4/1/04-02407

EQB's Technical Comments

Draft Remedial Investigation Report
Area of Concern (AOC) H
Former Naval Ammunition Support Detachment
Vieques Island, Puerto Rico
April 2004

I. INTRODUCTION

TRC has reviewed and provides the attached comments to the Draft Remedial Investigation Report for Area of Concern (AOC) H, dated April 2004.

The RI Report presents the results of the Remedial Investigation (RI) conducted for AOC H of the former Naval Ammunition Support Detachment (NASD) in the western portion of Vieques Island, Puerto Rico. The RI activities were detailed in the Final Remedial Investigation/Feasibility Study Work Plan for Solid Waste Management Unit (SWMU) 6, SWMU 7, Area of Concern (AOC) H, and AOC J, July 2003. TRC had provided to Puerto Rico Environmental Quality Board (EQB), on April 15, 2003, technical comments on the Draft Remedial Investigation/Feasibility Study Work Plan for Solid Waste Management Unit (SWMU) 6, SWMU 7, Area of Concern (AOC) H, and AOC J, Former U.S. Naval Ammunition Support Detachment, Vieques Island, Puerto Rico, dated February 21, 2003. The comments were provided by P.R. EQB to Naval Facilities Engineering Command on April 21, 2003 who finalized the RI Work Plan considering the comments.

The AOC H RI Report finds that the site conditions at AOC H do not pose an unacceptable risk to human health or ecological receptors based on an unrestricted land use. As a result, no remedial actions were recommended by the Navy for the site. This review notes a number of uncertainties, typographical errors, and other issues associated with the report.

Page-Specific Comments

1. **<u>Page ES-1, Paragraph 1</u> – The last sentence should be revised for consistency with the text. The last sentence indicates that the drainage ditch contains tidal water; however, text on Page 2-4, Paragraph 1 and Page 3-7, Paragraph 2, and Figure 3-5 all indicate there is no tidal influence.**

<u>Navy Response</u>: The Executive Summary, 1st Paragraph, last sentence was edited to read "An ephemeral stream is located to the west of the site."

2. **<u>Page ES-2, Paragraph 7</u> – Clarify if the total (unfiltered) metals samples were collected using United States Environmental Protection Agency (EPA) Region II low stress/low flow sampling procedures.**

Navy Response: Samples were collected using low flow sampling procedures but did not necessarily meet the Region II low stress/low flow sampling procedure requirements. The Work Plan stated that low-flow sampling techniques will be used, but did not specifically reference the USEPA Region II procedures. Future work plans will specify that the Region II low-flow sampling procedures will be used where possible.

3. **Page 2-1, Paragraph 3 – The acronym "PWA" is not identified in the Acronyms and Abbreviations list on pages VII through XII. Provide a definition for the acronym.**

Navy Response: The Acronym list was updated to include "PWA - Public Work Area."

4. **Page 2-4, Paragraph 3 – Provide the gradient calculations as described in this paragraph. Appendix D, which was cited as the location of the gradient calculations, contains only the groundwater sampling data sheets.**

Navy Response: The last sentence in Section 2.3.5.2, which states "Gradient calculations are included in Appendix D." was edited to read Gradient calculations are included below.:
Northern Direction from MW-6 to MW-3 Gradient = (-1.09 ft – (-) 2.12 ft)/100 ft = 1.03 ft/100 ft = 0.01 ft/ft
Western Direction from MW-6 to MW-5
Gradient = (-1.09 ft – (-) 1.42 ft)/60 ft = 0.33 ft/60 ft = 0.006 ft/ft.

5. **Page 2-5, Section 2.6 – Include the depths of surface and subsurface soil samples collected during the Expanded PA/SI since these samples were evaluated in the HHRA. The text should clarify the method/technique used to collect the four (4) surface soil samples inside the building**.

Navy Response: Page 2-5, Section 2.6, second paragraph reads: "The Expanded PA/SI report (2000) includes details of the previous investigations conducted at this site." Section 2 of this Remedial Investigation Report is just a brief summary of past activities at the site and is not intended to provide details such as sample depths and techniques, nor would details such as these enhance the objective of Section 2.6. These types of details can be found in the referenced PA/SI Report.

