



**Navy Responses to Regulatory Agency  
Comments on the Draft Remedial  
Investigation/Feasibility Study Report for  
Parcel E-2**

**Hunters Point Shipyard  
San Francisco, California**

**October 2008**

Prepared for:  
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**Table 1. Responses to Comments from U.S. Environmental Protection Agency (EPA)  
Draft Parcel E-2 Remedial Investigation/Feasibility Study (RI/FS) Report, Hunters Point Shipyard (HPS), March 2007**

Comment #	Page #	Section	Comment	Response
<b>Comments provided by EPA Remedial Project Manager (Mark Ripperda), dated July 11, 2007</b>				
1		General	<p>Additional alternatives must be evaluated. It is not sufficient to just look at complete removal and presumptive containment. While containment may be appropriate for the upland main fill area, removals and better wetland design must be evaluated for the near shore areas. Please hold a conceptual design meeting with the Department of Fish and Game and the State Parks wetlands construction team to come up with a more complete shoreline plan that better integrates with the adjoining State Parks plan. I would defer to wetlands and shoreline experts for actual alternatives, but possibilities include additional delineation and hot spot removal in the Panhandle with only a soil cover, not an engineered cap on the Panhandle. Erosion could then be controlled by a sandbar island located offshore instead of a concrete revetment/rip-rap. Similar removals should be evaluated for the rest of the shoreline so that the cap does not terminate at the shore. An engineered cap may also not be necessary for the East Adjacent Area.</p>	<p>The Department of the Navy (Navy) will revise the RI/FS Report to clarify the remedy evaluation process for Parcel E-2 as follows:</p> <ul style="list-style-type: none"> <li>▪ The containment presumptive remedy is being evaluated only for the Parcel E-2 Landfill (also referred to as the "Landfill Area").</li> <li>▪ Although EPA guidance for military landfills (EPA, 1996) advises that the presumptive remedy should not be used where excavation is considered, the Navy believes that, based on site-specific considerations, excavation should also be evaluated in order to address community concerns although this goes beyond the requirements of the presumptive remedy policy.</li> <li>▪ This approach is consistent with EPA's directive titled "Presumptive Remedies: Policy and Procedures" (pp. 1-2, EPA 1993b), which states that "there may be unusual circumstances (such as, complex contaminant mixtures, soil conditions, or extraordinary State and community concerns) that may require the site manager to look beyond the presumptive remedies for additional (perhaps more innovative) technologies or remedial approaches." In addition, this approach was applied in the Remedial Action Plan/Record of Decision prepared for the landfill within Investigation Area H1 at the former Mare Island Naval Shipyard (Weston Solutions, Inc, 2006).</li> <li>▪ The Navy did not apply or rely upon the presumptive remedy guidance for the areas adjacent to the Landfill Area (e.g., the Panhandle Area, East Adjacent Area, and Shoreline Area).</li> <li>▪ The remedial alternatives developed for the Panhandle Area, East Adjacent Area, and Shoreline Area were focused on containment and excavation; however, the Navy will revise the RI/FS Report to evaluate expanded hot spot removal (particularly those in the Shoreline Area) and alternate wetlands mitigation designs for the near-shore area. This approach is consistent with the streamlining approach outlined in pages 8704-8705 of the 1990 National Oil and Hazardous Substances Pollution Contingency Plan (NCP) Preamble (55 Federal Register [Fed. Reg.] 8704-8705, March 8, 1990) and on page 4-8 in Section 4.1.3.1 of EPA's "Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA," OSWER Directive 9355.3-01, October 1988.</li> </ul>

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1		General	(see above)	<p>The Navy met with the various agency stakeholders on August 28, 2007, to coordinate the wetlands mitigation approach for Parcel E-2 with the restoration efforts within Yosemite Slough.</p> <p>Regarding EPA's suggestions for the remedial alternatives, the Navy wishes to make the following clarifications on the technology evaluation provided in Section 11 of the Draft RI/FS Report:</p> <ul style="list-style-type: none"> <li>▪ Construction of a soil cover only (without a geosynthetic liner) throughout the Panhandle Area is not a practical approach to achieving the site remedial action objectives (RAOs) and meeting the applicable or relevant and appropriate requirements (ARARs). Based on the RI results, near-surface soil throughout Parcel E-2 may contain chemical concentrations exceeding risk-based remediation goals. As a result, Section 11.5.1 of the FS evaluated various cover options (including two options consisting of a soil cover only) and concluded that two variations of a geosynthetic cover were most appropriate for the site conditions.</li> <li>▪ Various shoreline protection options, including offshore stabilization structures (similar to what was suggested by EPA), were evaluated in Section 11.5.2 of the FS, and armoring was identified as the most practical option for Parcel E-2.</li> </ul> <p>Expanded hot spot removals along the shoreline will be evaluated. Depending on the results of this evaluation, terminating a portion of the geosynthetic cover at an inland location may be evaluated contingent upon practical considerations. In the case of the southwest portion of the Panhandle Area, terminating the geosynthetic cover at an inland location would help integrate the Parcel E-2 wetlands design with the Yosemite Slough restoration project. However, such a design modification could require additional excavation to provide wetland foundation and cover soil that meets stringent regulatory guidelines. If existing soil within the planned wetlands is not a hot spot and can be readily contained, then excavation may not be needed to achieve the site RAOs because installation of a geosynthetic cover along the shoreline (supplemented with appropriate shoreline protection measures) may be a more cost-effective means of achieving the site RAOs. The practicality of terminating the geosynthetic cover at an inland location will be assessed in the Draft Final RI/FS Report.</p>



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2		General	<p>This landfill does not meet the requirements for a presumptive containment remedy. EPA guidance states that the presumptive landfill containment remedy may not be appropriate for landfills with higher proportions of industrial waste such as that typically found at military shipyard or aircraft maintenance stations, or at landfills located near sensitive ecological habitats. The fact that this landfill directly adjoins the SF Bay, and that contaminant source areas have been located along the shore means that a remedial alternative addressing hot-spot or partial removal of fill material must be added to the Feasibility Study. Please re-write all references to the presumptive remedy to make it clear that while the presumptive remedy for landfills provides useful guidance for this site, this site does not qualify for an automatic application of a containment presumptive remedy. Containment may be a valid remedy, but show it through an evaluation of the data and pathways.</p>	<p>The Navy has met with EPA to discuss the revisions for the Draft Final RI/FS Report that are needed to properly clarify the manner in which the containment presumptive remedy was evaluated for the Landfill Area. These clarifications are discussed in the response to comment 1 above. For completeness, the Navy has prepared the following response to comment 2.</p> <p>In accordance with EPA's presumptive remedy guidance for military landfills (EPA, 1996), the Navy prepared and included a detailed analysis of the Landfill Area (exclusive of the adjacent areas) in Section 8.2.3 of the Draft RI/FS Report. The Navy concluded that the Landfill Area met the requirements for a presumptive remedy set forth in that guidance.</p> <p>EPA's comment referenced a general observation about characteristics of military landfills in the introductory portion of the guidance acknowledging that while "most military landfills present only low-level threats with pockets of some high-hazard waste...some military facilities (e.g., weapons fabrication or testing, shipbuilding, major aircraft or equipment repair depots) have a high level of industrial activity compared to overall site activities. In these cases, there may be a higher proportion and wider distribution of industrial (i.e., potentially hazardous) wastes present than at other less industrial facilities" (p. 3, EPA, 1996). A decision framework for identifying whether the containment presumptive remedy applies to a specific military landfill is presented on pages 4 through 6 of EPA's 1996 guidance. The Navy evaluated the Landfill Area relative to this decision framework in Section 8.2.3 of the Draft RI/FS Report and concluded that the containment presumptive remedy applies to the Landfill Area. EPA did not comment on or dispute the specific findings of the analysis in Section 8.2.3, which concludes that the contents of the Landfill Area meet the municipal-type waste definition and that no "high hazard" military wastes are present.</p> <p>The Navy disagrees with EPA's implication that the proximity of the Landfill Area to San Francisco Bay invalidates application of containment presumption. The presence of sensitive environments is identified in the guidance as a practical consideration for the remedy evaluation process.</p>

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2 (cont.)		General (see above)		<p>The containment alternatives for the Landfill Area, to be included in the Draft Final RI/FS Report, will address these practical considerations by (1) evaluating groundwater containment options in areas where the landfill waste is located within 100 feet of the bay, and (2) evaluating excavation of landfill waste adjacent to the shoreline (where existing slopes are too steep for long-term stability) and relocation of the waste to inland portions of the Landfill Area (where it will be capped).</p> <p>As discussed in the response to comment 1, the Navy did not apply or rely upon the presumptive remedy guidance for the areas adjacent to the Landfill Area (e.g., the Panhandle Area, East Adjacent Area, and Shoreline Area). See p. 1-6 in Section 1.4 of the Draft RI/FS Report. Also, as stated in the response to comment 1, the Navy will revise the RI/FS Report to evaluate expanded hot spot removal in the Panhandle Area, East Adjacent Area, and Shoreline Area, as requested by EPA.</p> <p>Section 8.2.3.4 discusses the rationale for evaluating excavation of the Landfill Area as follows: "Some members of the local community have expressed a strong desire for the Navy to thoroughly evaluate excavation of the landfill. In order to provide information to support the community's review of potential remedial alternatives for Parcel E-2, the Navy has agreed to evaluate excavation of the landfill as part of this report." This decision is supported by EPA's presumptive remedy policy (pp. 1-2; EPA, 1993b), which states that (1) presumptive remedy approaches are designed to accommodate a wide range of site-specific circumstances; (2) site-specific circumstances may require evaluation of additional technologies or remedial approaches beyond the presumptive remedy; and (3) the overall goal of the presumptive remedy approach is to focus data collection efforts and reduce the technology evaluation phase for certain categories of sites.</p>



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<b>Comments provided by EPA Remedial Project Manager (Mark Ripperda), dated July 11, 2007 (continued)</b>				
3		General	Groundwater discharge to the Bay must be better evaluated and a containment or treatment remedy proposed as necessary. The current document compares groundwater to a variety of screening criteria. Please develop a single set of remedial goals for groundwater discharging to the Bay (the California Toxics Rule is an ARAR and should be the main starting point). The current rates of groundwater infiltration and discharge from the landfill, and a total contaminant mass balance, are not presented in the RI/FS Report. Both the concentrations and mass flux of contaminants exceeding the remedial goals should be evaluated and remedies proposed as appropriate.	<p>The Navy prepared Appendix M of the Draft RI/FS Report to specifically evaluate the potential effect of groundwater discharges to aquatic life in the bay. The criteria used in this appendix were based primarily on promulgated criteria (from the California Toxics Rule [CTR] and the Basin Plan) that were identified as chemical-specific ARARs in surface water, and also included risk-based criteria for completeness. Please refer to the Navy's response to EPA comments (118 through 120) on this appendix. The Navy will revise Appendix M to include additional groundwater data through the fourth quarter 2007 and recent data from a focused data gaps investigation along the Parcel E-2 shoreline.</p> <p>As discussed at the working meeting on July 25, 2007, the Navy will implement a conservative approach to evaluate near-shore groundwater concentrations relative to aquatic water quality criteria. In particular, the Navy will use the trigger level approach implemented for the Parcel D FS to identify which areas might require groundwater containment or other forms of active remediation (such as hot spot removal). As a result of the July 25, 2007, meeting, estimating the total contaminant mass flux along the shoreline is not considered necessary at this time.</p> <p>The containment technologies to be evaluated in the Draft Final RI/FS Report will include both physical barriers and hydraulic containment that will effectively limit the flow of shallow groundwater from these areas of concern into the bay. The Navy believes that this conservative approach is the most appropriate means of expediting the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) process at Parcel E-2; however, the Navy may refine the evaluation process (for instance, using more robust fate and transport modeling or evaluating the total contaminant mass flux along the shoreline) in the remedial design phase.</p>
4		General	Metal slag has been observed on the shoreline west of the PCB Hot Spot Area. Please include a plan to evaluate and/or address this metal slag in the next version of the RI/FS.	The Navy will revise the RI/FS Report to evaluate expanded hot spot removal (particularly those along the shoreline). This evaluation will use field observations and post-excavation confirmation samples from the recently completed removal actions at Parcel E-2.

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5		General	The extent of groundwater contamination along the shoreline of Parcel E-2 is a data gap. To fill in this data gap new A-Aquifer wells are needed in the tidally influenced zone (TIZ) of the Panhandle and Landfill areas. Monitoring wells are needed between Well IR01MW48A and IR01MW38A, between IR01MW38A and IR01MWI-3, and outside the waste boundary, southwest of IR01MW38A.	The Navy will revise the RI/FS Report to evaluate recent data from a focused data gaps investigation along the Parcel E-2 shoreline. These data will be used to identify areas where additional groundwater wells are needed to fill data gaps along the shoreline. The schedule for resolving these data gaps will need to be discussed further with the Base Realignment and Closure Cleanup Team (BCT), because an appropriate groundwater remedy may be formulated in the FS without resolving all data gaps.
6		General	The proposed improved cap and revetment do not take into account expected rise in sea level during the post-closure period. As sea level rises, the landfill shoreline will be subject to higher tides and wave action. Please account for rising sea level in the analysis and design.	<p>The Navy wishes to clarify that, as shown on Figures 12-4 and 12-5, the top of the revetment structure is anticipated to be approximately 14 to 15 feet above mean sea level, or about 11 to 12 feet above the mean high tide level. This design provides an adequate level of shoreline protection that, based on the most recent estimates from the Intergovernmental Panel on Climate Change (IPCC), can reasonably accommodate rising sea levels over the next 100 years. The following excerpt from Church, et al. (2008) summarizes the most recent IPCC estimates of global sea level rise:</p> <p>“The IPCC provides the most authoritative information on projected sea-level change. The IPCC Third Assessment Report of 2001 (Church et al. 2001) projected a global-averaged sea-level rise of between 20 and 70 centimeters (cm) between 1990 and 2100 using the full range of IPCC greenhouse gas scenarios and a range of climate models. When an additional uncertainty for land-ice changes was included, the full range of projected sea-level rise was 9-88 cm. For the IPCC’s Fourth Assessment Report (Meehl, et al. 2007), the range of sea-level projections, using a larger range of models, is 18-59 cm (90% confidence limits) over the period from 1980-1999 to 2090-2099 (Meehl, et al. 2007).”</p> <p>Based on the 2007 IPCC estimate, the estimated sea level rise in 2099 (18 to 59 cm or 0.6 to 1.9 feet) is much lower than the 11 to 12 vertical feet of shoreline protection provided in the preliminary FS design. The revetment structure will be evaluated further in the remedial design relative to several factors including, but not limited to, potential rise in sea level.</p>



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7		General	Alternative 2 (excavation and off-site disposal) assumes that the entire contents of the landfill and adjacent waste sites (1,162,000 cubic yards) would be removed, screened, and replaced with clean soil, which would cost approximately \$330 million. Selective removal of wastes of concern, and avoiding excavation of non-hazardous demolition debris, etc., is not considered, although it may be feasible and effective to remove only a small percentage of the total waste volume or to remove hot spots, particularly in areas adjacent to the Bay. Successful implementation of this approach would require detailed assessments of hot spots, and agreement on field criteria for leaving wastes in place. Please utilize this approach in a new alternative.	As stated in the response to general comments 1 and 2, the Navy will revise the RI/FS Report to evaluate expanded hot spot removal (particularly those along the shoreline). However, the Navy does not believe that extension of this hot spot excavation approach is practical for the contiguous solid waste present in the Landfill Area. The Navy prepared Section 8.2.3.2 of the Draft RI/FS Report to specifically evaluate the potential hot spots within the Landfill Area with respect to EPA guidance, and concluded that characterization and treatment of these potential hot spots was not warranted.
8	5	ES.2.1	The text states that "Nearly all of the chemicals detected in Landfill Area soil at concentrations above RIECs were of a limited extent relative to the overall waste volume," but this statement gives the impression that areas where remedial investigation evaluation criteria (RIECs) were exceeded were actually examined to determine their size. This impression is incorrect, since most RIEC exceedences have not been investigated to determine the actual extent of high concentration contaminants.	The quoted statement in Section ES.2.1 is derived from an expanded discussion within Section 4.5.3, which begins as follows: "...soil characterization data within the Landfill Area are used to determine whether the containment presumption, as outlined in EPA guidance (EPA, 1993a, 1993b, and 1996) is appropriate. Specifically, the characterization data was used to assess the approximate lateral and vertical extent (relative to the landfill waste volume) of hazardous substances above the RIEC." Section ES.2.1 will be revised to include these two sentences to clarify the purpose of soil characterization data collected within the Landfill Area.
9	5 and 6	ES.2.3	In most of the remainder of the RI/FS, the Panhandle Area and East Adjacent Area are described separately. Use of this phrase is also confusing because the word "adjacent" is used to describe the East Adjacent Area and both areas together. For consistency, please delete the term "adjacent areas" and reference the specific area.	The RI/FS Report will be revised to minimize or eliminate use of the term "adjacent areas" and instead refer to the specific area(s). However, in circumstances where the term is repeatedly used to describe common conditions between the Panhandle Area and East Adjacent Area, the term may be used for brevity. In these circumstances, its use will be clarified to eliminate confusion.

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10	11	ES.5.1	The text indicates that remediation goals for human receptors were derived for each contaminant of concern (COC) by comparing the highest concentrations of acceptable risk with both the laboratory's reporting limit and the ambient level for the COC, if one was established, but specific numeric goals are not included in the RI/FS except for total petroleum hydrocarbons (TPH) and the approach is not clearly explained. The remediation goals for total petroleum hydrocarbons also appear to be based in part on the distance from the shoreline. Please clarify specifically how the remediation goals were determined for each class of contaminants (PCBs, semi-volatile organic compounds [SVOCs], metals, etc.) and provide the concentrations derived in this manner in a table for comparison with the RIECs and Region 9 preliminary remediation goals (PRGs).	For brevity, the Executive Summary does not explain the specific remediation goals for human receptors or the risk-based approach used in their development. This information is provided in Section 7.1.3, "Remediation Goals," of the RI/FS Report, and is subsequently referenced in Section 9, "Remedial Action Objectives." The approach for establishing risk-based remediation goals for CERCLA-regulated chemicals is consistent with the HPS-specific methodology established in consultation with the regulatory agencies (Navy, 2004).  The approach for establishing remediation goals for total petroleum hydrocarbons (TPH) is consistent with the evaluation methodology established under the HPS petroleum program. The TPH criteria presented in the Draft RI/FS Report were reflective of the available screening criteria for HPS (Tetra Tech EM Inc. [TtEMI], 2002f and 2004b). Since publishing the Draft RI/FS Report, the Navy and the San Francisco Bay Regional Water Quality Control Board (SFRWQCB) have updated the TPH screening criteria (Shaw Environmental, Inc., 2007). The Draft Final RI/FS Report will be updated to use the most current TPH screening criteria (soil source criteria and risk-based groundwater criteria). The soil source criterion (3,500 milligrams per kilogram for [mg/kg] total TPH) is unchanged from the Draft RI/FS Report. The risk-based groundwater criteria were slightly refined to specify more precise criteria based on distance from the shoreline. The updated TPH criteria will be presented in Section 5.3.1.2.
11	1-4	1.2	Item 4 appears to be incomplete; please provide the missing text.	Item 4 in Section 1.2 will be revised as follows: "The Shoreline Area, located at the interface with the Bay"
12	1-10	1.6.4.2	Although the text states that the area with PCB contamination was addressed under an interim removal action, portions of the PCB Hot Spot area have not yet been excavated. Please revise the text to incorporate this information.	Text will be added to Section 1.6.4.2 to clarify that portions of the Polychlorinated Biphenyl (PCB) Hot Spot Area remain unexcavated.



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13		Figure 1-4	This figure does not depict the current configuration of the shoreline and current elevations in the Metal Slag Area (MSA) or the current topography in the PCB Hot Spot excavation area. In addition, the figure does not include the drainage pipe that connects the drainage channel south of the interim landfill cap with the San Francisco Bay; this pipe is in the northwestern portion of the PCB Hot Spot excavation. Please provide an updated figure.	The post-excavation surface topography at the Metal Slag Area and PCB Hot Spot was not available for the Draft RI/FS Report because the construction completion reports were not yet published. Figure 1-4 will be updated to include post-excavation surface topography in the two removal areas and other recently installed drainage features.
14		Table 1-3	In addition to the area between the shoreline and the PCB Hot Spot Excavation, the area northwest of the excavation has not been excavated. The Regulatory Agencies requested that this area be included in the time critical removal action (TCRA) because of high concentrations of PCBs in shallow sediments adjacent to this area, but it was deleted when the excavation was scoped back. Please include this area in the sentence describing areas that still need to be excavated.	Table 1-3 and other portions of the document will be updated to clarify that the shoreline portion of the PCB Hot Spot Area has not yet been excavated, similar to the statement already provided in Section 3.10.2.
15	2-2, 2-3	2.1.1, 2.1.3	Since 537 miscellaneous containers of apparent laboratory waste were removed from the PCB Hot Spot excavation, it is likely that laboratory waste is also present in the Landfill Area. Also, 110 drums were removed from the PCB Hot Spot, but the text does not include industrial waste in the description of the East Adjacent Area. Please include laboratory waste in the Landfill Area and both laboratory and industrial waste in the East Adjacent Area in the lists of wastes.  It is also unclear why the only discussion of low level radiological waste is in the section describing the Panhandle Area when both the Landfill Area and portions of the PCB Hot Spot Area are considered radiologically impacted. Radioactive devices were removed from the PCB Hot Spot Excavation. Please revise the text of both sections to include a discussion of the likely presence of low level radiological waste in these areas.	Sections 2.1.1 and 2.1.3 were intended to provide general site information for the Landfill Area and East Adjacent Area. These sections will be updated to provide forward references to more detailed descriptions of waste types encountered during the recent removal actions, which are provided in Sections 4.2.1 and 4.4.1. These sections will be updated to include additional information provided in the recently published construction report for the removal action at the PCB Hot Spot Area, including information on the 537 miscellaneous containers. The description of waste within the Landfill Area will not be revised to cite waste types found within the East Adjacent Area.  Section 2.1.3 will be revised to cite that the East Adjacent Area includes an area containing potential low-level radioactive debris. Section 2.1.1 includes a statement on the potential presence of radioluminescent devices within the Landfill Area. Section 2.1 will be revised to include a statement that numerous areas within Parcel E-2 are considered "radiologically impacted" and will provide a forward reference to the more detailed discussion presented in Section 3.6.

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16	2-5	2.1.4	Since the MSA excavation was completed, it is unclear why the slag is described as though it was still present. Please revise the text to state that the MSA excavation has been completed.	Section 2.1.4 will be revised to further clarify that, similar to the statements provided in Section 2.1.2, the Metal Slag Area was excavated.
17	2-7	2.2.1.1	The text describes the A Aquifer as 5 to 15 feet thick, but in the northern portion of Parcel E-2, the Bay Mud is absent, so the A and B Aquifers are contiguous. As a result, the apparent thickness of the A Aquifer appears to be as much as 50 feet. For consistency, since the previous section discusses the interconnection of the A and B Aquifers, please discuss the combined thickness of the aquifers in this section.	As discussed in Section 2.2.1, the A-aquifer consists of saturated artificial fill (Qaf) and undifferentiated upper sand deposits (Quus), and the B-aquifer consists of saturated undifferentiated sand deposits (Qus). This interpretation is consistent with the hydrogeologic interpretations used in past investigations throughout HPS, and an alternate interpretation is not justified. The existing text of Section 2.2.1.1 clearly states: "The A-aquifer directly overlies the B-aquifer in the northwest corner of Parcel E-2, where the Bay Mud aquitard is absent (Figures 2-9, 2-10, and 2-13)."
18		2.2.1.2, Figures 2-3 and 2-6	The text states that fine grained sediments in the northwest corner of Parcel E-2 "isolate the uppermost portions of the B-aquifer (that are interconnected with the A-aquifer) from the lower portions of the B-aquifer," but this is not consistent with Figures 2-3 and 2-6, which indicate that the B Aquifer consists solely of sand in the northern portion of Parcel E-2. Please resolve this inconsistency.	The hydrogeologic interpretations stated in Section 2.2.1 (and associated subsections) are based on Figures 2-9 through 2-11. As discussed in Section 2.2.1, the geologic cross sections presented on Figures 2-3 through 2-8 "were prepared to depict the subsurface conditions in and immediately surrounding the landfill waste and, as such, focused on providing the greatest level of detail within the heterogeneous artificial fill," whereas the hydrogeologic cross sections presented on Figures 2-9 through 2-11 "were prepared to depict the overall hydrostratigraphy at Parcel E-2, with a specific focus on identifying permeable zones within the A- and B-aquifers." The common data used in both the geologic and hydrogeologic cross sections (most notably boring IR01B001) are presented consistently on all figures. It should be further noted that all cross sections presented in the Draft RI/FS Report were previously reviewed and revised, as appropriate, based on regulatory agency comments; these figures include Figures 2-3 through 2-8 in the Landfill Lateral Extent Evaluation (TtEMI, 2004f) and Figures 2-9 through 2-11 in the Parcel E Groundwater Summary Report (TtEMI, 2004c).



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<b>Comments provided by EPA Remedial Project Manager (Mark Ripperda), dated July 11, 2007 (continued)</b>				
19	2-12	2.2.4, Figure 2-19	It is unclear why the TIZ does not include IR01MW400A and IR01MW38A, which have similar tidal efficiencies and fluctuations to wells that are included within the TIZ. Please include these wells within the TIZ and/or explain the criteria used to determine the extent of the TIZ in the text.	Section 2.2.4 states that A-aquifer tidal influenced zone (TIZ) "is defined as the area where the maximum tidal fluctuation exceeds 0.10 foot in the A-aquifer (TtEMI, 2004c)." Neither well IR01MW400A nor IR01MW38A have tidal fluctuations that exceed 0.10 foot. It should be further noted that the delineation of the A-aquifer TIZ was previously presented in the Parcel E Groundwater Summary Report (TtEMI, 2004c).
20	2-15	2.2.6.1	Appendix I does not support the presumption that the cost to remove naturally occurring metals is prohibitive, as stated in Item 5. Please see comment on Section I4.1.8 and delete item 5 from Section 2.2.6.1.	Section 2.2.6.1 and Appendix I will be revised accordingly.
21	2-15	2.2.6.1	Item 6, the "[poor] quality of underlying B-aquifer relative to drinking water standards" appears to be contradicted by text in Section 2.2.6.2, which indicates that B aquifer groundwater has been included in the human health risk assessment (HHRA). Please delete item 6 or explain why it should be included.	The quality of the B-aquifer relative to drinking water standards was used as a site-specific factor (SSF) for evaluating the potential beneficial uses of the A-aquifer, consistent with past EPA correspondence (EPA, 1999). The use of this SSF in evaluating the potential beneficial uses of the A-aquifer does not affect the decision to include B-aquifer groundwater in the human health risk assessment (HHRA), which (as described in Section 2.2.6.3) was consistent with past agreements with the BCT on the HHRA methodology and to provide "an additional layer of conservatism with respect to the protection of human health at Parcel E-2."
22	2-16	2.2.6.4	Since the former Albion Spring on Innes Street produced 10,000 gallons per minute from bedrock for bottling water and as a brewery, it is not clear why it is concluded that the bedrock water bearing zone is "not capable of yielding sustainable quantities of water." Please delete the quoted statement and revise the text to state that the quantity of water that can be produced from bedrock beneath Parcel E-2 is unknown.	Section 2.2.6.4 clearly states that "no direct data are available to assess the water quality or yield of the bedrock water-bearing zone underlying Parcel E-2 relative to federal and state criteria." The additional statement regarding the poor yield from the bedrock water-bearing zone at the former Parcel A, while potentially pertinent to Parcel E-2, will be deleted from Section 2.2.6.4.

**Table 1. Responses to Comments from U.S. Environmental Protection Agency (EPA) (continued)**  
**Draft Parcel E-2 Remedial Investigation/Feasibility Study (RI/FS) Report, Hunters Point Shipyard (HPS), March 2007**

Comment #	Page #	Section	Comment	Response
<b>Comments provided by EPA Remedial Project Manager (Mark Ripperda), dated July 11, 2007 (continued)</b>				
23	2-17	2.3, Figure 2-22	Neither the text nor the figure include the drainage pipe in the northwestern portion of the PCB Hot Spot excavation that connects the drainage channel south of the interim landfill cap with the San Francisco Bay. Please revise the figure to include this pipe.  Since the PCB Hot Spot Area has been backfilled, the topography and drainage has changed. In addition, the blue arrows at the eastern and southeastern edge of the interim landfill cap should not cross the drainage swale at the base of the cap/slope. Please revise the figure to include the current topography and drainage at the PCB Hot Spot and correct the arrows on the eastern and southeastern edge of the interim landfill cap.	Section 2.3 and Figure 2-22 will be revised to include the pertinent post-excavation information that was not available for the Draft RI/FS Report.
24		Figures 2-6 and 2-13	Figure 2-6 indicates that Bay Mud is present in the vicinity of IR01MW05A, but this is not shown on Figure 2-13. Please resolve this discrepancy.	Figure 2-6 depicts a localized Bay Mud deposit in the vicinity of well IR01MW05A. This localized Bay Mud lens was not used in identifying the area where A- and B-aquifer sediments are in hydraulic communication due to a Bay Mud aquitard that is thin or absent. The hydrogeologic interpretation presented on Figure 2-13 is conservative and consistent with the past interpretations in the Parcel E Groundwater Summary Report (TtEMI, 2004c).
25		Figure 2-10	It appears that this cross-section has not been updated to incorporate the MSA excavation and clean backfill. Please update the cross-section to incorporate the extent of the MSA excavation and clean backfill.	Figures 2-9 and 2-10 will be revised to denote the areas that were recently excavated as part of interim removal actions.
26		Figures 2-14 through 2-16	It would be helpful to include the elevations used to create the contour maps and the TIZ on these figures. Please include the groundwater elevation values used to construct the contours and the TIZ on these figures.	Figures 2-14 and 2-15 will be revised to include the water level elevation from each well. The TIZ was developed based on data collected during the Groundwater Data Gaps Investigation (GDGI) (TtEMI, 2004c). The data used to construct the TIZ at Parcel E-2 are summarized on Figure 2-19 of the RI/FS Report. Wells located within the TIZ were identified on Figure 11 of the Final Sampling and Analysis Plan for the Basewide Groundwater Monitoring Program (TtEMI, 2004c) for the purposes of collecting synoptic water level measurements that minimized tidal effects at near-shore wells.



**Table 1. Responses to Comments from U.S. Environmental Protection Agency (EPA) (continued)**  
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<b>Comment #</b>	<b>Page #</b>	<b>Section</b>	<b>Comment</b>	<b>Response</b>
<b>Comments provided by EPA Remedial Project Manager (Mark Ripperda), dated July 11, 2007 (continued)</b>				
27		Figure 2-15	Depression contours should be used on Figure 2-15 in the vicinity of well IR12MW14A. Please use depression contours for areas below sea level that create a groundwater sink.	Figure 2-15 will be revised accordingly.
28	3-8	3.3.2, 3.3.3	The text indicates that the Draft Final RI/FS will be updated with confirmation sampling results from the removal actions conducted in these areas, so a summary of the types of debris encountered should also be included in the text of these sections to provide a more complete picture of the types of disposal that occurred in Parcel E-2. For example, at the PCB Hot Spot, 537 bottles and containers containing apparent laboratory waste and 110 drums were found; the types of waste and contents of the drums would provide insight into the types of industrial and laboratory waste that were disposed in Parcel E-2. Please include summaries of the types of debris that were removed from the PCB Hot Spot and MSA excavations. Please also include a summary of the materials contained in the drums.	Consistent with the response to comment 15, these sections will be updated to provide forward references to more detailed descriptions of waste types encountered during the recent removal actions, which are provided in Sections 4.2.1 and 4.4.1. These sections will be updated to include additional information provided in the recently published construction reports for the removal actions at the PCB Hot Spot Area and Metal Slag Area.
29	3-22	3.8.3	The text is written in present tense, which indicates that the groundwater extraction system still exists and can be brought back on-line, but all of the components of this system were removed during the PCB Hot Spot TCRA, so it will not be possible to bring the system back on-line. Please update the text to include the removal of this system.	Section 3.8.3 will be revised accordingly.

**Table 1. Responses to Comments from U.S. Environmental Protection Agency (EPA) (continued)**  
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Comment #	Page #	Section	Comment	Response
<b>Comments provided by EPA Remedial Project Manager (Mark Ripperda), dated July 11, 2007 (continued)</b>				
30		3.8.5	<p>There are more than the 5 gas monitoring probes (GMPs) mentioned in the text, since there are also a number GMPs on both sides of the gas collection trench and along Crisp Avenue, but these GMPs were apparently excluded from the text. Please revise the text to include a brief description of all GMPs associated with the landfill gas extraction system in the text.</p> <p>In addition, it is unclear why the text references Figure 1-3, which does not have all of the GMP locations and does not reference Figure 3-7, which includes all of the components of the landfill gas extraction and control system and all of the GMP locations. Please revise Section 3.8.5 to discuss and reference Figure 3-7.</p>	<p>Section 3.8.5 will be revised to provide additional details on the landfill gas control system. In addition, Section 3.8.5 will be revised to provide forward references to Sections 3.9.2 and 4.2.3.2, which provide more detailed explanations of the landfill gas characterization, removal action, and post-extraction monitoring activities.</p>
31		4	<p>The methodology used to screen and present PCB data is inconsistent. For example, the first complete paragraph on page 4-25 indicates that only the total PCB values will be described in detail, but this RIEC is based on the 2004 Industrial PRGs, which apply to individual Aroclor compounds as well as total PCBs. Therefore, each Aroclor mixture should be compared to its respective RIEC (21 mg/kg for low risk PCBs like Aroclor 1016 and 0.74 mg/kg for the high risk PCBs like Aroclor 1254). A number of Aroclors had maximum concentrations that exceeded the RIEC, but these detections exceeding the RIEC were not included in the summary of exceedences on the Section 4 tables. Please update the relevant Section 4 tables to reflect exceedences of individual Aroclor compounds, as well as for Total PCBs. Aroclors with concentrations that exceed the RIEC should be discussed in the text and included on figures.</p> <p>Also, it is inappropriate to use the Total PCB RIEC as a screening criterion for PCB congeners (e.g., PCB-008, PCB-052). Please re-evaluate the use of the Total PCB RIEC as a screening criterion, propose an alternate RIEC, and/or remove references to this RIEC from the Tables for PCB congeners.</p>	<p>The text, tables, and figures in Section 4 will be revised to evaluate low-risk and high-risk Aroclor compounds separately (consistent with EPA's preliminary remediation goals [PRGs]). Consistent with the established HHRA methodology, Aroclor-1016 is a low-risk PCB compound (and will be compared to the remedial investigation evaluation criterion (RIEC) of 21 mg/kg), and all other Aroclor compounds are considered high-risk (the sum of which will be compared with an RIEC of 0.74 mg/kg). Presenting the sum of all high-risk PCB compounds in Section 4 is conservative and considered sufficient to demonstrate the nature and extent of PCB concentrations at Parcel E-2. For completeness, the tables in Appendix J1 compare data for individual Aroclor compounds against their corresponding RIEC.</p> <p>Analysis for individual PCB congeners in soil was performed at three locations in the Panhandle Area as part of the Ecological Risk Assessment (ERA) Validation Study (and subsequent calculations of protective soil concentrations [PSCs]). Because these analyses were performed over a limited area in support of the ERA, these data do not help refine the nature and extent of PCBs in soil throughout Parcel E-2. Therefore, PCB congeners will be removed from the text, figures, and tables of Section 4.</p>



**Table 1. Responses to Comments from U.S. Environmental Protection Agency (EPA) (continued)**  
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Comment #	Page #	Section	Comment	Response
<b>Comments provided by EPA Remedial Project Manager (Mark Ripperda), dated July 11, 2007 (continued)</b>				
31 (cont.)		4	In addition, it is unclear how total PCB concentrations were obtained. Table 4-3 (Landfill Area, 0-2 feet) indicates the maximum total PCB concentration is 0.23 mg/kg, but the maximum Aroclor-1260 concentration is 20 J mg/kg. Further, Figure 4-56 indicates total PCBs were not reported above the RIEC, which is misleading given the elevated concentration of Aroclor-1260. Please discuss how the total PCB concentrations were derived and clarify how this maximum can be considered below the RIEC of 0.74 mg/kg when the Aroclor-1260 concentration is significantly above the RIEC. Also, please correct Tables 4-3 and 4-4 and Figure 4-56 to reflect Aroclor and total PCBs exceedences and discuss them in the text.	The tables in Appendix J1 show that the maximum Aroclor-1260 concentrations in the Landfill Area (0 to 2 feet) is 0.23 mg/kg not 20 J (estimated) mg/kg. Table 4-3 will be revised to correct this error, and the statistical summary tables in Section 4 will be checked to ensure that no other such errors are present. If any errors are identified, the text, figures, and tables in Section 4 will be revised, as appropriate, to ensure a consistent presentation of the PCB soil data.
32		4.1.3.1	It is unclear why the RIECs are based solely on human health when most of Parcel E-2 will be open space. Where possible, ecological criteria should be used to create RIECs. For example, the RIECs for shoreline sediment samples should be based on the effects-range medians (ERMs) for sediment. Shoreline sediment samples that exceed their respective ERMs but are below the selected RIECs for soil (such as copper) were omitted from the Figures in this RI/FS. Please revise the RI/FS to include revised RIECs for shoreline sediment that are based on the ERMs.	Section 4.1.3.2 will be expanded to further discuss the rationale for basing the RIEC on human health criteria. Specifically, an evaluation relative to human health criteria is needed to support the HHRA, particularly considering the wider range of chemicals and greater exposure depths as compared to the ERA.  As stated at the beginning of Section 4, "The nature and extent of sediment contamination within the intertidal Shoreline Area is presented, along with a SLERA [screening-level ecological risk assessment] for shoreline aquatic receptors, in the Shoreline Characterization Technical Memorandum (SulTech, 2005) (Appendix G of this report)."  Section 4.1.3.2 clarifies that the SLERA (presented in Appendix L of the RI/FS Report) presents a focused nature and extent evaluation for chemicals of potential ecological concern (COPECs) at Parcel E-2.

**Table 1. Responses to Comments from U.S. Environmental Protection Agency (EPA) (continued)**  
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Comment #	Page #	Section	Comment	Response
<b>Comments provided by EPA Remedial Project Manager (Mark Ripperda), dated July 11, 2007 (continued)</b>				
33	4-11, 8-6	4.2, 8.2.1.2	The text in the third bullet in Section 4.2 and the first bullet in Section 8.2.1.2 indicates that the oily waste area was included within the boundaries of landfill solid waste, but based on test pit logs from the landfill lateral extent evaluation, areas in the vicinity of WE19C and WE20B with stained soil that was likely due to the disposal of waste oil in this area are not included within the landfill boundaries (i.e., within the designated extent of solid waste). Please include these test pits within the boundary of solid waste or explain why they should be excluded.	Both Sections 4.2 and 8.2.1.2 specify that "An oily waste area was identified on the NAVFAC drawings along the western perimeter of the Landfill Area (Navy, 1974). During preliminary closure activities in 1974, ponded liquid was removed and the top 6 inches of soil at the oily waste area was scarified before the soil cover was placed. Based on borings and exploratory trenches, this area also was partially filled with solid waste during closure; therefore, this area is included within the boundaries of solid waste at the Parcel E-2 Landfill (TtEMI, 2004f)." Consistent with this rationale, the presence of stained soil outside of the contiguous solid waste does not necessitate an expansion of the lateral extent of the landfill.
34	4-21, 4-35, 4-48	4.2.4, 4.3.2, 4.4.2	RIEC exceedences are described as limited in extent and not indicative of a hot spot, but the Navy has proposed not to characterize any more hot spots, on the basis that EPA guidance states that waste characterization is not necessary. Please identify locations where the detected concentration exceeded the RIEC by a factor of 10 as a data gap and recommend minimal investigation (e.g., 3-5 new samples) at high concentration sample locations prior to or during remedial design for alternatives that involve complete excavation or removal of hot spots.	<p>The identification of potential hot spots was limited to the nature and extent evaluation for the Landfill Area. This identification was performed within the Landfill Area to support an evaluation of the landfill with respect to EPA presumptive remedy guidance (EPA, 1993a and 1996). This evaluation, as presented in Section 8.2.3.2, concluded that further characterization of potential hot spots within the Landfill Area was not needed.</p> <p>Based on the response to general comment 1, the RI/FS Report will be revised to identify potential hot spots within the East Adjacent Area, Shoreline Area, and Panhandle Area. As an initial step, the tables in Section 4 will be revised to identify chemicals where the maximum detected concentrations exceeded the RIEC by a factor of 100.</p> <p>This evaluation will be refined, as appropriate, to identify potential hot spots, the removal of which would enhance the Navy's ability to meet the RAOs.</p> <p>The Navy will also revise Section 4.5.3, 4.5.4, 8.4, 12, and 13 of the RI/FS Report to clarify that additional characterization may be required in areas where hot spot removal is implemented in conjunction with containment technologies. Specific data quality objectives for this additional characterization will be developed prior to or during the remedial design.</p>

**Table 1. Responses to Comments from U.S. Environmental Protection Agency (EPA) (continued)**  
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<b>Comments provided by EPA Remedial Project Manager (Mark Ripperda), dated July 11, 2007 (continued)</b>				
35	4-21	4.2.4.1, Table 4-3	The last paragraph on page 4-21 states that none of the laboratory reporting levels (LRLs) for benzo(a)anthracene exceeded the selected RIEC of 1.3 mg/kg. However, Table 4-3 indicates the range of LRLs for benzo(a)anthracene was 0.073 to 1.5 mg/kg. Please resolve this discrepancy. There are similar issues with benzo(b)fluoranthene, indeno(1,2,3-cd)pyrene, and other chemicals. Please review the text and Table 4-3 and resolve any other inconsistencies where the LRLs exceeded RIECs.	The analytical database will be reviewed, and the text and tables will be revised to resolve any discrepancies.
36	4-25	4.2.4.2	The second complete paragraph on page 4-25 indicates there are two PCB hotspots within the landfill (IR01B001, 9.41 feet bgs, 284 mg/kg, and IR01MW16A, 8.75 feet bgs, 740 mg/kg), but one additional PCB hot spot (IR01MW05A, 8.31 feet bgs, 370 mg/kg) was not mentioned in the text. Please include this hot spot in the discussion of total PCBs.	The text will be revised to identify IR01MW05A as a potential hot spot within the Landfill Area. The text will also be revised to identify boring IR01B004 (not IR01B001) as a potential hot spot within the Landfill Area. Section 4.5.3 will be revised to state that PCBs were detected in seven samples (not six) at concentrations indicative of a potential hot spot (that is, greater than 100 mg/kg).
37	4-25	4.2.4.2	1,4-dichlorobenzene is present in the landfill area at a maximum concentration of 59 mg/kg, which exceeds the RIEC (0.13 mg/kg) and 100 times the RIEC, which is used to define a hot spot, but the text states that this concentration is not indicative of a hot spot. Similarly, naphthalene also was reported at a maximum concentration (1400 mg/kg) that exceeds 100 times the RIEC (1.5 mg/kg), but was not considered a hot spot. In addition, naphthalene exceeded the RIEC in 11 locations, not the single location mentioned in the text. Please revise the text to include the 1,4-dichlorobenzene and naphthalene hot spots and correct the text to cite the correct number of naphthalene exceedences.	The text will be revised to cite the potential 1,4-dichlorobenzene and naphthalene hot spots and the correct number of naphthalene exceedences.
38	4-33	4.2.4.3	The last sentence in second complete paragraph (Petroleum Hydrocarbons) on page 4-33 refers to xylenes (total) but should refer to TPH. Please correct this sentence.	Section 4.2.4.3 will be revised to refer to TPH instead of xylenes (total).

