GSU agrees that the heterogeneous nature of the landfill source distribution makes complete delineation of soil contamination impractical. However, complete delineation at the perimeter of Parcel E-2 is necessary to ensure that adjacent parcels are adequately characterized. GSU requests that this section discusses data gaps related to inadequate delineation at the Parcel E-2 boundary and provides a mechanism for resolution of such data gaps (see General Comment C).
16. Section 5.2 – Groundwater Beneficial Use. GSU questions whether adequate data exist to support the statement that “downward migration of contamination into the bedrock WBZ is low because of the site conditions that limit hydraulic communication between the uppermost B-aquifer zone and the lower B-aquifer zones.” There has been very little site-specific investigation performed to these

depths. Please clarify the data that were used to support this conclusion or remove it from the Draft Final RI/FS Report.

17. Section 5.7.1 – Graphical Presentation of Groundwater Data. This report states that the perimeter monitoring wells include all of the wells along the south, east and west Parcel E-2 property boundaries, and that they are part of the monitoring network used in the Basewide Groundwater Monitoring Program (BGMP). However, some wells along the eastern Parcel E-2 boundary are not included in the BGMP (for example, wells IR12MW11A, IR04MW31A, and IR04MW35A).

Please identify the wells that have been designated as Parcel E-2 perimeter monitoring wells for the purposes of this RI/FS. Please also identify those wells that are considered to be upgradient monitoring wells for Parcel E-2. Please provide a reference for the last sentence in the first full paragraph of this section which states that a focused evaluation of monitoring wells is considered appropriate for landfill sites.

18. Section 5.8.1 – Summary of Lateral and Vertical Extent. GSU disagrees with the statement that ambient concentrations are the predominant reason for the wide variety of detections of metals in the A-aquifer as opposed to contamination contributed by past site activities. Highly elevated levels of several metals were found in soil in direct contact with groundwater. Highly elevated concentrations of the same metals were found in groundwater. The statement that ambient concentrations of metals are the predominant reason for the wide variety of detections should be further justified or removed from the Draft Final RI/FS Report.
19. Section 8.3.4 – Conclusions for Landfill Gas. One recommendation presented in this section is that subsurface utilities within the eastern portion of the Landfill Area should be verified because of their potential to act as preferential pathways for gas migration. Please clarify when and how this recommendation will be implemented and documented.
20. Section 11.7 – Summary of Screening of Technologies and Process Options. Although it is stated in *Section 8.3.4 – Conclusions for Landfill Gas* that the data collected to date have adequately defined the nature and extent of landfill gas at Parcel E-2, it is stated in this section (Section 11.7) that additional data are needed to determine what type of treatment or destruction would be most implementable or cost effective. Please clarify the type of additional data that will be needed, how/when these data will be obtained, and the reporting mechanism for such information. Please also clarify how these data will be incorporated into the FS alternatives evaluation.

21. Section 12 – Development of Remedial Alternatives.

- a. The text in the first paragraph states that this section describes remedial alternatives for Parcel E-2 developed from the technologies and process options retained in Section 11. However, the remedial alternatives developed in this section (Section 12) and evaluated in subsequent sections (Sections 13 and 14) exclude groundwater technologies and are, therefore, incomplete. Please include an evaluation of groundwater remedial alternatives in subsequent documents.
- b. Alternatives 2 and 3 presented in this section state that groundwater monitoring is included to evaluate chemical concentrations in groundwater while the aquifers naturally recover. As discussed above, the development of groundwater remedial alternatives has not been performed and there is currently no evaluation of natural attenuation processes at Parcel E-2 that would support the statement. Additionally, the statement that follows implies that groundwater exposure pathways are incomplete. This evaluation has not yet been performed and, as such, statements about incomplete exposure pathways are not supported and should also be absent in the Draft Final RI/FS Report.

If you have any questions, please feel free to contact me at (510) 540-3926 or at [mdalrymp@dtsc.ca.gov](mailto:mdalrymp@dtsc.ca.gov).