6. **Pages 2-5 and 2-6, Section 2.6 –**

a. Clarify that the PRGs used are the Region 9 PRGs.

b. **Clarify what screening criteria were used to compare soil contaminant concentrations**.

Navy Response:

a. Section 2.6, first sentence of the sixth paragraph was edited to read "Groundwater analytical results indicated total inorganic exceedances above the Region IX tap-water preliminary remediation goals (PRGs) and/or the maximum contaminant levels (MCLs) for aluminum, antimony, arsenic, barium, iron, manganese, vanadium, and thallium."
b. Page 2-6, seventh paragraph was edited to read "Surface soil samples contained aluminum, antimony, arsenic, chromium (total), iron, lead, manganese, benzo(a)pyrene, n-nitrosodi-n-

propylamine, p,p-DDE, p,p-DDT, and 2,6-dinitrotoluene above the USEPA Region IX residential PRGs, industrial PRGs, or leachability criteria.

7. **Figure 2-2 – Typographic Error. Correct the spelling of "Puerto Rico Conservation Trust" in the legend of this figure**.

Navy Response: The correction has been made and Figure 2-2 is shown in Attachment M.

8. **Figure 2-6 – The orientation of the groundwater contours indicate that there is no groundwater data downgradient from the majority of the power plant building (i.e., along the west side of the building, between the building and the ditch). The RI Report must discuss this as a possible data gap. The report must propose corrective action to address this data gap (i.e., installation of more wells). The monitoring wells should be identified in Figure 2-6. The stilling well should be located in Figure 2-6 and the water elevation data displayed and incorporated into the contour lines.**

Navy Response: Numerous surface and subsurface soil samples have been collected on the west side of the Power Plant Building. None of which suggest a contaminant source was present or give indication that the groundwater would be contaminated. Number of surface soil and subsurface samples were collected. None of which showed concentrations above screening criteria. The gw contours shows northerly flow none of those wells show contamination. Sampled the soil that would be the potential source. Soil below SSL DAF 1. look at above background. Northerly main flow none contaminated. SW and SD not contaminated. All justifies that no further investigation needed.

The stilling well location is shown with the other monitoring wells on Figure 3-3. Section 3.2.8 Tidal Fluctuation Study describes how the water levels varied between three wells and the stilling well. The Tidal Fluctuation Study was done in June 2003 and the three new monitoring wells were installed in August 2003. The full round of groundwater elevations did not include the stilling well which was a temporary well used only for the study.

Comment [CH1]: Let's discuss this one. We need to beef up our discussion of why we're not proposing additional wells. Let's discuss.JWS beef it up.

9. **Page 3-1 and 3-2, Section 3.1.2 - The text should discuss the depths at which subsurface soil samples were collected and the rationale for selecting those depths.**

Navy Response: A sentence was added to Section 3.1.2 which states that "subsurface soil samples were collected at a depth of 4 to 6 feet bls." The rationale for selecting the locations and depths is included in the Final RI/FS Work Plan for SWMU 6, SWMU 7, AOC H, and AOC J, dated July 2003, in Section 4.3.3.3 Surface and Sub-surface Soil Sampling and Analysis.

10. **Page 3-5, Paragraph 1 – Note that the range of purging rate exceeds the upper end of the flow rate recommended in the EPA Region II Groundwater Sampling Procedure, Low Stress (Low Flow) Purging and Sampling (GW Sampling SOP Final March 16, 1998). Explain why flow rates in excess of those recommended by EPA low stress (low flow)**

guidance were used. EPA Region II and the EQB prefer the low flow (low stress) purging and sampling procedure.

Navy Response: Low flow purging was done but not in strict accordance with the EPA Region II Groundwater Sampling Procedure, Low Stress (Low Flow) Purging and Sampling (GW Sampling SOP Final March 16, 1998), however a min of 3 well volumes were removed at each well.