**Table 1. Responses to Comments from U.S. Environmental Protection Agency (EPA) (continued)**  
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<b>Comments provided by EPA Remedial Project Manager (Mark Ripperda), dated July 11, 2007 (continued)</b>				
39	4-37	4.3.2.1	The text does not acknowledge that samples have not been collected east or south of IR01B372 where total PCBs were found at 20 mg/kg. Please revise the text to include this information.	Section 4.3.2.1 will be revised accordingly.
40	4-40	4.3.2.2	This section appears to have been titled incorrectly since subsurface contamination is discussed in the text.	The heading for Section 4.3.2.2 will be revised to: "Panhandle Area Subsurface Soils (2 to 10 feet)." In addition, the heading for Section 4.3.2.3 will be revised to: "Panhandle Area Deep Soils (greater than 10 feet)."
41	4-49, 4-50	4.4.2.1	The extent of contamination has not been delineated because samples have not been collected to define the following: <ul style="list-style-type: none"> <li>▪ Arsenic: samples have not been collected west of IR04B030</li> <li>▪ Lead: samples have not been collected west or northwest of IR04B047</li> <li>▪ Dieldrin: samples have not been collected southwest of IR12B041</li> <li>▪ Total PCBs: samples have not been collected southwest of IR12B042</li> <li>▪ Various polynuclear aromatic hydrocarbons (PAHs): samples have not been collected north of IR01TA06B</li> </ul> Please revise the text to include this information.	Section 4.1.3.4 will be revised to clarify that the evaluation of adjacent samples (to determine whether RIEC exceedances are adequately delineated) was performed in four basic directions (north, south, east, and west). This approach is consistent with the sampling approach developed during the Standard Data Gaps Investigation (SDGI). See the items below regarding comments on specific chemicals. <ul style="list-style-type: none"> <li>▪ Arsenic: Text will be revised to state that the exceedance is not bounded to the west.</li> <li>▪ Lead: Text will be revised to state that the exceedance is not bounded to the west.</li> <li>▪ Dieldrin: The samples collected to the west and south of IR12B041 are considered adequate to delineate the RIEC exceedance in this area. The text will be revised to discuss the samples located to the east (within adjacent Parcel E).</li> <li>▪ Total PCBs: Text will be revised to state that the exceedance is not bounded to the west. Additional text will be added to this section to discuss the presence of PCBs in shallow soil at numerous locations throughout the East Adjacent Area.</li> <li>▪ Various polycyclic aromatic hydrocarbons (PAHs): Text will be revised to state that the exceedance is not bounded to the north.</li> </ul>
42	4-53	4.4.2.2	Similarly, the extent of total PCBs has not been bounded to the southwest of IR01TA07A. Please revise the text to include this direction.	As discussed in the response to comment 41 above, the evaluation of adjacent samples (to determine whether RIEC exceedances are adequately delineated) was performed in four basic directions (north, south, east, and west) to a distance of 150 feet. Additional text will be added to this section to discuss the presence of PCBs in subsurface soil at numerous locations throughout the East Adjacent Area, including one location (IR01TA07B) with concentrations greater than 100 mg/kg.

**Table 1. Responses to Comments from U.S. Environmental Protection Agency (EPA) (continued)**  
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<b>Comments provided by EPA Remedial Project Manager (Mark Ripperda), dated July 11, 2007 (continued)</b>				
43	4-61, 8-19	4.5.3, 8.4.2	In order to support the conclusions in these sections, the number of borings and number of samples collected in each area should be compared to the number of locations/samples with exceedences. For example, it cannot be concluded that there is less contamination in the East Adjacent Area at depths below 10 ft bgs (page 8-19) than in other areas without considering the number of samples collected below 10 ft bgs in each area. Please include a comparison of the number of samples collected in each area and at specific depths with the number of exceedences (e.g., as listed in Table 4-24) into these sections.	The text will be revised to present the requested information.
44	4-61	4.5.3	The third bullet notes that 6 samples from the Panhandle Area exceeded more than 100 times the PCB RIEC, but only classifies the sample locations as "potential hot spots" with no further action planned. According to the definition in Section 4.2.4, exceedences 100 times the RIEC qualify as hot spots, not "potential" hot spots. Please revise the text to identify the six locations as hot spots, and provide appropriate sampling plans to determine contaminant distributions in these areas.	To clarify, Section 4.5.3 states that six samples from the Landfill Area contained PCBs at concentrations greater than 100 mg/kg. The term "potential hot spots with the landfill" was used because additional evaluation of these potential hot spots was required per EPA guidance (EPA, 1993a and 1996). This additional evaluation was outlined in Section 8.2.3.2. Please see the response to comment 34 above for additional information on the identification of hot spots at Parcel E-2.
45	4-62, 4-63	4.5.3, 4.5.4	As discussed in Section 4.5.3 and shown on Table 4-24, RIEC exceedences in the Panhandle and East Adjacent Areas are not completely delineated. The text states that it is difficult to delineate potential point sources of soil contamination due to the heterogeneous nature of fill material and that adequate data exists to evaluate potential human health and ecological risks at Parcel E-2. Section 4.5.4 further states that further delineation is not necessary based on the focused remedial alternatives presented in this FS. While the data may be sufficient to proceed with the RI/FS process, this does not preclude the need for future sampling to completely delineate the extent of soil and groundwater contamination for alternatives that involve excavation.	As discussed in the response to comment 34 above, the RI/FS Report will be revised to clarify that additional characterization may be required in areas where hot spot removal is implemented in conjunction with containment technologies.  For Alternative 2 (complete excavation of landfill waste and excavation of surface soils within the adjacent areas), pre-excavation delineation sampling would not be needed. However, post-excavation confirmation sampling would be required, and this effort is included in the cost estimate for Alternative 2.

**Table 1. Responses to Comments from U.S. Environmental Protection Agency (EPA) (continued)  
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<b>Comments provided by EPA Remedial Project Manager (Mark Ripperda), dated July 11, 2007 (continued)</b>				
45 (cont.)	4-62, 4-63	4.5.3, 4.5.4	Please revise the text to state that delineation of the extent of contamination is not necessary for capping alternatives, but that additional delineation may be necessary for alternatives that involve excavation (i.e., either complete excavation or hot spot removal).	(see above)
46	4-22	Figure 4-8, Table 4-3, 4.2.4.1	Several locations where concentrations are reported as non-detects on Figure 4-8 had reporting limits that are significantly above the RIEC for naphthalene of 1.5 mg/kg. For example, the samples from IR01B390 at 2 feet bgs and IR72SS22 at 0 feet bgs are reported as not detected above the reporting limit of 10 mg/kg. However, the reporting limit range on Table 4-3 is presented as 0.073 mg/kg to 1.5 mg/kg, and the text on page 4-22 states that none of the reporting limits for naphthalene exceeded the selected RIEC. Please clarify these discrepancies and review all figures, tables, and text for similar inconsistencies.	The analytical database will be reviewed, and the text, figures, and tables will be revised to resolve any discrepancies and inconsistencies.
47		Table 4-1	It is unclear why some of the RIEC values are not the lowest listed criterion. For example, the 2004 Industrial PRG for endrin is listed as 180 mg/kg, but the RIEC is 190 mg/kg. Similarly, the 2005 Industrial Environmental Screening Level (ESL), Inhalation for 2,4,5 trichlorophenol is 305 mg/kg and for pyrene is 425 mg/kg, but the RIECs are 310 mg/kg and 430 mg/kg, respectively. Please resolve these discrepancies.	The RIEC for endrin will be revised to 180 mg/kg, and all text, figures, and tables will be revised accordingly. For 2,4,5-trichlorophenol and pyrene, the difference in RIEC and environmental screening levels (ESLs) is the result of rounding the RIEC to two significant digits. The analytical database has been reviewed to confirm that no concentrations were detected between the rounded RIEC and the ESL.
48		Table 4-24	The text on page 4-62 indicates that RIEC exceedences are shown in red text on this table, but there is no red text. Please resolve this discrepancy.	The text on page 4-62 will be revised to state that exceedences are shown on Table 4-24 in bold text (inside shaded cells).
49		Table 4-25	The third column in the "Nature and Extent of Contamination in Parcel E-2 Shoreline Sediment" indicates the Shoreline Characterization Technical Memorandum is found in Appendix A. This memorandum is found in Appendix G. Please revise the text to cite the correct Appendix.	Table 4-25 will be revised accordingly.

**Table 1. Responses to Comments from U.S. Environmental Protection Agency (EPA) (continued)**  
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Comment #	Page #	Section	Comment	Response
<b>Comments provided by EPA Remedial Project Manager (Mark Ripperda), dated July 11, 2007 (continued)</b>				
50		Table 4-25	<p>The fifth Decision Question (DQ) under “Nature and Extent of Contamination in Onshore Soil” and its resolution are problematic. First, the DQ itself is vague since it does not specify how a TPH plume is defined. Based on the criteria for PCBs in groundwater (any detected concentrations), it could be assumed that TPH detections above reporting limits are considered part of the TPH plume, but this should be clarified.</p> <p>Second, it is unclear why PCB concentrations in soil are not included along with soil concentrations of TPH when investigating the sources of TPH and PCB groundwater contamination. PCB concentrations in soil should be considered for this DQ.</p> <p>Third, the resolution of the DQ states that source areas and single point locations suspected to be within TPH plumes or locations where PCBs have been detected in groundwater do not have soil concentrations of TPH that exceed criteria, but this conclusion is not supported by the data. PCB and TPH data were not collected from the screened interval of each monitoring well boring, so it is difficult to correlate soil and groundwater data. For example, IR01B011, where TPH in soil exceeds the RIEC (11,360 mg/kg at 9 feet bgs and 9,360 mg/kg at 11 feet bgs), does not have a corresponding groundwater sampling location. Therefore, it is unclear whether groundwater in this location has been impacted. Similarly, Figure 5-64 indicates only two wells (IR01MWI-3 and IR01MW43A) have TPH concentrations (in groundwater) above the RIEC. These locations are within the PCB Hot Spot area and were likely excavated to at least 10 feet bgs. However, soil data is unavailable for well IR01MWI-3, so the conclusion that concentrations of TPH did not exceed the RIEC cannot be made.</p>	<p>The decision questions were taken verbatim from the Sampling and Analysis Plan for the Standard Data Gaps Investigation (SDGI) (TtEMI, 2002d), which was reviewed and approved by the regulatory agencies. The TPH criterion used to define TPH plumes (in both the SDGI and the Draft RI/FS Report) is 3,500 mg/kg for total TPH (that is, the sum of all detectable gasoline-, diesel-, and motor oil-range TPH). As discussed in the response to comment 10, this criterion corresponds to the soil source criteria specified in the HPS petroleum program (Shaw Environmental, Inc., 2007). Table 4-25 will also be revised as follows:</p> <p>Decision Question 5: Do potential source areas, known source areas, and single-point locations suspected of being within TPH plumes or locations where PCBs have been detected in groundwater have soil concentrations of TPH that exceed criteria (greater than 3,500 mg/kg of total TPH)?</p> <p>Resolution of Decision Question 5: Yes. Some (but not all) sampling locations within potential TPH plumes, or areas with PCBs detected in groundwater, contain total TPH concentrations exceeding the soil source criteria (3,500 mg/kg). Adequate information has been collected to identify primary source areas, most notably the PCB Hot Spot Area in the East Adjacent Area; however, not all identified source areas have been sufficiently characterized to estimate the spatial extent of contamination. This finding is attributed to the heterogeneous nature of the soil contamination at Parcel E-2. Additional delineation is not effective in defining the nature and extent of such heterogeneous soil contamination. Sufficient data are available to support the HHRA and SLERA and the focused set of remedial alternatives.</p> <p>For item 4, the response to comment 31 clarifies that the maximum detected concentration in the Landfill Area (from 0 to 2 feet) is 0.23 mg/kg, not 20 mg/kg.</p>

**Table 1. Responses to Comments from U.S. Environmental Protection Agency (EPA) (continued)**  
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<b>Comments provided by EPA Remedial Project Manager (Mark Ripperda), dated July 11, 2007 (continued)</b>				
50 (cont.)		Table 4-25	<p>Also, Figure 4-56 does not include all PCB exceedences in the 0-2 feet bgs soils. Because the location of the maximum exceedence (20 mg/kg) is not identified, it is not possible to evaluate TPH and PCB concentrations in nearby groundwater sampling locations. In addition, groundwater sampling locations do not exist for every RIEC exceedence of PCBs in soil. For example, PCBs were detected at concentrations above the RIEC in locations IR01B373, IR01B374, IR01B386, IR01B390, and IR01B394 at 0-2 feet bgs. Samples were not analyzed for PCBs in these locations at greater depths.</p> <p>Groundwater samples were collected from locations IR01MW53B and IR01MW48A (which correspond roughly to soil sampling locations IR01B373 and IR01B374); however, the reporting limits for these samples exceeded the RIEC for PCBs. Similar issues exist for PCB hot spots identified in the landfill. Therefore it is premature to conclude that locations where PCBs have been detected in groundwater do not have corresponding soil concentrations that exceed the RIEC, or vice versa. Please revise the text and Table 4-25 to delete such conclusions.</p>	(see above)
51		4, Figures	<p>Soil sampling locations in the PCB Hot Spot area are not included on the figures, perhaps because soil was excavated in this area. However, soil samples with PCB concentrations exceeding the RIEC of 0.74 mg/kg were collected at depths greater than the PCB Hot Spot excavation depths. In addition, at least 4 sample locations/borings were not excavated when the excavation boundaries were changed. These soil samples should be included on the appropriate figures. Please include any soil samples from depths greater than those excavated and also include the 4 locations that were not excavated on the Figures.</p>	<p>As described in Section 4.1.3, the excavations were being done concurrently with preparation of the RI/FS Report, and certain assumptions were made in presenting the historic characterization data (specifically, filtering samples within the planned excavation boundaries to a depth of 3 feet below ground surface [bgs]). As discussed in Section 4.1.3 of the Draft RI/FS Report, the Navy will update the Draft Final RI/FS Report to reflect the final excavation boundaries, unexcavated historic data not previously shown, and confirmation sample results.</p>



**Table 1. Responses to Comments from U.S. Environmental Protection Agency (EPA) (continued)**  
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<b>Comments provided by EPA Remedial Project Manager (Mark Ripperda), dated July 11, 2007 (continued)</b>				
52		5.3.2.2	Although the text states that the extraction of more than three million gallons of groundwater and surface water from the PCB Hot Spot excavation "removed all remaining traces of LNAPL," excavations southwest of the PCB Hot Spot area and between it and the shoreline indicate that light non-aqueous phase liquid (LNAPL) is still present in the shoreline area. Please revise the text to include this information.	Section 5.3.2.2 will be revised to reflect the pertinent post-excavation information that was not available for the Draft RI/FS Report.
53	5-12	5.4	The statement in the second sentence, "Because the presence of metals in groundwater does not constitute contamination," should be revised to state that the presence of naturally occurring metals at background concentrations does not constitute contamination. This will clarify the difference between naturally occurring metals in groundwater and groundwater that has been impacted by metals contamination.	The subject sentence in Section 5.4 will be clarified as follows (changes in italicized text): "A comparison between detected concentrations and ambient levels was performed <i>to distinguish between naturally occurring metals in groundwater and potential contamination caused by site operations.</i> "
54	5-13	5.5	Groundwater samples should also be compared to the California Toxics Rule (CTR) criteria and to the national ambient water quality criteria (NAWQC). If these are contained within the Regional Water Board's ESLs, then that should be stated.	Chemical concentrations in groundwater samples were compared with the CTR criteria and with the National Ambient Water Quality Criteria (NAWQC). As discussed in the response to comment 3, the Navy prepared Appendix M of the Draft RI/FS Report to specifically evaluate the groundwater data against promulgated aquatic criteria (from the CTR and the Basin Plan) that were identified as chemical-specific ARARs in surface water, and also included other risk-based criteria (such as NAWQC) for completeness. Section 5 will be revised to use the surface water criteria (e.g., CTR, NAWQC, etc.) established in Appendix M, in addition to criteria for other exposure pathways (e.g., drinking water maximum contaminant levels (MCLs) and ESLs based on drinking water toxicity and indoor air effects).
55	5-16	5.7.2.1	The text states that cyanide was detected above the RIEC in only 1 perimeter well after 2002. Figure 5-1 indicates that cyanide was detected above the RIEC in 2 wells, IR01MWLF-4B and IR01MW47B in December 2004.	The evaluation of the nature and extent of contamination in groundwater will be revised to incorporate additional quarterly data collected since March 2005 (along with recent data from a focused data gaps investigation along the Parcel E-2 shoreline). The text, figures, and tables will be revised to reflect the updated data, and each component will be carefully reviewed to ensure consistency.

**Table 1. Responses to Comments from U.S. Environmental Protection Agency (EPA) (continued)**  
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<b>Comments provided by EPA Remedial Project Manager (Mark Ripperda), dated July 11, 2007 (continued)</b>				
56	5-17	5.7.2.1	The text states un-ionized ammonia exceeded the RIEC in 6 of 14 perimeter wells, but Figure 5-2 indicates that the RIEC was exceeded in 8 perimeter wells.	The evaluation of the nature and extent of contamination in groundwater will be revised to incorporate additional quarterly data collected since March 2005 (along with recent data from a focused data gaps investigation along the Parcel E-2 shoreline). The text, figures, and tables will be revised to reflect the updated data, and each component will be carefully reviewed to ensure consistency.
57	5-17	5.7.2.2	Table 5-1 indicates the maximum concentration of nitrite in the A-aquifer was 59,000 micrograms per liter (ug/L). This exceedence is not shown on Figure 5-3 nor is it discussed in the text.	The evaluation of the nature and extent of contamination in groundwater will be revised to incorporate additional quarterly data collected since March 2005 (along with recent data from a focused data gaps investigation along the Parcel E-2 shoreline). The text, figures, and tables will be revised to reflect the updated data, and each component will be carefully reviewed to ensure consistency.
58	5-17	5.7.2.2	Table 5-2 indicates the maximum concentration of aluminum in the A-aquifer was 183,000 ug/L. This exceedence is not shown on Figure 5-4 nor is it discussed in the text.	The evaluation of the nature and extent of contamination in groundwater will be revised to incorporate additional quarterly data collected since March 2005 (along with recent data from a focused data gaps investigation along the Parcel E-2 shoreline). The text, figures, and tables will be revised to reflect the updated data, and each component will be carefully reviewed to ensure consistency.
59		Figure 5-7	Several entries under well IR01MW48A are printed in red, indicating these concentrations exceed the RIEC, when they do not.	Figure 5-7 will be revised to correctly depict only the RIEC exceedances in red font.
60	5-20	5.7.2.2	The text states that copper was detected in all but 3 wells at the site. Figure 5-13 shows that copper was not detected in 12 wells. The text states that copper was detected above the RIEC in 5 B-aquifer wells. Figure 5-13 shows copper was detected above the RIEC in 6 B-aquifer wells	The evaluation of the nature and extent of contamination in groundwater will be revised to incorporate additional quarterly data collected since March 2005 (along with recent data from a focused data gaps investigation along the Parcel E-2 shoreline). The text, figures, and tables will be revised to reflect the updated data, and each component will be carefully reviewed to ensure consistency.
61	5-21	5.7.2.2	The text states that lead was detected in all but 4 wells at the site. Figure 5-14 shows that lead was not detected in 9 wells.	The evaluation of the nature and extent of contamination in groundwater will be revised to incorporate additional quarterly data collected since March 2005 (along with recent data from a focused data gaps investigation along the Parcel E-2 shoreline). The text, figures, and tables will be revised to reflect the updated data, and each component will be carefully reviewed to ensure consistency.



**Table 1. Responses to Comments from U.S. Environmental Protection Agency (EPA) (continued)**  
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<b>Comments provided by EPA Remedial Project Manager (Mark Ripperda), dated July 11, 2007 (continued)</b>				
62	5-21	5.7.2.2	The text states that mercury was detected above the RIEC in 9 A-aquifer wells. Figure 5-16 shows mercury was detected above the RIEC in 8 A-aquifer wells and 1 B-aquifer well.	The evaluation of the nature and extent of contamination in groundwater will be revised to incorporate additional quarterly data collected since March 2005 (along with recent data from a focused data gaps investigation along the Parcel E-2 shoreline). The text, figures, and tables will be revised to reflect the updated data, and each component will be carefully reviewed to ensure consistency.
63	5-22	5.7.2.2	The text states that nickel was detected in all but 4 wells. Figure 5-17 shows that nickel was not detected in six wells. The A-aquifer RIEC is described in the text as 36.48 ug/L, but Figure 5-17 indicates the RIEC is 96.5.	The evaluation of the nature and extent of contamination in groundwater will be revised to incorporate additional quarterly data collected since March 2005 (along with recent data from a focused data gaps investigation along the Parcel E-2 shoreline). The text, figures, and tables will be revised to reflect the updated data, and each component will be carefully reviewed to ensure consistency.
64	5-23	5.7.2.2	The text states that vanadium was detected in all but 3 wells. Figure 5-20 shows that vanadium was not detected in 4 wells.	The evaluation of the nature and extent of contamination in groundwater will be revised to incorporate additional quarterly data collected since March 2005 (along with recent data from a focused data gaps investigation along the Parcel E-2 shoreline). The text, figures, and tables will be revised to reflect the updated data, and each component will be carefully reviewed to ensure consistency.
65	5-23	5.7.2.2	The text states that zinc was detected in all but 10 wells at the site. Figure 5-21 shows that zinc was not detected in 17 wells. Figure 5-21 indicates zinc was detected above the RIEC in 14 A-aquifer wells, not 13 as stated in the text.	The evaluation of the nature and extent of contamination in groundwater will be revised to incorporate additional quarterly data collected since March 2005 (along with recent data from a focused data gaps investigation along the Parcel E-2 shoreline). The text, figures, and tables will be revised to reflect the updated data, and each component will be carefully reviewed to ensure consistency.
66		Table 5-3	Table 5-3 indicates 4,4'-DDD was detected in the A-aquifer at a range of 0.012 ug/L to 0.028 ug/L. Figure 5-22 indicates the range of 4,4'DDD was 0.0064 ug/L to 0.022 ug/L in well IR01MW38A. Figure 5-23 (4,4'-DDE in Groundwater) presents these same concentrations for well IR01MW38A, suggesting Figure 5-22 may present incorrect data.	The evaluation of the nature and extent of contamination in groundwater will be revised to incorporate additional quarterly data collected since March 2005 (along with recent data from a focused data gaps investigation along the Parcel E-2 shoreline). The text, figures, and tables will be revised to reflect the updated data, and each component will be carefully reviewed to ensure consistency.

**Table 1. Responses to Comments from U.S. Environmental Protection Agency (EPA) (continued)**  
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<b>Comments provided by EPA Remedial Project Manager (Mark Ripperda), dated July 11, 2007 (continued)</b>				
67	5-27	5.7.2.3	Table 5-3 indicates the range of heptachlor epoxide detections in the A-aquifer was 0.009 ug/L to 0.066 ug/L. Figure 5-34 indicates the concentration range was 0.008 ug/L to 0.049 ug/L. Also, Figure 5-34 indicates there were 4 detections that exceeded the RIEC, not 3 as specified in the text.	The evaluation of the nature and extent of contamination in groundwater will be revised to incorporate additional quarterly data collected since March 2005 (along with recent data from a focused data gaps investigation along the Parcel E-2 shoreline). The text, figures, and tables will be revised to reflect the updated data, and each component will be carefully reviewed to ensure consistency.
68	5-28	5.7.2.4	The text states that anthracene was detected in well IR01MW26A but Figure 5-36 shows that anthracene was detected in well IR01MW62A	The evaluation of the nature and extent of contamination in groundwater will be revised to incorporate additional quarterly data collected since March 2005 (along with recent data from a focused data gaps investigation along the Parcel E-2 shoreline). The text, figures, and tables will be revised to reflect the updated data, and each component will be carefully reviewed to ensure consistency.
69	5-29	5.7.2.4	The text states that bis(2-ethylhexyl)phthalate was detected in 5 wells, but Figure 5-42 does not include detections in the 4 listed A-aquifer wells.	The evaluation of the nature and extent of contamination in groundwater will be revised to incorporate additional quarterly data collected since March 2005 (along with recent data from a focused data gaps investigation along the Parcel E-2 shoreline). The text, figures, and tables will be revised to reflect the updated data, and each component will be carefully reviewed to ensure consistency.
70	5-30	5.7.2.4	The text states that chrysene was detected above the RIEC in 7 A-aquifer wells. Figure 5-43 shows chrysene was detected above the RIEC in 5 A-aquifer wells.	The evaluation of the nature and extent of contamination in groundwater will be revised to incorporate additional quarterly data collected since March 2005 (along with recent data from a focused data gaps investigation along the Parcel E-2 shoreline). The text, figures, and tables will be revised to reflect the updated data, and each component will be carefully reviewed to ensure consistency.
71	5-30	5.7.2.4	The text states that fluoranthene was detected in 7 wells, but only wells IR01MWI-3 and IR01MWI-5 are depicted with detections on Figure 5-45.	The evaluation of the nature and extent of contamination in groundwater will be revised to incorporate additional quarterly data collected since March 2005 (along with recent data from a focused data gaps investigation along the Parcel E-2 shoreline). The text, figures, and tables will be revised to reflect the updated data, and each component will be carefully reviewed to ensure consistency.



**Table 1. Responses to Comments from U.S. Environmental Protection Agency (EPA) (continued)**  
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<b>Comments provided by EPA Remedial Project Manager (Mark Ripperda), dated July 11, 2007 (continued)</b>				
72	5-31	5.7.2.4	The text states that fluorene was detected in 10 wells, but only 4 wells are shown with detections on Figure 5-65.	The evaluation of the nature and extent of contamination in groundwater will be revised to incorporate additional quarterly data collected since March 2005 (along with recent data from a focused data gaps investigation along the Parcel E-2 shoreline). The text, figures, and tables will be revised to reflect the updated data, and each component will be carefully reviewed to ensure consistency.
73	5-31	5.7.2.4	The text states that 2-methylnaphthalene was detected in ten wells, and eight wells had detections above the RIEC. Figure 5-47 shows nine wells with detections above the RIEC, and no wells with detections that were above reporting limits but below the RIEC.	The evaluation of the nature and extent of contamination in groundwater will be revised to incorporate additional quarterly data collected since March 2005 (along with recent data from a focused data gaps investigation along the Parcel E-2 shoreline). The text, figures, and tables will be revised to reflect the updated data, and each component will be carefully reviewed to ensure consistency.
74	5-31	5.7.2.4	The text states that naphthalene was detected in 17 wells; however, Figure 5-48 shows 8 E-2 wells that had detections.	The evaluation of the nature and extent of contamination in groundwater will be revised to incorporate additional quarterly data collected since March 2005 (along with recent data from a focused data gaps investigation along the Parcel E-2 shoreline). The text, figures, and tables will be revised to reflect the updated data, and each component will be carefully reviewed to ensure consistency.
75	5-31, 5-32	5.7.2.4	The text states that phenanthrene was detected in 9 A-aquifer wells and 1 B-aquifer well; however, Figure 5-49 shows four wells (3 A-aquifer wells and 1 B-aquifer well) that had detections.	The evaluation of the nature and extent of contamination in groundwater will be revised to incorporate additional quarterly data collected since March 2005 (along with recent data from a focused data gaps investigation along the Parcel E-2 shoreline). The text, figures, and tables will be revised to reflect the updated data, and each component will be carefully reviewed to ensure consistency.
76	5-33	5.7.2.5	The first complete paragraph on page 5-33 indicates 4 A-aquifer wells are located along the western and eastern edges of Parcel E-2, but well IR01MW31A is mentioned twice. It appears that one instance of IR01MW31A should be replaced with IR04MW31A.	Text will be revised accordingly.

**Table 1. Responses to Comments from U.S. Environmental Protection Agency (EPA) (continued)**  
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<b>Comments provided by EPA Remedial Project Manager (Mark Ripperda), dated July 11, 2007 (continued)</b>				
77		Table 5-5	Table 5-5 indicates the maximum concentration of 1,4-dichlorobenzene detected in A-aquifer groundwater was 12 ug/L. Figure 5-53 shows the maximum concentration of 1,4-dichlorobenzene was 16 ug/L.	The evaluation of the nature and extent of contamination in groundwater will be revised to incorporate additional quarterly data collected since March 2005 (along with recent data from a focused data gaps investigation along the Parcel E-2 shoreline). The text, figures, and tables will be revised to reflect the updated data, and each component will be carefully reviewed to ensure consistency.
78	5-34	5.7.2.5	The text states that 1,1-dichloroethane was detected in 6 A-aquifer wells. Figure 5-54 shows 4 wells within the E-2 boundaries with 1,1-dichloroethane detections.	The evaluation of the nature and extent of contamination in groundwater will be revised to incorporate additional quarterly data collected since March 2005 (along with recent data from a focused data gaps investigation along the Parcel E-2 shoreline). The text, figures, and tables will be revised to reflect the updated data, and each component will be carefully reviewed to ensure consistency.
79	5-35	5.7.2.5	The text states that 1,2-dichloroethane was detected in 5 wells. Figure 5-56 only shows 2 wells with 1,2-dichloroethane detections.	The evaluation of the nature and extent of contamination in groundwater will be revised to incorporate additional quarterly data collected since March 2005 (along with recent data from a focused data gaps investigation along the Parcel E-2 shoreline). The text, figures, and tables will be revised to reflect the updated data, and each component will be carefully reviewed to ensure consistency.
80	5-35	5.7.2.5	The text states that cis-1,2-dichloroethene was detected in 17 wells at Parcel E-2. Figure 5-57 shows 4 wells within Parcel E-2 boundaries with cis-1,2-dichloroethene detections.	The evaluation of the nature and extent of contamination in groundwater will be revised to incorporate additional quarterly data collected since March 2005 (along with recent data from a focused data gaps investigation along the Parcel E-2 shoreline). The text, figures, and tables will be revised to reflect the updated data, and each component will be carefully reviewed to ensure consistency.
81	5-35, 5-36	5.7.2.5	The text states that tetrachloroethene was detected in 9 wells. Figure 5-59 shows five wells within Parcel E-2 boundaries and 3 wells outside the boundaries with tetrachloroethene detections.	The evaluation of the nature and extent of contamination in groundwater will be revised to incorporate additional quarterly data collected since March 2005 (along with recent data from a focused data gaps investigation along the Parcel E-2 shoreline). The text, figures, and tables will be revised to reflect the updated data, and each component will be carefully reviewed to ensure consistency.



**Table 1. Responses to Comments from U.S. Environmental Protection Agency (EPA) (continued)**  
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82	5-36	5.7.2.5	The text states that trichloroethene was detected in 14 wells. Figure 5-61 shows 5 wells with trichloroethene detections within E-2 boundaries and 4 wells outside E-2 boundaries.	The evaluation of the nature and extent of contamination in groundwater will be revised to incorporate additional quarterly data collected since March 2005 (along with recent data from a focused data gaps investigation along the Parcel E-2 shoreline). The text, figures, and tables will be revised to reflect the updated data, and each component will be carefully reviewed to ensure consistency.
83	5-36	5.7.2.5	The text states that vinyl chloride was detected in 3 wells. Figure 5-62 shows 2 wells with vinyl chloride detections.	The evaluation of the nature and extent of contamination in groundwater will be revised to incorporate additional quarterly data collected since March 2005 (along with recent data from a focused data gaps investigation along the Parcel E-2 shoreline). The text, figures, and tables will be revised to reflect the updated data, and each component will be carefully reviewed to ensure consistency.
84	5-37	5.7.2.5	The text states that xylenes were detected in 19 wells. Figure 5-63 shows 12 wells within or adjacent to E-2 boundaries with xylenes detections.	The evaluation of the nature and extent of contamination in groundwater will be revised to incorporate additional quarterly data collected since March 2005 (along with recent data from a focused data gaps investigation along the Parcel E-2 shoreline). The text, figures, and tables will be revised to reflect the updated data, and each component will be carefully reviewed to ensure consistency.
85	5-37	5.7.2.5	The text states that TPH was detected in all but 7 wells. Figure 5-64 shows that TPH was detected in all but 11 wells within the E-2 boundaries.	The evaluation of the nature and extent of contamination in groundwater will be revised to incorporate additional quarterly data collected since March 2005 (along with recent data from a focused data gaps investigation along the Parcel E-2 shoreline). The text, figures, and tables will be revised to reflect the updated data, and each component will be carefully reviewed to ensure consistency.

**Table 1. Responses to Comments from U.S. Environmental Protection Agency (EPA) (continued)**  
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Comments provided by EPA Remedial Project Manager (Mark Ripperda), dated July 11, 2007 (continued)

86                      5.7.2      In some cases, the highest detection limit exceeds the RIEC by one or more orders of magnitude. Further, based on quarterly monitoring data, the detection limits for some metals, PCBs, and pesticides have not been low enough to detect concentrations at or below the most conservative screening criteria. As a result, the nature and extent of contamination has not been delineated. Please see the table below for chemicals of concern that have detection limits that are higher than screening criteria and discuss how and when this data gap will be resolved.

The Navy discussed the issue of laboratory reporting limits that exceed RIECs in Section 5.8.3 of the Draft RI/FS Report. Specifically, Section 5.8.3.2 discusses each chemical group and evaluates the usability of the current data set.

Section 5.8.4 (3rd bullet) discusses the overall effect of laboratory reporting limits that exceed RIECs as follows:

“The possibility exists that the presence of some chemicals may have not been identified as part of this nature and extent evaluation, due to the fact that some sample reporting limits exceed the RIECs selected for this evaluation. After evaluating the data, it appears that generally this issue does not diminish the usability of the data for the purpose of identifying the extent of the most prevalent risk-driving chemicals in groundwater.”

Chemical Detection	Limit <sup>a</sup>	Most Conservative Criterion
Un-ionized ammonia	1750 ug/L <sup>b</sup>	25 ug/L
PCBs (total)	0.5 ug/L	0.014 ug/L
Mercury	0.2 ug/L	0.012 ug/L
Copper	50 ug/L <sup>b</sup>	3.1 ug/L
Lead	320 ug/L <sup>b</sup>	2.5 ug/L
Cyanide	10 ug/L <sup>b</sup>	1 ug/L
4,4-DDD	0.01, 10 ug/L <sup>b</sup>	0.001 ug/L
4,4-DDE	0.01, 5 ug/L <sup>b</sup>	0.001 ug/L
4,4-DDT	0.01, 5 ug/L <sup>b</sup>	0.001 ug/L
Alpha-Chlordane	0.005, 25 ug/L <sup>b</sup>	0.004 ug/L
Dieldrin	0.01, 5 ug/L <sup>b</sup>	0.0019 ug/L
Endosulfan II	0.01, 5 ug/L <sup>b</sup>	0.0087 ug/L
Endrin	0.01, 5 ug/L <sup>b</sup>	0.0023 ug/L
Gamma BHC (Lindane)	3 ug/L <sup>b</sup>	0.016 ug/L
Gamma-Chlordane	0.005, 25 ug/L <sup>b</sup>	0.004 ug/L
Heptachlor	0.005, 3 ug/L <sup>b</sup>	0.0036 ug/L
Heptachlor Epoxide	0.005, 3 ug/L <sup>b</sup>	0.0036 ug/L
Benzo(a)anthracene	1, 100 ug/L <sup>b</sup>	0.027 ug/L
Benzo(b)fluoranthene	1, 100 ug/L <sup>b</sup>	0.029 ug/L
Benzo(k)fluoranthene	1, 100 ug/L <sup>b</sup>	0.029 ug/L
Benzo(a)pyrene	1, 100 ug/L <sup>b</sup>	0.014 ug/L
Benzo(g,h,i)perylene	1, 100 ug/L <sup>b</sup>	0.1 ug/L
Chrysene	1, 100 ug/L <sup>b</sup>	0.29 ug/L
Dibenz(a,h)anthracene	1, 100 ug/L <sup>b</sup>	0.0085 ug/L
Indeno(1,2,3-cd)pyrene	1, 100 ug/L <sup>b</sup>	0.029 ug/L



**Table 1. Responses to Comments from U.S. Environmental Protection Agency (EPA) (continued)  
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86 <i>(cont.)</i>		5.7.2	a The value listed is the minimum detection limit for non-detected results unless otherwise indicated. b The maximum detection limit is listed.	<i>(see above)</i>
87		5.7.2	For several metals, the text concludes that metals concentrations have not persisted in groundwater over time or that concentrations of a certain metal no longer exceed the RIEC, but the factors that impact metals concentrations in groundwater in the vicinity of a landfill were not considered. Changes in metal concentrations in groundwater or leachate can occur due to source depletion or because of changes in groundwater geochemistry; sampling artifacts and variations in sampling procedures could also be responsible for observed concentration changes. Metals do not degrade over time and would be expected to be present in groundwater unless a source is depleted. Changes in groundwater geochemistry that are likely in the vicinity of a landfill cause metals to dissolve or to precipitate out. For example, nickel is highly mobile and does not readily sorb to most materials whereas the mobility of copper is controlled by mobile (i.e., soluble) or immobile organics until the organic source is depleted. In addition, in a saline environment, groundwater chemistry associated with the landfill materials will change over short distances, causing inorganic constituents to dissolve or precipitate out. With regard to sampling artifacts, changes in sampling procedures like reducing the flow rate or using different batches of filters may result in varying metals concentrations. For example, a filter is a polymer web designed not to pass a certain particle size and over which there is uncertain quality control during manufacturing so different batches of filters may filter out smaller particles than specified by the filter size. Since some metals are subject to facilitated transport when sorbed to colloids and dissolved organics, different batches of filters may result in apparent decreases in metals concentrations.	Additional text will be included in Section 5.7.2 to discuss the various factors (e.g., geochemistry, degradation of organic material, sampling methods, etc.) that can result in variable dissolved metals concentrations. Section 5.7.2 will also be revised to eliminate conclusions of adequate delineation for instances when only one sampling result following an RIEC exceedance is available.

**Table 1. Responses to Comments from U.S. Environmental Protection Agency (EPA) (continued)**  
**Draft Parcel E-2 Remedial Investigation/Feasibility Study (RI/FS) Report, Hunters Point Shipyard (HPS), March 2007**

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<b>Comments provided by EPA Remedial Project Manager (Mark Ripperda), dated July 11, 2007 (continued)</b>				
87 <i>(cont.)</i>		5.7.2	Therefore, conclusions that metals are not persistent or that concentrations no longer exceed the RIEC based on a single round of groundwater sampling should be deleted from the text.  Please do not draw conclusions based on results from a single sampling round. Also, delete general statements about apparent reductions in concentrations from the text or revise the text to include better rationale for why the metal concentrations appear to have decreased.	<i>(see above)</i>
88	5-21	5.7.2.2	The text attributes the detections of mercury in IR01MW366A groundwater to landfill waste, but the boring log indicates that this well was screened across Bay Mud. Please either explain why landfill waste is a factor or delete the statement about the location of this well.	The subject sentence in Section 5.7.2.2 will be revised as follows: "One A-aquifer well (IR01MW366A), located in close proximity to the eastern edge of landfill waste, shows persistent detections exceeding the RIEC (between 3 and 542 times the RIEC)." To clarify, well IR01MW366A is screened in silty sand with gravel just above the Bay Mud deposits. The well is shown to be within the estimated extent of landfill waste because it is beneath the existing multilayer cap and, as documented in the Landfill Lateral Extent Report (Appendix B, TtEMI, 2002f), the limit of waste is within approximately 10 feet of the eastern edge of the cap.
89	5-23 to 5-27	5.7.2.3	The text indicates the extent of 4,4'-DDD, 4,4'-DDE, 4,4'-DDT, alpha chlordane, PCBs, dieldrin, endosulfan I, endosulfan II, endrin, gamma-BHC, gamma-chlordane, heptachlor, and heptachlor epoxide contamination in groundwater has been adequately delineated by concentrations below RIECs. However, the reporting limit exceeds the RIEC in a number of samples analyzed for these compounds. Please revise the text to indicate the extent of contamination of these compounds has not been delineated due to these elevated reporting limits.	The text will be revised to refer to Section 5.8.3.2 for a discussion of laboratory reporting limits that exceed the corresponding RIEC. As discussed in Section 5.8.3.2, the lowest achievable reporting limits were used for pesticides and PCBs, thus the most stringent evaluation of chemical extent possible was conducted.



**Table 1. Responses to Comments from U.S. Environmental Protection Agency (EPA) (continued)**  
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<b>Comments provided by EPA Remedial Project Manager (Mark Ripperda), dated July 11, 2007 (continued)</b>				
90	5-27 to 5-32	5.7.2.4	The reporting limits (RLs) for a number of SVOCs exceed the RIECs for these compounds, including anthracene, benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)-fluoranthene, benzo(a)pyrene, benzo(g,h,i)perylene, chrysene, dibenz(a,h)anthracene, fluoranthene, fluorene, indeno(1,2,3-cd)pyrene, 2-methylnaphthalene, phenanthrene, and pyrene. It is therefore premature to state that the extent of these compounds in groundwater is adequately delineated by concentrations below RIECs. Please revise the text to indicate the extent for contamination of these compounds has not been delineated due to elevated RLs.	The text will be revised to refer to Section 5.8.3.2 for a discussion of laboratory reporting limits that exceed the corresponding RIEC.
91	5-33 to 5-37	5.7.2.5	It is unclear whether the extent of carbon tetrachloride, 1,4-dichlorobenzene, 1,2-dichloroethane, 1,1,2,2-tetrachloroethane, and vinyl chloride in groundwater is adequately defined, as stated in the text, because the information presented on their respective figures indicates the reporting limits for these compounds exceeded the RIECs at a number of sampling locations. Please revise the text to indicate the extent of contamination for these compounds has not been delineated due to elevated reporting limits.	The text will be revised to refer to Section 5.8.3.2 for a discussion of laboratory reporting limits that exceed the corresponding RIEC.
92	5-39	5.8.1	The text of the first bullet on page 5-39 attributes metals concentrations in groundwater to ambient concentrations rather than past site activities, but there is no justification for this conclusion. Given the tendency of metals to sorb to colloids and organics, and the potential that batch-related variations in filter material may have resulted in screening out metals when it is likely that facilitated transport of metals sorbed to colloids and organics is occurring. Further, the detection of elevated concentration of some metals (e.g., antimony, cadmium, chromium VI, copper, lead, mercury, and zinc) in groundwater beneath the landfill, adjacent to the landfill, or in areas where construction debris and other wastes were disposed in the rest of the parcel suggests that former waste disposal practices resulted in elevated concentrations of metals in groundwater.	The text will be revised to discuss the potential anthropogenic sources of dissolved metals relative to the concentration trends for individual metals. The reference to the potential contribution of ambient concentrations will be retained, but will be clarified appropriately.

**Table 1. Responses to Comments from U.S. Environmental Protection Agency (EPA) (continued)**  
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<b>Comments provided by EPA Remedial Project Manager (Mark Ripperda), dated July 11, 2007 (continued)</b>				
92 (cont.)	5-39	5.8.1	Please delete the text of the bullet attributing metals in groundwater to ambient conditions or provide a detailed justification based on geochemistry and the behavior of individual metals beneath and in proximity to landfill and other buried wastes and in a saline environment.	(see above)
93	6-2	6.1	The 110 drums and 537 containers of laboratory waste found at the PCB Hot Spot Area or the 5 drums of waste found during excavation of the MSA are sources of contamination that should be acknowledged in this section. Since it is likely that drums, which deteriorate and release contaminants to soil and groundwater, may be present in the rest of the East Adjacent and Panhandle Areas, the likely presence of drums should be discussed in this section. Please revise the text to include this information.	Section 6.1 will be revised to include information on the drums and containers found at the PCB Hot Spot Area. As discussed in the response to comment 15, specific information on the nature of this waste was not available when the Draft RI/FS Report was prepared and submitted.
94	6-4	6.2.2	Although the text states, "No other landfill gas concentrations monitored in and around Parcel E-2 were detected at levels of concern," hazardous levels of methane have been detected in monitoring wells on the landfill and in well and utility vaults in the PCB Hot Spot Area. Groundwater sampling forms indicate that several wells on the landfill could not be sampled because high levels of methane were detected when the well cap was removed. Similarly, the landfill gas reports indicate that methane was detected at 15.1 percent by volume in at least one well or utility vault in 2004, and that methane was detected in several vaults in 2005. Please revise the quoted statement to clarify that hazardous levels of methane have been detected in wells located within the landfill boundary and in former vaults in the PCB Hot Spot Area.	Section 6.2.2 will be revised to clarify that landfill gas has accumulated within monitoring wells and other subsurface vaults at concentrations that may exceed 25 percent of the lower explosive limit (LEL) and therefore pose a hazard to site workers.

**Table 1. Responses to Comments from U.S. Environmental Protection Agency (EPA) (continued)**  
**Draft Parcel E-2 Remedial Investigation/Feasibility Study (RI/FS) Report, Hunters Point Shipyard (HPS), March 2007**

Comment #	Page #	Section	Comment	Response
<b>Comments provided by EPA Remedial Project Manager (Mark Ripperda), dated July 11, 2007 (continued)</b>				
95	6-7, 6-8	6.3.1.3	The groundwater discussion for the A aquifer should discuss discharge to the bay and ecological risk. The text should indicate that groundwater in Parcel E-2 is considered Class II under Federal guidelines, but then go on to reference the beneficial use analysis and that the Navy is proposing to not apply drinking water standards to the aquifer. In addition, it should be noted that the Basin Plan has not been amended, so the RWQCB determination should only be considered provisional.	Consistent with the flow chart presented on Figure 6-3, the discussion of contaminated A-aquifer groundwater discharging to the bay is discussed under Section 6.3.1.4, "Surface Water and Sediments."  Section 6.3.1.3 will be revised to reference the conclusions of the beneficial use analysis presented in Section 2.2.6. This analysis concluded that (1) the Class II A-aquifer at Parcel E-2 is not a potential source of water for municipal or domestic water supply, and (2) the SFRWQCB concluded that the A-aquifer at HPS is not suitable or potentially suitable as a municipal or domestic water supply, and meets exemption criteria in State Water Resources Control Board (SWRCB) Resolution 88-63 and RWQCB Resolution 89-39 (SFRWQCB, 2003).
96	8-7	8.2.1.3	The third paragraph on page 8-7 states that PCBs do not appear to have migrated to groundwater beneath the landfill, based on groundwater monitoring results that indicated PCBs were either not detected above reporting limits, or were detected sporadically. However, the detection limits are approximately two orders of magnitude above California Toxics Rule level for PCBs.  Further, A-aquifer monitoring well IR01MW16A had elevated PCB concentrations in 1992, PCB concentrations below reporting limits (but the reporting limits exceeded the RIEC) in 2002, and no groundwater data since 2002. IR01MW16A is also the location of a PCB hotspot in soil, with PCB concentrations of 250 mg/kg at 11.25 feet bgs. Additional groundwater data from this location is needed before the conclusion can be made that PCBs are not migrating from soil to groundwater. Please delete the conclusion that PCBs are not migrating to groundwater in hot spot areas and recommend collection of groundwater samples from IR01MW16A to provide current data for this area.	As discussed in Section 5.8.3.2, the lowest achievable reporting limits were used for the PCBs analyzed, thus the most stringent evaluation of chemical extent possible was conducted.  The PCB concentrations detected in soil at IR01MW16A (located within the Landfill Area) are less than 100 times the corresponding RIEC and, based on the Navy's evaluation criterion, were not considered hot spots. Regardless, Section 8.2.3.2 evaluated other potential PCB hot spots within the Landfill Area with respect to EPA guidance (EPA, 1993a and 1996), and concluded that characterization and treatment of these potential hot spots was not warranted.  While the Navy does not plan on continued groundwater monitoring at well IR01MW16A, a GDGI will be implemented downgradient of IR01MW16A, but outside of the contiguous solid waste of the landfill. Data from this area, in combination with updated quarterly data from nearby wells IR01MWLF1A and IR01MW38A, will be evaluated in the Draft Final RI/FS Report to assess PCB concentrations downgradient of IR01MW16A. The data will be used to verify that PCB concentrations from the landfill waste (in and around IR01MW16A) are not migrating to the bay at concentrations that exceed promulgated criteria (or, in the case of PCBs, the lowest commercially achievable laboratory reporting limits).