## Department of Toxic Substances Control

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Agency Secretary  
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1011 North Grandview Avenue  
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Arnold Schwarzenegger  
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### MEMORANDUM

**TO:** Tom Lanphar, DTSC Project Manager  
OMF Berkeley Office  
700 Heinz Street, Second Floor  
Berkeley, CA 94704

**FROM:** James M. Polisini, Ph.D.  
Staff Toxicologist, HERD  
1011 North Grandview Avenue  
Glendale, CA 91201

**DATE:** July 3, 2007

**SUBJECT:** HUNTERS POINT SHIPYARD DRAFT PARCEL E2 FEASIBILITY  
STUDY REPORT  
[SITE 200050-18 PCA 18040 H:39]

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### BACKGROUND

HERD reviewed the document titled *Draft Parcel E-2 Remedial Investigation/Feasibility Study, Hunters Point Shipyard, San Francisco, California*, dated March 2007. This document was produced by Engineering/Remediation Resources Group, Inc. of San Francisco, California and Shaw Environmental, Inc. of Concord, California. This document was received in HERD offices on April 2, 2007.

Hunters Point Shipyard (HPS) was divided into seven parcels, Parcel A through F and E-2, for environmental investigation and cleanup activities. Parcel A through E and E-2 are terrestrial parcels, while Parcel F encompasses the adjacent offshore areas. Parcel A was transferred to the San Francisco Redevelopment Agency in December, 2004 and is no longer considered Navy property. Parcel E, E-2 and F consist of the HPS property associated with the South Basin of HPS. Parcel E was established in 1992. In September 2004, Parcel E was divided into two parcels (Parcels E and E-2) to facilitate closure of the landfill and adjacent areas. Parcel E occupies approximately 138 acres of shoreline and lowland coast along the southwestern portion of HPS. Parcel E consists of numerous Installation Restoration (IR) sites, of which, only IR -02 and IR-03 border the shoreline. Parcel E-2 consists of approximately 48 acres, including the industrial landfill and IR-1/21 and the Panhandle Area, a small portion of IR-02 Northwest, and the area east of IR-01/21 that does not have an IR site designation.

HPS is situated on a promontory in the southwestern portion of San Francisco Bay. HPS is bounded on the north and east by San Francisco Bay and on the south and west by the Bayview Hunters Point district of San Francisco. The area within the property boundaries is approximately 955 acres of which approximately 400 acres are offshore sediments. These offshore sediments are designated Parcel F.

HERD assumes that the DTSC Project Manager has reviewed and accepts the Parcel E-2 site description, site history and characterization results.

### **GENERAL COMMENTS**

Recommendations contained in the document titled *Draft Parcels E and E-2 Shoreline Characterization Technical Memorandum, Hunters Point Shipyard, San Francisco, California*, dated November 1, 2005 were (Section 6.0, page 25) that:

1. Source control measures are warranted along the Parcel E and E-2 shoreline; and,
2. Evaluation of remedial alternatives for intertidal sediments along the entire Parcel E and E-2 shoreline is appropriate based in estimates of ecological risk to invertebrates, birds and mammals.

HERD agreed with these recommendations in a HERD memorandum dated December 7, 2005 and continues to support these recommendations.

The Draft Technical Memorandum for Parcels E and E-2, previously submitted by the Navy, is included as Appendix G. The Navy Response to Comments for HERD comments on the Draft Parcels E and E-2 Shoreline Characterization Technical Memorandum, dated November 1, 2005 is included as Appendix G1 of this document. Several of the original responses indicated that the Navy did not plan to issue a revised Technical Memorandum, but the Technical Memorandum would be included in the Parcel E RI for review. The responses to comments contained in the HERD December 7, 2005 memorandum (Appendix G1) were reviewed and compared to the Technical Memorandum (Appendix G). The substantive HERD comments are addressed by changes in the Technical Memorandum. The exceptions are the recommendations regarding revision to tables (HERD original Specific Comments 13 and 14). These changes do not appear to have been made, but are presentational only and do not affect the conclusions of the Technical Memorandum.

HERD has no technical objection to the stated goal of this document is to strike a balance between a presumptive remedy RI/FS and a standard RI/FS (Section 1.4, page 1-6), as long as the presumptive remedy includes exclusion of burrowing mammals from material encapsulated in any Parcel E-2 cover and resolution of the groundwater transport to San Francisco Bay (Parcel F) methodology is resolved.