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11. **Figures 3-1 to 3-3 - The locations of former transformers, generators, and ASTs inside and outside the building provide information on areas where historical leaks or spills may have occurred. Also, the location of floor drains, if any, and exterior doors are also indications of where releases may have occurred. Provide this information on these figures and include a discussion in the text that identifies the location of these potential sources and the samples collected to determine if releases may have occurred. If this information is not available, that should be clarified in the report.**

Navy Response:
Historical aerials do not show the items listed above. Because of the lack of historical information such as this, the surface and subsurface soil sampling completely circled the building and four surface soil samples were collected inside the building. A sentence was added to Section 2.2, last sentence of first paragraph that states: "No historical aerial photographs or diagrams show the location of the former generators, ASTs, or transformers located at the site. There are three exterior doors in the building, one door on the north, south, and east sides of the building." In addition, the last sentence of the first paragraph in Section 3.1.2 was replaced with: "Because the exact locations of former generators, ASTs, or other potential sources of contamination are not known, surface and subsurface soil sampling was conducted around the perimeter of the building and surface soil sampling was conducted inside the building. The rationale for the selection of specific soil sampling locations is as follows:"

12. **Page 4-2, Paragraph 1 - Typographical Error. Correct the reference "EPA, 1999" to read "EPA, 1999a" to be consistent with the reference citation in Section 9 (References).**

Navy Response: Reference was changed to (EPA, 1999a).

13. **Page 4-4, Section 4.1.4 – The text should include a consideration of the applicability of the following standards and criteria:**

a. **EPA has published interim final ecological soil screening levels (eco-SSLs) that should be used as the primary reference for ecological screening values, followed by the references provided in this section if an appropriate eco SSL value is not available.**

b. **Subsurface soils should be screened using residential PRGs to ensure that the residential exposure scenario for subsurface soil evaluated in the human health risk assessment (HHRA) includes all chemicals exceeding residential**

screening criteria. If the list of contaminants changes as a result of this screening, the risks to residential receptors should be reevaluated in the risk assessment and submitted for regulatory review and approval prior to finalizing this report.

c. MCLs, in some cases, are not risk-based. Therefore, risk-based PRGs should be calculated for those chemicals for which EPA Region 9 did not calculate a value rather than using the MCL as a screening value. EPA Region 9 provides the methodology and equations used to calculate PRGs in their technical memorandum, *Region 9 PRGs Table 2002 Update,* dated October 1, 2002.

Navy Response:

a. The current (2005) EPA Eco-SSLs (for plants and soil invertebrates) was incorporated as the primary reference, followed by the other references identified in the report. The following text changes were made to the report:

Comment [CH2]: Let's talk about this. I want to make sure we're not being inconsistent with our position on using recent screening criteria. For PRGs, we have stated that we are not going to use the most recent version because EPA waited too long to provide comments. Here, we have agreed to use the most recent Eco numbers. In the draft, did we use a previous version of these numbers or did we not do the screening at all? If we did, then we're being inconsistent in saying we're not going to revise with the most recent PRGs. John M. and Vijaya.

Section 4.1.4, Page 4-5, first bullet was replaced with the following:

- Surface soil results were compared to the EPA (2002) Region 9 residential preliminary remediation goals (PRGs) adjusted to a hazard index (HI) of 0.1 for noncarcinogenic chemicals; the EPA (2002) Region 9 leachability criteria for soil (SSL based on a dilution attenuation factor [DAF] of 10); and appropriate ecological screening criteria. The ecological screening criteria were the lower of the plant and soil invertebrate ecological soil screening levels (eco-SSLs) from EPA (2005). If eco-SSLs were not available, the ecological screening criteria were the most conservative values derived from either *Toxicological benchmarks for screening contaminants of potential concern for effects on soil and litter invertebrates and heterotrophic process* (Efroymson et al., 1997a) or *Toxicological benchmarks for screening contaminants of potential concern for effects on terrestrial plants* (Efroymson et al., 1997b). In some instances when soil screening values were not available from these primary sources, three other references were consulted comprising the Canadian protocol for deriving environmental soil quality guidelines (SQGs; CCME, 1996), Dutch Soil Quality Standards (MHSPE, 1994), and U.S. Fish and Wildlife Service soil screening values presented by Beyer (1990). The lowest screening value from these three sources was then selected for screening.