**Table 1. Responses to Comments from U.S. Environmental Protection Agency (EPA) (continued)**  
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<b>Comments provided by EPA Remedial Project Manager (Mark Ripperda), dated July 11, 2007 (continued)</b>				
97	8-7	8.2.1.3	There is another unexcavated source of PCBs, northwest of the PCB Hot Spot Area that appears to be a current ongoing source of PCBs to shoreline and offshore sediment, based on Parcel F data. This location has been a source of high concentrations of PCBs for some time, based on the finding of PCBs greater than 5000 ug/kg in offshore sediment from the surface to 2.5 feet below the sediment/water interface, but the source in Parcel E-2 has not yet been found. Since water in this area is quiescent and there is no long fetch for waves to build up and PCBs have been covered by sediment in other areas, there must be an ongoing source.	Data presented on Figure 13 of the Shoreline Characterization Technical Memorandum (Appendix G of the RI/FS Report) show elevated PCB concentrations in shoreline sediment northwest of the excavation boundaries in the PCB Hot Spot Area (as of September 2006). This area was initially planned to be excavated during the time-critical removal action (TCRA) at the PCB Hot Spot Area (as outlined in the action memorandum); however, the excavation boundary was adjusted to exclude this area based on field conditions and accessibility. This area will be identified in Section 8 as AN area requiring either future soil characterization or hot spot removal.
98	8-9	8.2.2.1	There is a discrepancy in the number of cells described in the first paragraph, since the third sentence states, "of the remaining 44 grid cells, 12 grid cells did not exceed any risk thresholds and 34 grid cells contained no data." It is unclear if there are 44 or 46 grid cells.	The sentence should have read: "...of the remaining 46 grid cells, 12 grid cells did not exceed any risk thresholds and 34 grid cells contained no data." The section will be revised to resolve this error and to be consistent with the updated HHRA.
99	8-11	8.2.3.1	In the second bullet, landfill solid waste volume is estimated as 710,000 cubic yards. This contradicts the volume estimate of 473,000 cubic yards stated in Section ES.2.1, Section 8.2.1.5, and elsewhere and different from the 1,008,250 cy listed in Step 5 on Page 8-14. Please provide a consistent estimate throughout.	The second bullet in Section 8.2.3.1 will be revised to present the correct solid waste volume of 473,000 cubic yards. As stated in Section 8.2.1.5, this estimated volume includes the soil fill within the solid waste, but excludes the overlying soil volume. The estimated excavation volume of 1,008,250 cubic yards includes the above-referenced solid waste volume (473,000 cubic yards), the volume of overlying soil cover (393,500 cubic yards), and the volume of the soil below the solid waste that would be removed to support clean closure of the waste disposal unit (141,750 cubic yards). As discussed in Section 12.2.2.4, "it was assumed that the excavation would extend 3 feet into clay formations and 5 feet into sand and gravel formations (an average of 4 feet below the bottom of the waste)."
100	8-12	8.2.3.1	Some munitions and explosives of concern (MEC) related waste items were found during the excavation of the PCB Hot Spot and possibly at the MSA. The types of these items should be summarized in this section.	Section 8.2.3.1 will be revised to indicate that munitions and explosives of concern (MEC) were discovered at the PCB Hot Spot Area, and consisted of expended shell casings of various calibers and empty practice projectiles. These findings are consistent with the evaluation presented in Section 8.2.3.1, which described the potential presence of "low-hazard" munitions hardware within Parcel E-2. As discussed in the response to comment 15, specific information on the nature of this waste was not available when the Draft RI/FS was prepared.

**Table 1. Responses to Comments from U.S. Environmental Protection Agency (EPA) (continued)**  
**Draft Parcel E-2 Remedial Investigation/Feasibility Study (RI/FS) Report, Hunters Point Shipyard (HPS), March 2007**

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<b>Comments provided by EPA Remedial Project Manager (Mark Ripperda), dated July 11, 2007 (continued)</b>				
101	8-13, 8-14	8.2.3.4	It is unclear why focused removals have not been considered. The answer provided to the question in Step 5 (Is excavation of contents practical?) is negative, due in part to the large removal proposed (more than a million cubic yards). Removal of relatively small hot spots could be practical, especially considering potential future liability for unknown wastes that may migrate outward from the landfill and adjacent areas. Leaving most of the non-hazardous wastes in place would also reduce or eliminate the need to import large volumes of backfill soil. Please consider the feasibility of a focused hot spot removal program prior to cap construction.	The Navy prepared Section 8.2.3.2 of the Draft RI/FS Report specifically to evaluate potential characterization and treatment of hot spots within the Landfill Area in accordance with EPA guidance (EPA, 1993a and 1996), and concluded that additional characterization and treatment of hot spots was not warranted. EPA did not provide any comments to invalidate the Navy's conclusion.  As discussed in the response to comment 1, the Navy will revise the RI/FS Report to evaluate expanded hot spot removal within the Shoreline Area, Panhandle Area, and East Adjacent Area.
102	8-15	8.3.1	It is unclear why the text of the last paragraph of this section states that "the extent of landfill gas was determined to be at the northern edge of the UCSF compound" and that "[t]o the east, west, and south, landfill gas had not migrated beyond the perimeter of the Parcel E-2 landfill," since there have been at least 15 detections of landfill gas in the well and utility vaults in the PCB Hot Spot Area between March 2003 and September 2005 at concentrations ranging from 0.1 to 15.1 percent by volume. Please revise the text to incorporate this information or to explain the basis for the quoted statements.	Section 8.3.1 will be revised to clarify that the estimated extent of landfill gas, as depicted on Figure 4-3, extends slightly (less than 150 feet) beyond the boundary of the Parcel E-2 Landfill to the west, east, and south. The estimated extent is based on subsurface methane concentrations being less than 1.25 percent by volume (25 percent of the LEL). This level is derived from the regulatory limit established for on-site structures (per Title 27 California Code of Regulations [CCR] Section [§] 20921), and is used as an action-level within utility vaults being monitored under the Interim Landfill Gas Monitoring and Control Plan (TtEMI and Innovative Technical Solutions, Inc. [ITSI], 2004c). The text will be further clarified to state that the extent of landfill gas to the west, east, and south is within the prescribed regulatory limit of 5 percent methane by volume (equivalent to the LEL) at the property and parcel boundary.  During monthly gas monitoring at the utility vaults associated with the former groundwater extraction system (until the vaults were decommissioned in late 2005 as part of the removal action), methane concentrations exceeded 1.25 percent by volume three times, as presented below.

**Table 1. Responses to Comments from U.S. Environmental Protection Agency (EPA) (continued)**  
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<b>Comments provided by EPA Remedial Project Manager (Mark Ripperda), dated July 11, 2007 (continued)</b>				
102 <i>(cont.)</i>	8-15	8.3.1	<i>(see above)</i>	Date
				Vault
				Methane Concentration (% by volume)
				3/17/04
3/17/04				
3/22/05				
				EW-150
				EW-154
				EW-154
				4.2%
				3.4%
				1.3%
				As shown on Figure 3-7 of the RI/FS Report, these three vaults were all located within the boundaries of the Parcel E-2 Landfill. Therefore, these methane exceedances are consistent with the conceptual site model that elevated methane concentrations are located within (or in close proximity to) the Parcel E-2 Landfill.
103	8-18	8.4.1	The description of the solid waste in the Panhandle and East Adjacent areas (first paragraph) and in the PCB Hot Spot Area (last paragraph) should include the drums found in the Panhandle and East Adjacent areas and the 537 containers of laboratory waste found at the PCB Hot Spot Area. Also, clothing, which should be considered putrescible, was found in the first 2 or 3 feet at the PCB Hot Spot area. Please revise the text to include this information.	Section 8.4.1 will be revised to include information on the waste types found during the removal actions at the PCB Hot Spot Area and Metal Slag Area. As discussed in the response to comment 15, specific information on the nature of this waste was not available when Draft RI/FS Report was prepared.
104	8-19	8.4.2	It is unclear why the second bullet only acknowledges PCBs exceeding the RIEC to a depth of 10 feet bgs when the PCB Hot Spot excavation was extended below 10 feet in some areas because PCBs were detected in confirmation samples.	Confirmation sampling data from the removal action at the PCB Hot Spot Area were not available when the Draft RI/FS Report was prepared. Section 8.4.2 will be updated to discuss confirmation sampling results from the recently published Removal Action Completion Report for the TCRA at the PCB Hot Spot Area (Tetra Tech EC, Inc., 2007a).
105	8-28	8.6	The statement, "Results to date indicate that surface water discharges from the Parcel E-2 Landfill do not pose an unacceptable risk to aquatic receptors in the Bay," is not supported by the results of the 2005-2006 sampling when total dissolved solids, specific conductance, and several metals exceeded discharge limits, NAWQC, and the CTRs. Please revise the text to incorporate this information and delete the quoted statement.	Section 8.6 will be revised to cite the following, more detailed statement from Section 3.9.3: "Results to date indicate no incidents of noncompliance at Parcel E-2, except in isolated locations where BMPs require modification to better control erosion and sediment transport from neighboring properties."



**Table 1. Responses to Comments from U.S. Environmental Protection Agency (EPA) (continued)**  
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<b>Comments provided by EPA Remedial Project Manager (Mark Ripperda), dated July 11, 2007 (continued)</b>				
106		Figure 8-1	It is unclear why the second bullet under "Monitoring Data" in Box 1 states that PCBs "showed little potential to migrate" when high levels of PCBs have been found in shoreline and offshore sediments at depths ranging from the sediment surface to 2.5 feet below the sediment-water interface. Given the presence of PCBs at the surface in near shore sediment, it appears that there is an ongoing source north-northwest of the PCB Hot Spot excavation that has not yet been located. Since a smear zone along the shoreline does not exist, the PCB Hot Spot is not the source of this contamination.	Figure 8-1 evaluates the application of the presumptive remedy to the Parcel E-2 Landfill, thus it does not include potential PCB hot spots located within the Shoreline Area, Panhandle Area, or East Adjacent Area. The title of Figure 8-1 will be revised to "Application of the Containment Presumptive Remedy to the Parcel E-2 Landfill."  Please see the response to comment 97 regarding the potential PCB hot spots located within the Shoreline Area, Panhandle Area, or East Adjacent Area.
107		12	The text refers to "adjacent areas" in several cases when the Panhandle is being described. For example, the last sentence of the description of Alternative 2 on page 12-1 indicates that wetlands would be mitigated in "the adjacent areas," but the wetlands restoration will occur in the Panhandle Area. Since the nomenclature "Panhandle Area" and "East Adjacent Area" are used throughout the remainder of the RI/FS to refer to the specific areas designated on Figures 1-2 and 11-1, please replace all occurrences of the phrase "adjacent areas" with the specific area designation.	Section 12 will be revised to minimize or eliminate use of the term "adjacent areas" and instead refer to the specific area(s). However, in circumstances where the term is used to describe common conditions between the Panhandle Area and East Adjacent Area, the term may be used for brevity. In these circumstances, its use will be clarified to eliminate confusion.
108		12.2.2 and Figure 12-11	Much of the PCB Hot Spot excavation was 10 or more feet deep, so it is unclear why excavation of the remaining wastes to the west and southwest of this area is proposed for a depth of 2.5 to 3 feet, particularly since most of the ridge along the shoreline has not yet been removed. Drums were found in this ridge, so excavation of the entire ridge is necessary. In addition, the PCB Hot Spot excavation was truncated, so Figure 12-11 should be revised to include the areas that have not yet been excavated. Please use the PCB Hot Spot excavation boundaries and depths to revise the proposed extent and depth of excavation shown on Figure 12-11 and adjust the excavation volume and costs to reflect these changes.	Alternative 2 will be revised to reflect the expansion of the excavation at the PCB Hot Spot Area, consistent with the proposed excavation boundaries in the action memorandum (Navy, 2005).

**Table 1. Responses to Comments from U.S. Environmental Protection Agency (EPA) (continued)**  
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Comment #	Page #	Section	Comment	Response
<b>Comments provided by EPA Remedial Project Manager (Mark Ripperda), dated July 11, 2007 (continued)</b>				
109	12-13	12.2.3	Alternative 3 should also include excavation of the remaining PCB-contaminated wastes west, southwest, and north of the PCB Hot Spot excavation. Parcel F data indicates that the area north of the PCB Hot Spot excavation is an ongoing source of PCBs to near shore sediment. It appears that Appendix R includes some costs for PCB excavation and disposal, but it is not clear that the volumes and costs include the area north of the PCB Hot Spot (i.e., west of the landfill), since the cost estimate specifies this would occur southwest of the landfill. Please revise the description of this alternative to include limited excavations for removal of PCBs west, southwest, and north of the PCB Hot Spot excavation and revise the costs to include the excavation and disposal of PCB-contaminated material north of the PCB Hot Spot Area.	<p>Alternative 3 will be revised to reflect the expansion of the excavation at the PCB Hot Spot Area, consistent with the proposed excavation boundaries in the action memorandum (Navy, 2005). Consistent with the ARARs evaluated for Alternative 3, the excavated material may be placed within Parcel E-2 as part of Alternative 3.</p> <p>As discussed in the response to comment 1, the Navy will revise the RI/FS Report to evaluate expanded hot spot removal within the Shoreline Area, Panhandle Area, and East Adjacent Area. The Navy anticipates including these expanded hot spot removals as part of an additional remedial alternative.</p>
110	12-13 and 14-1	12.2.3 and 14	Figure 14-1 includes shoreline remediation in Alternative 2, but not Alternative 3. Alternative 3 appears to assume that a cap could be constructed on the outboard shoreline. Due to the soft character of the saturated shoreline sediments, and the high contaminant concentrations in these sediments, placement of a cap may be extremely difficult and would cause substantial re-suspension of PCBs and other contaminants into Bay waters. Capping the shoreline sediments should be fully justified and a reasonable approach to accomplishing cap construction on the shoreline should be provided, or capping of this area should be removed from Alternative 3. Excavation and removal of the shoreline sediments should be included in Alternative 3.	<p>Sections 12, 13, and 14 (including Figure 14-1) will be revised to clarify that Alternative 3 includes removal of existing waste materials along the shoreline and construction of shoreline protection. Construction of the shoreline protection will include excavation of the existing slope to minimize filling in the bay and to obtain a suitable subgrade for constructing the shoreline protection. The shoreline protection includes the use of engineered materials to account for the foundation conditions. The geomembrane cap will be protected by a soil layer, as shown on Figure 12-6.</p> <p>The cost estimate for Alternative 3 includes a temporary sheet-pile wall to contain any contaminated sediments that are resuspended during construction. Additionally, the cost estimate for Alternative 3 includes monitoring for PCBs in excavated materials and off-site disposal of 13,600 tons of PCB-contaminated material within the unexcavated portion of the PCB Hot Spot Area. Section 12.2.3 will be revised to provide greater detail on management and potential disposal of excavated materials, including monitoring for PCBs.</p> <p>As discussed in the response to comment 1, the Navy will revise the RI/FS Report to evaluate expanded hot spot removal within the Shoreline Area, Panhandle Area, and East Adjacent Area. The Navy anticipates including these expanded hot spot removals as part of an additional remedial alternative.</p>



**Table 1. Responses to Comments from U.S. Environmental Protection Agency (EPA) (continued)**  
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<b>Comments provided by EPA Remedial Project Manager (Mark Ripperda), dated July 11, 2007 (continued)</b>				
111	12-17	12.2.3.5	It is unclear why it has been assumed that landfill gas would not be generated in the East Adjacent and Panhandle Areas since wood, clothing and other putrescible materials were found in the TCRA excavations. A soil gas survey is needed to evaluate whether landfill gas control systems are needed in these areas. Please delete the assumption that landfill gas will not be generated in these areas, and propose and conduct a soil gas survey to determine whether landfill gas control systems are needed.	Section 12.2.3.5 will be revised to delete the assumption that landfill gas will not be generated in these areas and to reference the additional steps (either further investigation or inclusion of a gas control system in the FS) that will be needed in these areas.
112		Figure 12-1	The legend contains green symbols for "landfill extent" and "extent of the existing landfill cap," but these symbols were not used on the figure. In addition, the grey hatched area symbol is not included in the legend. Please revise Figure 12-1 to include the extent of the landfill and the existing landfill cap. Please also define the grey hatched symbol. In addition, it is unclear why a top elevation over 40 feet is necessary for the landfill cap. The highest existing grade appears to be about 30 feet, so it appears that some regrading could allow the maximum height of the cap to be less and require less steep slopes. Please consider lowering the maximum height of the landfill cap or explain why a maximum elevation of 40 feet is necessary.	The landfill extent is shown on Figure 12-1; however, the line type on the figure (black dashed line) is not consistent with the legend (green dashed line). In addition, the existing landfill cap was inadvertently omitted from the figure. Figure 12-1 will be revised to correct these errors.  Clearing and grubbing of the site and excavation in the Panhandle Area will generate material that will be consolidated in the existing landfill. The northern and eastern portions of the landfill were selected to receive the material because they do not have an existing cap. Placing the clear and grubbing and excavation material in the northern and eastern portions will minimize the amount of existing cap that must be removed and new cap that must be reinstalled. The slope in the northern and eastern portions of the landfill, after regrading, is approximately 10 percent, which is not steep for a landfill.  Lowering the elevation will require removing additional existing cap and reinstalling cap over a larger area, which will increase the cost of the alternative without any design advantage. As discussed in the response to comment 1, the Navy will revise the RI/FS Report to evaluate expanded hot spot removal within the Shoreline Area, Panhandle Area, and East Adjacent Area. The Navy anticipates including these expanded hot spot removals as part of an additional remedial alternative, and any resulting changes to the grading plans may allow the design elevations of the landfill to be changed.

**Table 1. Responses to Comments from U.S. Environmental Protection Agency (EPA) (continued)**  
**Draft Parcel E-2 Remedial Investigation/Feasibility Study (RI/FS) Report, Hunters Point Shipyard (HPS), March 2007**

<b>Comment #</b>	<b>Page #</b>	<b>Section</b>	<b>Comment</b>	<b>Response</b>
<b>Comments provided by EPA Remedial Project Manager (Mark Ripperda), dated July 11, 2007 (continued)</b>				
113	13-10, 13-11, 14-2	13.3.1, 13.3.3, 14.1	<p>The text in these sections states that migration of contaminated groundwater would be controlled because the cap would significantly reduce infiltration, but the FS does not provide information to support this conclusion. The concern is that most of the groundwater entering Parcel E-2 appears to be lateral flow from upgradient areas, or upward flow from the B aquifer, not on-site infiltration. Section 2.2.2.3 suggests this would be the case. Therefore a more definite, quantitative approach is necessary to ensure minimal groundwater entry into, and contaminants exiting from, Parcel E-2. Groundwater data should be available to determine the rate of flow through the landfill, and the contaminant load in the discharge(s). Adequate containment may require upgradient and downgradient barriers, essentially surrounding the parcel.</p> <p>An active pumping system might be effective in controlling groundwater. Please provide the hydrogeologic information needed to support a more informed decision on the need for subsurface barriers or other control systems.</p>	<p>As agreed to at the working meeting on July 25, 2007, with the regulatory agencies, the Navy plans to revise the RI/FS Report to evaluate groundwater containment around the Parcel E-2 Landfill (and other near-shore contaminant sources to the bay). The remedial alternative analysis will evaluate the appropriate means of controlling groundwater (both upgradient and downgradient). The RI/FS Report will also evaluate whether extracted groundwater might be used to establish and support the proposed freshwater wetlands.</p>
<b>Comments on Appendix I, Groundwater Beneficial Use Evaluation</b>				
114	2-1, 2-2	12.2	<p>It is unclear why the potential use of groundwater to establish and maintain the proposed freshwater wetlands is not discussed in this section. Please include this potential use of groundwater in the discussion.</p>	<p>Section 12.2 will be revised to discuss the potential use of groundwater to establish and maintain the proposed freshwater wetlands.</p> <p>As discussed in Section ES.5.3 and at several meetings with the regulatory agencies, the Draft RI/FS Report deferred development of groundwater remediation options (beyond monitoring). A follow-on working meeting was held with the BCT and the City and County of San Francisco on July 25, 2007, to further discuss and plan the development of groundwater remedial alternatives for the Draft Final RI/FS Report. As discussed the response to comment 113, the Draft Final RI/FS Report will evaluate the appropriate means of controlling groundwater (both upgradient and downgradient), and will also evaluate whether extracted groundwater might be used to establish and support the proposed freshwater wetlands.</p>



**Table 1. Responses to Comments from U.S. Environmental Protection Agency (EPA) (continued)**  
**Draft Parcel E-2 Remedial Investigation/Feasibility Study (RI/FS) Report, Hunters Point Shipyard (HPS), March 2007**

<b>Comment #</b>	<b>Page #</b>	<b>Section</b>	<b>Comment</b>	<b>Response</b>
<b>Comments on Appendix I, Groundwater Beneficial Use Evaluation (continued)</b>				
115	2-2	I2.3	This section does not clearly state that the Basin Plan has not been amended to incorporate the RWQCB determination. Since it is unclear if such an amendment would be adopted, the text should indicate this uncertainty. Please revise the text to state that the Basin Plan has not been amended to incorporate the RWQCB determination and that it is uncertain whether this will be done.	The beneficial use analysis presented in Appendix I concluded that (1) the Class II A-aquifer at Parcel E-2 is not a potential source of water for municipal or domestic water supply, and (2) the SFRWQCB determined that the A-aquifer at HPS is not suitable or potentially suitable as a municipal or domestic water supply and meets exemption criteria in SWRCB Resolution 88-63 and RWQCB Resolution 89-39 (SFRWQCB, 2003).
116	4-5, 4-6, 4-9	I4.1.8, I4.1.10, I4.2.8, I4.2.9	The text in Sections I4.1.8 and I4.2.8 states that a cost estimate to reduce concentrations of naturally occurring antimony, arsenic, and thallium, has not been produced and then concludes that to remove these metals “the cost would likely be prohibitive, and it may be technically impracticable to do so.” Similarly, in Section I4.1.10, it is concluded that site specific factors include “[p]rohibitive cost to remove naturally occurring dissolved metals from the groundwater to meet federal and State Drinking water standards.” A similar statement is made in Section I4.2.9. No supporting evidence has been provided to justify these conclusions. Standard technologies like granular media filtration (i.e., a sand filter) can be used to remove metals from water. These technologies are neither cost prohibitive nor technically impracticable. Please delete the quoted statements and those that are similar in Sections I4.2.8 and I4.2.9 or provide costs and technical justification for these conclusions.	The quoted statements will be removed from Appendix I.
117	5-1	I5.1	The last sentence in this paragraph states, “The A-Aquifer at E-2 is also considered to be unsuitable as a potential drinking water source based on federal groundwater classification criteria ...”. The A-Aquifer is Class II groundwater (potential drinking water) and it does not meet criteria for re-classification. Please delete the quoted statement.	The quoted statement omitted the final clause in the sentence, which clarifies the basis of the conclusion: “...and an evaluation of SSFs identified in Section I4.1.” The subject sentence will be clarified to emphasize that the evaluation of the SSFs is the basis for the conclusion that the Class II groundwater at Parcel E-2 is considered to be unsuitable as a potential drinking water source.

**Table 1. Responses to Comments from U.S. Environmental Protection Agency (EPA) (continued)**  
**Draft Parcel E-2 Remedial Investigation/Feasibility Study (RI/FS) Report, Hunters Point Shipyard (HPS), March 2007**

Comment #	Page #	Section	Comment	Response
<b>Comments on Appendix M, Evaluation of Groundwater Chemical Migration to the Aquatic Environment</b>				
118	1-1, 2-1	M1, M2	The statement in Section M2 that B-aquifer groundwater does not result in direct exposure to the Bay has not been sufficiently substantiated, "B-aquifer data were evaluated, as a conservative measure, even though the migration of chemicals in B-Aquifer groundwater do not result in direct exposures to aquatic receptors in the Bay." A similar statement appears in Section M1. Please provide adequate evidence of that the B-aquifer does not result in direct exposure to the aquatic receptors or remove these statements from the text.	The statements in Sections M1 and M2 will be revised to discuss the basis for evaluating whether or not B-aquifer groundwater discharges into permeable zones underlying the bay, resulting in direct exposures to aquatic life in the bay. Specifically, the lithology of the Bay Mud aquitard adjacent to and beyond the Parcel E-2 and F boundary indicate the presence of a continuous Bay Mud aquitard separating the permeable B-aquifer zones from the surface waters of the bay offshore of Parcel E-2. Figure 2-13 in the RI/FS Report shows four soil borings within 200 feet of the Parcel E-2 and F boundary with Bay Mud ranging from 16 to 30 feet thick. In addition, historic soil borings collected offshore of the Parcel E-2 and F boundary show Bay Mud ranging from 28 to 68 feet thick (Navy, 1957). Sections M1 and M2 will also be revised to discuss that the evaluation of B-aquifer data relative to aquatic criteria is a conservative measure performed to address the uncertainty of the lithologic conditions adjacent to and beyond the Parcel E-2 and F boundary.
119	3-3	M3.1	Since the detection limit for sulfide (1000 ug/L) significantly exceeds the aquatic criterion of 2 ug/L, it should not be concluded that sulfide has not recurred in wells within or near the TIZ (e.g., IR01MW48A, IR01MWI-3, IR01MW44A, IR01MW38A) and the elevated detection limits should be discussed. The reason for the elevated detection limits should be assessed and measures to achieve lower detection limits should be evaluated. Please revise the text to state that the recurrence of sulfide cannot be ascertained because of the elevated detection limits (DLs) and discuss reasons for the elevated DLs. Also, please identify the extent of sulfide contamination as a data gap and recommend that measures be taken to achieve lower DLs or RLs.	As noted in Figure M-4 and Table M-1, the aquatic criterion of 2 microgram per liter (µg/L) is for hydrogen sulfide, whereas the analysis performed is for total sulfide. Appendix M will be updated to discuss the limitations in the sulfide data analysis and to note that no viable options are available to achieve a lower reporting limit.



**Table 1. Responses to Comments from U.S. Environmental Protection Agency (EPA) (continued)**  
**Draft Parcel E-2 Remedial Investigation/Feasibility Study (RI/FS) Report, Hunters Point Shipyard (HPS), March 2007**

Comment #	Page #	Section	Comment	Response
<b>Comments on Appendix M, Evaluation of Groundwater Chemical Migration to the Aquatic Environment (continued)</b>				
120		M3.2	<p>Figures in the Draft Final Parcel E RI (1997) indicate that the following metals also exceeded NAWQCs:</p> <ul style="list-style-type: none"> <li>▪ Arsenic – IR01MWI-9, IR01MW62A</li> <li>▪ Chromium – I R01MWI-9, R-1MW62A, IR01MWI-5, IR01MW18A</li> </ul> <p>In addition, some metals were observed above NAWQCs or CTRs in wells but these analytical results are not shown on figures or discussed in the text:</p> <ul style="list-style-type: none"> <li>▪ Copper - IR01MWI-9, IR01MW62A, IR01MW48A, IR01MWI-5</li> <li>▪ Lead - IR01MWI-9, IR01MW31A, IR01MW18A, IR01MW42A, IR01MW05A, IR01MWI-2</li> <li>▪ Nickel - IR01MWI-9, IR01MW62A, IR01MW48A</li> </ul> <p>Please include an analysis of these metals and include analytical results for the listed wells in this section.</p>	<p>As discussed in Section M2.1, the aquatic evaluation used data from early 1995 to April 2005. To focus the Appendix M evaluation, relative to the nature and extent evaluation performed in Section 5, data prior to 1995 was not used because anomalous chemical concentrations, particularly for metals, were detected throughout Parcel E-2 during this time period. In addition, data collected since 1995 more accurately represent current groundwater conditions.</p> <p>The chemical exceedances cited in this comment were detected prior to 1995 and were therefore excluded from the aquatic evaluation. All available groundwater data are presented and evaluated in Section 5. As discussed in Section M2.1, monitoring results from sampling performed since 1995 have demonstrated that chemical concentrations prior to 1995 can be considered anomalous.</p> <p>To clarify, the RI figures cited in this comment (Figures 4.1-23 through 4.1-28) did not exclusively use NAWQC for data screening, but also included Hunters Point groundwater ambient levels (HGALs) and drinking water criteria (MCLs and PRGs) for screening purposes. For most of the cited chemicals, the corresponding HGAL was used as the primary screening criterion.</p>
<b>Comments on Appendix O, Wetlands Evaluation and Mitigation Options</b>				
121	3-4	O3.3.3	Please use the term Panhandle instead of adjacent in the phrase: “on top of the cap in the adjacent areas”.	The text will be revised to specify that wetlands restoration is contemplated within the Panhandle and Shoreline Areas.
122	4-1	O4.1	The text states that Figure 12-11 “shows a net expansion of tidal wetlands along the shoreline,” but this figure shows the extent of wetlands in 2001 and 2002. Please cite the correct figure(s).	The text will be revised to refer to Figure 12-1 instead of Figure 12-11.
123	4-2	O4.2.1	It is not sufficient to use the phrase “poorly drained soil,” since this could refer to any type of soil where drainage is poor; instead, hydric soil capable of supporting wetlands should be specified. Please delete the quoted phrase and specify the need for hydric soil.	The text will be revised accordingly.

**Table 1. Responses to Comments from U.S. Environmental Protection Agency (EPA) (continued)**  
**Draft Parcel E-2 Remedial Investigation/Feasibility Study (RI/FS) Report, Hunters Point Shipyard (HPS), March 2007**

Comment #	Page #	Section	Comment	Response
<b>Comments on Appendix P2, Landfill Gas Generation Modeling</b>				
124	1		Bullet 6 indicates that the output of the landfill gas model (LFGM) was compared to recent landfill gas (LFG) data, but a comparison of the LFGM results with IR01/21 LFG data is missing from this appendix. As a result, it is not possible to evaluate which of the four calculated values most closely approximates LFG production in the IR01/21 landfill. Please provide this missing comparison.	The landfill gas model estimates will be compared with landfill gas data for Installation Restoration Site 01/21 for informational purposes. However, such a comparison is by its nature inaccurate, since the landfill gas model is intended to represent averaged generation of the entire assumed mass of waste-in-place and is not intended to be comparable to any specific location in the waste.
<b>Comments on Appendix K, Human Health Risk Assessment</b>				
125		General	The use of industrial soil screening criteria should not be considered as an adequate measure to screen against a site that, in part, is reasonably anticipated to be deemed as open space (which is associated with a recreational land use scenario). According to USEPA's 2002 Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites, sites where anticipated future land use is recreational typically necessitate a site-specific modeling approach for generating soil screening levels (SSLs). However, since exposure scenarios may be compatible to residential exposures, application of residential SSLs to the site may be a reasonable alternative to a site-specific approach. Consequently, please provide rationale for screening a recreational land use scenario against industrial soil screening values which fail to be protective of children. If rationale for such an approach is not offered, please consider using residential soil SSLs (e.g., USEPA Region 9 residential soil PRGs) in the refinement of the contaminants of potential concern (COPCs) list to ensure that contaminant levels are protective of exposures potentially incurred by children.	Section K4.4 of the HHRA details the methodology used to identify chemicals of potential concern (COPCs) for soil. As indicated in Section K4.4, COPCs for soil were identified for both a total risk evaluation and an incremental risk evaluation. For the total risk evaluation, COPCs were based on all chemicals detected, except the essential human nutrients calcium, magnesium, potassium, and sodium. For the incremental risk evaluation, concentrations of metals were also compared with HPALs; metals with maximum concentrations less than HPALs were excluded as COPCs for the incremental risk evaluation. No additional screening, such as comparison with SSLs, was done to identify COPCs for soil. Health risks from exposure to the identified COPCs were evaluated for the recreational exposure scenario using exposure assumptions specific to anticipated recreational activities at HPS (see Tables K-3 through K6). The assumptions for evaluating recreational exposure were based on agreement with the BCT (Navy 2004).



**Table 1. Responses to Comments from U.S. Environmental Protection Agency (EPA) (continued)**  
**Draft Parcel E-2 Remedial Investigation/Feasibility Study (RI/FS) Report, Hunters Point Shipyard (HPS), March 2007**

<b>Comment #</b>	<b>Page #</b>	<b>Section</b>	<b>Comment</b>	<b>Response</b>
<b>Comments on Appendix K, Human Health Risk Assessment (continued)</b>				
126		General	Section 7 and Appendix K do not provide sufficient detail on the evaluation of the chemical data for use in the HHRA. For example, the methodology underpinning the use and/or elimination of analytical data in the risk evaluation is not adequately discussed. Although Section 4 of the RI/FS indicates that COPCs within each study area and depth were refined by eliminating compounds that were either not detected above the method detection limit (MDL) or did not exceed their established Hunter's Point Ambient Level (HPAL), Section 7 and Appendix K fail to describe the treatment of non-detect results. The data evaluation portion of the HHRA should present a discussion surrounding treatment of all analytical results, including non-detect results. Within such a discussion, the Navy should present the uncertainties associated with phenomena such as cases where a reporting limit (preferably a sample quantitation limit) exceeds the most relevant health-based screening criterion. Essentially, although an analyte may be present at or below its quantitation limit, it still may be present at an environmentally-significant level (e.g., health-based standard). Please revise the HHRA to include additional detail on the data usability evaluation that was conducted for the data set.	Section 7 and Appendix K will be revised to clarify the methods used to treat nondetected results in the HHRA. In addition, the uncertainty analysis of the HHRA will be revised to address the uncertainties associated with sample quantitation limits that exceed health-based criteria.
127		General	In the evaluation of dioxins/furans, please consider generating a total toxic equivalency quotient (TEQ) as opposed to evaluating these compounds on the basis of a single congener. Van den Berg (2006) presents updated toxic equivalency factors (TEFs) for a number of individual congeners.	The HHRA will be revised to calculate a total toxic equivalent (TEQ) for dioxin and furan compounds, instead of evaluating each compound as discrete dioxin and furan congeners. The updated World Health Organization 2005 TEFs, as presented in Van Den Berg (2006), will be used to calculate TEQs.

**Table 1. Responses to Comments from U.S. Environmental Protection Agency (EPA) (continued)**  
**Draft Parcel E-2 Remedial Investigation/Feasibility Study (RI/FS) Report, Hunters Point Shipyard (HPS), March 2007**

Comment #	Page #	Section	Comment	Response
<b>Comments on Appendix K, Human Health Risk Assessment (continued)</b>				
128		General	Because substantial ingestion and inhalation exposures to surface and subsurface soil contaminants may be plausibly incurred by a construction worker receptor, it is not clear why only exposures related to direct and indirect contact (i.e., incidental soil ingestion, dermal adsorption, and inhalation of volatiles and fugitive dust) with subsurface media have been evaluated for this particular population receptor. For a construction worker receptor, please also evaluate risks and hazards not only associated with direct and indirect contact to contaminants in subsurface media but also to contaminants in surficial soil.	The soil depth intervals and exposure pathways evaluated for the construction worker scenario were based on agreement with the BCT (Navy 2004). This agreement limited evaluation of soil exposures for the construction worker to subsurface soil (0 to 10 feet bgs).
129		General	Exposure parameter values used to derive intake for a recreational exposure scenario are not reflective of USEPA parameter values. Please refer to USEPA's 2006 Child-Specific Exposure Factors Handbook (ChEFH) and USEPA 2002 to derive pertinent exposure parameter values for a child and adult recreator, accordingly, and consider use of the parameter values presented in the aforesaid documents during deliverable development in the future.	The assumptions used to evaluate recreational exposures to soil were based on agreement with the BCT (Navy 2004). The Navy recognizes that updated exposure assumptions have become available in more recent exposure factors guidance documents. Although the HHRA for Parcel E-2 will be revised to incorporate results of the removal actions for the PCB Hot Spot Area and Metal Slag Area, the assumptions used to evaluate recreational exposures to soil will be not be revised for consistency with the recreational assumptions used in the HHRAs for the other HPS parcels.
130	7.5	7.1.2.2	There appears to be some disconnect between the last sentence (starting with "For the construction worker scenario [0 to 2 feet bgs]...") in the first paragraph under Section 7.1.2.2 (and Tables 7-6 and 7-7. That is, the last sentence of the first paragraph under Section 7.1.2.2 suggests Tables 7-6 and 7-7 present total and incremental risks and hazards associated with exposure to contaminants in surficial soils when the Tables actually present total and incremental risks and hazards that coincide with exposure to subsurface soils at 0 to 10 ft bgs. Please revise the final sentence in the first paragraph under Section 7.1.2.2 to reflect subsurface depth.	Section 7.1.2.2 will be revised to indicate that the risk and hazard results presented for the construction worker are for exposure to subsurface soil (0 to 10 feet bgs).



**Table 1. Responses to Comments from U.S. Environmental Protection Agency (EPA) (continued)**  
**Draft Parcel E-2 Remedial Investigation/Feasibility Study (RI/FS) Report, Hunters Point Shipyard (HPS), March 2007**

<b>Comment #</b>	<b>Page #</b>	<b>Section</b>	<b>Comment</b>	<b>Response</b>
<b>Comments on Appendix K, Human Health Risk Assessment (continued)</b>				
131		Table 7.11	In Table 7.11, please consider revision of the Table to include the USEPA Region 9 tap water PRGs used to derive the cancer risk and non-cancer hazard estimates.	Adjusted EPA Region 9 tap water PRGs used to calculate cancer risks and noncancer hazards for exposure to groundwater from domestic use are shown in Tables K-11, K3-5, and K3-6 of Appendix K. The PRGs are excluded from Table 7-11 because of space limitations on the table.
132		Figure 7-5	Please include a location map for Parcel E-2 as reference and to maintain consistency with the other site figures.	Figure 7-5 will be revised to include a location map inset, consistent with the other Section 7 figures.
133		K9.3	While it is appropriate to include a discussion of the uncertainty associated with excluding dermal contact with groundwater in the evaluation of potential groundwater exposures under the residential scenario, it is not appropriate to diminish this uncertainty with the statement that "the effect of this underestimate is not significant because the overall cancer risk and noncancer HI for domestic use of groundwater in the B-aquifer were found to exceed the risk and hazard thresholds..." USEPA (2004) recommends a screening process that identifies chemicals that should be evaluated for the dermal pathway based on whether the dermal pathway has been estimated to contribute more than 10% of the oral pathway. Considering the ratios of the dermal exposure route relative to the ingestion route for non-volatile COPCs of up to 3,388 percent (as presented in Table K-20), the underestimation of risks as a result of excluding the dermal evaluation may be highly significant in some cases. Please revise the text to acknowledge this.	Section K9.3 will be revised to clarify that exclusion of the dermal exposure pathway for groundwater may have resulted in a significant underestimate of risks for some chemicals.

**Table 1. Responses to Comments from U.S. Environmental Protection Agency (EPA) (continued)**  
**Draft Parcel E-2 Remedial Investigation/Feasibility Study (RI/FS) Report, Hunters Point Shipyard (HPS), March 2007**

Comment #	Page #	Section	Comment	Response
<b>Comments on Appendix L, Ecological Risk Assessment</b>				
134	1-2	L1.1	The last paragraph of this section indicates that further refinement of the ecological risks, using food chain modeling for birds and mammals, was not considered necessary given that human health risk evaluations have shown cancer risks greater than $1 \times 10^{-6}$ and total noncancer hazard indices greater than 1.0 in the majority of Parcel E-2 areas. Human risk results cannot be used as a basis for excluding further refinement of ecological risks without justification or demonstration that the cleanup goals based on human risk exceedence are protective of ecological exposure to include food chain exposures. Please clarify how human risk exceedences would justify excluding food chain analysis from the ecological risk assessment.	<p>The text in Section L1.1 will be revised as follows:            “Further refinement of the ecological risks using food chain modeling for birds and mammals was not considered necessary based on the following factors:</p> <ul style="list-style-type: none"> <li>▪ The onshore environment at Parcel E-2 has undergone several phases of ERA, including a baseline ERA (1997) and a validation study (1999). These past studies are discussed in Section 3.5 of the RI/FS Report. As discussed in Section L1, this SLERA was necessitated by the collection of additional data during a soil data gaps investigation in 2002, which resulted in the identification of new COPECs and the calculation of corresponding PSCs.</li> <li>▪ The purpose of including quantitative risk assessments in the Parcel E-2 RI/FS Report was, as discussed in Section 1.4, to identify areas that require remedial action to protect human health and the environment.</li> <li>▪ The site conceptual model, as discussed in Sections 6.2.1 and 6.3.1, identifies solid waste throughout the Landfill Area and heterogeneous soil contamination throughout the Panhandle and East Adjacent Areas as posing a potential risk to terrestrial ecological receptors.</li> <li>▪ The SLERA performed for Parcel E-2 (through Step 3a) conservatively depicts the potential ecological risk in the onshore environment at Parcel E-2. Considering the heterogeneous contaminant distribution within the Landfill, Panhandle, and East Adjacent Areas, this conservative evaluation meets the overall goal of the RI/FS process and, when coupled with the results of the HHRA, provides an adequate basis for developing a focused set of remedial alternatives for Parcel E-2.”</li> </ul>



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**Table 2. Responses to Comments from Department of Toxic Substances Control (DTSC) and Department of Fish and Game  
Draft Parcel E-2 Remedial Investigation/Feasibility Study (RI/FS) Report, Hunters Point Shipyard (HPS), March 2007**

<b>Comment #</b>	<b>Page #</b>	<b>Section</b>	<b>Comment</b>	<b>Response</b>
<b>Comments provided by DTSC Remedial Project Manager (Tom Lanphar), dated July 13, 2007</b>				
1		General	<p>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 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.</p>	<p>The remedial alternatives developed for the Panhandle Area, East Adjacent Area, and Shoreline Area were focused on containment and excavation; however, the Department of the Navy (Navy) will revise the RI/FS Report to evaluate expanded hot spot removal (particularly those in the Shoreline Area) and alternate wetlands mitigation designs for the near-shore area. This approach is consistent with the streamlining approach outlined in pages 8704-8705 of the 1990 National Oil and Hazardous Substances Pollution Contingency Plan (NCP) Preamble (55 Federal Register [Fed. Reg.] 8704-8705, March 8, 1990) and on page 4-8 in Section 4.1.3.1 of U.S. Environmental Protection Agency's (EPA) "Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA," Office of Solid Waste and Emergency Response (OSWER) Directive 9355.3-01, October 1988 (EPA, 1988).</p> <p>The FS will evaluate whether backfilling of the hot spot excavations is necessary or if the areas could be part of the wetlands mitigation at Parcel E-2. As discussed in Section 12 of the RI/FS Report, the wetlands damaged as part of the remedial action at Parcel E-2 (as well as the remedial actions at Parcels B and E) will be restored at a 1:1 ratio, and additional wetlands restoration are not needed to achieve the site remedial action objectives (RAOs) and meet the applicable or relevant and appropriate requirements (ARARs).</p>
2		General	<p>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.</p>	<p>As stated in the response to comment 1 above, the RI/FS Report will evaluate hot spot removal (particularly those along the shoreline). The unexcavated shoreline portion of the Polychlorinated Biphenyl (PCB) Hot Spot Area (identified on Figure 3-2) will be one of the shoreline hot spots evaluated in the FS. Other potential hot spots will be evaluated based on their ability to enhance and expedite achieving the RAOs (most notably, protecting aquatic life in San Francisco Bay).</p>

**Table 2. Responses to Comments from Department of Toxic Substances Control (DTSC) and Department of Fish and Game (continued)  
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Comment #	Page #	Section	Comment	Response
<b>Comments provided by DTSC Remedial Project Manager (Tom Lanphar), dated July 13, 2007 (continued)</b>				
3		General	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.	A working meeting was held with the Base Realignment and Closure Cleanup Team (BCT) and the City and County of San Francisco (City) on July 25, 2007, to further discuss and plan the development of groundwater remedial alternatives for the Draft Final RI/FS Report. The topic was discussed again at the BCT monthly meeting on August 21, 2007.  The Navy will provide the BCT and the City the opportunity to review the newly developed material in advance of publishing the Draft Final RI/FS Report.
4		General	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 a 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.	The Draft Wetland Mitigation and Monitoring Plan is currently being revised in conjunction with the Parcel E-2 RI/FS Report. As part of that review, various wetland configurations and alignments are being considered. The emphasis in that evaluation is placed on increasing the ecological value, to the extent practical, of the wetlands created and the transitional position that it occupies between the bay and the surrounding uplands. As part of the groundwater containment alternative analysis, wetlands will be evaluated for the management of groundwater upgradient of the Parcel E-2 Landfill.
5		General	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 Candle Stick 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.	The Navy does not believe that any adjustments to the Parcel E and E-2 boundary are needed to support the planned reuses of Parcel E, which in areas adjoining Parcel E-2 include industrial, open space, and research and development uses. As discussed in Section 1.8, restrictive covenants that limit land use at Parcel E-2 to open space development will be incorporated in the transfer process.  Parcel boundaries at HPS were originally developed based on Installation Restoration (IR) site boundaries. Adjustments to parcel boundaries have typically involved moving an IR site from one parcel to another to expedite the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) process. For example, IR-25 was moved from Parcel B to Parcel C, and IR-36 was moved from Parcel D to Parcel E.