### **SPECIFIC COMMENTS**

1. Potential adverse human health effects from exposure to radioisotopes have not been completed and 432 cubic yards of radiologically-impacted material were excavated and disposed of off-site from an area in the southeast portion of Parcel E-2 (Executive Summary, Section ES.1.3, page 3; Section 1.1.4, page 1-4). Potential radiological contamination will be addressed in a radiological addendum to the Remedial Investigation/Feasibility Study (RI/FS) (Executive Summary, page 1). This is a data gap which must be addressed prior to selection of a final remedial alternative.
2. Non-Methane Organic Compounds (NMOCs) have been detected in landfill gas (Executive Summary, Section ES.2.2, page 5), with the highest concentrations immediately north of the landfill. Monitoring measurements based on the methane Lower Explosive Limit (LEL) are not adequate for NMOCs. Remedial Action Objectives (RAOs) should be risk-based rather than the proposed: 1) Greater than 500 part per million-volume (ppmv) at subsurface points of compliance; and 2) greater than 5 ppmv above background levels in the breathing zone of on-site workers and visitors (Executive Summary, Section ES.5.2, page 12). The risk-based calculations provided later for NMOCs, later in the document (Section 8.3.3, page 8-16), should be used to develop risk-based monitoring concentrations.
3. Based on the City and County of San Francisco's Hunters Point Naval Shipyard Redevelopment Plan, Parcel E-2 is designated for open space reuse except for a small area in the eastern portion, which is designated for industrial and research and development (R&D) reuse (Section 1.8, page 1-14; Section 7.1.1.1, page 7-3). These potential future uses appear reasonable and are accounted for in the selection of risk assessment exposure scenarios.
4. HERD defers to the DTSC Geological Services Unit (GSU) for evaluation of the statement that 'Overall, the number of detected chemicals and the magnitude of the concentrations detected in both aquifers have declined between 1990 and 2005' (Section 6.2.4, page 6-5) and that the vertical groundwater gradient in the northwest corner of Parcel E-2, where the A-aquifer and the uppermost B-aquifer are interconnected, is vertical.
5. Please more clearly explain the 'physical hazards' in addition to ingestion as an exposure route in the description of the terrestrial ecological receptor exposure to soil (Section 6.3.1.1, page 6-7).
6. There appears to be a typographic error in the Conceptual Site Model Flow Chart (Figure 6-3) where the initial 'Contaminant Source' box is only partially shaded, while all the other applicable boxes are either completely shaded or not shaded. Please

correct or explain this difference in shading. The Conceptual Site Model, as presented, appears to incorporate all applicable exposure pathways for Parcel E-2.

7. Human health-based soil Risk-based Concentrations (RBCs) were calculated based on  $1 \times 10^{-6}$  cancer risk and non-cancer hazard of 1.0 for applicable pathways and exposure scenarios (Section 7.1.3, page 7-8). Remediation Goals (RGs) were selected as the highest of the RBC, the laboratory Practical Quantitation Limit (PQL), and the Hunters Point Ambient Level (HPAL) for inorganic elements. For lead in soil, exposure-specific RBCs were based on modeled blood lead concentrations. This comment is meant for the DTSC Project Manager and no response is required from the Navy or Navy contractor.
8. Soil concentrations exceeding an ecological Hazard Quotient (HQ) of 1.0 and the HPAL indicate potential ecological hazard for cadmium, copper, lead, vanadium and zinc for birds and mammals in all three onshore study areas of Parcel E-2 (Section 7.2.1.2, page 7-10). Manganese also poses a potential ecological hazard at the Panhandle Area soil concentrations, but not at the Landfill or East Adjacent Area concentrations. This comment is meant for the DTSC Project Manager and no response is required from the Navy or Navy contractor.
9. Significant ecological hazard to the willet exposed to PCBs is predicted at Shoreline Area concentrations. Cadmium, copper, lead, mercury, PCBs, total DDT and dieldrin pose potential ecological hazard to birds (Section 7.2.2.3, page 7-11). Ingestion of sediment and prey items that contain cadmium, copper, molybdenum, zinc and PCBs pose a potential ecological for the house mouse, with the greatest potential hazard associated with PCBs. This comment is meant for the DTSC Project Manager and no response is required from the Navy or Navy contractor.
10. The current status of the Ecological Risk Assessment (ERA) for Parcel E-2 groundwater is accurately presented. A method for comparing groundwater concentrations, which accounts for site-specific discharges to and mixing with San Francisco Bay waters, to aquatic risk assessment criteria has not been agreed to by the Navy and regulatory agencies (Section 7.3, page 7-12).
11. The 'extent' of groundwater chemical contamination has not been completely defined along the Parcel E-2 shoreline (Executive Summary, Section ES.2.4, page 6 and Section 8.5.1, page 8-23). This remains a data gap, particularly in regards to integration of the ecological risk assessment conclusions and the selection of remedial alternatives.
12. The current data gaps for groundwater, which are summarized as four bulleted items (Section 8.5.1, page 8-25) are:

- a. Data gaps for certain analytes along the Parcel E-2 shoreline, where chemical concentrations persistently or recently exceeded the Remedial Investigation Ecological Concentration (REIC);
- b. Data gaps in areas where the effects on groundwater concentrations by recent soil removal action, or planned construction activities, have yet to be evaluated;
- c. Potentially unreported chemicals due to sample reporting limits exceeding the selected RIECs; and,
- d. Inadequacy of the current data to evaluate potential seasonal fluctuations on groundwater concentrations.

The first three do not appear to be significant risk assessment data gaps. HERD defers to the DTSC GSU regarding the severity of the fourth groundwater data gap.

13. Elevated risk levels for the domestic use of groundwater are partially associated with the use of A-aquifer PCB concentrations because the upper aquifer (i.e., A-aquifer) and the deeper aquifer (i.e., B-aquifer) are hydraulically connected in the northwestern part of Parcel E-2. The 'most significant' area of known PCB contamination is in the PCB Hot Spot, which is currently being remediated (Section 8.5.2.2, page 8-26). HERD will review the 'future versions' of this report which 'may' indicate a reduction of PCB concentrations in the A-aquifer. Please present a comparison of the A-aquifer PCB groundwater concentrations and risk estimates developed for the current domestic water use scenario with more current A-aquifer PCB concentrations and domestic water use risk in the 'future versions' of this report.
14. Shoreline Screening Level Ecological Risk Assessment (SLERA) concluded that elevated copper and lead in shoreline sediments are a potential source of contamination to Parcel F sediments. HERD agrees that source control measures are warranted along the Parcel E-2 shoreline (Executive Summary, Section ES.2.6, page 7). In addition, benthic invertebrates, birds and mammals are at risk from exposure to PCBs in Parcel E-2 shoreline sediments. HERD agrees that evaluation of remedial alternatives for intertidal sediments along the entire Parcel E-2 shoreline is necessary (Section 8.7, page 8-28).
15. In the event the presumptive remedy is selected, the remedial design must include exclusion of burrowing terrestrial receptors from the soil encapsulated under any Parcel E-2 engineered cover (Section 9.1, page 9-2).
16. Ecological Remedial Action Objectives (RAOs) for groundwater cannot be developed until a method for comparing Parcel E-2 groundwater concentrations to aquatic criteria is agreed upon between the Navy and regulatory agencies, boards, departments and resource trustees (Section 9.3, page 9-4). This limitation is clearly presented in the document. This comment is meant for the DTSC Project Manager and no response is required from the Navy or Navy contractor.

Tom Lanphar  
July 3, 2006  
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## **CONCLUSIONS**

Potential adverse human health affects from exposure to radioisotopes have not been completed and 432 cubic yards of radiologically-impacted material were excavated and disposed of off-site from an area in the southeast portion of Parcel E-2

The results of the Human Health Risk Assessment and the Ecological Risk Assessment appear to be completely summarized for input to the evaluation of remedial alternatives. However, as indicated, evaluation of the potential ecological hazard associated with exposure of San Francisco Bay aquatic receptors to Parcel E-2 groundwater has not been completed.