Section 4.1.4, Page 4-6, second bullet, first paragraph was replaced with the following:

- The ecological screening criteria were the lower of the plant and soil invertebrate ecological soil screening levels (eco-SSLs) from EPA (2005). If eco-SSLs were not available, ecologically-based toxicological benchmarks for screening contaminants of potential concern for effects to soil invertebrates and microbial processes were taken from Efroymson (1997a) and for terrestrial plants from Efroymson et al. (1997b).

Section 4.1.4, Page 4-6, second bullet, third paragraph was replaced with the following:
"In the absence of eco-SSLs and Oak Ridge National Laboratory soil screening values, alternate screening values were selected from the following references:"

The second paragraph of Section 7.2.3.1, Page 7-13, was replaced with the following:

"The soil screening values used were the lower of the plant and soil invertebrate ecological soil screening levels (eco-SSLs) from EPA (2005). If eco-SSLs were not available, the soil screening values used were from the Oak Ridge National Laboratory, which has identified soil screening values specific to soil invertebrates and microbial processes (Efroymson et al., 1997a), and terrestrial plants (Efroymson et al., 1997b). Where screening values were available for multiple receptors in these ORNL references, the most conservative value was chosen. In some instances where soil screening values were not available from these three primary sources, three other references were consulted comprising the Canadian protocol for deriving environmental soil quality guidelines (SQGs; CCME, 1996), Dutch Soil Quality Standards (MHSPE, 1994), and U.S. Fish and Wildlife Service soil screening values presented by Beyer (1990). The lowest screening value from these three sources was then selected for screening.
Tables 7-11, 7-15, 7-20, and 7-24 were updated (Attachment J) to reflect changes in some of the screening values, hazard quotients, and COPCs. The text associated with these tables was updated in the final report.

b.
The screening methodology was previously discussed for other sites within NASD, and EPA Region 2 recommended screening subsurface soils against industrial PRGs. As indicated in Table 2s (see Attachment L), only arsenic was identified as a subsurface soil COPC. The identified COPCs were included for risk estimation under industrial and residential land use. To be consistent with EPA Region 2 risk assessment guidance, as well as to maintain consistency across various sites, the COPC selection method was maintained as is.

c

The Navy concurs that PRGs are the most pertinent criteria for COPC selection for human health risk assessment, as these are developed based on human health protection as the basis. As can be seen in Table 2.3 in Attachment L, all groundwater detected concentrations were compared against PRGs for selection of the COPCs for human health risk assessment (Section 6). Though MCLs were listed in the COPC selection tables for human health (tables 2), they were not used as the toxicity screening criteria for COPC selection. There were not many cases where an MCL was available for a chemical while no PRG was available, lead being the only exception. Therefore, the concern raised by this comment is not applicable to this risk assessment.

Comment [CH3]: This is not sufficient. We cannot produce a final report with language that the regulators haven't seen. We need to include the revised language as part of these responses or an attachment to the responses. John Martin.

Comment [CH4]: We need to be able to cite something when we make these claims. Where was the methodology previously discussed? Where did EPA Region 2 recommend screening subsurface soil against industrial PRGs? Vijaya.

Comment [CH5]: Are these revised Table 2s? If so, what changed since the draft report? If not, why are we including them as an attachment? Vijaya.

Comment [CH6]: This phrase doesn't make sense. The previous sentence says only arsenic was identified as a COPC. This sentence talks about COPCs (i.e., plural). Vijaya.

Comment [CH7]: Reword this. Lead does not have an MCL. Vijaya Roni

Comment [CH8]: Reword. State what is inaccurate about the comment. Vijaya. Roni

14. <u>Page 4-4, Section 4.1.4, Bullet 1</u> - Typographical Error. Correct the reference "EPA (2002)" to read "EPA (2002d)" to be consistent with the reference citation in Section 9 (References).

<u>Navy Response</u>: Reference was changed to (EPA (2002d).