**Table 2. Responses to Comments from Department of Toxic Substances Control (DTSC) and Department of Fish and Game (continued)  
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<b>Comments provided by DTSC Remedial Project Manager (Tom Lanphar), dated July 13, 2007 (continued)</b>				
5 <i>(cont.)</i>		General	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.	<p>A similar rationale was used to create Parcel E-2 based on the boundaries of IR-01/21. As shown on Figure 1-14, the Parcel E-2 boundary encompasses the entire boundary of IR-01/21, the portion of IR-02 into which the PCB Hot Spot Area extends, and other adjoining areas not included within the boundaries of other IR sites.</p> <p>The Navy met with the various stakeholders on August 28, 2007, to coordinate the wetlands mitigation approach for Parcel E-2 with the restoration efforts within Yosemite Slough. Input received during this meeting will be used in the development of wetlands mitigation designs for Parcel E-2. One point of coordination discussed during the meeting was the alignment of the Bay Trail, which will be a primary feature tying Parcel E-2 to the adjoining parcels and properties.</p>
6		General	<p>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 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).</p>	<p>Because solid waste may be present at numerous locations throughout Parcel E-2, the Navy agrees with DTSC's request to evaluate those alternatives that leave waste in place at Parcel E-2 for their ability to meet the substantive requirements of Title 27 California Code of Regulations (CCR) Section (§) 66264.310(a) and (b). Alternative 3 in the Draft RI/FS Report was evaluated and shown to meet the substantive requirements of Title 27 CCR § 66264.310(a) and (b). A similar evaluation will be performed for the additional containment and hot spot removal alternative planned for the Draft Final RI/FS Report.</p> <p>The Navy wishes to clarify the following points raised in this general comment:</p> <ul style="list-style-type: none"> <li>Section 8.2.3.1 concludes that waste contained within the Parcel E-2 Landfill (also referred to as the "Landfill Area") meets the municipal-type waste definition outlined in EPA guidance (EPA, 1996). Consistent with this guidance, Section 8.2.3.1 indicates that the presence of industrial and low-level radiological waste does not invalidate this conclusion.</li> </ul>

**Table 2. Responses to Comments from Department of Toxic Substances Control (DTSC) and Department of Fish and Game (continued)  
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Comment #	Page #	Section	Comment	Response
<b>Comments provided by DTSC Remedial Project Manager (Tom Lanphar), dated July 13, 2007 (continued)</b>				
6 (cont.)		(see above)		<ul style="list-style-type: none"> <li>▪ As stated in Section 8.2.1.4, determination of the extent of solid waste at the Landfill Area is based on the physical presence of contiguous industrial or municipal-type wastes. Overall, the lateral and vertical extent of solid waste at the Landfill Area has been adequately defined by the soil borings and test pits installed within and adjacent to the landfill.</li> <li>▪ As stated in Section 8.4.1, the nature and extent of the solid waste in the Panhandle, Shoreline, and East Adjacent Areas is distinct from the solid waste defined in the Landfill Area. Specifically, fill material in the adjacent areas consists primarily of soil and rock with isolated solid waste locations that are not contiguous with the solid waste in the Landfill Area. In addition, solid waste within the adjacent areas consists of inert construction debris with isolated locations of industrial wastes (e.g., sandblast waste, metal slag, radioluminescent devices, and oily waste) and putrescible construction debris (e.g., wood). Although these waste types are also found in the Landfill Area, the municipal-type waste found in the Landfill Area is not found in the adjacent areas.</li> </ul>
7		General	<p>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.</p>	<p>The Navy has met with the BCT to discuss the revisions for the Draft Final RI/FS Report that are needed to properly clarify the manner in which the containment presumptive remedy was evaluated for the Landfill Area. The Navy will revise the RI/FS Report to clarify the remedy evaluation process for Parcel E-2 as follows:</p> <ul style="list-style-type: none"> <li>▪ The containment presumptive remedy is being evaluated only the Landfill Area.</li> <li>▪ Although EPA guidance for military landfills (EPA, 1996) advises that the presumptive remedy should not be used where excavation is considered, the Navy believes that, based on site-specific considerations, excavation should also be evaluated in order to address community concerns although this goes beyond the requirements of the presumptive remedy policy.</li> </ul>



**Table 2. Responses to Comments from Department of Toxic Substances Control (DTSC) and Department of Fish and Game (continued)  
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Comment #	Page #	Section	Comment	Response
<b>Comments provided by DTSC Remedial Project Manager (Tom Lanphar), dated July 13, 2007 (continued)</b>				
7 <i>(cont.)</i>		General <i>(see above)</i>		<ul style="list-style-type: none"> <li>▪ This approach is consistent with EPA’s directive titled “Presumptive Remedies: Policy and Procedures” (pp. 1-2, EPA, 1993b), which states that “there may be unusual circumstances (such as, complex contaminant mixtures, soil conditions, or extraordinary State and community concerns) that may require the site manager to look beyond the presumptive remedies for additional (perhaps more innovative) technologies or remedial approaches.” In addition, this approach was applied in the Remedial Action Plan/Record of Decision prepared for the landfill within Investigation Area H1 at the former Mare Island Naval Shipyard (Weston Solutions, Inc., 2006).</li> <li>▪ The Navy did not apply or rely upon the presumptive remedy guidance for the areas adjacent to the Landfill Area (e.g., the Panhandle Area, East Adjacent Area, and Shoreline Area).</li> </ul> <p>In accordance with EPA’s presumptive remedy guidance for military landfills (EPA, 1996), the Navy prepared and included a detailed analysis of the Landfill Area (exclusive of the adjacent areas) in Section 8.2.3 of the Draft RI/FS Report. The Navy concluded that the Landfill Area met the requirements for a presumptive remedy set forth in that guidance.</p> <p>DTSC’s comment referenced a general observation about characteristics of military landfills in the introductory portion of the guidance acknowledging that while “most military landfills present only low-level threats with pockets of some high-hazard waste...some military facilities (e.g., weapons fabrication or testing, shipbuilding, major aircraft or equipment repair depots) have a high level of industrial activity compared to overall site activities. In these cases, there may be a higher proportion and wider distribution of industrial (i.e., potentially hazardous) wastes present than at other less industrial facilities” (p. 3, EPA, 1996). A decision framework for evaluating whether the containment presumptive remedy applies to a specific military landfill is presented on pages 4 through 6 of EPA (1996) guidance.</p>

**Table 2. Responses to Comments from Department of Toxic Substances Control (DTSC) and Department of Fish and Game (continued)  
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Comment #	Page #	Section	Comment	Response
<b>Comments provided by DTSC Remedial Project Manager (Tom Lanphar), dated July 13, 2007 (continued)</b>				
7 (cont.)		General (see above)		<p>The Navy evaluated the Landfill Area relative to this decision framework in Section 8.2.3 of the Draft RI/FS Report and concluded that the containment presumptive remedy applies to the Landfill Area. DTSC did not comment on or dispute the specific findings of the analysis in Section 8.2.3, which concludes that the contents of the Landfill Area meet the municipal-type waste definition and that no "high hazard" military wastes are present.</p> <p>The Navy disagrees with DTSC's implication that the proximity of the Landfill Area to the bay invalidates application of containment presumption. The presence of sensitive environments is identified in EPA (1996) guidance as a practical consideration for the remedy evaluation process. The containment alternatives for the Landfill Area, to be included in the Draft Final RI/FS Report, will address these practical considerations by (1) evaluating groundwater containment options in areas where the landfill waste is located within 100 feet of the bay, and (2) evaluating excavation of landfill waste adjacent to the shoreline (where existing slopes are too steep for long-term stability) and relocation of the waste to inland portions of the Landfill Area (where it will be capped).</p> <p>As discussed previously, the Navy did not apply or rely upon the presumptive remedy guidance for the areas adjacent to the Landfill Area (e.g., the Panhandle Area, East Adjacent Area, and Shoreline Area). See p. 1-6 in Section 1.4 of the Draft RI/FS Report. Also as stated in the response to comment 1, the Navy will revise the RI/FS Report to evaluate expanded hot spot removal in the Panhandle Area, East Adjacent Area, and Shoreline Area as requested in general comment 2.</p> <p>Section 8.2.3.4 discusses the rationale for evaluating excavation of the Landfill Area as follows: "Some members of the local community have expressed a strong desire for the Navy to thoroughly evaluate excavation of the landfill. In order to provide information to support the community's review of potential remedial alternatives for Parcel E-2, the Navy has agreed to evaluate excavation of the landfill as part of this report."</p>



**Table 2. Responses to Comments from Department of Toxic Substances Control (DTSC) and Department of Fish and Game (continued)  
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Comment #	Page #	Section	Comment	Response
<b>Comments provided by DTSC Remedial Project Manager (Tom Lanphar), dated July 13, 2007 (continued)</b>				
7 <i>(cont.)</i>		General	<i>(see above)</i>	This decision is supported by EPA's directive titled "Presumptive Remedies: Policy and Procedures (pp. 1-2; EPA, 1993b), which states that (1) presumptive remedy approaches are designed to accommodate a wide range of site-specific circumstances; (2) site-specific circumstances may require evaluation of additional technologies or remedial approaches beyond the presumptive remedy; and (3) the overall goal of the presumptive remedy approach is to focus data collection efforts and reduce the technology evaluation phase for certain categories of sites.
<b>Comments provided by DTSC legal office, dated July 13, 2007</b>				
8		10.3.7	First bullet – Please remove "(a)(3)" and just cite to section 1471.	The text will be revised to state that the substantive provisions of California Civil Code § 1471 are potential ARARs. Similar changes will be made to the text and tables in Appendix N.
9		10.3.7	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."	The text will be revised to state: "The substantive provisions of this section for obtaining written variances from land use restrictions are identified in Section N4.2.6 of Appendix N and are accepted as ARARs. Procedural requirements do not qualify as ARARs." A separate bullet item will be added to cite California Health and Safety Code § 25232(b)(1)(A)-(E), which sets forth land use restrictions for hazardous waste property. The text and tables in Appendix N discuss this potential ARAR in more detail.
10		10.3.7	Fourth bullet - Replace the sentence following the code citation with the following sentence: "This section provides a process for removing land use restrictions."	The text will be revised to state: "The substantive provisions of this section for removing land use restrictions are identified in Section N4.2.6 of Appendix N and are accepted as ARARs. Procedural requirements do not qualify as ARARs." The text will be revised accordingly. The text and tables in Appendix N discuss this potential ARAR in more detail.
11		10.3.7	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."	The text will be revised accordingly and the following sentence will be added: "The substantive provisions of this requirement are identified in Section N4.2.6 of Appendix N." The text and tables in Appendix N discuss this potential ARAR in more detail.

**Table 2. Responses to Comments from Department of Toxic Substances Control (DTSC) and Department of Fish and Game (continued)  
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Comment #	Page #	Section	Comment	Response
<b>Comments provided by DTSC legal office, dated July 13, 2007 (continued)</b>				
12		10.3.7	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.	The Navy will remove the erroneous reference to Subsection (e)(1). The text will be revised to state: "The Navy recognizes that the substantive provisions of Title 22 CCR § 67391.1 are state ARARs as stated in Section N4.2.6 of Appendix N."
<b>Comments provided by DTSC Geologic Services Unit (GSU), Michael O. Finch, PG</b>				
13		General	<p>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.</p> <p><u>Recommendation</u></p> <p>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.</p>	<p>The Navy will revise the RI/FS Report to clarify the remedy evaluation process for Parcel E-2 as discussed in the responses to comments 1 and 7 (from the DTSC RPM). As discussed in the response to general comment 1, the remedial alternatives developed for the Panhandle Area, East Adjacent Area, and Shoreline Area were focused on containment and excavation; however, the Navy will revise the RI/FS Report to evaluate hot spot removal (particularly those within or adjacent to the Shoreline Area). This approach is consistent with the streamlining approach outlined in pages 8704-8705 of the 1990 NCP Preamble (55 Fed. Reg. 8704-8705, March 8, 1990) and on page 4-8 in Section 4.1.3.1 of the EPA's "Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA," OSWER Directive 9355.3-01, October 1988 (EPA, 1988).</p> <p>As discussed in Section 1.8, restrictive covenants that limit land use at Parcel E-2 to open space development will be incorporated in the transfer process. Therefore, the East Adjacent Area will only be used for open space purposes that, as outlined in the redevelopment plan, include active and passive recreation, plazas and promenades, wetlands restoration, and ancillary commercial uses.</p>



**Table 2. Responses to Comments from Department of Toxic Substances Control (DTSC) and Department of Fish and Game (continued)  
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Comment #	Page #	Section	Comment	Response
<b>Comments provided by DTSC Geologic Services Unit (GSU), Michael O. Finch, PG (continued)</b>				
14		General	<p>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 36).</p> <p><u>Recommendation</u></p> <p>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.</p>	<p>During a working meeting on July 25, 2007, the Navy and regulatory agencies agreed on a path forward for developing groundwater remedial alternatives for Parcel E-2 by:</p> <ul style="list-style-type: none"> <li>▪ Reviewing the conclusions from Appendix M and identifying near-shore source areas that require further analysis in the FS.</li> <li>▪ Agreeing that application of current “trigger-level” approach used for the Parcel D FS would be used at Parcel E-2.</li> <li>▪ Discussing process options available to contain groundwater at Parcel E-2, and how these options should be considered in conjunction with hot spot removals.</li> </ul> <p>The Navy will revise the Draft Final RI/FS Report to include groundwater remedial alternatives based on the conclusions of the July 25, 2007, meeting.</p> <p>As discussed in the response to general comment 3, the Navy will provide the BCT and the City the opportunity to review the newly developed material in advance of publishing the Draft Final RI/FS Report.</p>
15		General	<p>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.</p>	<p>Section 5.8.4 identified groundwater data gaps in two primary areas at Parcel E-2: (1) along the shoreline and (2) within areas that were recently excavated under interim removal actions. The Navy is implementing a groundwater data gaps investigation (GDGI) in these areas and has decided to delay submittal of the Draft Final RI/FS Report to incorporate the new data. The Draft Final RI/FS Report will also evaluate the new data for the purposes of recommending possible changes to the groundwater monitoring network.</p>

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Comment #	Page #	Section	Comment	Response
<b>Comments provided by DTSC Geologic Services Unit (GSU), Michael O. Finch, PG (continued)</b>				
15 <i>(cont.)</i>		General	<p><u>Recommendation</u></p> <p>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 30).</p>	<i>(see above)</i>
16		General	<p>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:</p> <ul style="list-style-type: none"> <li>▪ Arsenic and lead require additional delineation to the north and northwest of boring IR72B037 in the East Adjacent Area.</li> <li>▪ PAHs require additional delineation to the north and northwest of boring IR72B038 in the East Adjacent Area.</li> <li>▪ Chromium requires further delineation to the east of boring IR12MW11A in the East Adjacent Area.</li> <li>▪ Metals, TPH, and PAHs require further delineation to the west of IR01B366 through IR01B368 in the Panhandle Area.</li> <li>▪ PCBs require further delineation to the east of the eastern boundary of Parcel E-2.</li> </ul>	<p>As discussed in Section 4.5.4, the adequacy of the data set should be measured against the remediation decision to be made for Parcel E-2. For the alternatives evaluated in the Draft RI/FS Report, complete delineation of known and potential soil contamination in the Panhandle and East Adjacent Areas was not considered necessary. However, the Draft Final RI/FS Report will evaluate hot spot removal in conjunction with the containment alternatives, thus additional characterization may be required in areas where hot spot removal is implemented. The Navy will revise Section 4.5.3, 4.5.4, 8.4, 12, and 13 of the RI/FS Report to clarify situations in which additional characterization is needed at Parcel E-2. Specific data quality objectives for this additional characterization will be developed prior to or during the remedial design.</p> <p>Subsurface conditions at and beyond the Parcel E-2 boundary will be evaluated, as appropriate, as part of the cleanup process in the adjoining properties and parcels. Clarifications regarding the specific data gaps identified by DTSC are summarized below.</p> <ul style="list-style-type: none"> <li>▪ Section 4.4.2.2 explains that arsenic and lead concentrations greater than remedial investigation evaluation criteria (RIEC) at boring IR72B037 are bounded by samples located within 150 feet (including samples located in adjacent Parcel E IR sites). Data from the adjacent Parcel E IR sites were presented in the Parcel E RI Report (Barajas and Associates, Inc., 2008).</li> </ul>



**Table 2. Responses to Comments from Department of Toxic Substances Control (DTSC) and Department of Fish and Game (continued)  
Draft Parcel E-2 Remedial Investigation/Feasibility Study (RI/FS) Report, Hunters Point Shipyard (HPS), March 2007**

Comment #	Page #	Section	Comment	Response
<b>Comments provided by DTSC Geologic Services Unit (GSU), Michael O. Finch, PG (continued)</b>				
16 (cont.)		General	(see above)	<ul style="list-style-type: none"> <li>▪ Section 4.4.2.2 explains that polycyclic aromatic hydrocarbon (PAH) concentrations exceeding the RIEC at boring IR72B038 are bounded by samples located within 150 feet (including samples located in adjacent Parcel E IR sites). Data from the adjacent Parcel E IR sites were presented in the Parcel E remedial investigation report.</li> <li>▪ Section 4.4.2.2 acknowledges that chromium concentrations exceeding the RIEC at boring IR12MW11A are not adequately delineated. Section 4.5.4 will be revised to identify this as a potential data gap for further evaluation in the Parcel E RI Report.</li> <li>▪ Sections 4.3.2.1 and 4.3.2.2 acknowledge that concentrations of various metals, PAHs, and total petroleum hydrocarbons (TPH) exceeding the RIEC at borings IR01B366 through IR01B368 are not adequately delineated. Section 4.5.4 will be revised to identify this as a potential data gap for further evaluation in the Parcel E-2 remedial design.</li> <li>▪ The Draft Final RI/FS Report will include post-excavation data from the removal action at the PCB Hot Spot Area. The residual PCB concentrations from the data will be evaluated to identify additional hot spots and to refine the characterization along the Parcel E-2 and E boundary. Based on this data evaluation, Section 4.5.4 will be revised, as appropriate, to identify this issue as a potential data gap for further evaluation in the Parcel E RI Report.</li> </ul>
17		1.4	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.	As discussed in the response to general comments 3 and 14, the Navy will revise the Draft Final RI/FS Report to evaluate groundwater remedial alternatives. As a result, no further clarification is needed in Section 1.4.

**Table 2. Responses to Comments from Department of Toxic Substances Control (DTSC) and Department of Fish and Game (continued)  
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Comment #	Page #	Section	Comment	Response
<b>Comments provided by DTSC Geologic Services Unit (GSU), Michael O. Finch, PG (continued)</b>				
18		2.1.1	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.	Section 2.1.1 will be revised to specify the depth of the sheet-pile wall and groundwater extraction trench and to clarify that this feature targeted A-aquifer groundwater. Section 2.1.1 will also be revised to clarify that the extraction system was deactivated to excavate contaminated soil adjacent to the sheet-pile wall. Limited water level data are available in and around the sheet-pile wall to assess groundwater flow patterns following deactivation of the extraction system. Monitoring wells near the sheet-pile wall were decommissioned during implementation of the time-critical removal action (TCRA) at the PCB Hot Spot Area and were not replaced until April 2007. Water level data from the replacement wells are being collected and, based on these data, groundwater flow patterns will continue to be evaluated as part of the ongoing groundwater monitoring program.
19		2.2.1.2	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.	The subject sentence in Section 2.2.1.2 will be revised as follows (deletions in strikethrough): "The aquitard has <del>a relatively level base</del> and an irregular upper surface, as discussed in Subsection 2.2.1.1." The remainder of Section 2.2.1.2 accurately discusses the distribution of the Bay Mud aquitard in Parcel E-2.
20		2.2.1.3	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: <ul style="list-style-type: none"> <li>▪ A table of historical water level data,</li> <li>▪ A table of monitoring well construction details,</li> <li>▪ Water level elevation data (values) on groundwater elevation contour maps, and</li> <li>▪ Water level hydrographs.</li> </ul> Anomalous water level measurements identified on hydrographs should be evaluated and discussed in terms of possible causes.	The Navy will revise the Draft Final RI/FS Report to include the requested information to the maximum extent practical. Most of this information is gathered and compiled as part of the ongoing groundwater monitoring program; however, a comprehensive table of historical water level data will not be compiled because the data have been collected by multiple contractors dating to 1997, and are not available in a single manipulable format. Water level data collected prior to 2004 were summarized in previously-published reports (PRC Environmental Management, Inc. [PRC], Levine-Fricke-Recon [LFR], and Uribe & Associates, 1997; Tetra Tech EM Inc. [TEM], 2001a and 2004c). The Navy does not agree that water level hydrographs are a practical means of assessing groundwater flow patterns at Parcel E-2.



**Table 2. Responses to Comments from Department of Toxic Substances Control (DTSC) and Department of Fish and Game (continued)  
Draft Parcel E-2 Remedial Investigation/Feasibility Study (RI/FS) Report, Hunters Point Shipyard (HPS), March 2007**

Comment #	Page #	Section	Comment	Response
<b>Comments provided by DTSC Geologic Services Unit (GSU), Michael O. Finch, PG (continued)</b>				
20 (cont.)		2.2.1.3	(see above)	As discussed in Section 2.2.1.3, the historic flow patterns within the A-aquifer are believed to be influenced by leaking sanitary sewer and storm drain lines, and these patterns may change as a result of the Navy's ongoing removal of these lines in other HPS parcels. Therefore, a detailed evaluation of past water level data, which are not likely to represent long-term conditions, is not believed to be practical. Rather, the Navy will continue to evaluate the potentiometric surface of the A-aquifer as part of the ongoing groundwater monitoring program.
21		2.2.2.2	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.	The water level contours will be removed from Figure 2-17. This information was previously presented in the Parcel E Groundwater Summary Report (TtEMI, 2004c), and was intended to illustrate the direction of the vertical flow potential. The Draft Final RI/FS Report will be revised to include hydrographs for each of the four A- and B-aquifer well pairs at Parcel E-2.
22		2.2.2.4	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.	Section 2.2.2.4 will be revised to discuss the seasonal variations observed during more recent water level measurement events. Please refer to the response to comment 20 regarding the use of hydrographs to evaluate groundwater anomalies.

**Table 2. Responses to Comments from Department of Toxic Substances Control (DTSC) and Department of Fish and Game (continued)  
Draft Parcel E-2 Remedial Investigation/Feasibility Study (RI/FS) Report, Hunters Point Shipyard (HPS), March 2007**

Comment #	Page #	Section	Comment	Response
<b>Comments provided by DTSC Geologic Services Unit (GSU), Michael O. Finch, PG (continued)</b>				
23		2.2.3	<p>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.</p> <p>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.</p>	<p>a. Previous slug test data will be compiled and summarized in the Draft Final RI/FS Report.</p> <p>b. The Draft Final RI/FS Report will be revised to include a range of hydraulic gradients at various locations in Parcel E-2, including locations near the Parcel E-2 shoreline as measured during the 2002 tidal influence study (TtEMI, 2004c). Use of gradients near the shoreline will provide the most useful information in evaluating groundwater flow rates to San Francisco Bay. Additional information supporting the effective porosity value will be included in the Draft Final RI/FS Report.</p>
24		3.4.2	<p>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.</p>	<p>Section 3.4.2 will be revised to specify that wells IR01MW10A through 12A were installed to replace well IR01MW07A and that piezometer IR01P04A was installed to replace piezometer IR01P03A. Section 3.4.2 will also be revised to specify that the well decommissioning and replacement activities are discussed in Section 2.3.4 of the Landfill Gas Removal Action Closeout Report (TtEMI, 2004a; Appendix F to the Draft RI/FS Report).</p>

**Table 2. Responses to Comments from Department of Toxic Substances Control (DTSC) and Department of Fish and Game (continued)  
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Comment #	Page #	Section	Comment	Response
<b>Comments provided by DTSC Geologic Services Unit (GSU), Michael O. Finch, PG (continued)</b>				
25		3.8.3	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.	As agreed to at the working meeting on July 25, 2007, with the regulatory agencies, the Navy plans to revise the RI/FS Report to evaluate groundwater containment around the Parcel E-2 Landfill (and other near-shore contaminant sources to the bay). The remedial alternative analysis will evaluate the appropriate means of controlling groundwater (both upgradient and downgradient). As discussed in the response to general comment 4, the RI/FS Report will also evaluate whether the extracted groundwater might be used to establish and support the proposed freshwater wetlands.
26		3.10.1	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.	These data, which were presented in the completion report for the removal action at the Metal Slag Area and Metal Debris Reef (Tetra Tech EC, Inc. [TtECI], 2007b), will be discussed in the Draft Final RI/FS Report.
27		3.10.2	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.	These data, which were presented in the completion report for the removal action at the PCB Hot Spot Area (TtECI, 2007a), will be discussed in the Draft Final RI/FS Report.
28		4.2.4	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.	Section 4.1.3.4 will be revised to clarify that the evaluation of adjacent samples (to determine whether RIEC exceedances are adequately delineated) was performed in four basic directions (north, south, east, and west) to a distance of 150 feet. This approach is consistent with the sampling approach developed during the standard data gaps investigation (SDGI). Section 4.5.3 concludes that data are adequate to support the human health risk assessment (HHRA) and screening-level ecological risk assessment (SLERA) and the focused set of remedial alternatives, even though numerous locations in the Panhandle and East Adjacent Areas are not completely delineated. As discussed in the response to comment 16, the Navy will also revise Section 4.5.3, 4.5.4, 8.4, 12, and 13 of the RI/FS Report to clarify that additional characterization may be required in areas where hot spot removal is implemented in conjunction with containment technologies. Specific data quality objectives for this additional characterization will be developed prior to or during the remedial design.

**Table 2. Responses to Comments from Department of Toxic Substances Control (DTSC) and Department of Fish and Game (continued)  
Draft Parcel E-2 Remedial Investigation/Feasibility Study (RI/FS) Report, Hunters Point Shipyard (HPS), March 2007**

Comment #	Page #	Section	Comment	Response
<b>Comments provided by DTSC Geologic Services Unit (GSU), Michael O. Finch, PG (continued)</b>				
29		4.4.2.2	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.	As discussed in the response to comment 16, subsurface conditions at and beyond the Parcel E-2 boundary will be evaluated, as appropriate, as part of the cleanup process in the adjoining properties and parcels. Collection of additional arsenic data in this area is not needed to support the remedial alternative analysis at Parcel E-2; however, the conditions at the adjoining Parcel E IR sites will be evaluated prior to finalizing a decision whether or not additional characterization is needed.  Section 4.4.2.2 explains that arsenic concentrations exceeding the RIEC at boring IR72B037 are bounded by samples located within 150 feet (including samples located in adjacent Parcel E IR sites). Data from the adjacent Parcel E IR sites were presented in the revised Parcel E RI Report (Barajas and Associates, 2008). Further details on arsenic concentrations in this area are provided in the Revised Parcel E RI Report.
30		4.5.4	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 15).	Section 4.5.4 will be revised to specify (1) the areas along the Parcel E-2 boundary where RIEC exceedances are not completely delineated, (2) a conclusion whether or not this incomplete delineation constitutes a data gap, and (3) recommended steps to resolve the data gap.
31		5.2	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.	The subject sentence will be deleted from Section 5.2.



**Table 2. Responses to Comments from Department of Toxic Substances Control (DTSC) and Department of Fish and Game (continued)  
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Comment #	Page #	Section	Comment	Response
<b>Comments provided by DTSC Geologic Services Unit (GSU), Michael O. Finch, PG (continued)</b>				
32		5.7.1	<p>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).</p> <p>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.</p>	<p>A new table will be added to Section 5 to specify the perimeter monitoring wells evaluated in this section (including differentiating between upgradient and downgradient wells). The table will also specify any differences between this well list and the wells included in the basewide groundwater monitoring program.</p> <p>Section 5.7.1 will be revised to clarify that an evaluation of groundwater conditions upgradient (or "background") and downgradient (or "point of compliance") of a landfill is consistent with Title 22 CCR § 66264.97, which is the identified ARAR for establishing a groundwater monitoring network.</p>
33		5.8.1	<p>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.</p>	<p>The text will be revised to discuss the potential anthropogenic sources of dissolved metals relative to the concentrations trends for individual metals. The reference to the potential contribution of ambient concentrations will be retained, but will be clarified appropriately.</p>
34		8.3.4	<p>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.</p>	<p>The text will be revised to state that the investigation will be scoped, performed, and summarized as part of the remedial design process. The investigation may involve geophysical techniques and exploratory test pits.</p>

**Table 2. Responses to Comments from Department of Toxic Substances Control (DTSC) and Department of Fish and Game (continued)  
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Comment #	Page #	Section	Comment	Response
<b>Comments provided by DTSC Geologic Services Unit (GSU), Michael O. Finch, PG (continued)</b>				
35		11.7	Although it is stated in <i>Section 8.3.4 – Conclusions for Landfill Gas</i> 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.	Section 11.5.4 specifies that: “Prior to finalizing the design of a gas control system, a landfill gas generation study is needed to better estimate the gas generation rates from the landfill and to determine the content of the landfill gas.” Section 11.5.4 further discusses that the results of the study would be used to evaluate the level of treatment required to meet the landfill gas RAOs (for example, whether destruction of methane gas is required to meet the RAOs). The text will be revised to state that the landfill gas generation study will be scoped, performed, and summarized as part of the remedial design process.
36		12	<p>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.</p> <p>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.</p>	<p>a. As discussed in the response to general comments 3 and 14, the Navy will revise the Draft Final RI/FS Report to evaluate groundwater remedial alternatives.</p> <p>b. The objectives of the groundwater monitoring program for Alternatives 2 and 3 are discussed in Section 12.1.2. The reviewer appears to be citing text from Section 13.2. The subject statements in Section 13.2 will be revised as follows (revisions in bold and strikeout text): “Groundwater monitoring would also be included under this alternative to evaluate chemical concentrations in groundwater while the aquifers naturally recover <b>and to confirm that concentrations at the point of compliance do not exceed chemical-specific ARARs</b>. <del>Additionally, groundwater monitoring would be used to confirm site conditions and to ensure that, over time, the potential exposure pathways would remain incomplete.</del>”</p>



**Table 2. Responses to Comments from Department of Toxic Substances Control (DTSC) and Department of Fish and Game (continued)  
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Comment #	Page #	Section	Comment	Response
<b>Comments provided by DTSC Human and Ecological Risk Division, James M. Polisini, Ph.D.</b>				
37		General	<p>Recommendations contained in the document titled <i>Draft Parcels E and E -2 Shoreline Characterization Technical Memorandum, Hunters Point Shipyard, San Francisco, California</i>, dated November 1, 2005 were (Section 6.0, page 25) that:</p> <ol style="list-style-type: none"> <li>1. Source control measures are warranted along the Parcel E and E-2 shoreline; and,</li> <li>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.</li> </ol> <p>HERD agreed with these recommendations in a HERD memorandum dated December 7, 2005 and continues to support these recommendations.</p>	Comment noted. The conclusions of the subject document were incorporated into the RI/FS Report.
38		General	<p>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.</p>	Replacement pages for the Shoreline Characterization Technical Memorandum, which correct the errors cited in comments 13 and 14, were submitted on June 29, 2007, in conjunction with the Revised Parcel E RI Report. The updated Shoreline Characterization Technical Memorandum will be included in the Draft Final RI/FS Report for Parcel E-2.

**Table 2. Responses to Comments from Department of Toxic Substances Control (DTSC) and Department of Fish and Game (continued)  
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Comment #	Page #	Section	Comment	Response
<b>Comments provided by DTSC Human and Ecological Risk Division, James M. Polisini, Ph.D. (continued)</b>				
39		General	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.	<p>The containment alternatives contemplated in the FS involve ARARs that require the cap be designed to control vectors and prevent exposure of waste. In addition, the FS also identifies ARARs that require the integrity of the cap material be maintained throughout the postclosure period. These requirements will be met through regular inspections and associated maintenance. The inspections will involve checking various site conditions, including searching for evidence of burrowing animals. Maintenance actions would include prompt repair of any damage and use of an appropriate control device (such as the Molecontrol® device, which sends out sound waves to deter burrowing animals). These inspection and maintenance procedures are being implemented for the interim cap at Parcel E-2 (TtEMI, 2003b), and have been demonstrated to be effective in preventing damage to the cap material or exposure of terrestrial receptors to contaminated waste material below the cap. Additional text will be added to Section 12.2.3.6 to clarify the inspection and maintenance procedures.</p> <p>As discussed in the response to general comments 3 and 14, the Navy will revise the Draft Final RI/FS Report to evaluate groundwater remedial alternatives. This evaluation will use the current trigger-level approach developed for the Parcel D FS Report to conservatively assess transport of contaminants in groundwater to San Francisco Bay.</p>
40	3, 1-4	ES.1.3, 1.1.4	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 (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, page1). This is a data gap which must be addressed prior to selection of a final remedial alternative.	The Navy is developing responses to comments from DTSC and other regulatory agencies on the radiological addendum to the Parcel E-2 RI/FS Report.



**Table 2. Responses to Comments from Department of Toxic Substances Control (DTSC) and Department of Fish and Game (continued)  
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Comment #	Page #	Section	Comment	Response
<b>Comments provided by DTSC Human and Ecological Risk Division, James M. Polisini, Ph.D. (continued)</b>				
41	5,	ES.2.2	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.	<p>The Navy wishes to discuss this issue further with DTSC. As discussed in Section 8.3.3, the risk-based calculations, which were performed using laboratory analytical data collected during gas characterization studies at Parcel E-2, were linked to the concurrent field measurements to select action levels for the interim landfill gas monitoring program (TtEMI and Innovative Technical Solutions, Inc., 2004c). These action levels were selected as RAOs for nonmethane organic compound (NMOC) concentrations in subsurface and outdoor air. The Navy believes that these RAOs, which compare NMOC threshold concentrations against readings from calibrated field instruments, are adequately protective of human health and meet the requirements of Title 27 CCR § 20921.</p> <p>While it is understood that quantified risk thresholds (or risk-based chemical criteria) are typically used to establish RAOs, long-term monitoring against such risk thresholds would require collection of gas samples and analysis (by a fixed laboratory) for a wide range of NMOCs. Considering the frequency of landfill gas monitoring planned for Parcel E-2 (minimum of quarterly monitoring for 30 years), the Navy does not believe that sample collection and laboratory analysis is practical or cost-effective considering that alternative monitoring methods (using calibrated field instruments) are readily available.</p>
42	1-14, 7-3	1.8, 7.1.1.1	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.	Comment noted.

**Table 2. Responses to Comments from Department of Toxic Substances Control (DTSC) and Department of Fish and Game (continued)  
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Comment #	Page #	Section	Comment	Response
<b>Comments provided by DTSC Human and Ecological Risk Division, James M. Polisini, Ph.D. (continued)</b>				
43		General	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.	Please refer to the response to DTSC GSU comment 21 regarding vertical gradients at Parcel E-2. No comments were received from DTSC GSU questioning the statement of declining chemical concentrations between 1990 and 2005.
44	6-7	6.3.1.1	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).	The term "physical hazards" was identified in an example from EPA guidance (EPA, 1991). This potential exposure route is not described in detail in EPA guidance and upon further review does not represent a viable exposure route for terrestrial receptors at Parcel E-2. Section 6.3.1.1 and Figure 6-3 will be revised to delete reference to the term "physical hazards."
45		Figure 6-3	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.	The "Contaminant Source" box is partially shaded to specify that, as discussed in Section 6.1, municipal and industrial wastes are the primary contaminant source at Parcel E-2. The unshaded waste types (commercial and hazardous wastes) were identified in an example from EPA guidance (EPA, 1991). Figure 6-3 will be revised to specify the contaminant source at Parcel E-2 as municipal and industrial waste.
46	7-8	7.1.3	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.	As noted in the comment, no response is required from the Navy.



**Table 2. Responses to Comments from Department of Toxic Substances Control (DTSC) and Department of Fish and Game (continued)  
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<b>Comments provided by DTSC Human and Ecological Risk Division, James M. Polisini, Ph.D. (continued)</b>				
47	7-10	7.2.1.2	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.	As noted in the comment, no response is required from the Navy.
48	7-11	7.2.2.3	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 hazard 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.	As noted in the comment, no response is required from the Navy.
49	7-12	7.3	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).	As discussed in the response to general comments 3 and 14, the Navy will revise the Draft Final RI/FS Report to use the current trigger-level approach developed for the Parcel D FS to conservatively assess groundwater contaminant transport to San Francisco Bay.
50	6, 8-23	ES.2.4, 8.5.1	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.	As discussed in the response to general comment 15, the Navy implemented a GDGI along the Parcel E-2 shoreline and delayed submittal of the Draft Final RI/FS Report to incorporate the new data.

**Table 2. Responses to Comments from Department of Toxic Substances Control (DTSC) and Department of Fish and Game (continued)  
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<b>Comments provided by DTSC Human and Ecological Risk Division, James M. Polisini, Ph.D. (continued)</b>				
51	8-25	8.5.1	<p>The current data gaps for groundwater, which are summarized as four bulleted items (Section 8.5.1, page 8-25) are:</p> <ul style="list-style-type: none"> <li>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);</li> <li>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;</li> <li>c. Potentially unreported chemicals due to sample reporting limits exceeding the selected RIECs; and,</li> <li>d. Inadequacy of the current data to evaluate potential seasonal fluctuations on groundwater concentrations.</li> </ul> <p>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.</p>	Please see the response to comments from DTSC GSU.
52	8-26	8.5.2.2	<p>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.</p>	<p>As discussed in Section K4.3 of the HHRA, the entirety of Parcel E-2 was treated as a single exposure point for the groundwater risk evaluation. The methodology used for the groundwater risk evaluation was based on agreement with the BCT and defines the HHRA data set as comprising the last 12 rounds of sampling for each chemical at each monitoring well. As a result, the calculation of exposure point concentrations (EPCs) in the HHRA for groundwater combines groundwater data for Parcel E-2 both spatially and temporally. This approach has the effect of minimizing changes to groundwater EPCs if the data set for the groundwater risk evaluation is updated.</p> <p>Post-removal action groundwater data for the PCB Hot Spot Area are limited. Only two monitoring wells to date have been reconstructed in the PCB Hot Spot Area following the removal action; only one round of validated sampling results (collected during the first quarter 2007) is currently available from the reconstructed wells. The HHRA will be updated to include groundwater results through the fourth quarter 2007; sampling results for the two reconstructed wells in the PCB Hot Spot Area will be included.</p>



**Table 2. Responses to Comments from Department of Toxic Substances Control (DTSC) and Department of Fish and Game (continued)  
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<b>Comments provided by DTSC Human and Ecological Risk Division, James M. Polisini, Ph.D. (continued)</b>				
52 (cont.)	8-26	8.5.2.2	(see above)	<p>However, because the HHRA methodology requires use of 12 rounds of sampling for each chemical at each monitoring well, sampling results from monitoring wells in the PCB Hot Spot Area that have been decommissioned but not replaced will also be included in the revised HHRA.</p> <p>A comparison of post-removal action groundwater results with pre-removal action results will be discussed in Section 5 of the Draft Final RI/FS Report; however, for the reasons discussed above, comparison of pre- and post-removal action risk estimates is not particularly useful.</p>
53	8-28	8.7	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).	Comment noted.
54	9-2	9.1	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).	Please see the response to DTSC HERD comment 39.
55	9-4	9.3	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.	As noted in the comment, no response is required from the Navy.

**Table 2. Responses to Comments from Department of Toxic Substances Control (DTSC) and Department of Fish and Game (continued)  
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<b>Comments provided by DTSC Human and Ecological Risk Division, James M. Polisini, Ph.D. (continued)</b>				
56			<p>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</p> <p>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.</p> <p>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.</p> <p>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.</p>	Please see the response to DTSC HERD comments 39, 40, 49, and 52.
<b>Comments provided by Department of Fish and Game (DFG) Office of Spill Prevention and Response (OSPR), Charlie Huang, Ph.D. and Frank Gray</b>				
57		General	<p>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.</p>	The DTSC transmitted additional comments from the DFG, which identified potential ARARs for Parcel E-2, on September 21, 2007. Please refer to the response to comment 76 for the Navy's evaluation of these potential ARARs, which will be incorporated into the Draft Final RI/FS Report, as appropriate.
58		General	<p>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.</p>	The Draft Final RI/FS Report and associated responses to comments will be forwarded to DFG-OSPR for review.



**Table 2. Responses to Comments from Department of Toxic Substances Control (DTSC) and Department of Fish and Game (continued)  
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<b>Comments provided by Department of Fish and Game (DFG) Office of Spill Prevention and Response (OSPR), Charlie Huang, Ph.D. and Frank Gray (continued)</b>				
59		General	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.	The wetlands mitigation activities associated with Alternatives 2 and 3 are discussed in Section 12.2.2.7 of the Draft RI/FS Report. The wetlands mitigation areas are identified on Figure 12-12 (Alternative 2) and Figure 12-1 (Alternative 3). As discussed in the responses to comments 4 and 5, the wetland mitigation approach is being reevaluated and the Draft Final RI/FS Report will be updated accordingly.
60		General	Adequate control of shoreline erosion of the landfill in perpetuity should be addressed. Other methods for bank stabilization may be appropriate.	Shoreline protection options were evaluated in Section 11.5.2 of the Draft RI/FS Report. As outlined in this subsection, armoring is considered the only viable process option for shoreline protection. The Draft RI/FS Report identified rock revetment for shoreline protection. As discussed in the responses to comments 4 and 5, the wetland mitigation approach is being reevaluated and may alter the shoreline protection plans presented in the Draft RI/FS Report; these shoreline protection plans will be updated accordingly.
61	Figure ES-1	Executive Summary	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.	Figure ES-1 will be updated accordingly.
62	2	E.S. 1.1	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.	The requested information is included in the Draft RI/FS Report. Section 3.1.2 discusses the soil cover that was placed over the landfill after its closure in 1974. Section 3.8.4 discusses the interim cap that was constructed between 2000 and 2001, and refers to the construction report for this action (included as Appendix E to the Draft RI/FS Report). The nature and extent of chemicals within the soil cover material is discussed in Section 4.2.4.1.
63	6	ES.2.4	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.	Section ES.2.4 will be revised to state that contaminated groundwater has the potential to migrate to the intertidal zone (including sediments and wetlands) and the bay.