Apparently, revision of the assessment of Parcel E-2 PCB risk and/or hazard is planned based on recent removal actions. Please present a comparison of the upper aquifer (i.e., A-aquifer) PCB groundwater concentrations and risk estimates developed for the current domestic water use scenario with more current A-aquifer PCB concentrations and domestic water use risk in the 'future versions' of this report.

In the event the presumptive remedy is selected, the remedial design must include exclusion of burrowing terrestrial receptors from the soil encapsulated under any Parcel E-2 engineered cover.

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# Memorandum

Tom Lanphar, Remedial Project Manager  
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Date: July 9, 2007

From: Frank Gray, Environmental Scientist   
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Subject: **Review of Draft Parcel E-2 Remedial Investigation (RI)/Feasibility Study (FS) Hunters Point Shipyard, San Francisco County (Site #200050)**

The California Department of Fish and Game, Office of Spill Prevention and Response (DFG-OSPR) appreciates the opportunity to review the subject report (RI/FS) for Hunters Point Shipyard (HPS), dated March 2007. It describes alternatives for solid waste disposal at Site E-2. The DFG-OSPR received the complete RI/FS for review on June 19, 2007. DFG-OSPR's review focused on sections of the report that relate to biological resource and ecological receptors issues as part of our role as a natural resource trustee for the State of California. We believe that a draft final RI/FS should be prepared and provided to us with adequate review time, and should incorporate the concerns and suggestions contained in the following specific and general comments.

## Background

HPS is in southeast San Francisco, on a peninsula that extends east into San Francisco Bay. It is divided into six parcels (A through F). Parcel E occupies 173 acres of shoreline and lowland coast along the southwestern part of HPS. It consists of about 46 percent ruderal habitat; 41 percent former industrial area; 8 percent non-native grassland; a 5 percent combination of freshwater wetlands, saline emergent wetlands, intertidal habitat; and a small landscaped area. Parcel E was used as a landfill and a storage area for waste, construction, and industrial materials, as well as for office and laboratory space. It includes Parcel E-2, which is a 47.4-acre landfill area. The landfill covers 22 acres and about 14.5 acres of that is covered by an "interim" cap.

The DFG is the State's trustee for fish and wildlife resources pursuant to Fish and Game Code Section 711.7. The Agency is also designated to act on behalf of the public as a trustee for natural resources pursuant to Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 107 (f)(2)(B). The DFG-OSPR has commented on various Hunters Point documents, including a July 26, 1999, memorandum commenting on the draft validation study report at Parcel E and a February 27, 2007, memorandum commenting on the draft wetlands mitigation and monitoring plan for the Metal Debris Reef and Metal Slag Areas at Parcels E and E-2.

## General Comments

1. DFG-OSPR did not receive a request to provide applicable or relevant and appropriate requirements (ARARs) for Parcel E-2. The document does not include all of the DFG ARARs, and the discussion of the various alternatives does not contain analysis of whether or not the alternative is consistent with these ARARs. DFG-OSPR will be providing ARARs for the document.
2. We request that the draft final RI/FS and all applicable responses to comments be provided to the DFG-OSPR for review as soon as possible after they become available for review.
3. The amount or location of mitigation that will be required for each FS alternative has not been identified and quantified in the RI/FS. The draft final RI/FS should describe the mitigation requirements.
4. Adequate control of shoreline erosion of the landfill in perpetuity should be addressed. Other methods for bank stabilization may be appropriate.

## Specific Comments

### *Executive Summary*

1. *Figure ES-1:* The boundary of parcel E should be indicated by a solid line and clearly differentiated from that of E-2. Also, the symbols in the legend for the areas designated as "burn areas" and "UCSF Compound areas" appear virtually identical and a different symbol should be selected that will help clearly differentiate the parcels.
2. *Page 2, Section E.S. 1.1, Operational History:* The status of the existing and future landfill cover(s) is an important factor in determining FS alternatives. There is a brief reference here to the placement of compacted fill over the landfill. It would be helpful if additional information was provided regarding other covers in place, whether the cover material was contaminated, existence of any biotic barriers, and any other information relevant to ecological risks associated with the cover.
3. *Page 6, Section ES.2.4, Groundwater:* Any known hydraulic connection between groundwater and surface waters should be identified briefly in this section. This is especially important since this section states that the extent of groundwater contamination is not completely defined along the Parcel E-2 shoreline, which is adjacent to surface waters in San Francisco Bay and many biological receptors.
4. *Page 14, Section ES.5.4, Development of Remedial Alternatives:* Either Alternative 2 or 3 is acceptable to the DFG-OSPR with appropriate modifications, as discussed elsewhere in this memo. Alternative 3 should