15. <u>Page 4-4, Section 4.1.4, Bullet 2</u> –

a. The use of industrial worker screening levels for subsurface soil is inconsistent with the site conceptual model presented in Figure 5-1, which contemplates construction workers as the only potentially complete exposure pathway associated with subsurface soil and does not identify industrial workers as potentially exposed receptors. Consequently, screening the

subsurface soils with the less conservative industrial worker screening levels may not be sufficiently protective. Provide a justification for using the industrial PRGs that demonstrates that they are sufficiently protective for screening purposes given the receptors identified in the conceptual model, or use the residential PRGs for subsurface soil screening, which address dermal contact, ingestion, and inhalation of fugitive dust and should be protective of construction worker exposures.

b. Provide the rationale for using a DAF of 10 for the SSLs.

Navy Response:

a. PRG values are not readily available from EPA or EQB for construction workers. Typically, exposures to industrial workers assumed by EPA in deriving PRG values include chronic long-term exposures, and are therefore more protective for carcinogenic end-point than construction worker scenario based PRGs. Conversely, for the non-cancer end-point, the construction scenario is more protective. Attachment N includes an example comparison between the construction scenario versus the industrial scenario. As can be noted, the overall difference is not significant. For example, the intake rate for the same chemical at the same concentration results in higher dose for an industrial worker compared to a construction worker. Therefore, use of industrial PRGs to selection COPCs for the construction worker scenario is appropriate.

b. The DAF=20 was previously determined to be appropriate for sites on west Vieques, and it has been used consistently for all sites. Therefore, an SSL with a DAF=20 was used for the sites that are located in areas with deeper depths to groundwater, for example SWMU 7, and other NASD sites proposed for NFA. However, a more conservative SSL value with a DAF=10 was selected for AOC H, based on site-specific conditions such as the shallower depth to groundwater, small area of contamination (compared to the ½-acre area assumed during the SSL estimation by EPA), older age of the potential contamination, clayey (strongly binding) nature of the soil, and absence of surface soil organic contaminants in subsurface soil or groundwater. This qualitative discussion of applicability of DAF=10, based on the site specific information above, was added to the revised report.

Comment [CH9]: The response is fine, but my question is whether we did exactly what we said we would do in the work plan? If so, we need to state that. If not, please tell me why we deviated. Vijaya Roni

Comment [CH10]: We need to support this point with actual citations that they can look up to verify. Vijaya

Comment [CH11]: What SSL estimation by EPA? Vijaya.

Comment [CH12]: Older than what? Vijaya.

16. Page 4-4, Section 4.1.4, Bullet 4 – Correct the citation "Long, 1995" to "Long et al, 1995" to be consistent with the reference citation in Section 9 (References). The text should explain the rationale for not referencing the NOAA SQuiRT tables.

Navy Response: Reference was changed to (Long et al., 1995). The NOAA SQuiRT tables include a compilation of sediment screening values from several literature sources, including Long et al.. The Long et al. values were used in this ERA because they are conservative and generally accepted. Other values, such as AETs that are provided in the NOAA SQuiRT tables, are much less conservative, and therefore less appropriate for this screening level ERA; thus, the more specific reference to Long et al. was used. No changes to the text are proposed.

17. Page 4-5, Section 4.1.4 – Correct the citation "(EPA, 2000)" to "(EPA, 2000a)" to be consistent with the reference citation in Section 9 (References).

Navy Response: Reference was changed to (EPA, 2000a).

18. **Page 4-5, Section 4.1.4, Bullet 1 - Typographic Error. Correct the reference "EPA (1991)" to read "EPA (1991a)" to be consistent with the reference citation in Section 9 (References).**

Navy Response: Reference was changed to (EPA, 1991a).

19. **Page 4-6, Section 4.2.1 – The text should discus the representativeness of the facility-wide background data used for comparison to site data for soil. Data should be used that has been collected from similar soils (e.g., same soil horizon and soil type).**

Navy Response: The background study report includes the details of the background soil types characterized for this part of the island, and the statistical comparison of soil sample concentrations between different soil types and depths, which demonstrated that the there are no significant differences between various soil types. Further details can be found in *Final Soil, Groundwater, Surface Water, and Sediment Background Investigation Report. Former U.S. Naval Ammunition Support Detachment, Vieques Island, Puerto Rico*. CH2M HILL, October 2002. The fourth sentence of the first paragraph under Section 4.2.1 was revised to read: "The Navy and regulatory agencies concurred upon the use of the basewide soil background concentrations for site soil comparisons because evaluation of the background soil inorganic concentrations demonstrated statistical comparability among the various soil types on west Vieques."