**Table 2. Responses to Comments from Department of Toxic Substances Control (DTSC) and Department of Fish and Game (continued)  
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<b>Comments provided by Department of Fish and Game (DFG) Office of Spill Prevention and Response (OSPR), Charlie Huang, Ph.D. and Frank Gray (continued)</b>				
64	14	ES. 5.4	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.	Please refer to the responses to comments 70 through 75 regarding various DFG input on Alternatives 2 and 3.
65	2-2	2.1.1	The draft final RI/FS should document what constitutes "significant" erosion of the interim 14.5 acre cap.	The subject sentence in Section 2.1.1 will be replaced with the following statement: "Inspection and maintenance of the interim landfill cap is performed in accordance with a site-specific operation and maintenance (O&M) plan (TtEMI, 2003b)."
66	2-2 1	2.4.2.2	<p>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.</p> <p>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.</p>	<p>a. The references to "sensitive" species will be revised to read "special-status" species.</p> <p>b. The statement in Section 2.4.2.2 does not indicate that the scope of the 2004 bird survey was limited to rail species, but rather that the "primary conclusion of that survey was that no suitable habitat exists at Parcels E or E-2 for any of the rail species." The 2004 bird survey was performed to support an interim removal action. The need for supplemental surveys, in support of the remedial action, will be evaluated as part of the remedial design.</p>
67	2-22	2.4.2.4	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.	<p>The Hunters Point Shipyard Redevelopment Plan (San Francisco Redevelopment Agency, 1997) identifies most of Parcel E-2, including the Panhandle Area, as open space. Also, the redevelopment plan identifies wetlands restoration a planned reuse for future open space areas. In addition, as discussed in Section 1.8 of the Draft RI/FS Report, restrictive covenants that limit land use at Parcel E-2 to open space development will be incorporated in the transfer process. Section 2.4.2.4 will be revised to state that future development plans for the Panhandle Area will need to address potential incompatibilities between recreation and pedestrian facilities and wetland areas.</p> <p>As discussed in the response to comment 5, the Navy met with the various agency stakeholders on August 28, 2007, to coordinate the wetlands mitigation approach for Parcel E-2 with the restoration efforts within Yosemite Slough.</p>

**Table 2. Responses to Comments from Department of Toxic Substances Control (DTSC) and Department of Fish and Game (continued)  
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67 (cont.)	2-22	2.4.2.4	(see above)	Input received during this meeting will be used in the development of wetlands mitigation designs for Parcel E-2. One point of coordination discussed during the meeting was the alignment of the Bay Trail, which will be a primary feature tying Parcel E-2 to the adjoining parcels and properties.
68	9-2	9.1.1	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.	As noted in the comment, no response is required from the Navy.
69	10-5	10.2.2, 10.2.3	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.	Please refer to the responses to comments 76 and 77.
70	12-4	12.1.3	<p>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:</p> <ul style="list-style-type: none"> <li>a. <i>Settlement of the rock revetment</i> - 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.</li> <li>b. <i>Geomembrane integrity</i> - The geomembrane fabric may be subject to punctures or tears from placement of rock or other factors.</li> <li>c. <i>Allowances for sea level change</i> - 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.</li> </ul>	<p>The shoreline protection measures outlined in the Draft RI/FS Report will be refined during the remedial design process. Such refinements include specific installation, inspection, and maintenance procedures to ensure that shoreline protection measures effectively prevent exposure of humans or wildlife to contaminated material. Alternative materials recommended by DFG will also be evaluated during the remedial design; however, such changes would be considered consistent with the armoring process option selected in the FS. Specific input on the three points raised by DFG are provided below.</p> <ul style="list-style-type: none"> <li>a. The potential settlement of the shoreline protection features will be minimized by proper design and construction techniques, including proper grading and compaction of the subgrade material. The integrity of the shoreline protection, along with the rest of the engineered covers at Parcel E-2, will be inspected regularly for potential settlement and potential damage to the liner. Settlement or other damage that affects the integrity of the liner will be promptly repaired.</li> </ul>

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<b>Comments provided by Department of Fish and Game (DFG) Office of Spill Prevention and Response (OSPR), Charlie Huang, Ph.D. and Frank Gray (continued)</b>				
70 (cont.)	12-4	12.1.3	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® ( <a href="http://contechc~i.com/ess/products/contechhardarmorlarmortecfamily/armorflex/220">http://contechc~i.com/ess/products/contechhardarmorlarmortecfamily/armorflex/220</a> ), Geoweb ( <a href="http://beta.alcoa.com/alcqeo/en/solutions/geoweb/specifications.aspoa-">http://beta.alcoa.com/alcqeo/en/solutions/geoweb/specifications.aspoa-</a> ), 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.	<p>b. As shown on Figure 12-6, the conceptual design calls for a soil layer to be placed over the geomembrane. In addition, as part of the Navy's construction quality control process, soil and rock placement activities will be closely monitored to verify that the geomembrane is not damaged.</p> <p>c. The proposed shoreline design is based on wave runup occurring when the bay elevation is at the mean high tide level. As shown on Figures 12-4 and 12-5 of the Draft RI/FS Report, the top of the revetment wall is designed to be approximately 14 to 15 feet above mean sea level, or about 11 to 12 feet above the mean high tide level. This design provides an adequate level of shoreline protection which, based on the most recent estimates from the Intergovernmental Panel on Climate Change (IPCC), can reasonably accommodate rising sea levels over the next 100 years. The following excerpt from Church et al. (2008) summarizes the most recent IPCC estimates of global sea level rise: "The IPCC provides the most authoritative information on projected sea-level change. The IPCC Third Assessment Report of 2001 (Church et al. 2001) projected a global-averaged sea-level rise of between 20 and 70 centimeters (cm) between 1990 and 2100 using the full range of IPCC greenhouse gas scenarios and a range of climate models. When an additional uncertainty for land-ice changes was included, the full range of projected sea-level rise was 9-88 cm. For the IPCC's Fourth Assessment Report (Meehl et al. 2007), the range of sea-level projections, using a larger range of models, is 18-59 cm (90% confidence limits) over the period from 1980-1999 to 2090-2099 (Meehl et al. 2007)." Based on the 2007 IPCC estimate, the estimated sea level rise in 2099 (18 to 59 cm or 0.6 to 1.9 feet) is much lower than the 11 to 12 vertical feet of shoreline protection provided in the preliminary FS design. The revetment structure will be further evaluated in the remedial design relative to several factors including, but not limited to, potential rise in sea level and ground settlement.</p> <p>Please refer to the response to comment 67 regarding integration of pedestrian facilities with future wetlands.</p>



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Comment #	Page #	Section	Comment	Response
<b>Comments provided by Department of Fish and Game (DFG) Office of Spill Prevention and Response (OSPR), Charlie Huang, Ph.D. and Frank Gray (continued)</b>				
71	12-6	12.1.5	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.	Please refer to the responses to comments 4, 5, 59, 60, and 67 regarding the planned changes to the wetlands design. Section 12.1.5 will be revised to reflect the changes to the wetlands design.
72	12-12	12.2.2.7	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.	Please refer to the responses to comments 4, 5, 59, 60, and 67 regarding the planned changes to the wetlands design. Section 12.2.2.7 will be revised, as appropriate, to reflect the changes to the wetlands design.

**Table 2. Responses to Comments from Department of Toxic Substances Control (DTSC) and Department of Fish and Game (continued)  
Draft Parcel E-2 Remedial Investigation/Feasibility Study (RI/FS) Report, Hunters Point Shipyard (HPS), March 2007**

Comment #	Page #	Section	Comment	Response
<b>Comments provided by Department of Fish and Game (DFG) Office of Spill Prevention and Response (OSPR), Charlie Huang, Ph.D. and Frank Gray (continued)</b>				
73	12-16	12.2.3.4	<p>The construction of a multilayer 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:</p> <ul style="list-style-type: none"> <li>a. <i>Burrowing animals</i> - 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.</li> <li>b. <i>Barrier for aquatic organisms</i> - The geomembrane may provide a barrier to movement</li> <li>c. <i>Potential puncturing</i> - Puncturing of the cap might occur from the use of heavy equipment.</li> </ul>	<p>Specific input on the three points raised by DFG are provided below.</p> <ul style="list-style-type: none"> <li>a. The proposed tidal wetlands in the Panhandle Area will be revised to specify a 3-foot soil cover with no geomembrane. This design is better suited to the potential erosion patterns in the tidal zone. The 2-foot thickness of the vegetative cover in the remainder of the Panhandle Area exceeds the requirements of Title 27 CCR § 21090(a)(3). Please refer to the response to comment 39 regarding inspection and maintenance procedures to reduce the potential for burrowing animals to damage the geomembrane.</li> <li>b. Aquatic organisms expected to inhabit the wetlands area typically bore only a few inches into the soil, but some may bore up to 12 inches deep. The 3-foot thickness of the vegetative cover in the proposed tidal wetlands in the Panhandle Area is greater than the depth that aquatic organisms would be expected to bore; therefore, the geomembrane would not be a barrier to their movement.</li> <li>c. The construction specifications for the cap will include a limitation on the weight of equipment that can be used in placing the vegetative layer. Heavy construction equipment will not be allowed to operate directly on the geomembrane.</li> </ul>
74	Page 12-18	12.2.3.7	See Comment #14 [of February 27, 2007 memo].	<p>Please refer to the responses to comments 4, 5, 59, 60, and 67 regarding the planned changes to the wetlands design.</p> <p>Section 12.2.3.7 will be revised, as appropriate, to reflect the changes to the wetlands design.</p>
75	Figure 12-12	12	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.	<p>Please refer to the responses to comments 4, 5, 59, 60, and 67 regarding the planned changes to the wetlands design.</p> <p>Figure 12-12 will be revised, as appropriate, to reflect the changes to the wetlands design.</p>

**Table 2. Responses to Comments from Department of Toxic Substances Control (DTSC) and Department of Fish and Game (continued)  
Draft Parcel E-2 Remedial Investigation/Feasibility Study (RI/FS) Report, Hunters Point Shipyard (HPS), March 2007**

Comment #	Page #	Section	Comment	Response
<b>Additional comments provided by Department of Fish and Game, Frank Gray (transmitted to Navy by Tom Lanphar on September 21, 2007)</b>				
76		10, Appendix N	<p>Attached are ARARs that are pertinent to the Feasibility Study (FS) for Parcel E-2 at Hunters Point Shipyard (HPS). The Department of Fish and Game, Office of Spill Prevention and Response (DFG-OSPR) appreciates this opportunity to provide State laws and regulations to guide the planned cleanup at Site E-2. We would like to see the ARARs in the enclosed table included in the Record of Decision for Parcel E-2.</p> <p>We do not have a record of a request from the Navy for the subject ARARs, as we typically would have received from the Navy through the Department of Toxic Substances Control. However, the DFG-OSPR is providing the enclosed table to define appropriate State cleanup requirements and species protection statutes and regulations which may be relevant and appropriate to the remediation efforts pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act. This memo advises you of the DFG's continuing interest in coordinating any natural resource issues, as the designated natural resource trustee for the State of California.</p>	Please refer to the attached table for the Navy's preliminary determination on the potential ARARs specified by DFG.
77		10, Appendix N	<p>Listed in the enclosed table is a site-specific list of Fish and Game Code or California Code of Regulations Title 14 Code Sections or policies that may apply as State ARARs or "To be Considered" (TBC) items. This is applicable to the implementation of each of the three alternatives that are identified in the March 2007 draft Parcel E-2 Remedial Investigation/Feasibility Study (RI/FS) for Hunters Point Shipyard, as well as any subsequent FS alternatives. The attached ARARs and TBC list should be incorporated into the draft final RI/FS.</p>	Please refer to the attached table for the Navy's preliminary determination on the potential ARARs specified by DFG.

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**Table 3. Potential State Location-Specific ARARs for the  
Parcel E-2 Remedial Investigation/Feasibility Study Report, Hunters Point Shipyard**

<b>Location</b>	<b>Requirement</b>	<b>Prerequisite</b>	<b>Citation <sup>a</sup></b>	<b>Preliminary ARAR Determination</b>	<b>Comments</b>
<b>McAteer-Petris Act (California Government Code §§ 66600 through 66661) <sup>b</sup></b>					
Within the San Francisco Bay coastal zone	Reduce fill and disposal of dredged material in San Francisco Bay, maintain marshes and mudflats to the fullest extent possible to conserve wildlife, abate pollution, and protect the beneficial uses of the San Francisco Bay.	Activities affecting the San Francisco Bay and 100 feet landward of the shoreline.	Bay Plan at Cal. Code Regs, tit. 14, §§ 10110 through 11990	Relevant and appropriate	The Bay Plan, developed under the authority of the McAteer-Petris Act, is an approved state coastal zone management program. Any remedial actions take by the Navy that will affect San Francisco Bay or that will occur within 100 feet landward of the shoreline will be consistent with the goals of the Bay Plan.
<b>California Endangered Species Act (California Fish &amp; Game Code §§ 2050–2116) <sup>b</sup></b>					
Endangered species	Department policy and legislative findings and definitions for significant natural areas.	Activity taking place in an endangered species habitat and significant natural area.	Cal. Fish & Game Code § 2053	Not an ARAR	Procedural; not a “cleanup standard, standard of control,” or “other substantive requirement, criteria, or limitation.”
<b>California Endangered Species Act (Cal. Fish &amp; Game Code §§ 2050–2116) <sup>b</sup></b>					
Endangered species	No person shall import, export, take, possess, or sell any endangered or threatened species or part or product thereof.	Threatened or endangered species determination on or before 01 January 1985.	Cal. Fish & Game Code § 2080	Relevant and appropriate	Cal. Fish & Game Code § 2080 is not applicable because the United States of America has not waived sovereign immunity for this State of California requirement. The American peregrine falcon is protected under Cal. Fish & Game Code § 2080. The substantive provisions of Cal. Fish & Game Code § 2080 appear to meet the criteria under 40 C.F.R. § 300.400(g)(2)(viii) and are potentially relevant and appropriate for these species.

**Table 3. Potential State Location-Specific ARARs for the  
Parcel E-2 Remedial Investigation/Feasibility Study Report, Hunters Point Shipyard (continued)**

Location	Requirement	Prerequisite	Citation <sup>a</sup>	Preliminary ARAR Determination	Comments
<b>California Endangered Species Act (Cal. Fish &amp; Game Code §§ 2050–2116) <sup>b</sup> (continued)</b>					
Endangered species (continued)	No person shall import, export, take, possess, or sell any endangered or threatened species or part or product thereof.	Threatened or endangered species determination on or before 01 January 1985.	Cal. Fish & Game Code § 2080	Relevant and appropriate	The Navy is subject to the jurisdiction of the FESA. The substantive requirements of Cal. Fish & Game Code § 2080 that are more stringent than FESA are accepted by the Navy as being relevant and appropriate. Thus, species that are listed under CESA, but not protected under FESA, will be addressed by the application of the substantive provisions of Cal. Fish & Game Code § 2080.  The current state list of endangered and threatened animals (May 2008) identifies the American peregrine falcon as a state endangered species and a candidate for delisting from the state list. If the American peregrine falcon is delisted, then this requirement will no longer be an ARAR because no other state endangered or threatened species have been observed on or near the site.



**Table 3. Potential State Location-Specific ARARs for the  
Parcel E-2 Remedial Investigation/Feasibility Study Report, Hunters Point Shipyard (continued)**

<b>Location</b>	<b>Requirement</b>	<b>Prerequisite</b>	<b>Citation <sup>a</sup></b>	<b>Preliminary ARAR Determination</b>	<b>Comments</b>
<b>California Department of Fish and Game (Cal. Fish &amp; Game Code) <sup>b</sup></b>					
Bird nest or eggs	It is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto.	Bird nests or eggs on site.	Cal. Fish & Game Code § 3503 (Added by Statutes 1985, c. 1334, § 6)	Not an ARAR	Cal. Fish & Game Code § 3503 is not applicable because the United States of America has not waived sovereign immunity for this State of California requirement. The activities regulated by this section are not sufficiently similar to the circumstance of the release or response action alternatives to be relevant and appropriate and are not well suited to the site pursuant to 40 C.F.R. § 300.400(g)(2)(i) and (iv) of the NCP. The purpose of this section is to prevent the taking of the species specified. In contrast, the Navy's response action alternatives are intended to respond to releases of hazardous substances in order to protect human health and the environment. Therefore, Cal. Fish & Game Code § 3503 is not a "relevant and appropriate" ARAR. However, ERAs will take into account representative receptors specific for each location. In addition, any species that are present and are federal and/or state endangered, threatened, or fully protected species will be addressed by ARARs related to those designations.

**Table 3. Potential State Location-Specific ARARs for the  
Parcel E-2 Remedial Investigation/Feasibility Study Report, Hunters Point Shipyard (continued)**

Location	Requirement	Prerequisite	Citation <sup>a</sup>	Preliminary ARAR Determination	Comments
<b>California Department of Fish and Game (Cal. Fish &amp; Game Code) <sup>b</sup> (continued)</b>					
Falconiformes or Strigiformes	It is unlawful to take, possess, or destroy any birds in the orders Falconiformes or Strigiformes (birds-of-prey) or to take, possess, or destroy the nest or eggs of any such bird.	Falconiformes or Strigiformes birds on site.	Cal. Fish & Game Code § 3503.5 (Added by Statutes 1985, c. 1334, Section 6)	Not an ARAR	Cal. Fish & Game Code § 3503.5 is not applicable because the United States of America has not waived sovereign immunity for this State of California requirement. The activities regulated by this section are not sufficiently similar to the circumstance of the release or response action alternatives to be relevant and appropriate and are not well suited to the site pursuant to 40 C.F.R. § 300.400(g)(2)(i) and (iv) of the NCP. The purpose of this section is to prevent the taking of the species specified. In contrast, the Navy's response action alternatives are intended to respond to releases of hazardous substances in order to protect human health and the environment. Therefore, Cal. Fish & Game Code, § 3503.5 is not a "relevant and appropriate" ARAR. However, ERAs will take into account representative receptors specific for each location. In addition, any species that are present and are federal and/or state endangered, threatened, or fully protected species (such as the American peregrine falcon) will be addressed by ARARs related to those designations.



**Table 3. Potential State Location-Specific ARARs for the  
Parcel E-2 Remedial Investigation/Feasibility Study Report, Hunters Point Shipyard (continued)**

<b>Location</b>	<b>Requirement</b>	<b>Prerequisite</b>	<b>Citation <sup>a</sup></b>	<b>Preliminary ARAR Determination</b>	<b>Comments</b>
<b>California Department of Fish and Game (Cal. Fish &amp; Game Code) <sup>b</sup> (continued)</b>					
Fully protected birds	Fully protected birds or parts thereof may not be taken or possessed at any time. The following are fully protected birds: American Peregrine Falcon, California Brown Pelican, California Black Rail, California Clapper Rail, California Condor, California Least Tern, Golden Eagle, Greater Sandhill Crane, Light-footed Clapper Rail, Southern Bald Eagle, Trumpeter Swan, White-tailed Kite, and Yuma Clapper Rail.	A fully protected species must be potentially affected.	Cal. Fish & Game Code § 3511	Relevant and appropriate	Cal. Fish & Game Code § 3511 is not applicable because the United States of America has not waived sovereign immunity for this State of California requirement. The American peregrine falcon is protected under Cal. Fish & Game Code § 3511. The substantive provisions of Cal. Fish & Game Code § 3511 appear to meet the criteria under 40 C.F.R. § 300.400(g)(2)(viii) and are potentially relevant and appropriate for these species. The Navy is subject to the jurisdiction of the FESA. The substantive requirements of Cal. Fish & Game Code § 3511 that are more stringent than FESA are accepted by the Navy as being relevant and appropriate.
Fully protected reptiles or amphibians	Fully protected reptiles and amphibians or parts thereof may not be taken or possessed at any time. The following are fully-protected reptiles or amphibians: Blunt-nosed leopard lizard, San Francisco garter snake, Santa Cruz long-toed salamander, Limestone salamander, and Black toad.	A fully protected species must be potentially affected.	Cal. Fish & Game Code § 5050	Not an ARAR	Cal. Fish & Game Code § 5050 is not applicable because the United States of America has not waived sovereign immunity for this State of California requirement. It is not a relevant and appropriate requirement because none of the pertinent species are present at the site. Cal. Fish & Game Code § 5050 is not an ARAR.

**Table 3. Potential State Location-Specific ARARs for the  
Parcel E-2 Remedial Investigation/Feasibility Study Report, Hunters Point Shipyard (continued)**

Location	Requirement	Prerequisite	Citation <sup>a</sup>	Preliminary ARAR Determination	Comments
<b>California Department of Fish and Game (Cal. Fish &amp; Game Code) <sup>b</sup> (continued)</b>					
Nongame birds	It is unlawful to take any nongame bird.	All birds occurring naturally in California that are not resident game birds, migratory game birds, or fully protected birds are nongame birds.	Cal. Fish & Game Code § 3800(a) (Added by Statutes 1971, c. 1470, p. 2906, § 13)	Not an ARAR	Cal. Fish & Game Code § 3800(a) is not applicable because the United States of America has not waived sovereign immunity for this State of California requirement. The activities regulated by this section are not sufficiently similar to the circumstance of the release or response action alternatives to be relevant and appropriate and are not well suited to the site pursuant to 40 C.F.R. § 300.400(g)(2)(i) and (iv) of the NCP. The purpose of this section is to prevent the taking of the species specified. In contrast, the Navy's response action alternatives are intended to respond to releases of hazardous substances in order to protect human health and the environment. Therefore, Cal. Fish & Game Code § 3800(a) is not a "relevant and appropriate" ARAR. However, ERAs will take into account representative receptors specific for each location. In addition, any species that are present and are federal and/or state endangered, threatened, or fully protected species will be addressed by ARARs related to those designations.



**Table 3. Potential State Location-Specific ARARs for the  
Parcel E-2 Remedial Investigation/Feasibility Study Report, Hunters Point Shipyard (continued)**

<b>Location</b>	<b>Requirement</b>	<b>Prerequisite</b>	<b>Citation <sup>a</sup></b>	<b>Preliminary ARAR Determination</b>	<b>Comments</b>
<b>California Department of Fish and Game (Cal. Fish &amp; Game Code) <sup>b</sup> (continued)</b>					
Nongame mammals	All mammals occurring naturally in California that are not game mammals, fully protected mammals, or fur-bearing mammals, are nongame mammals. Nongame mammals or parts thereof may not be taken or possessed.	Response action may potentially take a nongame mammal.	Cal. Fish & Game Code § 4150	Not an ARAR	Cal. Fish & Game Code, § 4150 is not applicable because the United States of America has not waived sovereign immunity for this State of California requirement. The activities regulated by this section are not sufficiently similar to the circumstance of the release or response action alternatives to be relevant and appropriate and are not well suited to the site pursuant to 40 C.F.R. § 300.400(g)(2)(i) and (iv) of the NCP. The purpose of this section is to prevent the taking of the species specified. In contrast, the Navy's response action alternatives are intended to respond to releases of hazardous substances in order to protect human health and the environment. Therefore, Cal. Fish & Game Code § 4150 is not a "relevant and appropriate" ARAR. However, ERAs will take into account representative receptors specific for each location. In addition, any species that are present and are federal and/or state endangered, threatened, or fully protected species will be addressed by ARARs related to those designations.

**Table 3. Potential State Location-Specific ARARs for the  
Parcel E-2 Remedial Investigation/Feasibility Study Report, Hunters Point Shipyard (continued)**

Location	Requirement	Prerequisite	Citation <sup>a</sup>	Preliminary ARAR Determination	Comments
<b>California Department of Fish and Game (Cal. Fish &amp; Game Code) <sup>b</sup> (continued)</b>					
Waters of the state	Prohibits the passage of enumerated substances or materials into waters of the state deleterious to fish, plant life, or birds.	Not authorized under Cal. Water Code § 13263 or a waiver issued pursuant to subdivision (a) of § 13269 of the Cal. Water Code.	Cal. Fish & Game Code § 5650(a), (b), and (c)	Relevant and appropriate	Cal. Fish & Game Code § 5650 is not applicable because the United States of America has not waived sovereign immunity for this State of California requirement. While no direct deposition of material is expected to enter into or affect waters of the states, the substantive portions of this standard will be complied with as an ARAR. Response actions along the Parcel E-2 shoreline will be conducted in such a way as to ensure that materials dug up will not be released into the water column.
Mollusks, crustaceans, or invertebrates	No mollusks, crustaceans, or other invertebrates may be taken, possessed aboard a boat, or landed for commercial purposes by any person in any tide pool or tidal area, including tide flats or other areas between the high tidemark and 1,000 feet beyond the low tidemark.	The taking and possession of mollusks, crustaceans, or other invertebrates for any commercial purpose.	Cal. Fish & Game Code § 8500	Not an ARAR	This is not a potential ARAR since the response action will not take any animals for any commercial purpose.



**Table 3. Potential State Location-Specific ARARs for the  
Parcel E-2 Remedial Investigation/Feasibility Study Report, Hunters Point Shipyard (continued)**

<b>Location</b>	<b>Requirement</b>	<b>Prerequisite</b>	<b>Citation <sup>a</sup></b>	<b>Preliminary ARAR Determination</b>	<b>Comments</b>
<b>California Department of Fish and Game (California Fish &amp; Game Code) <sup>b</sup> (continued)</b>					
Reptiles and amphibians	It is unlawful to capture, collect, intentionally kill or injure, possess, purchase, propagate, sell, transport, import, or export any native reptile or amphibian, or part thereof.	Potentially affect native reptiles or amphibians.	Cal. Code Regs. tit. 14, § 40	Not an ARAR	Cal. Code Regs. tit. 14, § 40 is not applicable because the United States of America has not waived sovereign immunity for this State of California requirement. The activities regulated by this section are not sufficiently similar to the circumstance of the release or response action alternatives to be relevant and appropriate and are not well suited to the site pursuant to 40 C.F.R. § 300.400(g)(2)(i) and (iv) of the NCP. The purpose of this section is to prevent the taking of the species specified. In contrast, the Navy's response action alternatives are intended to respond to releases of hazardous substances in order to protect human health and the environment. Therefore, Cal. Code Regs. tit. 14, § 40 is not a "relevant and appropriate" ARAR. However, ERAs will take into account representative receptors specific for each location. In addition, any species that are present and are federal and/or state endangered, threatened, or fully protected species will be addressed by ARARs related to those designations.

**Table 3. Potential State Location-Specific ARARs for the  
Parcel E-2 Remedial Investigation/Feasibility Study Report, Hunters Point Shipyard (continued)**

Location	Requirement	Prerequisite	Citation <sup>a</sup>	Preliminary ARAR Determination	Comments
<b>California Department of Fish and Game (Cal. Fish &amp; Game Code) <sup>b</sup> (continued)</b>					
Birds or mammals	It is unlawful to take birds or mammals with any net, pound, cage, trap, set line or wire, or poisonous substance, or to possess birds or mammals so taken, whether taken within or without this state.		Cal. Fish & Game Code § 3005 (a) (Statute 1957, c. 456, p. 1353, § 3005)	Not an ARAR	Cal. Fish & Game Code § 3005(a) is not applicable because the United States of America has not waived sovereign immunity for this State of California requirement. The activities regulated by this section are not sufficiently similar to the circumstance of the release or response action alternatives to be relevant and appropriate and are not well suited to the site pursuant to 40 C.F.R. § 300.400(g)(2)(i) and (iv) of the NCP. The purpose of this section is to prevent the taking of the species specified. In contrast, the Navy's response action alternatives are intended to respond to releases of hazardous substances in order to protect human health and the environment. Therefore, Cal. Fish & Game Code § 3005(a) is not a "relevant and appropriate" ARAR. However, ERAs will take into account representative receptors specific for each location. In addition, any species that are present and are federal and/or state endangered, threatened, or fully protected species will be addressed by ARARs related to those designations.



**Table 3. Potential State Location-Specific ARARs for the  
Parcel E-2 Remedial Investigation/Feasibility Study Report, Hunters Point Shipyard (continued)**

<b>Location</b>	<b>Requirement</b>	<b>Prerequisite</b>	<b>Citation <sup>a</sup></b>	<b>Preliminary ARAR Determination</b>	<b>Comments</b>
<b>California Department of Fish and Game (Cal. Fish &amp; Game Code) <sup>b</sup> (continued)</b>					
Wetlands	Actions must be taken to ensure that there is "no net loss" of wetlands acreage or habitat value. Action must be taken to preserve, protect, restore and enhance California's wetland acreage and habitat values.	Wetlands meeting U.S. Fish and Wildlife Service definition – one of the following criteria: hydric soils, saturation or inundation, and vegetable criteria.	Fish and Game Commission Wetlands Policy (adopted 1987) included in Fish and Game Code Addenda	Not an ARAR	Not an ARAR because it is not a promulgated requirement. Further, federal wetlands protection ARARs have already been identified; therefore, the Navy does not accept this provision as an ARAR or TBC requirement.
Rare and endangered plants	No person shall import into this state or take, possess, or sell within this state, except as incident to the possession or sale of the real property on which the plant is growing, any native plant, or any part or product thereof, that the commission determines to be an endangered native plant or rare native plant.	Endangered or rare native plant species determination.	Cal. Fish & Game Code §§ 1900 and 1908	Not an ARAR	Cal. Fish & Game Code § 1908 is not applicable because the United States of America has not waived sovereign immunity for this State of California requirement. It is not a relevant and appropriate requirement because none of the pertinent species are present at the site. Cal. Fish & Game Code § 1908 is not an ARAR. Cal. Fish & Game Code § 1900, previously specified by the Department of Toxic Substances Control, does not specify any substantive requirements and is therefore not an ARAR.

**Notes:**

- a** Only the substantive provisions of the requirements cited in this table are potential ARARs
- b** Statutes and policies and their citations are provided as headings to identify general categories of potential ARARs for the convenience of the reader; listing the statutes and policies does not indicate that the DON accepts the entire statute or policy as a potential ARAR; specific potential ARARs follow each general heading; only substantive requirements of the specific citations are considered potential ARARs

§ Section		CESA	California Endangered Species Act	NCP	National Oil and Hazardous Substances Pollution Contingency Plan
§§ Sections		C.F.R.	Code of Federal Regulations		
ARAR	Applicable or relevant and appropriate requirement	ERA	ecological risk assessment	Regs.	Regulations
Bay Plan	San Francisco Bay Plan	FESA	Federal Endangered Species Act	TBC	to be considered
Cal.	California	Navy	Department of the Navy	tit.	Title

**Table 4. Responses to Comments from San Francisco Regional Water Quality Control Board (SFRWQCB)  
Draft Parcel E-2 Remedial Investigation/Feasibility Study (RI/FS) Report, Hunters Point Shipyard (HPS), March 2007**

Comment #	Page #	Section	Comment	Response
<b>Comments provided by SFRWQCB Remedial Project Manager (James Ponton, P.G.), dated July 6, 2007</b>				
1		General	<p>We reviewed the subject report and our comments follow. Our review team included myself, Ms. Agnes Farres, (Appendices L and O), Mr. Alan Friedman, P.E, (Appendices K and Q), and Mr. Erich Simon, (Section 7 and Appendix K). If you have any questions, you can contact me via phone (5 10) 622-2492 or email at <a href="mailto:jponton@waterboards.ca.gov">jponton@waterboards.ca.gov</a>.</p> <p>It should be noted that our review was based on an incomplete report, since the report does not include an evaluation of groundwater remediation options or the radiological assessment. At this time we find the RI/FS unacceptable as it is incomplete.</p>	<p>The rationale for deferring development of groundwater remedial alternatives (beyond monitoring) was discussed during the April 2007 Base Realignment and Closure Cleanup Team (BCT) meeting. A follow-on working meeting was held with the BCT and City on July 25, 2007, to further discuss and plan the development of groundwater remedial alternatives for the Draft Final RI/FS Report.</p> <p>In addition, the Department of the Navy (Navy) had previously communicated their intention to present the radiological addendum to the Parcel E-2 RI/FS Report separately. This document was published on September 14, 2007.</p>
2		General	<p>Available groundwater data show that groundwater at the E-2 landfill may pose a risk to aquatic receptors in the Bay. The remedial alternatives developed in the RI/FS however, do not include groundwater remediation options, only long-term groundwater monitoring. Failure to evaluate groundwater remediation alternatives is unacceptable. The report cites that groundwater remediation alternatives were not evaluated because of:</p> <ol style="list-style-type: none"> <li>a. Data limitations (need for replacement of PCB hot spot wells, need for additional data to evaluate seasonal changes, and need to evaluate groundwater flow patterns following removal of storm drain and sanitary sewers); and,</li> <li>b. Lack of consensus on a method for comparing groundwater data to aquatic criteria.</li> </ol> <p>With regard to Point A, the existing groundwater data demonstrates that the landfill waste contaminates groundwater. In turn, contaminated groundwater migrates vertically (into the B-zone drinking water aquifer) and laterally towards the Bay where it discharges to surface water. We believe that there is adequate groundwater data to develop and evaluate groundwater remedial alternatives and that the existing data captures seasonal variability.</p>	<p>During the working meeting on July 25, 2007, the Navy and regulatory agencies agreed on a path forward for developing groundwater remedial alternatives for Parcel E-2 by:</p> <ul style="list-style-type: none"> <li>▪ Reviewing the conclusions from Appendix M and identifying near-shore source areas (adjacent or in close proximity to the Parcel E-2 Landfill) that require further analysis in the FS.</li> <li>▪ Agreeing that the current trigger-level approach used for the Parcel D FS Report would be used at Parcel E-2.</li> <li>▪ Discussing process options available to contain groundwater at Parcel E-2, and how these options should be considered in conjunction with hot spot removals.</li> </ul> <p>The Navy will revise the Draft Final RI/FS Report to include groundwater remedial alternatives based on the conclusions of the July 25, 2007, meeting.</p>

**Table 4. Responses to Comments from San Francisco Regional Water Quality Control Board (SFRWQCB) (continued)  
Draft Parcel E-2 Remedial Investigation/Feasibility Study (RI/FS) Report, Hunters Point Shipyard (HPS), March 2007**

Comment #	Page #	Section	Comment	Response
<b>Comments provided by SFRWQCB Remedial Project Manager (James Ponton, P.G.), dated July 6, 2007 (continued)</b>				
2 (cont.)		General	<p>It is unlikely that the sewer line removal actions will significantly alter the groundwater flow system/regime, which is generally directed through landfill waste (source area for leachate and contaminated groundwater) towards the Bay.</p> <p>With regard to Point B, I feel that the RI/FS does not portray the significant progress made towards resolving this issue. On March 2006, we sent the Navy a letter' which:</p> <ul style="list-style-type: none"> <li>• Clarified our position on the locations of the points of compliance (POC) for measuring (pollutants in) groundwater prior to its discharge to the Bay;</li> <li>• Encouraged incorporating both fate and transport modeling and sampling as a means of evaluating the attenuation of contaminant groundwater plumes; and,</li> <li>• Provided case examples where the groundwater/surface water interface was successfully addressed.</li> </ul> <p>Although we received no written response to our letter, the Navy acknowledged receipt of the letter and has told the BRAC Cleanup Team (BCT) that it intends to address the issues raised in upcoming documents (i.e., feasibility studies, etc.). Along those lines, the Navy created attenuation nomographs for Parcel E-2, that showed that within 50 to 100 ft of the shore, attenuation of groundwater plumes is essentially equal to one (i.e., surface water and groundwater concentrations are the same), supporting the interrelationship of surface water to groundwater. The focused discussion and presentation of the nomographs was promising, leading us to conclude that we were moving closer towards consensus.</p> <p>In summary, the path forward discussed with the BCT (nomographs, modeling, etc) should be included. Until groundwater containment/treatment is addressed, we will find the RI/FS unacceptable and incomplete and therefore unacceptable.</p>	(see above)



**Table 4. Responses to Comments from San Francisco Regional Water Quality Control Board (SFRWQCB) (continued)  
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Comment #	Page #	Section	Comment	Response
<b>Comments provided by SFRWQCB Remedial Project Manager (James Ponton, P.G.), dated July 6, 2007 (continued)</b>				
3		General	<p>Failure to propose groundwater and leachate containment and treatment options in the RI/FS is in violation of the standards, requirements, and criteria for the protection of the beneficial uses of groundwater and surface water.</p> <p>Shoreline monitoring well data show discharge of contaminated A-zone groundwater to surface water. Similarly, limited B-zone groundwater data show landfill contamination of the B-zone drinking water aquifer. The proposed long-term groundwater monitoring strategy does not address contaminated A-zone groundwater/landfill leachate from degrading the water quality of the Bay and deeper drinking water aquifers.</p>	<p>Please see the response to comment 2 regarding the Navy's plan to ensure that remedial alternatives for A-aquifer groundwater are protective of aquatic life in San Francisco Bay.</p> <p>The Navy believes that the monitoring and institutional controls alternative presented in the Draft RI/FS Report is adequate to protect humans from exposure to contaminated groundwater in the B-aquifer.</p>
4		General	<p>We find that the RI/FS is inconsistent with the presumptive remedy guidance and incomplete with respect to groundwater/leachate containment and source control. The RI/FS compares the characteristics of the Parcel E2 landfill to the relevant characteristics of municipal landfills for the applicability of the presumptive remedy to military landfills. The presumptive remedy for municipal landfills relies on source containment. We consider landfill generated leachate and contaminated groundwater sources that require control, containment, and/or treatment. The report does not evaluate source containment (i.e., leachate/groundwater containment, control, and treatment) and proposes only long-term groundwater monitoring for verification of A- or B-aquifer groundwater concentrations at the Parcel E-2 boundary. As previously stated, long-term groundwater monitoring is unacceptable for it does not stop continuing contamination of the B-aquifer, bedrock aquifers, and of San Francisco Bay.</p>	<p>Please see the response to comment 2 regarding the Navy's plan to evaluate containment and source control remedial alternatives for A-aquifer groundwater.</p>

**Table 4. Responses to Comments from San Francisco Regional Water Quality Control Board (SFRWQCB) (continued)  
Draft Parcel E-2 Remedial Investigation/Feasibility Study (RI/FS) Report, Hunters Point Shipyard (HPS), March 2007**

Comment #	Page #	Section	Comment	Response
<b>Comments provided by SFRWQCB Remedial Project Manager (James Ponton, P.G.), dated July 6, 2007 (continued)</b>				
5		General	The distribution of waste excavated during the PCB TCRA appears to contradict the "isolated" and "non-contiguous" nature of waste for the PCB area described in the report. For example, Figure 4-1 (Isolated Waste Locations in Adjacent Areas) shows that a majority of the samples located within the proposed excavation boundary reportedly contained no waste. During the PCB TCRA, however, excavators uncovered very significant contamination (i.e., 11 0 drums and 537 assorted waste containers from within the removal area). Field observations confirmed that waste extends beyond the East Adjacent Area into the Shoreline, Landfill, and offshore Parcel F Areas. We recommend reviewing the nature and extent of solid waste discussion in light of the TCRA findings and revising the report as appropriate.	The Navy will incorporate additional information from the recently published removal action completion report and will revise the report as appropriate. The landfill lateral extent evaluation (Appendix B of Draft RI/FS Report) evaluated the lateral and vertical extent of solid waste within the Landfill Area. This evaluation distinguished between the contiguous solid waste within the Landfill Area and the noncontiguous waste found within the Panhandle and East Adjacent Areas. The Navy wishes to clarify that the drums and assorted waste containers found during the recent removal action were not contiguous with the extent of solid waste defined during the previous study. Therefore, the landfill lateral extent does not require adjustment based on the findings of the recent removal action.
6		General	Although there are no complete records for the waste stream deposited in the landfill, the RI/FS repeatedly states that the E-2 Landfill Area is comprised primarily of municipal-type waste and inert construction debris. In our experience, with the exception of ammonia and trace levels of VOCs and metals, the assemblage of groundwater contaminants and their respective elevated concentrations is not typical of the groundwater conditions encountered at typical municipal/inert solid waste landfill and provides further justification for evaluating groundwater containment measures.	While it is acknowledged in the RI/FS Report that no waste disposal records are available for the Parcel E-2 Landfill, Section 4.2 of the report cites data from 26 soil borings, 12 monitoring wells, and 25 test pits that conclude that the Parcel E-2 Landfill contains primarily municipal-type waste and inert construction debris. Section 4.2 further clarifies that various types of industrial wastes may have been disposed of in the Parcel E-2 Landfill. Industrial wastes, although present in small volumes relative to the estimated 473,000 cubic yards of solid waste, are believed to be the sources of most groundwater contamination found at Parcel E-2.



**Table 4. Responses to Comments from San Francisco Regional Water Quality Control Board (SFRWQCB) (continued)  
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Comment #	Page #	Section	Comment	Response
<b>Comments provided by SFRWQCB Remedial Project Manager (James Ponton, P.G.), dated July 6, 2007 (continued)</b>				
7		General	<p>The Screening Level Ecological Risk Assessment (SLERA) is incomplete and cannot be appropriately evaluated at this time for the following reasons:</p> <p>a. The exposure pathway to surface water and groundwater was not evaluated. The SLERA evaluates risk to onshore receptors exposed to soil but does not evaluate potential ecological risk from exposure to surface water and groundwater. However, a 1.3-acre seasonal freshwater wetland is located in the Panhandle Area of Parcel E-2 and provides potential ecological habitat. According to the Navy, the diversity and abundance of aquatic organisms is low in the seasonal freshwater wetland "presumably due to the toxicity of the soil and water". Ecological risk from exposure to contaminated surface water and potential recharge of contaminated groundwater must be evaluated.</p> <p>b. The Appendix L SLERA evaluates risk to terrestrial receptors within the onshore area while a separate SLERA evaluated potential risk to aquatic receptors exposed to intertidal sediment within the Shoreline Area of Parcel E-2. However, terrestrial receptors such as the American kestrel and red-tailed hawk could feed on prey in the shoreline areas (e.g. in the intertidal wetlands). As such, ecological risk to terrestrial organisms should be evaluated for both upland and shoreline areas including both inland and intertidal wetlands. Further, the shoreline areas should be clearly defined in all the figures and text to distinguish between inland and intertidal wetland habitats.</p>	<p>Regarding Item (a), the Navy provided the following information in the Draft RI/FS Report, which is considered adequate to identify areas that potentially pose an unacceptable risk to wildlife:</p> <ul style="list-style-type: none"> <li>▪ As discussed in Section 7.3, a preliminary evaluation of ecological risk to aquatic organisms in the bay was presented in Appendix M. This evaluation was considered preliminary because it directly compared groundwater data with saltwater aquatic criteria. As discussed at the working meeting on July 25, 2007, the conclusions of this evaluation are considered adequate (combined with the conservative trigger-level modeling approach, which uses an attenuation factor of 1 for near-shore source areas) to develop groundwater remedial alternatives.</li> <li>▪ As discussed in Section 8.6, potential exposure of wildlife in the existing freshwater and saline wetlands to contaminated surface water is monitored as part of the ongoing storm water discharge management program. The ongoing maintenance of the interim cap and implementation of best management practices serve to minimize erosion from surface water runoff and mitigate potential exposure to aquatic organisms.</li> </ul> <p>Regarding Item (b), refinements to the screening-level ecological risk assessment (SLERA) to reflect interaction between shoreline and upland ecological receptors are not considered necessary based on the rationale presented in Section 7.2.1.1: "Given that human health risk evaluations (Section 7.1, Appendix K) have shown unacceptable risk to human health within most of Parcel E-2, and that the Navy has initiated a focused approach to the Parcel E-2 RI/FS, a detailed refinement of specific risks to birds and mammals in Parcel E-2 is not warranted." All figures in Appendix L depict the Shoreline Area separately from the inland areas (Landfill, Panhandle, and East Adjacent Areas). The extent of the Shoreline Area is consistent with the delineation presented in the Shoreline Characterization Technical Memorandum (Appendix G of the RI/FS Report), which describes the shoreline area as "...the intertidal area between the low- and high-tide watermarks.</p>

**Table 4. Responses to Comments from San Francisco Regional Water Quality Control Board (SFRWQCB) (continued)  
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Comment #	Page #	Section	Comment	Response
<b>Comments provided by SFRWQCB Remedial Project Manager (James Ponton, P.G.), dated July 6, 2007 (continued)</b>				
7 (cont.)		General	(see above)	Most of the shoreline is bounded by the onshore area, which is where the upper riprap begins or where the ridge was formed where the shore abruptly drops to the water. However, the Panhandle Area in Parcel E-2 is bounded by the high-tide line where no ridge or riprap is present." Appendix L will be revised to include this description of the Shoreline Area.
8		General	The results of the SLERA are based on an incomplete data set. Parcel E-2 was divided into three areas (Panhandle Area, Landfill Area, and East Adjacent Area) which are not well characterized. Sample points are few and clustered in focused areas. Specifically, very few samples are located in wetland habitats in the Panhandle Area. In addition, no data is currently shown for the PCB and Metal Slag Hotspots and post-excavation data will be presented in the draft final RI/FS. The Panhandle area should be better characterized with more samples taken in the wetland areas to support the conclusions in the SLERA. In addition, a more complete evaluation of the SLERA will have to wait until post-excavation data are made available for the PCB and Metal Slag Hotspots.	As discussed in Section 8.4.3.3, the Navy does not believe that additional data collection is necessary because: "Given the heterogeneous contaminant distribution in the adjacent areas, the collection of additional data would not be the most expeditious or cost-effective means of protecting human health and the environment; rather, the assumption that areas with no data may cause unacceptable risk is considered the most prudent course of action."
9		7, Appendix K	Throughout Section 7 and Appendix K there needs to be a clear indication that about half of the 150' x 150' evaluation areas do not have data available for assessing potential risk, and all risk characterization results are based only on those grid areas where there was sufficient data to evaluate. This important detail is missing, leading the reader of the narrative sections to believe that the risk assessment results pertain to every grid area in Parcel E-2. Please revise Section 7 and Appendix K as appropriate.	Section 7 and Appendix K will be revised to clarify that the characterization of health risks is based only on those exposure areas with analytical data for soil. Figures that summarize the human health risk assessment (HHRA) results for soil in Section 7 and Appendix K indicate which grids were evaluated for risks and which were not evaluated based on a lack of data.