involve the placement of a multi-layered cap over the perimeter of lands not already covered by a cap.

### *Section 2. Site Description and Physical Characteristics*

5. *Page 2-2, Section 2.1.1, Landfill Area:* The draft final RI/FS should document what constitutes "significant" erosion of the interim 14.5 acre cap.
6. *Page 2-21, Section 2.4.2.2, Protection of Sensitive Species:*
  - a. The reference to "sensitive species" should be replaced with "Special Status" species. The use of the term "sensitive" may cause confusion with respect to ecological sensitivity to contaminants or other issues. Special Status species include but are not limited to species that are State or Federally endangered or threatened, and state Species of Special Concern or State designated as protected.
  - b. There is reference to a 2004 bird survey that did not result in detections of rail species. However, it is not clear why the surveys were focused only on rails, especially when other species might be potentially affected by any alternative identified under the FS.
7. *Page 2-22, Section 2.4.2.4, Wetlands Restoration and Mitigation:* The Panhandle Area is considered as a wetlands mitigation site. However, there is potential for development at that site, and the type of development is unknown. Noise, runoff, and other aspects of development adjacent to the Panhandle area should be described here since it might impact the effectiveness of any wetlands to be created. The DFG-OSPR commented on the potential problems of wetlands creation at this site in our February 27, 2007, memo. In Specific Comment #3 of that memo, we addressed the potential for incompatible land uses adjacent to a proposed mitigation site at the Panhandle Area.

### *Section 9. Remedial Action Objectives*

8. *Pages 9-2, Section 9.1.1. Chemicals of Concern in Solid Waste, Soil, and Sediment:* DFG-OSPR checked the remedial action objectives (RAOs) for terrestrial receptors in this RI/FS against acceptable ecologically protective soil concentrations (PSCs) in the Ecological Risk Assessment Validation Study Report for Parcel E (TtEMI and LFR, 2000). The RAOs for cadmium, lead, selenium, and zinc are the same as the PSCs. The RAO for copper (469.6 mg/kg) is lower than the PSC (1083.7 mg/kg). This comment is directed to the DTSC Remedial Project Manager and no response from the Navy is necessary.

### *Section 10. Potential Applicable or Relevant and Appropriate Requirements*

9. *Page 10-5, Sections 10.2.2, Wetlands Protection and Flood Plains Management and 10.2.3, Biological Resources:* The only ARARs that are included are

Sections 2080 and 3005 of the Fish and Game Code. The draft final RI/FS should include the pending ARARs that will be provided by DFG-OSPR for the RI/FS.

*Section 12. Development of Remedial Alternatives*

10. *Pages 12-4, Section 12.1.3, Completion of the Shoreline Protection:* Alternatives 2 and 3 involve the placement of rock riprap and a geomembrane fabric to protect the shoreline from tidal and wave action. Unresolved issues with this form of shoreline protection include the following:
- a. *Settlement of the rock revetment* - Rock revetment will typically settle over time, as commonly occurs on levees. Any settlement of rock might expose the contaminants in the landfill (in Alternative 3) to ecological receptors.
  - b. *Geomembrane integrity* - The geomembrane fabric may be subject to punctures or tears from placement of rock or other factors.
  - c. *Allowances for sea level change* - It is uncertain whether the current design elevation, relative to mean high tide (as shown in Figure 12-5), takes into consideration any potential sea level rise as a function of climate change or for potential for settlement of the rock revetment.