20. **Page 4-7, Section 4.2.1.5, Paragraph 5 – Typographic Error. Correct the reference "(EPA, 1989)" to read "(EPA, 1989b)" to be consistent with the reference citation in Section 9 (References).**

Navy Response: Reference was changed to (EPA, 1989b).

21. **Page 4-7, Section 4.2.1.4 – The text should present limitations based on the limited (one sample) sediment data set. The rationale for appropriateness of corrective actions should be discussed.**

Navy Response: As discussed in Section 4.2.1, base-wide sediment samples were available from the background report. However, regulatory (EPA and EQB) review comments on the work plan suggested site-specific samples be used for the surface water and sediment samples. The ephemeral stream located next to AOC H is unique, where upstream locations are normally dry and are wet only during rain events, and where downstream locations are water-filled. Therefore, it was determined and documented in the regulatory approved Work Plan that one upstream sample would be collected from the ephemeral stream channel on the south side of the road.. There are site-specific conditions that limited the number of samples that could be collected for background. This was discussed during work planning stages with the reviewing agencies. The work conducted is consistent with the approved work plan. That one background sediment sample was collected is not a significant contributor to uncertainties associated with

Comment [CH13]: Is this documented somewhere? Vijaya.

conclusions drawn, as the risk assessment did not identify significant risks and hazards from potential exposure to site sediment.

Comment [CH14]: We cannot use this term. Risks are either acceptable or unacceptable. Please revise this sentence. Vijaya.

The following text was added to the ecological risk assessment uncertainty section (Section 7.4, page 7-23, second bullet):
"Only a single background sediment sample was collected for AOC H. This sample was collected from the stream in an area that was upgradient of potential influences from AOC H. It is appropriate to conclude that there is a range of concentrations attributable to background for any inorganic constituent, and that the datum for a particular constituent from a single background sample represents only one point in that range. Therefore, the single sediment sample collected upstream of AOC H represents a single point in the range of background sediment conditions for the site. The uncertainty associated with use of the single data point as representative of background is relatively low because the upgradient comparison was only used for two inorganics (beryllium and thallium), neither of which is known to be site-related."

22. **Page 4-9, Paragraph 1 – Typographic Error. Correct the reference "(EPA, 1989)" to read "(EPA, 1989b)" to be consistent with the reference citation in Section 9 (References).**

Navy Response: Reference was changed to (EPA, 1989b).

23. **Page 4-9, Paragraphs 5 through 10 – Typographic Error. Correct the reference "(CH2M HILL, 2002)" to read "(CH2M HILL, 2002b)" to be consistent with the reference citation in Section 9 (References).**

Navy Response: Reference was changed to (CH2M HILL, 2002b).

24. **Page 4-10, Section 4.2.2.1 – The text states that an SSL was not available for benzo(a)pyrene. However, Table 4-4 shows an SSL of 4 mg/kg for benzo(a)pyrene. Please clarify.**

Navy Response: Text was corrected. The last sentence was changed from "An SSL was not available for benzo(a)pyrene" to "The detected benzo(a) pyrene concentrations did not exceed the SSL value of 4 mg/kg."

25. **Page 4-11, Section 4.2.2.1 – A discussion should be provided on the PCB Aroclor analyses performed on subsurface soils.**

Navy Response: The text was edited to be consistent with other chemical group results discussion in Section 4.2.2.2. The following was added to the end of the section before the groundwater subsection.

"Polychlorinated Biphenyls

PCBs were not detected in subsurface soil samples collected at AOC H."

26. <u>Page 4-10, Section 4.2.2.1, Page 4-11, Section 4.2.2.1, and Page 5-7, Section 5.4.2.4</u> – The text should be revised for consistency. Page 4-10 and Page 5-7 indicate that 2,6-DNT was detected in surface soil. Page 4-11 states that explosives were not detected in surface soil samples.