**Table 4. Responses to Comments from San Francisco Regional Water Quality Control Board (SFRWQCB) (continued)  
Draft Parcel E-2 Remedial Investigation/Feasibility Study (RI/FS) Report, Hunters Point Shipyard (HPS), March 2007**

<b>Comment #</b>	<b>Page #</b>	<b>Section</b>	<b>Comment</b>	<b>Response</b>
<b>Comments provided by SFRWQCB Remedial Project Manager (James Ponton, P.G.), dated July 6, 2007 (continued)</b>				
10	7-1	7, P3	This paragraph describes how site-specific prey tissue data was used to represent actual bioavailability of chemicals at the site instead of using published bioaccumulation factors. Please at least indicate how site-specific bioaccumulation data compares with published bioaccumulation data to show how different the two approaches may be in estimating ecological risks at the site.	A reference to Section 3.5 is provided in the 2nd sentence of the subject paragraph. Section 3.5 summarizes the past methodology for establishing protective soil concentrations (PSCs), which was developed in consultation with the regulatory agencies and implemented in 2000 (Tetra Tech EM Inc. [TtEMI] and Levine Fricke Recon [LFR], 2000b). Given the level of effort expended on this site-specific approach, the Navy does not consider it appropriate to revisit this approach in the RI/FS Report.
11		7.1.2	Tables 7.2 and 7.3: Please include a discussion in the applicable narrative sections that clearly explains what the 'RME Segregated HI' is and how it's different from the 'RME HI'. This comment also applies to tables in Appendix K.	Section 7 will be revised to clarify the difference between the reasonable maximum exposure (RME) hazard index (HI) and the RME segregated HI. Section K7.3 of Appendix K describes the process for calculating the segregated HI. Text will be added to Appendix K to clarify how the RME segregated HI results are distinguished from the RME nonsegregated HI results in the Appendix K tables.
12	7-8	7.1.3.2 P1	Other sections in this report clearly indicate that the A-aquifer may be in communication with the B-aquifer. While this is the case, the RBCs for the A-aquifer do not consider ingestion whereas the RBCs for the B-aquifer do. Please include more discussion explaining why RBCs based on ingestion are not appropriate for the A-aquifer.	Section 7.1.1.1 will be revised to summarize the beneficial use evaluation for the A-aquifer that, as described in Section 2.2.6, concluded the A-aquifer at Parcel E-2 is not a potential drinking water source. Based on this conclusion, potential upward groundwater flow (from the B-aquifer to the A-aquifer) would not require evaluation of human ingestion of A-aquifer groundwater. Health risks from domestic use (ingestion) of groundwater were evaluated under two scenarios. The first scenario assumed exposure solely to the B-aquifer, and the second scenario assumed exposure to both the B- and A-aquifers to account for hydraulic communication. For the second scenario, groundwater data for the B-aquifer were combined with groundwater data for the A-aquifer to account for potential downward vertical migration (from the A-aquifer to the B-aquifer) to conservatively estimate chemical exposures within the B-aquifer. EPA Region 9 tap water preliminary remediation goals (PRGs) were used as risk-based concentrations (RBCs) to calculate domestic use risks for both scenarios.

**Table 4. Responses to Comments from San Francisco Regional Water Quality Control Board (SFRWQCB) (continued)  
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Comment #	Page #	Section	Comment	Response
<b>Comments provided by SFRWQCB Remedial Project Manager (James Ponton, P.G.), dated July 6, 2007 (continued)</b>				
13		Table 7.15	This table indicates that the Hunters Point Groundwater Ambient Level for arsenic (43.26 ug/L) is over 6000 times the applicable Risk Based Concentration (0.007 ug/L). Please confirm that this ambient level is applicable to this site and confirm that the arsenic background levels were calculated appropriately and approved by the regulatory agencies. Please include discussion in the text regarding the high 'background' arsenic level and how this arsenic concentration impacts total risk at the site.	Text will be added to Section 7 to address the contribution that ambient risks associated with metals, such as arsenic, may have on risk estimates. To clarify, the Hunters Point groundwater ambient level (HGAL) for arsenic is correctly shown in Table 7-15 as 27.3 micrograms per liter (µg/L) (not 43.26 µg/L, which is the HGAL for antimony). The ambient level for arsenic in groundwater was established in 1996 in conjunction with the Department of Toxic Substances Control (PRC Environmental Management, Inc. 1996).
14		Appendix K	Grid development: There is a potential disconnect between selection of the 0.5 acre grid areas and predicted future uses. The 0.5 acre area was selected because that is a typical size for a light industrial lot, but several sections indicate that light industrial is not expected to occur at this site. Furthermore, recreational and construction worker exposures were assumed to occur within the same 0.5 acre area selected for industrial workers. There needs to be some additional language explaining that the 0.5 acre area is an appropriate area for assessing exposure for recreational and construction workers	Based on agreement with the BCT (Navy 2004), a 0.5-acre exposure area (grid) was used to evaluate nonresidential exposures in the HHRA. Appendix K will be revised to clarify that the selection of 0.5-acre grids was based on prior agreement with the BCT.
15		Appendix K, K2.0	While this section indicates that total and incremental risk evaluation were performed to evaluate risk from exposure to soil, it does not indicate that a similar comparison was made for evaluating exposure to groundwater. Instead a risk-based screening approach was used to evaluate exposures to groundwater. It remains unclear whether total and incremental risks are included in groundwater exposure evaluation. Please clarify and include further justification for use of a risk-based screening approach for groundwater at Parcel E-2.	HGALs have been developed for groundwater in the A-aquifer at HPS. HGALs have not been developed for groundwater in the B-aquifer. As a result, data for inorganic chemicals in the B-aquifer were not compared with HGALs in the HHRA as a conservative approach and incremental risks were not assessed for the groundwater domestic use evaluation. Section K4.4 will be revised to clarify this approach.  The approach of using RBCs and ratiometric calculations to assess risks from exposure to groundwater was based on agreement with the BCT during meetings in 2003 and 2004 (see Section K7.2).

**Table 4. Responses to Comments from San Francisco Regional Water Quality Control Board (SFRWQCB) (continued)  
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Comment #	Page #	Section	Comment	Response
<b>Comments provided by SFRWQCB Remedial Project Manager (James Ponton, P.G.), dated July 6, 2007 (continued)</b>				
16	K-2	Appendix K, K2.0	Second bullet list, Third bullet: This bullet item indicates that 12 rounds of monitoring data were used to delineate risk plumes, but does not indicate the time span, seasonality, or period in tide cycle associated with the 12 rounds of sampling. Without this information, I don't know if the sampling rounds span 12 years (annual sampling) or 12 hours (1 sample/ hour on one day). This also needs to be clarified in Section K4.3.2, first sentence.	Sections K2.0 and K4.3.2 will be revised to clarify that, in general for Parcel E-2, 12 rounds of groundwater sampling corresponds to the 12 most recent quarterly sampling events (quarterly sampling was initiated in 2004; the HHRA will be updated to include groundwater data collected through the first quarter 2007). Because the methodology established for the groundwater HHRA requires inclusion of the last 12 events of sample results available for each chemical per individual monitoring well, it is possible that for chemicals or wells with discontinued or intermittent sampling the last 12 events of sampling may include sampling events beyond the 12 most recent events of quarterly sampling for the parcel; for example, sampling events during the groundwater data gaps investigation during 2001 and 2002, data from the RI, and other sampling conducted during the 1990s. This clarification, along with information on the range of sampling dates associated with the HHRA data set for groundwater, will be included in the revisions to Sections K2.0 and K4.3.2.
17	K-4	Appendix K, K3.3	This section indicates that, based on chemical release and transport mechanisms, contaminants may migrate to indoor air. Please clarify that migration to indoor air is only expected from domestic use of groundwater from the B-aquifer	Section K3.3 will be revised to clarify that evaluation of migration of volatile chemicals from the subsurface to indoor air was limited to groundwater sources.
18	K-4	Appendix K, K3.4	Some sections of this report seem to indicate that only recreational and open space reuse will occur at this site, whereas other sections indicate that some portion is planned for research or industrial reuse. If a portion of the site is currently planned for research or industrial reuse, then the potentially exposed receptors described in this section should reflect that. If these are not the reuse plans, please discuss, or reference the appropriate section of this report that discusses, what controls may be put in place to limit future research or industrial reuses at this site. Also include reference to any applicable decision documents that may indicate that future land uses will be restricted to recreation/open space. Lastly, please briefly describe what further risk characterization would be needed if future land use changes to include research or industrial activities.	Section K3.4 will be revised to clarify the planned future reuse, as discussed in Section 7.1.1.1: "The "Hunters Point Shipyard Redevelopment Plan" outlines the planned reuses for Parcel E-2, which was included as part of Parcel E at the time of publication (SFRA, 1997). Figure 1-15 shows the specific planned reuse for Parcel E-2. According to the redevelopment plan, most of the planned reuse for Parcel E-2 is open space. Other planned reuses of areas within Parcel E-2 include industrial and research and development (SFRA, 1997). As discussed in Subsection 1.8, land uses other than open space are incompatible with the Landfill Area, and restrictive covenants will address this incompatibility. For this reason, the planned reuse exposure scenario evaluated for Parcel E-2 is limited to open space reuse. Open space reuse is associated with a recreational exposure scenario."

**Table 4. Responses to Comments from San Francisco Regional Water Quality Control Board (SFRWQCB) (continued)  
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Comment #	Page #	Section	Comment	Response
<b>Comments provided by SFRWQCB Remedial Project Manager (James Ponton, P.G.), dated July 6, 2007 (continued)</b>				
19	K-6	Appendix K, K3.5.2 P1	This paragraph includes discussion that the A-aquifer does not have the potential beneficial use of drinking water. However, it does not describe other potential beneficial uses associated with this aquifer that may be appropriate in evaluating groundwater exposure pathways, including use as irrigation water or industrial process water. Please include a discussion of all other potential beneficial uses of the A-aquifer and potential groundwater exposure pathways associated with these beneficial uses.	Section K3.5.2 will be revised to refer the reader to Section 2.2.6 of the RI/FS Report for information on the potential beneficial uses of groundwater. Also, the agreement with the BCT during meetings in 2003 and 2004 was to limit the risk evaluation of the A-aquifer to vapor intrusion exposure (not applicable to Parcel E-2) and construction worker trench exposure.
20	K-11	Appendix K, K4.4 P2	This paragraph is confusing and doesn't present a clear argument for why incremental risks were not assessed for the groundwater domestic use evaluation.	Please see the response to comment 15.
21	K-20	Appendix K, K6.4 P1	Please include references to the 'HPS-specific risk-based concentration for lead for recreational receptors' and the 'EPA Region IX Industrial PRG for Lead'.	As discussed in Section K6.4, Attachment K5 details the methodology used to derive the HPS-specific RBC for lead for recreational receptors. The section will be revised to cite U.S. Environmental Protection Agency (EPA) (2004a) as the source for the Region 9 industrial PRG for lead.
22	K-20	Appendix K, K7.1.1	This section discusses the characterization of cancer risks at Parcel E-2, however it does not clearly indicate if the characterization of chemical-specific cancer risks or pathway-specific cancer risks includes compounds below HPS 'background' levels. Please clarify.	Section K7.1.1 will be revised to clarify that the risk results presented in this section are based on the incremental risk results for soil and do not include risks for metals with concentrations below Hunters Point ambient levels.
23	K-22	Appendix K, K7.2 P4	This paragraph indicates that the PRGs used in this HHRA do not account for exposure from dermal contact with groundwater. Please include further explanation/justification as to why this exposure pathway is not incorporated into the evaluation of exposure to groundwater, and briefly discuss how the risk-based screening approach may underestimate risks associated with domestic use of groundwater.	As discussed, in Section K7.2, the use of tap water PRGs and a risk-based screening approach for evaluating groundwater risks from domestic use was based on agreement with the BCT during meetings in 2003 and 2004. Section K9.3 (uncertainty analysis) describes the uncertainties associated with exclusion of the dermal exposure route from evaluation of risks from exposure to groundwater from domestic use. No revision to the HHRA is needed to address this comment.



**Table 4. Responses to Comments from San Francisco Regional Water Quality Control Board (SFRWQCB) (continued)  
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Comment #	Page #	Section	Comment	Response
<b>Comments provided by SFRWQCB Remedial Project Manager (James Ponton, P.G.), dated July 6, 2007 (continued)</b>				
24		Appendix K, Table K-10	This table indicates that there are no RfDs for dioxins and furans. Please confirm that there are no other sources that provide appropriate RfDs for dioxins and furans.	Noncancer toxicity values (oral and inhalation reference doses [RfDs]) are not currently available for dioxins or furans (California Environmental Protection Agency 2005; EPA 1997, 2004a, 2004b, and 2007). No revision to the HHRA is needed to address this comment.
25		11, 12, and 13	Section 11.1 et al states that containment actions apply to groundwater, landfill gas, and other media. This is contradicted by Section 11.7 which states that "...these were not included in any of the proposed remedial alternatives...because the need for their implementation cannot be supported by existing data.," as there is no method "for translating contaminant concentrations in groundwater...to determine if existing groundwater conditions pose a risk to aquatic receptors." Additionally, with respect to landfill gas, "additional data are needed regarding the volume and concentrations of gas." We ask that you please resolve these contradictions.	Regarding groundwater containment, the Navy will revise the Draft Final RI/FS Report to evaluate containment and source control alternatives for A-aquifer groundwater, as discussed in the response to general comment 2. Section 11.7 will be revised to clarify that the "alternative landfill gas treatment and destruction process options" that were not included in the landfill gas containment alternative were limited to noncombustion destruction processes. This conclusion is discussed in Section 11.5.4.3 and detailed on Figure 11-2.
26		11.5.1.1	This section should be revised to state that the soil layer should have a maximum permeability of 1 E-6 cm/sec or a maximum permeability equal to the hydraulic conductivity of the base liner system or of the underlying geologic materials.	Section 11.5.1.1 will be revised accordingly.
27		Appendix Q	The remedial options emphasizing waste containment by installing a cap include drainage layers above the liner to preclude the buildup of head, but these options must also consider the impacts of groundwater building up beneath/behind the liner, and if necessary, should include upstream diversions to prevent this.	Based on the historic groundwater elevations at the site, it is unlikely that groundwater will build up beneath any areas of the cap except along the shoreline. Figure 12-6 in the Draft RI/FS Report depicted a drainage layer with perforated piping and riser pipes behind the liner that would allow groundwater to be pumped to relieve any groundwater buildup behind the liner. Note that, based on the planned inclusion of A-aquifer groundwater containment in the Draft Final RI/FS Report, the capping design may be reconfigured along the shoreline and upgradient groundwater diversions will be evaluated.

**Table 4. Responses to Comments from San Francisco Regional Water Quality Control Board (SFRWQCB) (continued)  
Draft Parcel E-2 Remedial Investigation/Feasibility Study (RI/FS) Report, Hunters Point Shipyard (HPS), March 2007**

Comment #	Page #	Section	Comment	Response
<b>Comments provided by SFRWQCB Remedial Project Manager (James Ponton, P.G.), dated July 6, 2007 (continued)</b>				
28		Figure 11-2	This figure contains inconsistencies for landfill gas and groundwater. The text, and the color coding, indicate that treatment and physical containment of both will not be considered, and yet the final column (labeled retained for analysis) indicates otherwise. Please review and correct.	The legend of Figure 11-2 clarifies that process options highlighted in yellow will be "retained for possible future incorporation (based on future site data)." Figure 11-2 will be updated to reflect the inclusion of groundwater containment options in the remedial alternatives; however, no changes are needed for the landfill gas treatment options (see the response to comment 25).
29		Figure 12-1	This figure should be revised to more clearly show the existing and the proposed new caps. We request you modify this map to show where all of the subsequent cross-sections, such as Figures 12-3, 12-8, 12-13 and 12-14 are located.	Figure 12-1 will be revised to more clearly show the existing and proposed caps. Figures 12-3, 12-8, 12-13, and 12-14 are typical cross sections. Typical locations for these cross sections will be shown on Figure 12-1.
30		13, Appendix Q	The new landfill cap is proposed to be constructed directly on the existing landfilled waste. Please clarify the expected excavation needed to create the necessary final slopes and whether the waste will be compacted to serve as a suitable foundation layer.	Excavation of the existing landfilled waste, shown on Figure 12-1, is proposed along the shoreline to create stable slopes in accordance with Title 27 of the California Code of Regulations (27 CCR) Section (§) 21145(a). Clearing and grubbing and excavated material from Parcel E-2 will be consolidated in the existing landfill. As shown on Figure 12-2, a soil foundation layer will be placed before the geosynthetic materials are placed. The soil foundation layer will be compacted to serve as a suitable base for the geosynthetic materials and vegetative soil cover. The specific regulatory requirements for the foundation layer (contained in 27 CCR) are summarized in Section 10 and Appendix N.
31		12.2.3.7	This section states that freshwater and tidal wetlands will be restored on top of the new cap in the Panhandle Area, as well as in other portions of the Landfill, the East Adjacent Areas and the Shoreline Area. As we discussed, placing a wetland on top mounded waste (i.e., Landfill and East Adjacent Areas) is problematic. Proper landfill closure requires the minimization of the volume of water contained above the waste.	As discussed in Section 13.3.2, Alternative 3 would meet all of the potential action-specific applicable or relevant and appropriate requirements (ARARs) for containing solid waste. The prohibition on surface water ponding at 27 CCR § 21090(b)(1) is not an ARAR because, consistent with the provisions of 27 CCR §§ 20080(b) and (c), it was determined to not be feasible and a specific engineered alternative was identified that is consistent with the performance goal and affords equivalent protection against water quality impairment. A detailed evaluation of state landfill closure requirements is provided in Appendix N (Section N4.3.1.2).

**Table 4. Responses to Comments from San Francisco Regional Water Quality Control Board (SFRWQCB) (continued)  
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<b>Comments provided by SFRWQCB Remedial Project Manager (James Ponton, P.G.), dated July 6, 2007 (continued)</b>				
31 (cont.)		12.2.3.7	(see above)	To clarify, Section 12.2.3.7 states that wetlands are proposed only in the Panhandle Area. There is no mention of wetlands restoration within the Landfill or East Adjacent Areas in Section 12.2.3.7. Please refer to the response to Department of Toxic Substance Control comment 73 for information on planned revisions for the wetlands restoration in the Panhandle Area.
32		Appendix M	Appendix M summarizes ten years or more of groundwater data for conventional, inorganic and organic substances present within tidally influenced shoreline wells. The report states that the actual concentrations in the Bay are not known, given the unknown amount of attenuation and dilution that occurs within this zone. We do not grant dilution credits at the surface/groundwater interface because it can not be reliably estimated within the active tidal zone. As such, we require that surface water quality criteria be met at the furthest downgradient edge of a site. We believe that there exists sufficient data to show that there is a potential risk from the discharge of site groundwater and that this groundwater must be contained.	The Navy does not agree with the SFRWQCB's position that surface water quality criteria must be met in groundwater at the farthest downgradient edge of a site. However, as discussed in the response to general comment 2, the Navy has decided to use the conservative trigger-level approach developed in the Parcel D FS Report to translate near-shore groundwater concentrations to potential discharges to San Francisco Bay. Based on this conservative analysis, a groundwater containment alternative will be developed and presented in the Draft Final RI/FS Report. Appendix M will be revised to reflect the current approach.
33		Appendix P	Appendix P2 estimates future landfill gas generation for the E-2 landfill at 6,000 - 35,000 SCFD. We request use of these data in the development of a remedial control option for landfill gas.	As discussed in the response to comment 25, Alternative 3 includes containment of landfill gas. This containment system will be designed to handle the estimated landfill gas output outlined in Appendix P2. The Navy anticipates performing additional landfill gas generation studies during the remedial design phase to verify and refine the gas generation estimates. The design of the gas control system will be adjusted, as needed, based on these future studies.  Two process options for treating extracted landfill gas are included in Alternative 3. As discussed in Section 12.2.3.5, the specific treatment options for landfill gas will be determined in the remedial design.

**Table 4. Responses to Comments from San Francisco Regional Water Quality Control Board (SFRWQCB) (continued)  
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Comment #	Page #	Section	Comment	Response
<b>Comments provided by SFRWQCB Remedial Project Manager (James Ponton, P.G.), dated July 6, 2007 (continued)</b>				
34		Appendix Q	We request an explanation of: a. How the cross-section for the static and pseudo-static analyses was chosen, and whether it represents the critical (or lowest factor of safety) case; and, b. The source and composition of the fill material proposed for the toe-berm construction.	The Navy believes that the cross section analyzed is the most critical based on the existing subsurface information and the slope geometry. It should be further clarified that the slope stability analysis in Appendix Q is qualitative and will be refined during the remedial design.  The material to be used for the construction of the toe berm will be imported clean soil.
35		Appendix Q	The analysis of the sand and silt underlying the proposed toe berm is based on a single boring log and cone penetrometer test (CPT) boring log. Figure 2, however, shows several additional CPT and boring locations. We request they be analyzed to see if they are consistent with the chosen data.	Logs of the other test borings and cone penetrometer test (CPT) locations along the shoreline and close to the cross section analyzed were reviewed as part of the analysis. In general, the subsurface conditions at other test boring and CPT locations are similar or less critical than that analyzed. The slope stability analysis in Appendix Q is qualitative and will be refined during the remedial design.
36		Appendix Q	Please explain whether: a. Translational slope failures along the proposed new liner were evaluated in addition to circular failures. b. Short-term factors of safety during construction were calculated and found to be acceptable.	Because of the absence of weak interfaces (a textured geomembrane will be used) and the presence of a significant toe buttress, block-type translation failure surfaces are not considered critical for the toe berm and therefore were not analyzed.  As stated in Appendix Q, the slope stability analysis performed is for a qualitative assessment of the feasibility of the proposed toe berm. Although conditions during construction are likely to be less critical than the end-of- construction condition, additional analysis will be performed during the remedial design stage.
37		Appendix Q	What is the seismic event or maximum probable earthquake (MPE) used to determine the peak accelerations in the pseudostatic analyses?	As noted in the Section 3.2.4 and Appendix C of the RI/FS Report, the maximum probably earthquake (MPE) is a magnitude 7.9 event along the San Andreas Fault. Appendix Q will be revised to specify the MPE used in the analysis.
38		Appendix Q	Please justify the factor of safety of 1.1 calculated for the revised static analysis with liquefaction. Typically, a minimum factor of safety of at least 1.5 is considered acceptable.	According to the "RCRA Subtitle D (258) Seismic Design Guidance for Municipal Solid Waste Landfill Facilities" (EPA, 1995), a safety factor of 1.1 is considered acceptable for a post-liquefaction condition. This factor is consistent with the recommendation in Seed et al. (2001). The justification for this is that liquefaction is a very short duration event (lasting only several seconds); the safety factor returns to the pre-liquefaction value following the earthquake.

**Table 4. Responses to Comments from San Francisco Regional Water Quality Control Board (SFRWQCB) (continued)  
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<b>Comment #</b>	<b>Page #</b>	<b>Section</b>	<b>Comment</b>	<b>Response</b>
<b>Comments provided by SFRWQCB Remedial Project Manager (James Ponton, P.G.), dated July 6, 2007 (continued)</b>				
39		Appendix L	It is unclear how the Protective Soil Concentrations (PSCs) were derived for any of the chemicals of ecological concern. Throughout Appendix L, I am referred to various sections for an explanation, none of which provide one. Include a discussion on how PSCs were derived.	Section L.2.5.1 describes the methods used in calculating the PSCs for various terrestrial organisms at Parcel E-2. The text states that the methodology used is consistent with the approach that was developed in consultation with the regulatory agencies and implemented in 2000 (TtEMI and LFR, 2000b). Section L.3.2.1 will be revised to refer the reader back to the technical discussion in Section L.2.5.1.
40		Appendix O, O1.2	Section 1.2 concludes that the soil screening evaluation "confirms that existing soil within and adjacent to existing Parcel E-2 wetlands is not suitable to support additional wetland construction without some form of remedial action". It also states that remedial alternatives "will address the soil contamination that makes the existing conditions unsuitable for wetlands construction". It is not evident how this conclusion was reached since no sample data is provided. Provide tables and figures showing soil sample locations and results.	Section O.1.2 will be revised to compare results of select soil samples collected within or adjacent to existing wetland areas against wetland cover criteria recommended by the SFRWQCB. A summary table will also be added to Appendix O. A reference will be added to the text to refer the reader to the figures within Section 4 that depict the distribution of various chemicals in soil throughout Parcel E-2.
41		Appendix L, L.3.2.2	Cumulative risk is not evaluated "because of differences in the degree of conservatism in selecting PSCs for various chemicals". It is difficult to evaluate this statement without knowing how the PSCs were derived. However, in my experience, screening criteria are often literature-derived values based on a variety of studies with different degrees of conservatism. The SLERA is the initial step in the risk assessment and should incorporate the most conservative assumptions. Therefore, cumulative risk should be evaluated at least initially, with further refinement of ecological risk at a later stage of the risk assessment. A discussion of the differences in degree of conservatism in selecting PSCs can be included in the Uncertainty Analysis.	Please see the response to comment 39 regarding the methodology used to establish the PSCs. As discussed in Section L1, the purpose of the Parcel E-2 SLERA was to update the previous ecological risk assessments performed at Parcel E-2. These previous assessments are summarized in Section 3.5 of the RI/FS Report. Because of the extensive past evaluations, the focused nature of the SLERA is considered appropriate to support the RI conclusions for Parcel E-2 and develop remedial alternatives that are protective of terrestrial organisms.
42		Appendix L, L3.3.1, L3.3.2 and L3.3.3	The information presented in these sections would be better summarized in a table.	Table L7 summarizes the information provided in these sections; specifically, a summary of the maximum concentrations of various chemicals of potential ecological concern and their corresponding hazard quotient.

**Table 4. Responses to Comments from San Francisco Regional Water Quality Control Board (SFRWQCB) (continued)  
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Comment #	Page #	Section	Comment	Response
<b>Comments provided by SFRWQCB Remedial Project Manager (James Ponton, P.G.), dated July 6, 2007 (continued)</b>				
43		Appendix L, L4.4	This section provides conclusions but no recommendations. Based on the results of the SLERA, a number of chemicals were identified to pose a potential threat to birds and mammals in all subareas of Parcel E-2. Provide recommendations on the next steps based on the SLERA results.	Section L4.4 will be revised to recommend that one of two approaches be followed to ensure protectiveness of terrestrial organisms: (1) develop remedial alternatives that address shallow soil throughout the three onshore areas of Parcel E-2 or (2) collect additional data and refine and update the SLERA to identify specific areas that pose an unacceptable risk.
44		Appendix O, O1.1	Clarify if the confirmatory assessment conducted on April 2002 is the same as a jurisdictional determination. If not, the wetlands delineation conducted on December 2001 should be verified by the Corps.	Section O1.1 will be revised to provide the following text consistent with Appendix D of the RI/FS Report: "The wetlands delineation was conducted on October 1, 2001, and the functions and values assessment was conducted on December 3, 2001. A confirmatory functions and values assessment was conducted on April 10, 2002." The following text will be added consistent with Section 2.4.2 of the RI/FS Report: "The Delineation and Functions and Values Assessment was submitted to the USACE for review to ensure technical adequacy and compliance with all substantive requirements. The USACE responded on July 30, 2003, that it had no comments."
45		Appendix O, O1.1	This section states that "an abundance and diversity of wintering and migrating waterfowl species is a potentially significant feature [at Parcel E-2 wetlands]; however, only red-winged blackbirds were observed to nest in the seasonal freshwater wetland". Provide information on whether wildlife surveys were conducted (when and where) and the results (e.g. species observed, not just those species nesting).	Section O1.1 will be revised to refer to text presented in Section 2.4 of the RI/FS Report.
46		Appendix O, O1.1	The last two paragraphs focus mainly on the low functions and values of wetlands at Parcel E-2. However, it should be included in this discussion that these wetlands likely serve an important role in sediment retention and water filtration of stormwater runoff. In other words, they filter out contaminants in sediment and stormwater runoff that would otherwise impact the Bay.	The paragraphs in question will be evaluated and revised as appropriate to discuss the additional benefits of wetlands in handling stormwater runoff.

**Table 4. Responses to Comments from San Francisco Regional Water Quality Control Board (SFRWQCB) (continued)  
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<b>Comments provided by SFRWQCB Remedial Project Manager (James Ponton, P.G.), dated July 6, 2007 (continued)</b>				
47		Appendix O, O1.2	In developing the wetland cover and foundation soil screening criteria, please also refer to the <i>Draft Staff Report Beneficial Reuse of Dredged Materials: Sediment Screening and Testing Guidelines</i> (Water Board 2000). This document updates previous Water Board documents and contains updated information on ambient concentrations of contaminants in SF Bay sediments as well as updated biological effects concentrations (ER-Ls and ER-Ms).	Section O1.2 will be revised to refer to and use the 2000 SFRWQCB staff report.
48		Appendix O, O3.3.2	This section states that wetland mitigation will be at a 1 : 1 ratio, and if performed outside of Parcel E-2, "its timing would be independent of the remedial action at Parcel E-2 but would be dependent upon actions and activities at other portions- of HPS". Typically, construction of mitigation wetlands is required concurrently with impacts to wetlands. If not, higher mitigation ratios are often required to compensate for temporal impacts. Because the existing wetlands serve an important function in sediment retention and water filtration, we would prefer that mitigation occur immediately at the time of impact, or otherwise at a higher ratio.	The subject sentence in Section O3.3.2 will be revised to eliminate the phrase "independent of the remedial action at Parcel E-2." The specific location and schedule for wetlands mitigation activities will be finalized during the remedial design.
49		Appendix O, O3.3.3	If restoration occurs within Parcel E-2, mitigation wetlands will be constructed on top of the cap. One project, the Shell Refinery in Martinez, is used as an example of successful implementation of wetland restoration over a cap. Given the regulatory agencies' concerns over building mitigation wetlands on top of a cap designed to contain landfill waste, provide more details on the Shell Refinery project and its relevance to the current project.	Please refer to the response to comment 31 regarding the Navy's evaluation of landfill closure requirements relative to the proposed containment option (which includes wetlands restoration on top of a geosynthetic cap). The Navy will work to provide additional information to address the regulatory agencies' concerns; however, the Navy requests additional input on the nature of these concerns (if they are not already specified in comment 31). It should also be noted that the wetlands design and underlying cover in the Panhandle Area are being reevaluated in the Draft Final RI/FS Report.

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**Table 5. Responses to Comments from City and County of San Francisco, Department of Public Health (SFDPH)  
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Comment #	Page #	Section	Comment	Response
<b>Comments provided by SFDPH Environmental Engineer (Amy Brownell), dated September 14, 2007</b>				
1		General	<p><u>Presumptive Remedy Approach</u></p> <p>In view of the extremely high cost associated with the excavation and off-site disposal of the entire landfill contents (Alternative 2) along with the other considerations discussed in this RI/FS, the selection of the CERLA municipal landfill presumptive remedy for the Parcel E-2 landfill (Alternative 3) seems appropriate. However, in light of the uncontrolled nature of the historical landfilling operation (e.g., no containment or monitoring systems); the unique location of the landfill (i.e., high proportion of waste submerged within the A-aquifer); the potential presence of radiological wastes (“Radiological RI/FS” is pending); and community concerns, it is recommended that the Navy adopt a more rigorous approach to evaluating and implementing the presumptive remedy. As currently written, this document over-emphasizes the “capping” portion of the presumptive remedy and underplays the potential benefits of other portions of the presumptive remedy (e.g., hot spot identification and excavation) and other variants of technologies or process options (e.g., excavation and on-site consolidation of landfill waste). Specific comments below address this general comment in greater detail.</p>	<p>The Department of the Navy (Navy) has met with the Base Realignment and Closure Cleanup Team (BCT) to discuss the revisions for the Draft Final RI/FS Report that are needed to properly clarify the manner in which the containment presumptive remedy was evaluated for the Parcel E-2 Landfill. The Navy will revise the RI/FS Report to clarify the remedy evaluation process for Parcel E-2 as follows:</p> <ul style="list-style-type: none"> <li>▪ The containment presumptive remedy is being evaluated only for the Parcel E-2 Landfill (also referred to as the “Landfill Area”).</li> <li>▪ Although U.S. Environmental Protection Agency (EPA) guidance for military landfills (EPA, 1996) advises that the presumptive remedy should not be used where excavation is considered, the Navy believes that, based on site-specific considerations, excavation should also be evaluated in order to address community concerns although this goes beyond the requirements of the presumptive remedy policy.</li> <li>▪ This approach is consistent with EPA’s directive titled “Presumptive Remedies: Policy and Procedures (pp. 1-2, EPA, 1993b), which states that “there may be unusual circumstances (such as, complex contaminant mixtures, soil conditions, or extraordinary State and community concerns) that may require the site manager to look beyond the presumptive remedies for additional (perhaps more innovative) technologies or remedial approaches.” In addition, this approach was applied in the Remedial Action Plan/Record of Decision prepared for the landfill within Investigation Area H1 at the former Mare Island Naval Shipyard (Weston Solutions, Inc, 2006).</li> <li>▪ The Navy did not apply or rely upon the presumptive remedy guidance for the areas adjacent to the Landfill Area (e.g., the Panhandle Area, East Adjacent Area, and Shoreline Area).</li> </ul>

**Table 5. Responses to Comments from City and County of San Francisco, Department of Public Health (SFDPH) (continued)  
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Comment #	Page #	Section	Comment	Response
<b>Comments provided by SFDPH Environmental Engineer (Amy Brownell), dated September 14, 2007 (continued)</b>				
1 (cont.)		General	(see above)	<p>▪ The remedial alternatives developed for the Panhandle Area, East Adjacent Area, and Shoreline Area were focused on containment and excavation; however, the Navy will revise the RI/FS Report to evaluate expanded hot spot removal (particularly those in the Shoreline Area). This approach is consistent with the streamlining approach outlined in pages 8704-8705 of the 1990 National Oil and Hazardous Substances Pollution Contingency Plan (NCP) Preamble (55 Federal [Fed.] Register [Reg.] 8704-8705, March 8, 1990) and on page 4-8 in Section 4.1.3.1 of the "Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA," Office of Solid Waste and Emergency Response (OSWER) Directive 9355.3-01, October (EPA, 1988).</p> <p>As stated above, the Navy agrees that community concerns warrant analysis of additional remedial alternatives, specifically excavation of the Landfill Area. However, the Navy disagrees with SFDPH's statement that the nature of the landfilling operations, unique location of the landfill, and the potential presence of radiological wastes should prompt the Navy to "adopt a more rigorous approach to evaluating and implementing the presumptive remedy." The Navy prepared and included a detailed analysis of the Landfill Area (exclusive of the adjacent areas) in Section 8.2.3 of the Draft RI/FS Report to evaluate the Landfill Area in accordance with EPA's presumptive remedy guidance for military landfills (EPA, 1996). The Navy concluded that the Landfill Area met the requirements for a presumptive remedy set forth in that guidance.</p> <p>Regarding the unique location of the Landfill Area (adjacent to San Francisco Bay), the containment alternatives for the Landfill Area to be included in the Draft Final RI/FS Report will evaluate (1) groundwater containment options in areas where the landfill waste is located within 100 feet of the bay and (2) excavation of landfill waste adjacent to the shoreline (where existing slopes are too steep for long-term stability) and relocation of the waste to inland portions of the Landfill Area (where it will be capped).</p>



**Table 5. Responses to Comments from City and County of San Francisco, Department of Public Health (SFDPH) (continued)  
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<b>Comments provided by SFDPH Environmental Engineer (Amy Brownell), dated September 14, 2007 (continued)</b>				
1 (cont.)		General	(see above)	Regarding the potential presence of radiological wastes, Section 8.2.3.1 concludes that waste contained within the Landfill Area meets the municipal-type waste definition outlined in EPA guidance (EPA, 1996). Consistent with this guidance, Section 8.2.3.1 indicates that the presence of industrial and low-level radiological waste does not invalidate this conclusion.
2		ES.2.2 – Landfill Gas	<p>This section only describes the landfill gas data collected in 2002 as part of the non-standard data gaps investigation. Additional sources of landfill gas data include the Navy's original Parcel E RI and select groundwater monitoring reports. This section should be expanded to include all landfill gas data ever collected from any location at Parcel E, including temporary gas monitoring probes (GMPs), permanent GMPs, surface/ambient air locations, and groundwater monitoring wellheads, so that as complete and comprehensive a picture as possible is presented.</p> <p>It might also be worth mentioning that during the 2002 non-standard data gaps investigation a number of soil borings were terminated prior to reaching full depth when methane was encountered at 100 percent of the lower explosive limit (LEL) within the borehole.</p>	<p>The second paragraph of Section ES.2.2 describes the landfill gas removal action and ongoing landfill monitoring performed at Parcel E-2. This paragraph concludes with the statement that: "The data collected as part of the landfill gas characterization study, the time-critical removal action, and the ongoing landfill gas monitoring have adequately defined the nature and extent of landfill gas at Parcel E-2."</p> <p>The Navy did not perform any landfill gas studies during the original Parcel E RI (from 1988 to 1996). The only other subsurface gas investigation was the Solid Waste Air Quality Assessment Test, which was performed from October 1988 to February 1989 (Harding Lawson Associates, 1989).</p> <p>As discussed in Section 3.7.1 of the Draft RI/FS Report, this study found that "methane was detected in isolated pockets at IR-01 and at the northern edge of the IR-01 boundary (near the UCSF compound but within the solid waste footprint)."</p> <p>The Executive Summary will not be revised to specify situations in which borings were terminated prior to reaching full depth. Such situations, which were in all but one case caused by the presence of subsurface debris, were not considered major findings in the Landfill Gas Characterization Report (Tetra Tech EM Inc. [TtEMI], 2003e; Appendix A of the Draft RI/FS Report). Further, the reviewer is not correct in stating that "several" borings were terminated because of elevated methane concentrations. As presented in Appendix A of the Landfill Gas Characterization Report (TtEMI, 2003e), boring SG03B is the only boring that was terminated prior to reaching total depth because of the presence of elevated methane. As shown on Figure 15 of the Landfill Gas Characterization Report, a nearby boring (SG03C) provided adequate soil gas data in this area.</p>

**Table 5. Responses to Comments from City and County of San Francisco, Department of Public Health (SFDPH) (continued)  
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Comment #	Page #	Section	Comment	Response
<b>Comments provided by SFDPH Environmental Engineer (Amy Brownell), dated September 14, 2007 (continued)</b>				
3		7, Human Health and Ecological Risk Assessment	<p>The Parcel E-2 landfill is being evaluated under a presumptive remedy regarding capping. Although the evaluation of the Parcel E-2 area was performed assuming future open space use, portions of Parcel E, as noted in Figure 1-15, are industrial and research and development land use. Since industrial and research and development land use was not evaluated as part of the HHRA, it should be noted that no portion of Parcel E-2 can be used for industrial and research and development land use without a land use-specific HHRA.</p> <p>The risk assessment evaluated exposure to chemicals in soil, intertidal sediment, and groundwater at Parcel E-2. Section 3.9.2 of the report indicates that monthly landfill gas monitoring is being conducted, primarily along the fence line of the landfill and the UCSF compound (along the northern perimeter of Parcel E-2). Please explain why the landfill gas monitoring data was not considered in the risk assessment, both in terms of data and associated exposure scenarios. Outdoor air potential risks from methane would be limited to short-term explosion/fire, whereas a construction worker may also be subject to asphyxiation issues due to methane displacement of oxygen under the trench exposure scenario evaluated for groundwater exposure.</p>	<p>As discussed in Section 1.8, restrictive covenants that limit land use at Parcel E-2 to open space development will be incorporated in the transfer process. The language in Section 1.8 was developed in consultation with the SFDPH.</p> <p>As discussed in Sections 4.1.2.2 and 8.3.3, risk assessments were performed using laboratory soil gas data (for nonmethane organic compounds [NMOCs]) collected during the landfill gas characterization study and the landfill gas removal action. The results of these risk assessments were previously published in the Landfill Gas Characterization Report (TtEMI, 2003e; Appendix A of the Draft RI/FS Report) and the Landfill Gas Removal Action Closeout Report (TtEMI, 2004a; Appendix F of the Draft RI/FS Report).</p> <p>The ongoing landfill gas monitoring is performed using field instruments that do not quantify individual NMOCs and, as a result, cannot be used in a risk assessment. However, the previous laboratory data (and the associated risk calculations) were linked to the concurrent field measurements to select action levels for the interim landfill gas monitoring program (TtEMI and Innovative Technical Solutions, Inc. [ITSI], 2004c). These action levels were selected as remedial action objectives (RAOs) for methane and NMOC concentrations in subsurface and outdoor air.</p> <p>The Navy believes that these RAOs, which compare methane and NMOC threshold concentrations against readings from calibrated field instruments, are adequately protective of human health and meets the requirements of Title 27 of the California Code of Regulations Section 20921.</p>



**Table 5. Responses to Comments from City and County of San Francisco, Department of Public Health (SFDPH) (continued)  
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4		7.1.1.1, Exposure Scenarios and Pathways	<p>Receptors included in the HHRA were limited to a recreational user (child and adult) and a construction worker, based upon the designation of the area as open space. Only surface soil (0-2 feet) was evaluated for the recreational user, while the subsurface soil (0-10 feet) was evaluated for the construction worker. For non-VOCs, the evaluation of surface soil for a recreational user is appropriate based upon the likely limited soil intrusion by recreational users. As noted in Table 7.9 and in Section 7.1.2.2, naphthalene was detected in subsurface soil. Although potential exposure pathways to VOCs in surface and subsurface would be limited to outdoor air inhalation exposures, which would likely be attenuated by wind dispersion, VOCs in subsurface soil should be evaluated for the recreational user.</p> <p>Groundwater exposure from chemicals in the A-aquifer was limited to hypothetical domestic use of the groundwater for the recreational user and a trench volatilization and dermal contact exposure pathway for the construction worker. The presence of VOCs in the groundwater, including naphthalene and tetrachloroethene, should be considered in the evaluation of potential outdoor air inhalation exposure scenarios for the recreational user. A discussion of VOC distribution near the shoreline, where groundwater mixes with surface water (as noted in Section 7.3) should be provided to allow for evaluation of potential VOC exposures to a recreational user.</p> <p>If the outdoor air inhalation of VOCs pathway is not quantified, a discussion of the potential underestimate of risk due to exclusion of the pathway should be included in Appendix K, Human Health Risk Assessment, Section K9.0 (Uncertainty Analysis). The exposure pathway should be added to Figure K-1.</p>	<p>The soil exposure pathways evaluated in the human health risk assessment (HHRA) for the recreational exposure scenario were based on the methodology developed by the BCT (Navy 2004). The methodology does not include evaluation of exposure to volatile chemicals in soil greater than 2 feet below ground surface. The methodology for the groundwater HHRA methodology was based on meetings with the EPA, Department of Toxic Substances Control, and the Navy in 2003 and 2004, and does not include evaluation of exposure of recreational visitors to volatile chemicals from groundwater. The report will not be changed as a result of this comment.</p>

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5		9.2 Landfill Gas RAOs	<p>It is true that “methane gas emitted from the landfill may migrate off-site and could accumulate in structures and confined spaces to create an explosive or oxygen-deficient atmosphere.” However, it is also possible for methane to be present on-site near the ground surface (i.e., not just in the subsurface or in structures or confined spaces) at explosive concentrations, which presents a risk that needs to be mitigated. Anecdotal evidence indicates that methane may be present above landfills in unconfined conditions at concentrations that exceed the LEL of 5% and have the potential to cause a nuisance or even bodily injury if ignited by a construction worker (case study re. City of San Diego landfill) or a recreational user (Shoreline Amphitheater, Mountain View). Therefore, although CCR Title 27 does not explicitly mandate that methane concentrations in open air (unconfined conditions) immediately above the landfill cover be controlled to 5% or less by volume in air and although the ambient air survey that was conducted by the Navy in 2002 (Final Parcel E Nonstandard Data Gaps Investigation Landfill Gas Characterization, dated 23 December 2003) did not detect combustible gases within the ambient air breathing zone at any surveyed location with the landfill area, this public safety issue is of sufficiently great concern that it should be an RAO (or at least categorized as “to be considered”) if future open space recreational land use with public access is envisioned, as stated in Section 11.2.</p>	<p>Ambient methane at ground level can potentially accumulate to concentrations of concern, typically at defective cover locations that provide a preferential pathway for localized escape of landfill gas from underlying waste. Larger municipal solid waste landfills in the region are subject to regulations requiring routine “cover integrity inspection” and “surface emissions monitoring.” Shallower, older landfills typically do not have the high gas generation rates necessary to produce hazardous ground level methane accumulations, outside of a confined space. Nonetheless, cover monitoring and maintenance for minimization of landfill gas emissions, as well as moisture intrusion, is a standard operating procedure for all landfills during the postclosure monitoring and maintenance period. These measures are included in the postclosure operations for Parcel E-2.</p>



**Table 5. Responses to Comments from City and County of San Francisco, Department of Public Health (SFDPH) (continued)  
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6		9.3, Groundwater RAOs	It is understood that "a method for comparing groundwater data to saltwater aquatic criteria, in a manner that accounts for chemical attenuation and the near-shore mixing process" is currently under development, and it is anticipated that the method will be agreed upon by the Navy and the regulatory agencies prior to the finalization of this RI/FS. All comments regarding this and all subsequent sections of the RI/FS are contingent upon this assumption.	<p>During a working meeting on July 25, 2007, the Navy and the regulatory agencies agreed on a path forward for developing groundwater remedial alternatives for Parcel E-2 by:</p> <ul style="list-style-type: none"> <li>▪ Reviewing the conclusions from Appendix M and identifying near-shore source areas that require further analysis in the FS.</li> <li>▪ Agreeing that the trigger-level approach used for the Parcel D FS Report would be used at Parcel E-2.</li> <li>▪ Discussing process options available to contain groundwater at Parcel E-2, and how these options should be considered in conjunction with hot spot removals.</li> </ul> <p>The Navy will revise the Draft Final RI/FS Report to include groundwater remedial alternatives based on the conclusions of the July 25, 2007, meeting.</p>
7		11, Identification and Screening of Technologies and Process Options	The EPA's FS Analysis for CERCLA Municipal Landfill Sites (EPA, 1994), which reviewed the remedy selection process at 30 CERCLA municipal landfill sites, is recapped on p. 11-2 with the statements that it "found that containment was selected at all 30 sites" and that "The remedial technologies that were routinely screened out included excavation/disposal, bioremediation, chemical destruction, thermal treatment, chemical/physical extraction, thermal desorption, and immobilization." That no mention is made of the conclusions reached in the other EPA documents enumerated at the top of the page is misleading, as it presents an incomplete picture of the remedies selected at other landfill sites. The conclusions reached in the other documents are as follows:	Section 11.0 will be revised to better describe the conclusions reached by EPA in the various publications cited.