As we mentioned in our February 27, 2007 comments on the mitigation plan, other methods may be available for bank stabilization. These methods include the use of Armorflex® ([http://contech-cpi.com/ess/products/contech\\_hard\\_armor/armortec\\_family/armorflex/220](http://contech-cpi.com/ess/products/contech_hard_armor/armortec_family/armorflex/220)), Geoweb ([http://beta.alcoa.com/alc\\_geo/en/solutions/geoweb\\_specifications.aspoa-](http://beta.alcoa.com/alc_geo/en/solutions/geoweb_specifications.aspoa-)), or other products. Also, pedestrian use along the proposed walkway that is discussed on Page 12-5 may result in disturbances to birds and other wildlife. As discussed in our February 27, 2007, memo, this project element should be deleted.

11. *Page 12-6, Section 12.1.5., Integration with Ongoing Wetlands Restoration and Offshore Feasibility Study:* Our February 27, 2007, memo discusses several elements of the wetlands mitigation plan for the Metal Slag Area, which is discussed here. Much of the content of that plan is pertinent to the review of the RI/FS since some of the mitigation plan design elements (e.g. pedestrian path walkway, placement of rock revetment) are also proposed in RI/FS for nearby areas. The second paragraph indicates that the plan is being reviewed by the regulatory agencies. Text should be revised to read "A draft plan was provided for review on November 28, 2006 and comments were provided by ... agencies." This section states that the basic components of the mitigation plan are not expected to change. However, the Navy should consider options for major revisions in basic project design since the plan that was released was apparently a first draft and there may not have been time allocated to date to incorporate all public and agency input. Also, we are not aware of any provisions for a site visit or meeting with personnel of involved agencies

regarding plan design. We recommend that the Navy prepare written responses to comments on the draft mitigation plan and circulate them to all of the trustee agencies for review, including the DFG-OSPR. In particular, the February 27, 2007, comment memo recommended the elimination of the plan for the pedestrian walkway and this concern was also communicated informally to the Navy. This recommendation was based mainly on concerns about the potential disturbances of wildlife, especially birds, by pedestrian traffic along the walkway. Further, the memo addressed whether the proposed wetlands site is suitable because of the proximity of adjacent development, contaminants, and other issues.

12. *Page 12-12, Section 12.2.2.7, Wetlands Restoration:* Wetlands restoration elements that are applicable to Alternative 2 are presented here. In comment # 9 of our February 27, 2007, memo, we discussed several design issues regarding the development of mitigation for the Metal Slag and Metal Debris Reef Areas. These issues are pertinent to the RI/FS and should be addressed in the document.
13. *Page 12-16, Section 12.2.3.4., Cap Construction:* The construction of a multi-layer geosynthetic cap under the wetlands and other areas at the Panhandle area may be problematic. The draft final RI/FS should address the following issues:
  - a. *Burrowing animals* – The depth of the vegetative layer is inadequate with respect to allowing access by animals that may burrow through the geomembrane. This is especially true if any erosion occurs at the proposed wetland and the proposed 2-foot vegetative layer is reduced.
  - b. *Barrier for aquatic organisms* - The geomembrane may provide a barrier to movement.
  - c. *Potential puncturing* - Puncturing of the cap might occur from the use of heavy equipment.
14. *Page 12-18, Section 12.2.3.7., Wetlands Restoration:* See Comment #14.
15. *Figure 12-12, Conceptual Grading Plan, Alternative 2:* The grading plan shows the approximate locations of proposed intertidal wetlands. The close proximity of the intertidal and freshwater wetlands to the access road may result in disturbances to shorebirds and other wildlife.

We appreciate the opportunity to review the draft RI/FS. If you have any questions regarding this review or require further details, please contact Frank Gray at (916) 327-9961 or via e-mail at [fgray@ospr.dfg.ca.gov](mailto:fgray@ospr.dfg.ca.gov). Regarding contaminants, please contact Charlie Huang, Ph.D., at (916) 324-9805 or via e-mail at [chuang@ospr.dfg.ca.gov](mailto:chuang@ospr.dfg.ca.gov).

Reviewer: Regina Donohoe, Ph.D., Staff Toxicologist

## References

TtEMI and LFR. 2000. "Draft Final Validation Study Report, Parcel E, HPS, San Francisco, California." March.

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