**Table 5. Responses to Comments from City and County of San Francisco, Department of Public Health (SFDPH) (continued)  
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7 (cont.)		11, Identification and Screening of Technologies and Process Options	<ul style="list-style-type: none"> <li>▪ EPA's guidance document, Conducting Remedial Investigations/Feasibility Studies for CERCLA Municipal Landfill Sites (EPA, 1991a) reviewed 92 such sites (Appendix B-3) and found that although capping was selected as the remedy for soils/landfill contents at 68 sites, for soils/hot spots, excavation was selected for 30 sites; onsite disposal was selected for 5 sites; off-site disposal for 13 sites; thermal treatment for 8 sites; and physical treatment for 12 sites. Thus, hot spot excavation and disposal or treatment was a component of remedial actions at a large number of sites. In addition, for groundwater and leachate, groundwater collection and extraction was selected at 43 sites; leachate collection and extraction was selected at 27 sites; and physical treatment was selected at 29 sites. Thus, collection, extraction, and treatment were a frequent component of remedial action targeted for groundwater and leachate. Furthermore, "no action" was selected for only 6 sites, even though most of the sites reviewed likely did not have a significant proportion of their solid waste immersed in groundwater, as is the case at Parcel E-2.</li> <li>▪ An examination of 31 RODs that document remedial decisions for 51 landfills at military installations (EPA, 1996) revealed that "no action" was chosen for 10 landfills. Of the 41 landfills for which remedial actions were chosen, containment was selected for 23 (56%) sites; institutional controls only were selected for 3 sites; excavation and on-site consolidation were selected at 4 sites; and excavation and off-site disposal were selected for 11 (25%) sites.</li> </ul> <p>It is recommended that this paragraph be rewritten to more accurately and fully describe the conclusions reached by EPA in the various publications cited.</p>	(see above)



**Table 5. Responses to Comments from City and County of San Francisco, Department of Public Health (SFPDH) (continued)  
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8		11.5, Containment (With or Without Removal, Treatment, and/or Disposal), and 11.6, Removal by Excavation and Off-Site Disposal	<p>Neither of these sections discusses remediation of potentially remaining hot-spots. Although the Navy has completed several substantial removal actions on Parcel E-2, notably in the "PCB Hot Spot" and the "Metal Slag Area", further consideration should be given in this document to identifying potential hot spots within Parcel E-2. For example, as discussed below in conjunction with Appendix M, monitoring results at well IR01MW366A may be indicative of a hot spot within the submerged landfill waste.</p> <p>In addition, neither of these sections discusses excavation and on-site consolidation of waste in a meaningful way. There are several areas within Parcel E-2 that may warrant excavating landfill waste and consolidating it with like material on-site prior to capping. For example, there is landfill waste that extends across the boundary of and onto the UCSF property ("Non-Navy Property within Landfill Area", Figure 1-2). This material is a potential candidate for waste excavation and on-site consolidation. In addition, some of the remedial action alternatives discussed in Section 12 envision excavating landfill waste or debris in conjunction with the construction of a riprap revetment wall (see Figure 12-4). The wastes excavated during these construction activities are strong candidates for waste excavation and on-site consolidation.</p> <p>There may also be other portions of the landfill that are appropriate for this technology/process option. In all cases, the excavated waste/soil would be placed with other landfill material on-site, which would all be (under the presumptive remedy) capped. This is a particularly attractive option because 1) waste characterization, off-site transportation, and disposal costs are avoided, and 2) the waste consolidation can occur in an area that has not yet been capped. Thus, the Navy should give more serious consideration to this technology/process option.</p>	<p>As discussed in the response to comment 1, the Navy will revise the RI/FS Report to evaluate hot spot removal (particularly those in the Shoreline Area) in conjunction with the containment alternatives. However, the Navy does not believe that extension of this hot spot removal approach is practical for contiguous solid waste present in the Parcel E-2 Landfill. The Navy prepared Section 8.2.3.2 of the Draft RI/FS Report to specifically evaluate the potential hot spots within the Parcel E-2 Landfill in accordance with EPA guidance (EPA, 1993a and 1996), and concluded that characterization and treatment of these potential hot spots was not warranted.</p> <p>Additional language will be added to Sections 11.5 and 11.6, as appropriate, to reflect the potential hot spot removals contemplated under the remedial alternatives.</p> <p>Sections 11 and 12 will be revised to clarify that the containment alternatives involve excavation and consolidation of solid waste within Parcel E-2. Figure 12-1 shows the conceptual grading plan associated with Alternative 3 and details the extensive excavation planned for the Panhandle Area (to facilitate wetlands construction) and filling planned for the northwest (uncapped) portion of the landfill.</p>

**Table 5. Responses to Comments from City and County of San Francisco, Department of Public Health (SFDPH) (continued)  
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9		11.5.4.2, [Landfill Gas] Destruction by Combustion	The first paragraph (p. 11-31) notes that, "A flare... is most cost-effective when landfill gas concentrations are sufficient to facilitate combustion." This statement seems to imply that a landfill flare could be self-sustaining under certain conditions, and it is unclear what is meant by the term "facilitate". For greater clarity, it should be stated that at this site a flare would most likely require an auxiliary fuel supply (e.g., natural gas) in order to operate properly and continuously. This is the case especially at older landfills such as this one, where the rate of and quality of methane generated can be expected to fluctuate over time and decline over the next several decades. As operating conditions change, the flare may require retrofitting or even replacement.	Section 11.5.4.2 discusses the potential need for an auxiliary fuel supply under the heading "Cost," as follows: "Supplemental fuel may be required to maintain the proper operating temperature, and costs could be moderately high, depending on the size of the flare and the amount of supplemental fuel required." Considering the preliminary stage of the FS evaluation, no further detail is considered necessary for the RI/FS Report. The potential need for an auxiliary fuel supply will be evaluated in the remedial design.
10		11.5.5, Groundwater Containment/ Leachate Collection	The first paragraph of this section states, "Because the solid waste in the Parcel E-2 Landfill is submerged in the A-aquifer, groundwater containment (adjacent to the landfill) and leachate collection/treatment are functionally the same actions and are evaluated together in this subsection." This grouping is reasonable. However, the next sentence states, "A final cap over the landfill source area would reduce infiltration and associated leachate generation, and could be sufficient in preventing continued contaminant migration in groundwater." This statement is not reasonable in the case of this particular landfill because, as noted in the preceding sentence, much of the waste is submerged in the groundwater.  Therefore, 1) infiltration of rainfall across the entire footprint of the landfill (if none of it was capped) is not the sole and possibly not even the most significant source of recharge for the groundwater flowing through the landfill waste and 2) the amount of leachate generated by infiltration (assuming no cap) through the unsubmerged waste is likely a fraction of the leachate generated by the flow of groundwater through the submerged waste.	The sentence in Section 11.5.5 will be revised to state: "A final cap over the landfill source area would reduce infiltration and associated leachate generation <i>in the unsubmerged portion of the waste</i> , and could be sufficient in preventing continued contaminant migration in groundwater. "



**Table 5. Responses to Comments from City and County of San Francisco, Department of Public Health (SFPDH) (continued)  
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10 (cont.)		11.5.5, Groundwater Containment/ Leachate Collection	Stated another way, even with a highly effective cap in place, continued contaminant migration in groundwater is likely to occur largely unabated due to the continuous upgradient/off-site recharge of the A-aquifer and the high proportion of landfill waste that is submerged in the groundwater. (Section 6.2.4.1 Landfill Area Groundwater provides a more accurate statement regarding the relative contribution of precipitation infiltration to leaching of contaminants.) Furthermore, the local groundwater gradient is not likely to be significantly changed by fully capping the waste. Therefore, it is can reasonably be anticipated that impacts to groundwater being caused by the (largely submerged) waste and the rate of migration of impacted groundwater toward the Bay will continue largely unchanged solely by the construction of a cap. The sentence should be modified to say, "A final cap over the landfill source area would reduce infiltration and associated leachate generation in the unsubmerged portion of the waste."	(see above)
11		11.6 – Removal by Excavation and Off-Site Disposal	<p>First sentence of first paragraph states, "The removal GRA includes the excavation and off-site disposal of all solid waste and impacted soil...". First sentence of second paragraph states, "For the removal GRA, the only viable process option is off-site disposal. Other process options, including on-site treatment/disposal or consolidation, either do not meet the RAOs or would require resolution of numerous technical and administrative issues that would render these options ineffective, difficult to implement, and cost-prohibitive."</p> <p>The "all or nothing" presentation of the excavation option coupled with the "off-site disposal" restriction is taking an overly narrow view of this technology option. Limited waste/soil excavation coupled with either on-site consolidation prior to capping or off-site disposal should be given more serious consideration. As noted earlier, the landfill waste that is located on the UCSF property as well as any construction-derived waste/soil are candidates for excavation and on-site consolidation.</p>	<p>Please refer to the response to comment 8 regarding the evaluation of hot spot removal in the Draft Final RI/FS Report.</p> <p>Section 11.6 will be revised to clarify that on-site consolidation may be a valid process option when the removal general response action (GRA) is implemented in combination with the containment GRA.</p>

**Table 5. Responses to Comments from City and County of San Francisco, Department of Public Health (SFDPH) (continued)**  
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11 (cont.)		11.6 – Removal by Excavation and Off-Site Disposal	Excavation and off-site disposal of potentially remaining hot spots should similarly be given more serious consideration. The EPA publication Application of the CERCLA Municipal Landfill Presumptive Remedy to Military Landfills (EPA, 1996) states (p. 5) that, “Consideration of excavation must balance the long-term benefits of lower operation and maintenance costs and unrestricted land use with the initial high capital construction costs and potential risks associated with excavation. Although no set excavation volume limit exists, landfills with a content of more than 100,000 cubic yards (approximately 2 acres, 30 feet deep) would normally not be considered for excavation.” Using 100,000 cubic yards as an upper-end boundary on the feasibility of excavation, consideration should be given to strategically contracting the overall footprint of the landfill waste with the goal of decreasing long-term operations and maintenance costs associated with the presumptive remedy of capping, groundwater/leachate control/collection, landfill gas collection and treatment, and IC’s.	(see above)
12		11.7 – Summary of Screening of Technologies and Process Options	Third paragraph states, “In addition, several groundwater containment and alternative landfill gas treatment/destruction process options were retained as viable options that may be appropriate to implement in the future; however, these were not included in any of the proposed remedial alternatives (presented in Section 12) because the need for their implementation cannot be supported by existing data.”... “In the case of landfill gas, additional data are needed regarding the volume and concentrations of gas within the landfill to determine what type of gas treatment or destruction would be most implementable and cost-effective.” The first statement is not entirely true in that there is sufficient information to indicate that a landfill gas collection and destruction system is necessary, particularly if this area is to be used as publicly accessible open space.	Section 11.7 will be revised to clarify that two potentially viable process options (destruction by enclosed flare and adsorption by granular activated carbon/potassium permanganate) were included in Section 12 for evaluation purposes.



**Table 5. Responses to Comments from City and County of San Francisco, Department of Public Health (SFDPH) (continued)  
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12 (cont.)		11.7, Summary of Screening of Technologies and Process Options	In addition to the information that lead to the installation of the LFG trench/barrier wall along the northern edge of the landfill, previous groundwater monitoring efforts have indicated the presence of methane at concentrations above the upper explosive limit (UEL) within wellheads located inside the footprint of the landfill waste. The second statement is confusing because Section 12 does discuss a remedial action alternative (Alternative 3) that includes a full-scale landfill gas collection system and an enclosed flare (Figure 12-15), which appears to be based on reasonable assumptions for the conceptual design and preliminary cost estimating purposes of this RI/FS. Therefore, these two sentences should be either omitted or appropriately reworded.	(see above)
13		12.2.3, Alternative 3: Contain Solid Waste, Soil, and Sediment (including monitoring and institutional controls)	The fifth bullet in the lower portion of page 12-13 states that this alternative would include decommissioning of the existing gas control system and installation and maintenance of an active gas collection system. If the existing LFG control system will in fact be decommissioned, this would be all the more reason to seriously consider excavation (and on-site consolidation) of the landfill waste located on the UCSF property (see comment regarding Section 11.6).	As discussed in the response to comment 1, the Draft Final RI/FS Report will evaluate removal of potential hot spots based on their ability to enhance and expedite achieving the RAOs (most notably, protecting aquatic organisms in the bay). Excavation and on-site consolidation of solid waste located between the Navy property and the fence line of the University of San Francisco compound would not significantly enhance or expedite achieving the RAOs when compared to the remedial alternatives evaluated in the FS.  Please refer to the response to comment 8 for additional input on the Navy's evaluation of potential hot spot removal in the Draft Final RI/FS Report.
14		12.2.3.5, Landfill Gas Control	Last two sentences in first paragraph state, "...it should be noted that wetlands and Bay mud can produce methane, hydrogen sulfide, and other gases similar in composition to landfill gases. These gases would not be subject to gas collection requirements." It is true that a landfill-type active gas collection system would not be required in the adjacent, non-landfill areas. However, certain measures may need to be taken during the remediation, redevelopment, and reuse phases of the property to safeguard human health and property.	Appropriate construction features and warning signs to address the potential accumulation of subsurface gas will be developed during the remedial design.

**Table 5. Responses to Comments from City and County of San Francisco, Department of Public Health (SFDPH) (continued)  
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14 (cont.)		12.2.3.5, Landfill Gas Control	For example, subsurface enclosed spaces, such as utility vaults, would need to be constructed such that any methane or other vapors that might enter them can readily be (passively) vented into the atmosphere rather than accumulating within these spaces; these spaces would also need to have warning signs placed at entry points.	(see above)
15		Figures 12-1 through 12-15	Figure 1-2 correctly shows the location of the Parcel E-2 boundary and highlights (rose background with cross-hatching) "Non-Navy Property within Landfill Area". The figures in Section 12 incorrectly show the Parcel E-2 property line as running parallel to the limits of waste; these figures should be redrawn to show the correct location of the property line.	To most clearly depict the site boundaries evaluated in the RI/FS Report, Figures 12-1 through 12-15 (as well as others in the report) were drawn to include the entirety of the Parcel E-2 Landfill as being within the Parcel E-2 boundary. The fact that a small portion of solid waste extends beyond the Navy property does not relieve the Navy of its obligation to develop and evaluate remedial alternatives for the entire Parcel E-2 Landfill. No changes will be made to the report in response to this comment.
16		13.3.9, Summary of Detailed Analysis for Remedial Alternative 3	This section states, "...similar caps have been constructed throughout the San Francisco Bay Area." Although it is true that the practice of capping/containing landfills is commonplace, the Parcel E-2 landfill is somewhat unusual in that a large proportion of the landfill waste is submerged within the shallow aquifer. In view of this and the other unique aspects of this landfill enumerated in the very first comment above, a more detailed review of the methods of capping/containment (of both soil and groundwater) selected for other landfill closures, with a particular focus on those landfills containing a similarly high proportion/volume of submerged waste, should be performed as part of this RI/FS.	As discussed in the response to comment 6, the Navy will revise the RI/FS Report to evaluate groundwater containment in conjunction with the capping and containment alternatives. The Navy believes that the resulting analysis, when coupled with the existing capping technology screening presented in Section 11.5, will be adequately detailed to develop a set of remedial alternatives for Parcel E-2. Regarding the unique aspects of the Parcel E-2 Landfill, the Navy wishes to clarify that numerous municipal and military landfills are located in close proximity to San Francisco Bay that include solid waste below the groundwater table. .



**Table 5. Responses to Comments from City and County of San Francisco, Department of Public Health (SFDPH) (continued)  
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17		Section K5.1.3 – Exposure Point Concentrations for Media Not Sampled	The first sentence of the second paragraph indicates that “samples were not collected for outdoor air or indoor air at Parcel E-2.” Section 3.7, Outdoor Air Monitoring, indicates that several sets of outdoor air data were developed as part of the landfill-related work. This data should be discussed in previous sections of the human health risk assessment and rationale for not considering this data for the HHRA should be provided (i.e., concentrations were within ambient levels or samples were collected during unique events).	Section K5.1.3 will be revised to include the following text: “As discussed in Subsection 3.7 and 6.2.3 of the RI/FS Report, previous outdoor air monitoring activities performed at Parcel E-2 have indicated that air contaminant concentrations at Parcel E-2 are similar to Bay Area regional air quality monitoring results, with only minor differences observed for most analytes investigated. The most notable exceptions are past detections of PCBs in the southeast portion of Parcel E-2. These detections of PCBs were associated with dust generated during past construction activities; specifically, the sandblast waste fixation project and landfill cap construction. As an additional precaution, the HHRA methodology evaluates potential outdoor air exposure via several transfer mechanisms.”
18		M2.4, Data Evaluation	The bullet-item list in the last paragraph (p. 2-3) provides four semi-quantitative criteria that are applied in subsequent subsections when determining whether a compound “warrants further monitoring and evaluation to assess the potential impact to the Bay”. For greater clarity and consistency in the evaluation of these four criteria, a brief summary of how well/poorly the data for each constituent meet these criteria should be provided prior to the last sentence of each subsection. For example, in the case of TCE (Figure M-20) there is only one well (IR01MW48A) at which the aquatic criterion for TCE is exceeded (by a factor of 1.1), and during five subsequent rounds of monitoring spanning nearly three years, TCE concentrations were below detectable levels. Therefore, in regards to the four criteria listed in this subsection, the TCE data could be summarized as follows: “The single recorded exceedance has been followed by non-detections in at least four subsequent sampling rounds; has thus clearly decreased over time; is present in only one location; and the one exceedance was only slightly greater than the aquatic criterion”. Then it is clear why TCE is not retained as a COPC.	The Navy will revise Appendix M to briefly summarize of how well or poorly the data for each chemical meet the evaluation criteria. Also, the Navy will revise Appendix M to include additional groundwater data through the fourth quarter 2007 and data from a focused data gaps investigation along the Parcel E-2 shoreline. This revision will result in the addition of about 11 quarters of data for most of the wells along the Parcel E-2 shoreline and an additional 68 locations sampled during the focused data gaps investigation.

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<b>Comments provided by SFDPH Environmental Engineer (Amy Brownell), dated September 14, 2007 (continued)</b>				
18 (cont.)		M2.4, Data Evaluation	For certain constituents (e.g., heptachlor epoxide) it appears that the only reason they are retained as COPCs is that less than four "non-detect" rounds of sampling have occurred since the most recent exceedance. For those particular constituents, it may be worthwhile "unlocking" the database and examining more recent (after March 2005) rounds of data, so that the list of COPCs (or COCs) might be further reduced.	(see above)
19		M3.1, Anions	Page 3-2, final sentence of first paragraph states, "Because unionized ammonia concentrations are calculated using field parameters, the potential exists for error to be introduced into these results." Please discuss the nature of these "errors". Are they instrument errors, calculation errors, or other types of errors? Or is it more accurate to use the term "uncertainty" or "variability" instead of "error"? Strictly speaking, errors should be eliminated to the greatest extent practicable through appropriate QC measures, such as equipment calibration and checking of calculations. On the other hand, a computed quantity that is highly sensitive to data inputs that may fluctuate temporally or spatially could have a high degree of uncertainty or variability associated with it. Therefore, this statement should be either rephrased (for accuracy) or elaborated upon (for clarity).	Section M3.1 will be revised to clarify that the calculated unionized ammonia concentrations have a high degree of uncertainty because they are sensitive to field parameter data inputs that may fluctuate temporally or spatially.
20		M4, Conclusions and Recommendations	Although well IR01MW366A lies beyond the tidally influenced zone (TIZ) and elevated concentrations of COPCs at that location may therefore pose a lesser potential risk to aquatic receptors than similarly elevated concentrations at locations within the TIZ, the groundwater data evaluation's focus on impacts to aquatic receptors may be overly narrow at the RI/FS stage. Specifically, clusters of elevated concentrations of COPCs should be identified and further evaluated. For instance, well IR01MW366A exhibits elevated concentrations of unionized ammonia, sulfide, cadmium, copper, lead, mercury, nickel, zinc, 4,4-DDT, alpha chlordane, and endosulfan I.	As discussed in the response to comment 8, the Navy prepared Section 8.2.3.2 of the Draft RI/FS Report to specifically evaluate the potential hot spots within the Parcel E-2 Landfill in accordance with EPA guidance (EPA, 1993a and 1996), and concluded that characterization and treatment of these potential hot spots was not warranted.

**Table 5. Responses to Comments from City and County of San Francisco, Department of Public Health (SFDPH) (continued)  
Draft Parcel E-2 Remedial Investigation/Feasibility Study (RI/FS) Report, Hunters Point Shipyard (HPS), March 2007**

Comment #	Page #	Section	Comment	Response
<b>Comments provided by SFDPH Environmental Engineer (Amy Brownell), dated September 14, 2007 (continued)</b>				
20 (cont.)		M4, Conclusions and Recommendations	In some cases, IR01MW366A is the only well within Parcel E-2 where the compound exceeds the screening criterion; in other cases, the criterion for a particular compound has been exceeded during multiple successive rounds of sampling. Thus, this particular well may be indicative of a localized "hot spot" within the landfill waste and therefore warrants further evaluation. At a minimum, this potential "hot spot" should be evaluated in accordance with EPA guidance (EPA, 1993a).	(see above)
21		Appendix Q – Qualitative Slope Stability Evaluation	A shear strength value for the Bay Mud of 1,000 pounds per square foot (psf) was used in the slope stability analysis (as shown on the various slope profiles). This is not a typical value for Bay Mud. Typical values would be more on the order of 300 to 600 psf for normally consolidated clay. The appropriateness of the 1,000 psf value utilized should be double-checked and verified, and any appropriate revisions to the analysis should be made.	<p>Although the undrained shear strength (<math>S_u</math>) of the Bay Mud can be very low near the ground surface due to low vertical effective stress (<math>\sigma'_{vc}</math>), it is important to note that <math>S_u</math> increases with depth due to the increase in effective stress with depth. Also, the <math>S_u</math> of the Bay Mud would increase along the cross section, from the toe of the landfill toward the center of landfill, due to increasing vertical stress from the overlying soil and waste materials. The results of the unconsolidated undrained (UU) triaxial tests presented in the Landfill Liquefaction Potential Report (TtEMI and ITSI, 2004b; Appendix C of the Draft RI/FS Report) show <math>S_u</math> values of between 740 and 920 pounds per square foot (psf) for the Bay Mud encountered in the test borings. Since UU triaxial tests significantly underestimate <math>S_u</math> because of sample disturbance, the actual <math>S_u</math> of the samples tested would be higher than the measured values.</p> <p>For the above reasons, an average <math>S_u</math> of 1,000 psf was assigned to the entire Bay Mud along the cross section analyzed as part of the qualitative analysis. However, the Draft RI/FS Report recommends that a more detailed slope stability analysis be performed as part of the remedial design, during which the Bay Mud should be subdivided both vertically and horizontally to assign <math>S_u</math> values based on the varying vertical stress levels. This analysis will require additional field investigation and laboratory testing in conjunction with the remedial design to determine the normalized shear strength parameter (i.e., <math>S_u/\sigma'_{vc}</math>) for the Bay Mud at the site.</p>

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**Table 6. Responses to Comments from California Department of Parks and Recreation  
Draft Parcel E-2 Remedial Investigation/Feasibility Study (RI/FS) Report, Hunters Point Shipyard (HPS), March 2007**

Comment #	Page #	Section	Comment	Response
<b>Comments provided by Stephen Bachman, dated July 5, 2007</b>				
1		General	In reviewing the Navy's Draft Wetlands Mitigation & Monitoring Plan (Metal Debris Reef & Metal Slag Areas Parcels E and E-2), staff recommends that the Navy review the State Park Foundation Yosemite Slough Restoration Plan. Actual plan sheets may be available for your review by contacting me. Since parcels E and E-2 are in close proximity to the Yosemite Slough project area, State Parks strongly encourages that Navy wetland design engineers review the Yosemite Slough design sheets. State Park staff may also be open to facilitating a meeting between Navy and State Park design teams to review plans, share design ideas, and to brainstorm ways in which the Navy's wetland site can meet its objectives while reflecting a design that provides ecological continuity between Yosemite Slough and the Navy's E and E-2 parcels.	The Navy will respond to this comment under separate cover in conjunction with the Draft Final Wetlands Mitigation and Monitoring Plan (WMMP). However, the remedial alternatives presented in the Parcel E-2 RI/FS Report will conform and be integrated with the WMMP.
2		General	Although Section 1.5 of the Navy Wetlands Mitigation and Monitoring Plan makes reference to the wetlands as occurring, "... in an area with known hazardous substances and therefore have diminished social or biological value", and furthermore states that, "...the assessed capability of these tidal wetlands to perform functions based on their physical, chemical, or biological characteristic is low", State Parks urges the Navy to look at restoration and remediation alternatives that provide the maximum optimal level of hazardous waste removal to maximize tidal wetland biological value. State Park staff encourages the Navy to explore and develop design options that provide a tidal wetland system that is physically, structurally, functionally, and chemically functional. To achieve this goal of providing a biologically significant system that is ecologically functional, State Park staff believes the Yosemite Slough restoration plans can provide the Navy with a sound design template. Also, if a similar design were to occur on the Navy E and E-2 sites and if the project could be implemented during Phase II Yosemite Slough construction scheduling, cost savings may be realized by the Navy.	The Navy will respond to this comment under separate cover in conjunction with the Draft Final WMMP.

**Table 6. Responses to Comments from California Department of Parks and Recreation (continued)  
Draft Parcel E-2 Remedial Investigation/Feasibility Study (RI/FS) Report, Hunters Point Shipyard (HPS), March 2007**

Comment #	Page #	Section	Comment	Response
<b>Comments provided by Stephen Bachman, dated July 5, 2007 (continued)</b>				
3		General	With regard to the Draft Remediation Investigation/Feasibility Study Report, State Park staff encourages the Navy to implement a blend of its identified remediation alternatives in such a way that places emphasis on full clean up of hazardous wastes from identified shoreline area "hot spots" that may in the future become prime high intensity public use areas. Full clean up within the shoreline areas seems to be the most viable alternative when considering human and environmental health and safety. The upland areas could include a mixture of retainment and capping on site to partial or full cleanup and removal of hazardous waste. Considering the extent and magnitude of public recreation that will occur within the shoreline and adjacent upland areas, State Park staff would strongly endorse plans that seek to remove underlying hazardous waste from proposed wetland and shoreline areas. While retainment of hazardous waste on site has been identified as a preferred alternative, State Park staff encourages the Navy to develop remediation plans that seek to remove identified hazardous waste hot spots, particularly from areas that will be within high public use areas (shoreline, wetlands and adjacent shoreline upland areas).	<p>The Navy will revise the RI/FS Report to evaluate expanded hot spot removal (particularly those in the Shoreline Area). Other potential hot spots will be evaluated based on their ability to enhance and expedite achieving the remedial action objectives (RAOs) (most notably, protecting aquatic organisms in the bay). The RAOs identified in Section 9 of the RI/FS Report address the future recreational use of Parcel E-2.</p> <p>The revised remedial alternative(s) will offer a combination of containment and removal along the shoreline. The containment portions of the alternatives will be evaluated for, among other factors, their long-term effectiveness in preventing unacceptable exposure to future humans and wildlife at the parcel.</p> <p>It should also be noted that the RI/FS Report does not identify a preferred alternative for Parcel E-2, but rather evaluates multiple alternatives relative to the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) criteria. After finalization of the RI/FS Report, the preferred alternative will be identified in the Proposed Plan, which will be subject to public review and comment.</p>
4		General	The Draft Remediation Investigation/Feasibility Study Report refers to the possibility of instituting land use controls to prevent human contact with contaminants in waste material, groundwater, landfill gas, etc. It is the hopes and wishes of State Parks that the Navy will realize the full potential of the shoreline and adjacent upland areas as prime areas for future human recreational access ( bay trail, picnic tables, viewing trailside benches, promenades, viewing platforms, piers, shoreline access, etc), and that these areas in particular should not carry restrictions preventing human access.	As noted in the response to comment 3 above, the RAOs identified in Section 9 of the RI/FS Report address the future recreational use of Parcel E-2. The remedial alternatives are designed to meet these RAOs by using a variety of general response actions, including removal, containment, and institutional actions. As discussed in Section 11.4 of the Draft RI/FS Report, institutional actions include institutional controls, engineering controls, and site monitoring. Institutional controls are legal and administrative mechanisms used to implement land use and access restrictions that are used to limit the exposure of future landowner(s) and user(s) of the property to hazardous substances and to maintain the integrity of the remedial action until remediation is complete and remediation goals have been achieved.



**Table 6. Responses to Comments from California Department of Parks and Recreation (continued)  
Draft Parcel E-2 Remedial Investigation/Feasibility Study (RI/FS) Report, Hunters Point Shipyard (HPS), March 2007**

Comment #	Page #	Section	Comment	Response
<b>Comments provided by Stephen Bachman, dated July 5, 2007 (continued)</b>				
4 <i>(cont.)</i>		General	In turn it is these shoreline and adjacent upland areas that should warrant full cleanup and removal of hazardous waste. State Parks operates Candlestick Point SRA and experience tells us on a daily basis that local citizens and park visitors cherish and expect shoreline access.	As noted in Section 12.1.1 of the Draft RI/FS Report, the only land use restrictions planned for Parcel E-2 (for both Alternatives 2 and 3) involve restricting land use to open space. This land use restriction is consistent with the planned reuse of Parcel E-2, as discussed in Section 1.8 of the Draft RI/FS Report. With the exception of maintaining security for the containment infrastructure and preventing damage to sensitive ecological areas, no access restrictions will be associated with the containment alternatives.
5		General	Other concerns include the longevity of the geomembrane cap as part of a retainment and cap on site alternative. This alternative fails to account for ground settling, rodent activity, seismic events, and deterioration over time as a function of age and/or contact with hazardous wastes. While this solution may be appropriate in some cases, State Parks recommends that the Navy explore means of developing a hybrid of the "cap" and retain on site and full removal of hazardous waste alternatives in a manner which protects the long term health of humans and the environment, while limiting the amount of future land use restrictions.	<p>The potential settlement of the containment features will be minimized by proper design and construction techniques, including proper grading and compaction of the subgrade material. The integrity of the engineered covers at Parcel E-2 will be inspected regularly for potential settlement and potential damage to the liner from burrowing animals. Maintenance actions would include prompt repair of any damage and use of an appropriate control device (such as the Molecontrol® device, which sends out sound waves to deter burrowing animals).</p> <p>The Geosynthetic Research Institute (GRI), based at Drexel University, is one of the leading groups researching geosynthetics, including high-density polyethylene (HDPE) geomembranes. The GRI has published a white paper ("GRI White Paper #6 on Geomembrane Lifetime Prediction: Unexposed and Exposed Conditions," June 7, 2005) addressing the life of geomembranes. The life of a geomembrane is dependent on several factors, with temperature probably being the most significant factor. The white paper presents predicted HDPE geomembrane half-lives (that is, the time when a 50 percent reduction in a specific design property is reached) based on varying temperatures. Assuming an average temperature of 25°C (77°F), the predicted half-life of a typical HDPE geomembrane is 270 years.</p> <p>The HDPE geomembrane proposed for the cap is typically used as the liner material for hazardous waste landfills. HDPE geomembranes have been shown to provide effective containment for a wide range of hazardous materials. The exposure conditions of the HDPE geomembrane cap proposed for the Parcel E-2 Landfill, which as noted in Section 8.2.1.1 is composed of primarily municipal-type waste and construction debris, will be far less severe than as a liner in a hazardous waste landfill.</p>

**Table 6. Responses to Comments from California Department of Parks and Recreation (continued)  
Draft Parcel E-2 Remedial Investigation/Feasibility Study (RI/FS) Report, Hunters Point Shipyard (HPS), March 2007**

Comment #	Page #	Section	Comment	Response
<b>Comments provided by Stephen Bachman, dated July 5, 2007 (continued)</b>				
6		General	Once restoration is complete, shoreline areas within the Yosemite Slough and Hunters Point areas will become prime locations for the much awaited "Bay Trail". In concept, this area could become one of the most popular recreational destination points in San Francisco Bay. State parks is confident, and very optimistic, that once redevelopment of the Hunters Point area is complete it will become a key destination point for millions of visitors to enjoy bay views, open space, picnicking, wildlife viewing, wind surfing, kayaking, hiking, biking, public events, environmental learning, and maybe even overnight camping!	The Navy met with the various stakeholders on August 28, 2007, to coordinate the wetlands mitigation approach for Parcel E-2 with the restoration efforts within Yosemite Slough. Input received during this meeting will be used in the development of wetlands mitigation designs for Parcel E-2. One point of coordination discussed during the meeting was the alignment of the Bay Trail, which will be a primary feature tying Parcel E-2 to the adjoining parcels and properties.
7		General	The recreational value of the shoreline area becomes critical when addressing the E and E-2 wetland restoration design. State Park staff strongly urges that Navy design teams meet with State Park design staff to look at design alternatives that promote a wetland restoration design that provides seamless ecological transition and continuity between Hunters Point and Yosemite Slough. The Navy's current wetland design falls somewhat short of this objective in that the extent of shoreline hardening with rip rap is rather extensive and the wetland itself is discontinuous with the bay. More specifically, State Parks is concerned about the extent of rip rap armoring the wetland area. In effect, the extent and magnitude of riprap isolates the wetland from the shoreline. A wetland design should be developed that provides direct continuity to the bay and to Yosemite Slough. While we understand the need to protect the shoreline from erosion during long duration high intensity storm events, we also believe a design can be developed which protects the shoreline while also providing additional wetland and tidal marsh habitat that has a more direct connectivity to the bay.	As discussed in the response to comment 6, the Navy met with the various stakeholders, including State Park staff, on August 28, 2007, to coordinate the wetlands mitigation approach for Parcel E-2 with the restoration efforts within Yosemite Slough.  The Navy design team has reviewed the Yosemite Slough design and is currently assessing design alternatives that would integrate, to the extent practical under Comprehensive Environmental Response, Compensation, and Liability Act and the NCP, the wetland development in the Panhandle Area with the Yosemite Slough project. The Draft Final RI/FS Report and Draft Final WMMP will be revised to reflect the updated wetlands design for Parcel E-2. It should also be noted that the wetlands design may be further refined in the remedial design, which will occur after the final remedy is selected in the Record of Decision (following the RI/FS and Proposed Plan).



**Table 6. Responses to Comments from California Department of Parks and Recreation (continued)**  
**Draft Parcel E-2 Remedial Investigation/Feasibility Study (RI/FS) Report, Hunters Point Shipyard (HPS), March 2007**

<b>Comment #</b>	<b>Page #</b>	<b>Section</b>	<b>Comment</b>	<b>Response</b>
<b>Comments provided by Stephen Bachman, dated July 5, 2007 (continued)</b>				
8		General	Although State Parks understands how limited resources and funding can influence project design, we urge the Navy to consider ways of possibly creating larger areas of shoreline wetlands including fore-bays, narrow slough inlets similar to the adjacent Yosemite Slough, backwater marshes, offshore break-waters, habitat islands, etc. Hazardous waste hot spots, if fully removed, could be incorporated into back-bay, fore-bay, and or inlet wetland design plans.	As discussed in the response to comment 7, the Navy is currently assessing design alternatives that would coordinate the wetland development in the Panhandle Area with the Yosemite Slough project.

**Table 7. Responses to Comments from Arc Ecology  
Draft Parcel E-2 Remedial Investigation/Feasibility Study (RI/FS) Report, Hunters Point Shipyard (HPS), March 2007**

<b>Comment #</b>	<b>Page #</b>	<b>Section</b>	<b>Comment</b>	<b>Response</b>
<b>Comments provided by Michael McGowan, Ph.D., dated July 19, 2007</b>				
1		General	The study is well organized with copious information provided in the tables, figures, appendices, and list of references that thoroughly document the results so far of the remedial investigation.	Comment noted.
2		General	According to the Executive Summary (ES-2.4), groundwater near the PCB hotspot was especially contaminated before the removal action but the well to monitor the groundwater here was removed for the removal action. When will there be information available to assess whether the removal action was successful and to determine the present state of contamination of the groundwater at this location?	Regular sampling of replacement monitoring wells in the vicinity of the Polychlorinated Biphenyl (PCB) Hot Spot Area was initiated in summer 2007. Available data from these wells (estimated to consist of one to two quarters) will be presented in the Draft Final RI/FS Report. In addition, the Draft Final RI/FS Report will incorporate information from a focused groundwater data gaps investigation performed along the Parcel E-2 shoreline, including locations in the vicinity of the PCB Hot Spot Area.
3		General	The feasibility study portion of the Draft RI/FS is weakened by the absence of the radiological addendum because, according to Table 6-7 in the Historical Radiological Assessment, 12 of 33 separate buildings or areas in Parcel E, which includes E-2, were not sampled until the 2002 Phase V Radiological Investigation. This is the information that is presumably to be contained in the radiological addendum to the RI/FS. It is difficult if not impossible to make an informed assessment of remedial alternatives without considering the radiological information because it is known that the landfill contains radiological material. Please include the Phase V radiological investigation information for Parcel E and E-2 in the next draft of the RI/FS.	<p>The Draft Radiological Addendum, which was submitted on September 14, 2007, discusses the available data from the Phase V radiological investigation at Parcel E-2. Regarding characterization of the waste present within the Parcel E-2 Landfill, the Navy analyzed the landfill in accordance with U.S. Environmental Protection Agency (EPA) guidance (EPA, 1991, 1993a, and 1996). The conclusions of this analysis are presented in Section 8.2.3. Key conclusions presented in this section include the following:</p> <ul style="list-style-type: none"> <li>▪ Based on the findings of the Historical Radiological Assessment (HRA) (Naval Sea Systems Command [NAVSEA], 2004), low-level radioactive wastes may be present in and around the Parcel E-2 Landfill.</li> <li>▪ According to EPA guidance, low-level radioactive wastes are considered “low-hazard military-specific wastes” and “generally are no more hazardous than some wastes found in municipal landfills” (EPA, 1996).</li> <li>▪ Additional characterization and treatment of hot spots is not warranted.</li> </ul> <p>Based on this analysis, the Navy concluded that the nature and extent of solid waste and chemicals in soil within the Parcel E-2 Landfill is adequately characterized to evaluate a focused set of remedial alternatives. The same set of remedial alternatives evaluated in the RI/FS Report was also evaluated in the radiological addendum. Changes to the remedial alternatives will be reflected in the draft final versions of both documents. The Navy will respond to comments regarding radiological characterization data as the radiological addendum progresses through the review and approval process.</p>

**Table 7. Responses to Comments from Arc Ecology (continued)**  
**Draft Parcel E-2 Remedial Investigation/Feasibility Study (RI/FS) Report, Hunters Point Shipyard (HPS), March 2007**

Comment #	Page #	Section	Comment	Response
<b>Comments provided by Michael McGowan, Ph.D., dated July 19, 2007 (continued)</b>				
4		General	The feasibility study only has three alternatives: no action, complete excavation and removal, and containment (cap and treat). There should be additional alternatives for consideration, especially some variations on the excavation alternative such as partial excavation of "hot spots" as was done for the time critical removal actions of the metal reef and metal slag areas. Please include additional alternative remedies beyond the three listed in the draft RI/FS.	The Navy will revise the RI/FS Report to evaluate expanded hot spot removal (particularly those in the Shoreline Area).
5		General	The comparative evaluation of alternatives appears to be skewed in favor of the containment alternative, almost as if the CERCLA Municipal Landfill presumptive remedy were being applied to the E-2 cleanup. However, according to Environmental Protection Agency Directive No. 9355.0-67FS (EPA/540/F-96/020) "if excavation of the landfill contents is being considered as an alternative, the presumptive remedy should not be used." Please clarify in the FS that a presumptive remedy is not being proposed, but instead containment is being considered as one of the possible remedies.	<p>The Navy has met with the Base Realignment and Closure Cleanup Team (BCT) to discuss the revisions for the Draft Final RI/FS Report that are needed to properly clarify the manner in which the containment presumptive remedy was evaluated for the Parcel E-2 Landfill. The Navy will revise the RI/FS Report to clarify the remedy evaluation process for Parcel E-2 as follows:</p> <ul style="list-style-type: none"> <li>▪ The containment presumptive remedy is being evaluated only for the Parcel E-2 Landfill (also referred to as the "Landfill Area").</li> <li>▪ Although EPA guidance for military landfills (EPA, 1996) advises that the presumptive remedy should not be used where excavation is considered, the Navy believes that, based on site-specific considerations, excavation should also be evaluated in order to address community concerns although this goes beyond the requirements of the presumptive remedy policy.</li> <li>▪ This approach is consistent with EPA's directive titled "Presumptive Remedies: Policy and Procedures (pp. 1-2, EPA, 1993b), which states that "there may be unusual circumstances (such as, complex contaminant mixtures, soil conditions, or extraordinary State and community concerns) that may require the site manager to look beyond the presumptive remedies for additional (perhaps more innovative) technologies or remedial approaches." In addition, this approach was applied in the Remedial Action Plan/Record of Decision prepared for the landfill within Investigation Area H1 at the former Mare Island Naval Shipyard (Weston Solutions, Inc, 2006).</li> <li>▪ The Navy did not apply or rely upon the presumptive remedy guidance for the areas adjacent to the Landfill Area (e.g., the Panhandle Area, East Adjacent Area, and Shoreline Area).</li> </ul>

**Table 7. Responses to Comments from Arc Ecology (continued)**  
**Draft Parcel E-2 Remedial Investigation/Feasibility Study (RI/FS) Report, Hunters Point Shipyard (HPS), March 2007**

Comment #	Page #	Section	Comment	Response
<b>Comments provided by Michael McGowan, Ph.D., dated July 19, 2007 (continued)</b>				
5 (cont.)		General	(see above)	<ul style="list-style-type: none"> <li>The remedial alternatives developed for the Panhandle Area, East Adjacent Area, and Shoreline Area were focused on containment and excavation; however, the Navy will revise the RI/FS Report to evaluate expanded hot spot removal (particularly those in the Shoreline Area). This approach is consistent with the streamlining approach outlined in pages 8704-8705 of the 1990 National Oil and Hazardous Substances Pollution Contingency Plan (NCP) Preamble (55 Federal Register, 8704-8705, March 8, 1990) and on page 4-8 in Section 4.1.3.1 of the "Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA [Comprehensive Environmental Response, Compensation, and Liability Act," Office of Solid Waste and Emergency Response Directive 9355.3-01, October (EPA, 1988).</li> </ul> <p>The Navy believes that the remedy evaluation for the Landfill Area accurately reflects the performance of the excavation and containment alternatives relative to the NCP evaluation criteria. The Navy's conclusion that excavation of the Landfill Area does not perform as well as containment is consistent with the conclusions of numerous CERCLA FSs for landfill sites. It is this body of evidence, as documented in EPA guidance titled "Feasibility Study Analysis for CERCLA Municipal Landfill Sites" (OSWER Directive 9356.0-03, EPA/540/R-94/081, August 1994), that forms the basis of the containment presumption.</p> <p>The Navy's decision to fully evaluate the excavation alternative for the Landfill Area to support the community's review of potential remedial alternatives for Parcel E-2 does not invalidate the technical factors that are used to compare excavation and containment alternatives.</p>
6		General	According to EPA guidance on land use with regard to remedy selection, the Base Realignment and Closure Team should work closely with the local reuse group responsible for developing the reuse alternatives for the site after cleanup. Although existing San Francisco Redevelopment Agency plans call for the area of Parcel E-2 to be open space, a voter referendum in San Francisco (Proposition P) called for Hunters Point Shipyard to be cleaned up to the highest possible level. This could be interpreted as to residential standards, not just "open space."	Consistent with the Base Realignment and Closure Act of 1990, the planned reuse is coordinated by the local redevelopment authority, which for HPS is the San Francisco Redevelopment Agency (SFRA). The SFRA's planned reuse for HPS is outlined in the redevelopment plan, which was published in 1997 following approval by the City and County of San Francisco. The Navy works closely with the City and County of San Francisco to implement the cleanup program at HPS, and these efforts include their review of and consultation on the Parcel E-2 RI/FS (see responses to comments from the San Francisco Department of Public Health).

**Table 7. Responses to Comments from Arc Ecology (continued)**  
**Draft Parcel E-2 Remedial Investigation/Feasibility Study (RI/FS) Report, Hunters Point Shipyard (HPS), March 2007**

Comment #	Page #	Section	Comment	Response
<b>Comments provided by Michael McGowan, Ph.D., dated July 19, 2007 (continued)</b>				
6 (cont.)			Community acceptance is one of the criteria to be considered in alternative selection so please explicitly discuss how the Navy has worked with the appropriate group(s) to plan reuse, and the relevance and applicability of the Proposition P voter referendum to the appropriate level of cleanup for Parcel E-2.	The Navy acknowledges its obligation under the CERCLA process to seek community acceptance of remedial alternatives and has solicited community input on the RI/FS to satisfy this obligation. As discussed in Section 13 of the RI/FS Report, community acceptance will be addressed in the Record of Decision following comment on the RI/FS Report and Proposed Plan. Also, the Navy understands that Proposition P reflects valuable community input on the planned reuses of the shipyard. However as stated above, the environmental cleanup program at HPS is performed based on the planned reuse outlined in the Hunters Point Shipyard Redevelopment Plan (SFRA, 1997).
7		General	In the comparative evaluation of alternatives, the cost of the excavation alternative appears to greatly exceed the cost of the containment alternative. However, no information is presented about how long the cap will be effective or how much periodic replacement will cost. Landfill closures typically use 30 years as the lifetime, but at least three to four times this long should be used for residential and open space planning for HPS. Please adjust the cost comparisons to accommodate at least a 100-year time horizon and the 100-year costs for each alternative.	<p>The Geosynthetic Research Institute (GRI), based at Drexel University, is one of the leading groups researching geosynthetics, including high-density polyethylene (HDPE) geomembranes. The GRI has published a white paper ("GRI White Paper #6 on Geomembrane Lifetime Prediction: Unexposed and Exposed Conditions," June 7, 2005) addressing the life of geomembranes. The life of a geomembrane is dependent on several factors, with temperature probably being the most significant factor. The white paper presents predicted HDPE geomembrane half-lives (that is, the time when a 50 percent reduction in a specific design property is reached) based on varying temperatures. Assuming an average temperature of 25°C (77°F), the predicted half-life of a typical HDPE geomembrane is 270 years.</p> <p>Section 10 of the RI/FS Report identifies several requirements pertinent to the question of post-closure duration:</p> <ul style="list-style-type: none"> <li>▪ Post-closure Water Entry: Title 22 of the California Code of Regulations (CCR) Section (§) 66264.310(a)(1). This section requires that the final cover be designed to prevent the downward entry of water into the closed landfill throughout a period of at least 100 years.</li> <li>▪ Post-closure care period: 27 CCR, § 20950(a). This section requires that the post-closure maintenance period shall extend as long as the wastes pose a threat to water quality.</li> <li>▪ Post-closure Maintenance: 27 CCR § 21180(a). This section requires post-closure maintenance and monitoring of the landfill for no less than 30 years following closure.</li> </ul> <p>Based on the information presented in the GRI White Paper, the predicted half-life of a HDPE geomembrane (270 years) well exceeds the established duration for preventing downward entry of water into the closed landfill.</p>

**Table 7. Responses to Comments from Arc Ecology (continued)**  
**Draft Parcel E-2 Remedial Investigation/Feasibility Study (RI/FS) Report, Hunters Point Shipyard (HPS), March 2007**

Comment #	Page #	Section	Comment	Response
<b>Comments provided by Michael McGowan, Ph.D., dated July 19, 2007 (continued)</b>				
7 (cont.)		General (see above)		<p>The 30-year post-closure maintenance period is assumed only for cost estimating purposes in the RI/FS Report. Per 27 CCR § 20950(a), the Navy will maintain and monitor the remedy for as long as the wastes pose a threat to water quality. In the absence of site-specific modeling to predict the reductions in groundwater chemical concentrations over time, the Navy analyzed the sensitivity of the cost estimate against varying lengths of the postclosure maintenance period. The results of the sensitivity analysis (for Alternative 3A and 3B) are presented in the attached Exhibit A and show that extending postclosure maintenance period beyond 30 years does not substantially change the calculated present values for Alternatives 3A or 3B. As shown in Exhibit A, the percent differences between a 30-year and 120-year postclosure maintenance period are less than 14 percent, or well within the accuracy prescribed in EPA guidance for FS cost estimates (+50/-30 percent) (EPA, 2000). This conclusion can be explained by the present value analysis used in the cost estimate. As explained in EPA guidance: "This standard methodology allows for cost comparisons of different remedial alternatives on the basis of a single cost figure for each alternative. This single number, referred to as the present value, is the amount needed to be set aside at the initial point in time (base year) to assure that funds will be available in the future as they are needed, assuming certain economic conditions" (EPA, 2000). The nondiscounted amount, which is also shown on Exhibit A, demonstrates the effect of a discount rate on the total present value cost and the relative amount of future expenditures. As described in Appendix R of the Draft RI/FS Report, the present value cost analysis (using a discount rate of 3 percent) is consistent with the NCP, other federal guidelines (from the Office and Management and Budget), and EPA guidance for FS cost estimates. The Navy believes that a 30-year postclosure maintenance period is a reasonable basis to evaluate the remedial alternatives in accordance with the NCP and EPA guidance based on (1) the results of this sensitivity analysis, (2) the prescribed accuracy for FS cost estimates (+50/-30 percent), and (3) the absence of data to predict how long wastes will pose a threat to water quality.</p>

**Table 7. Responses to Comments from Arc Ecology (continued)**  
**Draft Parcel E-2 Remedial Investigation/Feasibility Study (RI/FS) Report, Hunters Point Shipyard (HPS), March 2007**

Comment #	Page #	Section	Comment	Response
<b>Comments provided by Michael McGowan, Ph.D., dated July 19, 2007 (continued)</b>				
8		General	The excavation alternative was rated less implementable than the containment because of the amount of material needing to be excavated. The volume of the landfill is approximately 461,000 cubic yards (22 acres x 13 feet deep on average). This is a substantial amount of material but at least 44,500 cubic yards were excavated and disposed of in the PCB hotspot TCRA, and other large quantities of soil and debris have also been taken care of at HPS. In this context the amount of material in the entire landfill does not seem so large as to pose an infeasible problem, especially when it should be acknowledged that a lot of dirt and other material would have to be moved and processed to prepare and groom a cap and cover under the containment alternative. Please list the amounts of material that would be moved around in preparing for a containment remedy and to make it possible to see that the excavation alternative is implementable and perhaps equally implementable as the containment alternative.	As stated in Section 8.2.1.5, the estimated volume of solid waste within the landfill is 473,000 cubic yards. This estimate includes the soil fill within the solid waste, but excludes the overlying soil volume. The estimated excavation volume of 1,008,250 cubic yards, presented in Section 12.2.2.4, includes the above-referenced solid waste volume (473,000 cubic yards), the volume of overlying soil cover (393,500 cubic yards), and the volume of the soil below the solid waste that would be removed to support "clean closure" of the waste disposal unit (141,750 cubic yards). This total volume is not comparable with the volume of material removed under any past removal or remedial actions at HPS, nor is it comparable with the volume of material needed to be moved as part of the containment alternative (93,000 cubic yards – as discussed in Section 12.2.3.2 of the RI/FS Report).
9		General	Historically the Parcel E-2 Landfill was not dry land or a pit excavated for a landfill but was, in fact, part of San Francisco Bay. A reasonable alternative to capping and retaining this toxic fill would be to excavate it and to restore the small bay and aquatic habitat that have been destroyed by the landfill. This would reduce the cost of excavation and fill by deleting the fill portion, and could potentially be used to mitigate other impacts to wetlands, waters, or other aquatic habitats on or adjacent to HPS. Please develop and evaluate an alternative remedy that excavates the landfill and restores the site as much as possible to its historic state as part of San Francisco Bay.	Consistent with the applicable or relevant and appropriate requirements (ARARs) identified for the Parcel E-2 remedial action, the Navy plans to restore existing wetlands along the Panhandle and Shoreline Areas that will be damaged as part of implementing the Parcel E-2 remedial action. Modification of the excavation alternative to evaluate wetlands restoration throughout the entire Landfill Area will not be performed because (1) although the estimated \$8.2 million in backfilling costs would be substantially reduced, such changes would not significantly affect the overall cost of the excavation alternative (\$330 million) beyond the required accuracy required by EPA RI/FS guidance (+50/-30 percent) (EPA, 1988); and (2) such a large-scale expansion of the planned wetlands restoration is not required by the remedial action objectives (RAOs), ARARs, or planned reuse, which guide the CERCLA remedy evaluation process.
10		General	Excavation and restoration of the landfill area to be part of San Francisco Bay could have a beneficial impact on water quality of groundwater and surface water reaching the bay., especially if a treatment wetland were included as part of the restoration. Please consider the water quality benefits and relative costs to obtain them of such an alternative compared with those of a containment alternative.	Please see the response to comment 9 above regarding restoration of the Parcel E-2 Landfill as aquatic habitat. The Navy plans to restore existing wetlands along the Panhandle and Shoreline Areas that will be damaged as part of implementing the Parcel E-2 remedial action. The wetlands restoration efforts for Parcel E-2 are being coordinated with various stakeholders.

**Table 7. Responses to Comments from Arc Ecology (continued)**  
**Draft Parcel E-2 Remedial Investigation/Feasibility Study (RI/FS) Report, Hunters Point Shipyard (HPS), March 2007**

Comment #	Page #	Section	Comment	Response
<b>Comments provided by Michael McGowan, Ph.D., dated July 19, 2007 (continued)</b>				
11		General	The San Francisco Bay Conservation and Development Commission recently prepared a report on the impacts to the SF Bay shoreline of potential sea level rise. They mapped a 1-meter rise by the year 2100 as an example. This inundated part of Parcels E and E-2. Moreover, with rising sea levels the frequency of 100-year floods increases so they are more like 5-10 year floods. Please include the projected effects of sea level rise over at least 100 years due to global warming in the plans and costs of remedial alternatives for Parcel E-2.	The Navy wishes to clarify that, as shown on Figures 12-4 and 12-5, the top of the revetment structure is anticipated to be approximately 14 to 15 feet above mean sea level, or about 11 to 12 feet above the mean high tide level. This design provides an adequate level of shoreline protection, which based on the most recent estimates from the Intergovernmental Panel on Climate Change (IPCC) can reasonably accommodate rising sea levels over the next 100 years. The following excerpt from Church et al. (2008) summarizes the most recent IPCC estimates of global sea level rise: "The IPCC provides the most authoritative information on projected sea-level change. The IPCC Third Assessment Report of 2001 (Church et al. 2001) projected a global-averaged sea-level rise of between 20 and 70 centimeters (cm) between 1990 and 2100 using the full range of IPCC greenhouse gas scenarios and a range of climate models. When an additional uncertainty for land-ice changes was included, the full range of projected sea-level rise was 9-88 cm. For the IPCC's Fourth Assessment Report (Meehl et al. 2007), the range of sea-level projections, using a larger range of models, is 18-59 cm (90% confidence limits) over the period from 1980-1999 to 2090-2099 (Meehl et al. 2007)." Based on the 2007 IPCC estimate, the estimated sea level rise in 2099 (18 to 59 cm or 0.6 to 1.9 feet) is much lower than the 11 to 12 vertical feet of shoreline protection provided in the preliminary FS design. The revetment structure will be further evaluated in the remedial design relative to several factors including, but not limited to, potential rise in sea level.

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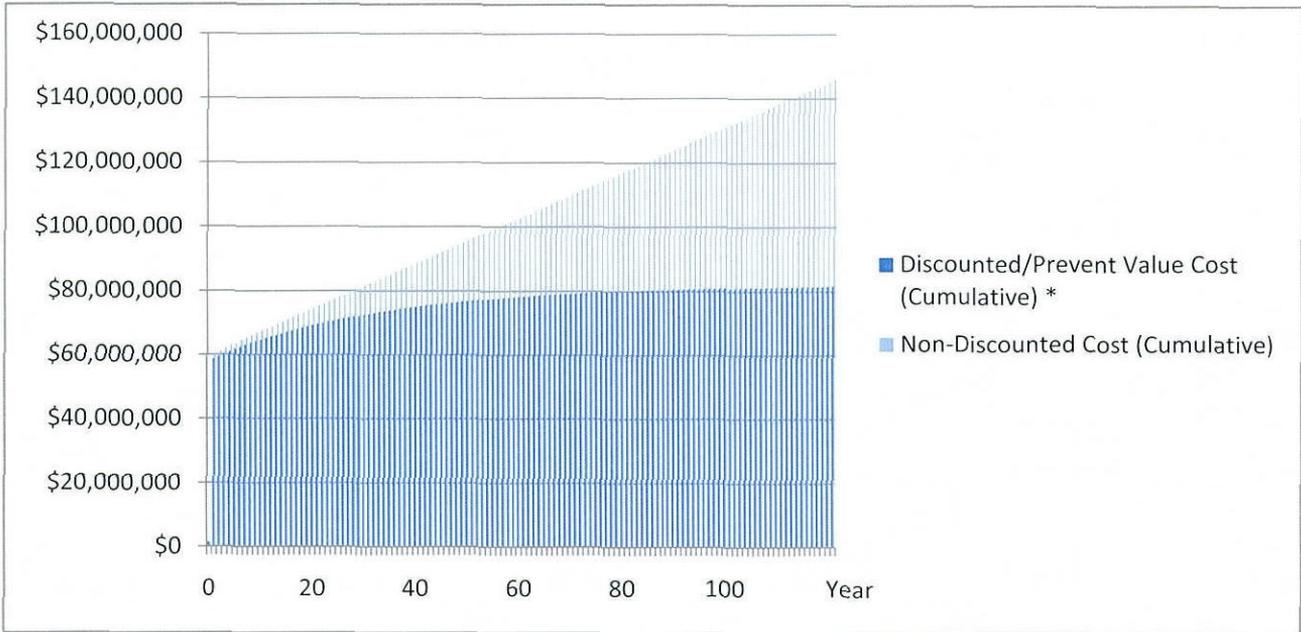
Weston Solutions, Inc. 2006. Final Draft Remedial Action Plan/Record of Decision RCRA Closure Plan. Investigation Area H1, Mare Island, Vallejo, California. May.

**EXHIBIT A - SENSITIVITY ANALYSIS FOR ALTERNATIVE 3 COST ESTIMATE**

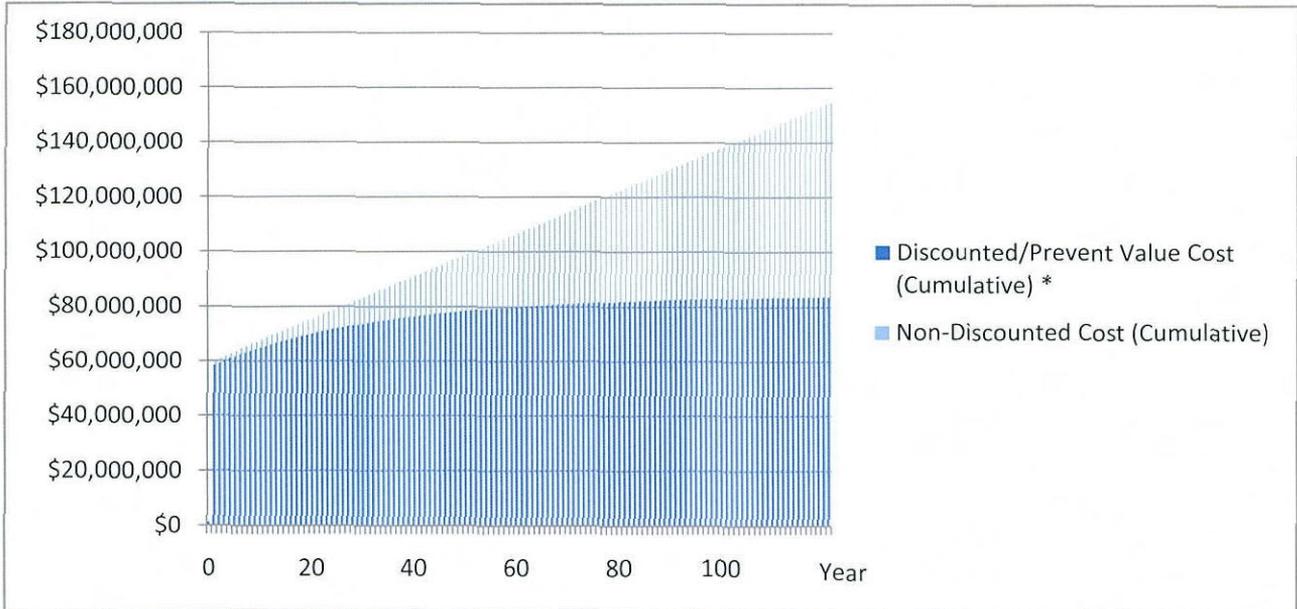
Years of O&M	Cumulative Present Value Cost Differential (Relative to 30 years of O&M)*			
	Alternative 3A (\$)	Alternative 3A (%)	Alternative 3B (\$)	Alternative 3B (%)
30	\$0	0.0%	\$0	0.0%
50	\$4,211,077	5.8%	\$4,660,957	6.3%
70	\$6,542,648	9.0%	\$7,241,616	9.8%
90	\$7,833,582	10.8%	\$8,670,464	11.7%
100	\$8,243,399	11.3%	\$9,124,063	12.3%
120	\$8,775,247	12.1%	\$9,712,729	13.1%

\* 3 percent discount rate used to estimate present value (per OMB Circular A-94)

**Cumulative Costs for Alternative 3A (With and Without Discount Rate)**



**Cumulative Costs for Alternative 3B (With and Without Discount Rate)**



**Table 8. Responses to Comments from the Community First Coalition (CFC) and Technical Assistance Grant (TAG) Reviewers  
Draft Parcel E-2 Remedial Investigation/Feasibility Study (RI/FS) Report, Hunters Point Shipyard (HPS), March 2007**

Comment #	Page #	Section	Comment	Response
<b>Comments provided by Dr. Raymond Tompkins, dated July 23, 2007</b>				
1		General	Community members and CFC feel, as do 86.5% of the voters in San Francisco feel, EXCAVATION/REMOVAL should be the remediation options for this superfund site. The, CFC Board members would like to thank our Technical Advisory Team of Dr. Peter Palmer and Gregg Grist for looking at alternative options to bridge the gap between cap/monitor and excavation.	The Department of the Navy (Navy) acknowledges and appreciates this feedback from the CFC. The Navy wishes to clarify that the remediation options for Parcel E-2 are not being selected at this stage in the process. The RI/FS Report evaluates remedial alternatives and is the first opportunity for the community to provide input on the remediation options for Parcel E-2. The community will have additional opportunities to provide input in the next version (draft final) of the report and the next stage of the process (the Proposed Plan). The Navy will revise the RI/FS Report to evaluate expanded hot spot removal (particularly those in the Shoreline Area).
2		General	CFC Board members believe as the TAG team has stated in their report "The Navy's presentation and arguments at the April RAB meeting to support their preliminary conclusion for a cap/monitor/treat option were based on a comparison of the Hunters Point Naval Shipyard (HPNS) to municipal and military landfills and presupposition of the applicability of the EPA's presumptive remedy. The E-2 landfill is known to contain radioactive wastes, PCBs, VOCs, and heavy metals. These are not municipal waste but industrial wastes and hence the applicability of the presumptive remedy to Parcel E-2 is inappropriate.	<p>The Navy agrees that community concerns warrant analysis of additional remedial alternatives, specifically excavation of the Parcel E-2 Landfill (also referred to as the "Landfill Area"). However, the Navy disagrees with the statement that the nature of the landfill waste invalidates the Navy's evaluation of the presumptive remedy. The Navy prepared and included a detailed analysis of the Landfill Area (exclusive of the Panhandle, Shoreline, and East Adjacent Areas) in Section 8.2.3 of the Draft RI/FS Report to evaluate the Landfill Area in accordance with U.S. Environmental Protection Agency's (EPA) presumptive remedy guidance for military landfills (EPA, 1996). The Navy concluded that the Landfill Area met the requirements for a presumptive remedy set forth in that guidance.</p> <p>Regarding the types of waste present within the Landfill Area, the Navy analyzed the landfill in accordance with EPA guidance (EPA, 1991, 1993a, and 1996). The conclusions of this analysis are presented in Section 8.2.3, including the following key:</p> <ul style="list-style-type: none"> <li>▪ Waste within the Landfill Area meets the municipal-type waste definition (as outlined in EPA's [1996] guidance) based on five lines of evidence: (1) risks are low level (except for potential hot spots); (2) treatment is impractical due to the volume and heterogeneity of the waste; (3) waste types include household, commercial, nonhazardous sludge, and industrial solid waste; (4) lesser quantities of hazardous wastes are present as compared with municipal wastes; and (5) land application units, surface impoundments, injection wells, and waste piles are not included.</li> </ul>

**Table 8. Responses to Comments from the Community First Coalition (CFC) and Technical Assistance Grant (TAG) Reviewers (continued)  
Draft Parcel E-2 Remedial Investigation/Feasibility Study (RI/FS) Report, Hunters Point Shipyard (HPS), March 2007**

Comment #	Page #	Section	Comment	Response
<b>Comments provided by Dr. Raymond Tompkins, dated July 23, 2007 (continued)</b>				
2 (cont.)		General (see above)		<ul style="list-style-type: none"> <li>▪ Based on the findings of the Historical Radiological Assessment (Naval Sea Systems Command, 2004), low-level radioactive wastes may be present in and around the Landfill Area.</li> <li>▪ According to EPA guidance, low-level radioactive wastes are considered “low-hazard military-specific wastes” and “generally are no more hazardous than some wastes found in municipal landfills” (EPA, 1996).</li> </ul>

**Table 8. Responses to Comments from the Community First Coalition (CFC) and Technical Assistance Grant (TAG) Reviewers (continued)  
Draft Parcel E-2 Remedial Investigation/Feasibility Study (RI/FS) Report, Hunters Point Shipyard (HPS), March 2007**

<b>Comment #</b>	<b>Page #</b>	<b>Section</b>	<b>Comment</b>	<b>Response</b>
<b>Comments provided by Dr. Raymond Tompkins, dated July 23, 2007 (continued)</b>				
3		General	The CFC Board members urge the Navy to avoid the application of the presumptive remedy to Parcel E-2 and provide one or more "hybrid" remedial options that include several alternatives that bridge the gap between cap/monitor/treat and excavation/removal in the current draft RI/FS.	The Navy will revise the RI/FS Report to evaluate expanded hot spot removal (particularly those in the Shoreline Area).
<b>Comments provided by Peter Palmer, Ph.D. and Gregg Grist, M.S., dated July 23, 2007</b>				
4		General	<p>The Navy's 11,000 plus page draft RI/FS is well organized, provides a valuable historical and chronological overview of various remediation studies on this sites, and numerous figures, tables, and appendices. We commend the authors for what has been a tremendous amount of work, representing the efforts of many different Navy staff and contractors and the expenditure of a significant amount of taxpayer dollars over several decades on this parcel.</p> <p>That being said, we recognize that this is a "work in progress", the current understanding of the site is incomplete (i.e., groundwater, landfill gases, and radiological monitoring is still in progress), and that it may be several years before the final RI/FS is completed. This Superfund site, its location within the city limits of a major urban environment, the many different types of contaminants which are present, the two subsurface aquifers flowing through the landfill, and its proximity to the San Francisco Bay present significant and complex challenges. We hope that the Navy, through input from various regulators and the community, can devise with a solution that minimizes risk to San Francisco residents and the Bay.</p>	The Navy acknowledges and appreciates this feedback from the TAG reviewers.

**Table 8. Responses to Comments from the Community First Coalition (CFC) and Technical Assistance Grant (TAG) Reviewers (continued)  
Draft Parcel E-2 Remedial Investigation/Feasibility Study (RI/FS) Report, Hunters Point Shipyard (HPS), March 2007**

Comment #	Page #	Section	Comment	Response
<b>Comments provided by Peter Palmer, Ph.D. and Gregg Grist, M.S., dated July 23, 2007 (continued)</b>				
4 (cont.)		General	Our comments are provided in a numbered list on the following pages, in relative order of importance. We understand that the Navy is not obligated to solicit public comment at this stage in the process, and appreciate the opportunity to provide our comments at this time. While we realize that this document will go through several more revisions, we hope that the Navy will consider these as suggestions in the spirit in which they were made, which is to provide the public with more complete documentation on this parcel and a defensible justification as to the final disposition of this site.	(see above)
5		General	The Navy's presentations and arguments at the April RAB meeting to support their preliminary conclusion for a cap/monitor/treat option were based on a comparison of the Hunters Point Naval Shipyard (HPNS) to municipal and military landfills and presupposition of the applicability of the EPA's presumptive remedy. The E-2 landfill is known to contain radioactive wastes, PCBs, VOCs, and heavy metals. These are not municipal wastes but industrial wastes, and hence the applicability of the presumptive remedy to Parcel E-2 is inappropriate. Moreover, the draft RI/FS only presents only two remediation options (cap/monitor/treat and excavation/removal). These are far too few remedial options for a site this complex (in fact, the Navy's draft final RI/FS for Parcel F includes <i>eight</i> different remedial options). <b>The Navy is urged to avoid the application of the presumptive remedy to Parcel E-2 and provide one or more "hybrid" remedial options that include several alternatives that bridge the gap between cap/monitor/treat and excavation/removal in the current draft RI/FS.</b>	Please see the responses to comments 2 and 3 above (from Dr. Raymond Tompkins).

**Table 8. Responses to Comments from the Community First Coalition (CFC) and Technical Assistance Grant (TAG) Reviewers (continued)  
Draft Parcel E-2 Remedial Investigation/Feasibility Study (RI/FS) Report, Hunters Point Shipyard (HPS), March 2007**

Comment #	Page #	Section	Comment	Response
<b>Comments provided by Peter Palmer, Ph.D. and Gregg Grist, M.S., dated July 23, 2007 (continued)</b>				
6		General	<p>The RI/FS does not include the most current radiological data. This is of great concern given that historical and anecdotal information indicates significant radiological contamination within the landfill, and the potential for both human and environmental exposure to these contaminants. <i>"The HRA (Historical Radiological Assessment) identified numerous locations within Parcel E-2 as "radiologically impacted", including ... the majority of Parcel E-2, the ship shielding area..., and the Parcel E-2 shoreline"</i> (Source: E-2 RI/FS, page 3-15). <i>"The HRA also indicated that the landfill was a potential disposal area for: 1) wastes from decontamination of ships used in atomic testing; 2) building debris from demolition of radiologically impacted buildings used by the NRDL; and 3) materials used in radiological experiments by NRDL"</i> (Source: E-2 RI/FS, page 4-11). <i>"Several areas with elevated levels of radioactivity were reported. The HRA recommended further characterization, followed by remediation and a final status survey"</i> (Source: E-2 RI/FS, page 3-17). Given that the radiological addendum to this draft RI/FS has not been provided, its release has been postponed numerous times (and is currently scheduled for release after the draft final RI/FS), any conclusions on how to remediate this site are premature. <b>The Navy is urged to provide the radiological addendum before issuing the draft final RI/FS so that any conclusions as to the best remediation option is based on a publicly available document that provides current data and the best available information as to the radiological contamination contained within this landfill.</b></p>	<p>The Draft Radiological Addendum, which was submitted on September 14, 2007, discusses the available radiological data for Parcel E-2.</p>

**Table 8. Responses to Comments from the Community First Coalition (CFC) and Technical Assistance Grant (TAG) Reviewers (continued)  
Draft Parcel E-2 Remedial Investigation/Feasibility Study (RI/FS) Report, Hunters Point Shipyard (HPS), March 2007**

Comment #	Page #	Section	Comment	Response
<b>Comments provided by Peter Palmer, Ph.D. and Gregg Grist, M.S., dated July 23, 2007 (continued)</b>				
7		General	The RI/FS includes a tremendous amount of data on specific environmental contaminants, and in particular data on a wide variety of chemicals of concern in groundwater and soil gas. Many of the concentrations are reported to more than 3 and in some cases as many as seven significant figures in the tables and appendices. Such presentation of data is incorrect and provides misleading representation of the uncertainty of the measurements. Additionally, while the RI/FS briefly discusses some of the trends in the data in the body of the text, the data in the tables and appendices are presented in tabular format which makes it difficult to review visually inspect and identify trends in the data. <b>The Navy is urged to round these data to the first uncertain digit as per standard EPA practice, and provide figures which plot trends in contaminant concentrations as a function of time to provide a better visual representation of groundwater and soil gas data (i.e., bar graphs).</b>	The RI/FS presents data, collected by various Navy contractors, which has been previously published in various reports and technical memoranda. Section 3 briefly summarizes past investigations at Parcel E-2, and Section 15 provides a detailed list of the pertinent documents. These previous documents specify the quality control and quality assurance methods used to ensure that the data meet or exceed EPA standards and guidance. It is beyond the scope of this RI/FS to resummairize this previously published documentation. However, the previously published documents are available for public review in the local information repositories (San Francisco main library and the Anna E. Waden branch library).  Given the large volume of data evaluated in the RI/FS, it is not practical to present additional visual representations of the data. The Navy's environmental data at HPS is available in an online, GIS-enabled format. For additional information on using this resource, please contact Melanie Kito (HPS Lead Remedial Project Manager).
8		General	The RI/FS indicates release of chlorine gas cylinder from the landfill area during construction of the sheet pile wall. <i>"An obstruction was encountered at a depth of 40 feet bgs, accompanied by a release of pressurized gas that escaped to the surface... Sporadic detections of ... chlorine gas above 5 ppm were encountered. Approximately 80 feet of the sheet pile wall (as originally designed) was re-aligned in order to avoid the subsurface obstructions"</i> (Source: E-2 RI/FS, page 3-9). It should be noted that chlorine gas is highly toxic and has been used as a chemical warfare agent in the past. While it is understood the Draeger tubes used to perform the chlorine gas monitoring can provide false positives and does not provide accurate quantitative data, this information raises a number of questions that are not addressed in this portion of the document. The fact that the sheet pile wall was moved and no further mention was made as to the identity of the obstructions and source of the gas release is disturbing and further investigation seems warranted.	The RI/FS presented the available information on the subsurface obstruction encountered during installation of the sheet-pile wall based on information presented in Section 2.2.1 of the report titled "Final Post-Construction Report, Site 1/21 Industrial Landfill Groundwater Extraction System/Containment Barrier, Hunters Point Naval Shipyard, San Francisco, California" (International Technology Corporation, 1999).  In July 2007, the Navy published the construction completion report for the removal action at the PCB Hot Spot Area (Tetra Tech EC, Inc., 2007a). This report, which is available for public review in the local information repositories, noted the following information that is pertinent to the subsurface obstructions encountered (in 1997) during installation of the sheet-pile wall:  ▪ Excavation depths in the vicinity of the obstruction (near the interface of grid cells 81 and 82) ranged from 9 to 15 feet below ground surface (bgs); the obstruction was encountered in 1997 at an approximate depth of 20 feet bgs.



**Table 8. Responses to Comments from the Community First Coalition (CFC) and Technical Assistance Grant (TAG) Reviewers (continued)  
Draft Parcel E-2 Remedial Investigation/Feasibility Study (RI/FS) Report, Hunters Point Shipyard (HPS), March 2007**

Comment #	Page #	Section	Comment	Response
<b>Comments provided by Peter Palmer, Ph.D. and Gregg Grist, M.S., dated July 23, 2007 (continued)</b>				
8 (cont.)			<p>The use of ground penetrating radar (GPR) is a common, technically viable, and cost effective means for identifying buried waste drums and providing very detailed visual information on buried objects (i.e., <a href="http://www.geomodel.com/">http://www.geomodel.com/</a>, <a href="http://www.epa.gov/tio/-search">http://www.epa.gov/tio/-search</a> for GPR, <a href="http://www.springerlink.com/content/tn83tr545uvce1c4/">http://www.springerlink.com/content/tn83tr545uvce1c4/</a>, <a href="http://info.ngwa.org/GWOL/pdf/900152827.pdf">http://info.ngwa.org/GWOL/pdf/900152827.pdf</a>). The Navy is urged to provide additional information as to why would chlorine gas be present in a landfill (is there historical evidence of the use of this gas on site in the past?), what was the time lag between release of the pressurized gas and chlorine gas monitoring, could this detection be due to the burial and rupture of a chlorine gas cylinder, and should not the Navy consider the use of GPR to provide visual data as to the identity/shape/size of the obstructions and confirm whether or not this could be due to the presence of gas cylinder(s) in the landfill. It was somewhat surprising to note that the draft RI/FS did not include any mention as to whether or not GPR was used to screen the contents of the landfill. Given community concerns about the contents of this landfill and evidence that waste drums have been found in the PCB hotspot and other parts of Parcel E-2, the Navy is urged to consider the use of GPR to provide a more thorough survey of the landfill and attempt to identify its contents including any buried waste drums.</p>	<ul style="list-style-type: none"> <li>▪ In response to the buried drums encountered approximately 100 feet southeast of the obstruction, the Navy performed a geophysical survey throughout the PCB Hot Spot Area.</li> <li>▪ The geophysical survey noted metal deposits at numerous locations throughout the PCB Hot Spot Area, including at grid cells 81 and 82. The presence of metal debris was confirmed visually during excavation performed at select locations (which are not specified in the draft report).</li> </ul> <p>The discovery of metal debris throughout the PCB Hot Spot Area is not unexpected given the fill history at Parcel E-2, which includes frequent observation of metal debris in past soil borings and test pits. In addition, a variety of metal debris was encountered during excavation activities at the PCB Hot Spot Area. This debris consisted of 550 cubic yards of metal debris (wire, miscellaneous scrap, etc.), 110 drums, and 25 compressed gas cylinders. The gas cylinders were inspected, verified to be empty and inert, and disposed of as trash.</p> <p>As discussed in Section 8.2.3.1, no anecdotal information, documentation, or physical evidence are available that "high-hazard" military-specific wastes, which include chemical warfare agents, artillery, bombs, and other military chemicals, were ever used at HPS. Further, the shipyard's primary mission of fleet repair and maintenance did not include weapons storage.</p> <p>Based on the information summarized above, the Navy believes that adequate investigation has been performed to assess the types of metal debris in and around the PCB Hot Spot Area, which includes the area where the subsurface obstruction was encountered in 1997.</p>
9		General	<p>The RI/FS includes data indicating successful removal of a large amount of PCB contaminated soil in the PCB hot spot area. Nevertheless, PCBs have been detected at high levels in both groundwater samples and soil samples within the other portions of Parcel E-2. "Concentrations of PCBs exceeded the evaluation criteria in A-aquifer wells located near the sheet pile wall in the Landfill Area in 2002" (Source: E-2 RI/FS, page 5-7). "Total PCBs were detected at concentrations exceeding the RIEC (Remedial Investigation Evaluation Criteria) in soil between 0 and 10 feet within the Panhandle</p>	<p>As discussed in the response to comment 3 above, the Navy will revise the RI/FS Report to evaluate expanded hot spot removal (particularly those in the Shoreline Area). The Navy will continue monitoring groundwater at Parcel E-2 to assess potential migration of chemicals from groundwater to aquatic organisms in San Francisco Bay.</p>

**Table 8. Responses to Comments from the Community First Coalition (CFC) and Technical Assistance Grant (TAG) Reviewers (continued)  
Draft Parcel E-2 Remedial Investigation/Feasibility Study (RI/FS) Report, Hunters Point Shipyard (HPS), March 2007**

Comment #	Page #	Section	Comment	Response																								
<b>Comments provided by Peter Palmer, Ph.D. and Gregg Grist, M.S., dated July 23, 2007 (continued)</b>																												
9 (cont.)		General	<p><i>and East Adjacent Areas. The Landfill areas had concentrations of PCBs at depths greater than 2 feet bgs, including 6 samples... greater than 100 times the RIEC (0.74 mg/kg) and... may be considered potential hot spots within the landfill" (Source: E-2 RI/FS, page 4-16). "(Total PCB) detections exceeding the RIEC are consistent in two... wells (IR01MW43A and IR01MW44A)... where elevated concentrations may migrate to the Bay... Post removal action groundwater sampling is required" (Source: E-2 RI/FS, page 5-24 to 5-25). Based on this information, it is apparent that PCB contamination in Parcel E-2 is widespread and includes several areas that may be categorized as hot spots. Moreover, PCBs are contaminating the groundwater and may be migrating towards the Bay. The Navy is urged to remove or remediate PCB contaminated soil in the Panhandle, East Adjacent Areas, and other potential hot spots within Parcel E-2, and to continue its sampling and monitoring of PCBs in groundwater and control or prevent its potential migration into the Bay.</i></p>	(see above)																								
10		General	<p>The RI/FS includes a large amount of data on VOCs and chlorinated solvents in landfill gas and groundwater. Most of the data are not of concern and are below appropriate limits. The following data represents the maximum VOC concentrations detected in landfill gas for illustrative purposes (Source: E-2 RI/FS, Table 4-2):</p> <table border="0"> <tr> <td>1,2,4-trimethylbenzene</td> <td>1.7%</td> </tr> <tr> <td>Benzene</td> <td>0.5%</td> </tr> <tr> <td>Carbon disulfide</td> <td>1.0%</td> </tr> <tr> <td>Chlorobenzene</td> <td>2.3%</td> </tr> <tr> <td>Dichlorodifluorobenzene (CFC12)</td> <td>4.2%</td> </tr> <tr> <td>Propylene</td> <td>26.0%</td> </tr> </table>	1,2,4-trimethylbenzene	1.7%	Benzene	0.5%	Carbon disulfide	1.0%	Chlorobenzene	2.3%	Dichlorodifluorobenzene (CFC12)	4.2%	Propylene	26.0%	<p>For clarity, the Navy wishes to point out several errors in the converted values from parts per million by volume (as listed in Table 4-2) to percent by volume (as listed by the reviewer):</p> <table border="0"> <tr> <td>1,2,4-trimethylbenzene</td> <td>1.7% (correct)</td> </tr> <tr> <td>Benzene</td> <td><del>0.5%</del> 0.06%</td> </tr> <tr> <td>Carbon disulfide</td> <td><del>1.0%</del> 0.10%</td> </tr> <tr> <td>Chlorobenzene</td> <td><del>2.3%</del> 0.23%</td> </tr> <tr> <td>Dichlorodifluorobenzene (CFC12)</td> <td><del>4.2%</del> 0.42%</td> </tr> <tr> <td>Propylene</td> <td><del>26.0%</del> 2.6%</td> </tr> </table> <p>As discussed in Section 4.2.3.1 (page 4-18) of the RI/FS Report, the potential risk associated with the concentrations of nonmethane organic compounds (NMOCs) in subsurface gas (as cited in Table 4-2) was previously evaluated by the Navy. The risk assessments, as discussed in Section 4.1.2.2 of the RI/FS Report, concluded that NMOC concentrations do not pose an unacceptable risk to human health.</p>	1,2,4-trimethylbenzene	1.7% (correct)	Benzene	<del>0.5%</del> 0.06%	Carbon disulfide	<del>1.0%</del> 0.10%	Chlorobenzene	<del>2.3%</del> 0.23%	Dichlorodifluorobenzene (CFC12)	<del>4.2%</del> 0.42%	Propylene	<del>26.0%</del> 2.6%
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**Table 8. Responses to Comments from the Community First Coalition (CFC) and Technical Assistance Grant (TAG) Reviewers (continued)  
Draft Parcel E-2 Remedial Investigation/Feasibility Study (RI/FS) Report, Hunters Point Shipyard (HPS), March 2007**

Comment #	Page #	Section	Comment	Response
<b>Comments provided by Peter Palmer, Ph.D. and Gregg Grist, M.S., dated July 23, 2007 (continued)</b>				
10 (cont.)		General	<p>These are very high concentration that would be construed as evidence of hot spots requiring remediation. In addition, "NMOCs (Non-Methane Organic Compounds) were detected at 11 soil gas locations at concentrations &gt; 5 ppm above background" (Source: E-2 RI/FS, page 4-16). This information indicates that NMOC concentrations are exceeding their limits and require application of appropriate remediation and control strategies. Additional information from the RI/FS indicates significant concentrations of VOCs and chlorinated solvents within a very large footprint of the landfill area and concomitant contamination of groundwater. "Elevated concentrations of benzene have been detected in wells in the A- and B- aquifers within an area... of 2250 by 1200 feet. 1,4-DCB... exceeded the MCL at the southern/central portion of the landfill in an area... of 1000 by 100 feet. Chlorinated solvents (7) exceeding their MCL... contamination is migrating laterally in the A aquifer" (Source: E-2 RI/FS, pages 5-5 to 5-6). "The most persistent benzene concentrations exceeding RIECs occur in 7 A-aquifer wells located mainly in the Landfill Area. The area surrounding these wells constitutes what has been identified as a benzene plume... Along the southern edge, consistently elevated benzene concentrations... may be migrating to the Bay" (Source: E-2 RI/FS, pages 5-32 to 5-33). <b>The Navy is urged to indicate the specific remediation or containment methods that will be employed to prevent and control migration of these contaminants to groundwater, the Bay, and the atmosphere.</b></p>	<p>The Navy prepared Appendix M of the Draft RI/FS Report to specifically evaluate the potential effect of groundwater discharges to aquatic organisms in the bay. In the Draft Final RI/FS Report, the Navy will revise Appendix M to include additional groundwater data through early 2007 and will formulate a groundwater containment alternative for Parcel E-2 that is protective of aquatic organisms in the bay.</p>

**Table 8. Responses to Comments from the Community First Coalition (CFC) and Technical Assistance Grant (TAG) Reviewers (continued)  
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Comment #	Page #	Section	Comment	Response
<b>Comments provided by Peter Palmer, Ph.D. and Gregg Grist, M.S., dated July 23, 2007 (continued)</b>				
11		General	The RI/FS includes a large amount of data pertaining to heavy metal contamination in soil and groundwater. Some of this data indicates several metals in excess of their appropriate limits and/or potential migration of contaminants into the Bay. <i>“Groundwater with elevated total chromium may be migrating to the Bay”</i> (Source: E-2 RI/FS, page 5-20). <i>“(Wells) IR01MW43A and IR01MW44A showed more recent detections (of lead) exceeding the RIEC. Concentrations exceeding the RIEC... were up to 2 times the RIEC in IR01MW43A, and almost 10 times the RIEC in IR01MW44A... The extent of lead in groundwater is adequately delineated except in IR01MW43A... elevated lead concentrations may be migrating to the Bay”</i> (Source: E-2 RI/FS, page 5-21). <i>“Data gaps exist for certain analytes along the Parcel E-2 shoreline, where chemical concentrations persistently exceeded RIEC”</i> (Source: E-2 RI/FS, page 5-45). <b>The Navy is urged to continue their monitoring and study of these problems and to specify the specific remediation or containment methods that will be employed to prevent and control migration of these contaminants to groundwater and the Bay.</b>	The Navy will continue monitoring groundwater at Parcel E-2 and will, as indicated in the response to comment 10 above, formulate a groundwater containment alternative for Parcel E-2 that is protective of aquatic organisms in the bay.
12		General	The RI/FS provides evidence that the current landfill gas control system is ineffective. <i>“Methane (is) migrating in two locations either through a tear in the (HDPE) barrier or over the barrier through the bentonite seal”</i> (Source: E-2 RI/FS, page 4-19). <b>The Navy is urged to provide more detailed information as to how any future landfill gas control systems will be constructed to avoid such problems in the future, and to factor the costs for any future repairs of this barrier into any associated remedial options.</b>	Page 4-19 clarifies that the actions taken in 2003, in response to the methane migration cited by the reviewer, “have reduced gas migration beneath the UCSF compound.”  In general, the proposed landfill gas remedial alternatives (active interior extraction, perimeter barrier, and perimeter soil vapor extraction) constitute a single robust and redundant operational control system. Deterioration or failure of an isolated component at one level of control does not imply failure of the system or breakdown of landfill gas remediation for the site.

**Table 8. Responses to Comments from the Community First Coalition (CFC) and Technical Assistance Grant (TAG) Reviewers (continued)  
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<b>Comments provided by Peter Palmer, Ph.D. and Gregg Grist, M.S., dated July 23, 2007 (continued)</b>				
12 (cont.)		General	(see above)	<p>The landfill gas system construction materials and installation will undergo rigorous quality assurance inspections in accordance with an approved Construction Quality Assurance (CQA) Plan to minimize the probability of future locations with ineffective control.</p> <p>Cost estimates will be clarified to present appropriate funding levels for future repair and maintenance of damaged or ineffective control system components.</p> <p>The following additional information will be added to the RI/FS Report:</p> <ul style="list-style-type: none"> <li>▪ Detailed cost estimates for repair and maintenance of damaged or ineffective control system components.</li> <li>▪ Description of CQA Plan for the landfill gas system.</li> </ul>
13		General	<p>The RI/FS implies the use of a sheet pile wall and monitoring/control strategies to prevent migration of contaminants into the aquifers and the Bay. Nevertheless, there are serious concerns about how effective any containment methods would be in a landfill, which was constructed without the use of appropriate technologies to prevent migration of contaminants through the bay side of landfill. <b>The Navy is urged to evaluate the longevity and long term integrity of the sheet pile wall, especially when considering the corrosive nature of saltwater, and to factor the costs for any future repairs of this barrier into any associated remedial options.</b></p>	<p>Sheet-pile walls are identified in Section 11 of the Draft RI/FS Report as one of several physical barriers that may be suitable for containing groundwater at Parcel E-2. The Draft Final RI/FS Report will formulate a groundwater containment alternative and the service lifetimes of various process options will be considered among other factors.</p>

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