<u>Navy Response</u>: Page 4-11, Explosive paragraph. Text was replaced with the statement: "The explosive 2,6-dinitrotoluene was detected above its SSL in 2 of 33 surface soil samples as part of the SVOC analytical parameter group (8270C); however it was not detected in any soil sample by the explosives analytical method (8330). It was not detected above its residential PRG. An ecological screening criterion was not available for 2,6-dinitrotoluene. No other explosives related chemicals were detected in surface soils at AOC H."

27. <u>Pages 4-11 and 4-12, Section 4.2.2.2</u> –

a. As previously discussed, the use of industrial worker screening levels for subsurface soil is inconsistent with the site conceptual model presented in Figure 5-1, which contemplates construction workers as the only potentially complete exposure pathway associated with subsurface soil and does not identify industrial workers as potentially exposed receptors. Screening the subsurface soils with the less conservative industrial worker screening levels may not be sufficiently protective. Justify the use of the industrial PRGs and demonstrate that they are sufficiently protective for screening purposes, or use the residential PRGs for subsurface soil screening, which should be conservatively protective of construction worker exposures.

b. If the residential PRGs are used for screening, additional compounds will be included in the discussion of the nature and extent of contamination, fate and transport, and human health risk assessment, such as lead, vanadium, DDD, and DDE.

<u>Navy Response</u>:

a. Please refer to responses to Comment 13b and 15a above. It is also worth noting that the direct exposure to subsurface soil risk evaluation assumes that all of subsurface soil, regardless of sampling location and depth comes to the surface, and thus will be available for direct exposure to future residential receptors. This is an overly conservative and unrealistic assumption adding significant uncertainty in the risks estimated. The most likely exposed receptors to the subsurface soil are the workers involved in soil disturbance related activities, such as construction workers. Additionally, subsurface soils were compared against leachability criteria, which are much lower than soil PRG values for the more soluble organic chemicals. In addition to the response to comments 13b and 15a, this reasoning serves as adequate reasoning to keep the currently used approach for subsurface soil COPC selection.

b. A re-screening of subsurface soil using residential PRG is not warranted based on the rationale provided in previous responses to similar questions.

28. <u>Page 4-11, Paragraphs 8 and 9</u> – Typographic Error. Correct the reference "(CH2M HILL, 2002)" to read "(CH2M HILL, 2002b)" to be consistent with the reference citation in Section 9 (References).

Navy Response: Reference was changed to (CH2M HILL, 2002b).

29. **Page 4-12, Section 4.2.2.3 – It is unclear why only one filtered sample is presented in Table 4-6 for cadmium if three filtered samples exceed the PRG and background for cadmium, according to the text in this section.**

Navy Response: The dissolved form of the cadmium typically represents a fraction of the total cadmium present in water at a site. The two samples did not have any detectable total cadmium. Additionally, the reported cadmium is near reporting limit of 5 µg/L. Site soil did not have any cadmium above background, and no releases of cadmium are expected at the site. Thus PRG exceedences are not associated with any site-specific significance. Thus not including the cadmium in the text tables, and keeping them in an Appendix is adequate for the site characterization discussions. This process was consistently applied for all sites in West Vieques.

Comment [CH15]: I'm confused by this response relative to what the comment says. I don't understand why we don't list the cadmium in the table as we discuss in the text and as they request. If we want to have this explanation around the detections, that would be fine to include in the text, but the table should represent the data as it purports to. Vijaya. Roni.

Comment [CH16]: Again, we have to back up statements like this with citations that the reader and regulators can verify. Vijaya.

30. **Page 4-12, Paragraph 8 – Clarify that the PRG used for comparison was the tap water PRG for hexavalent chromium.**

Navy Response: Yes, 1/10 of the tap water PRG listed for hexavalent chromium was used for comparison to site chromium concentrations. For clarification, the following sentence was added at the end of Paragraph 8 on page 4-12: "As a conservative measure, the PRG used for comparison of site chromium concentrations is 1/10 of the tap water PRG for hexavalent chromium."

31. **Table 4-1 –**
    a. **Explain the occurrence of toluene (1.3 µg/L) and caprolactam 3 J (µg/L) in background groundwater.**
    b. **Typographic error. The footnote for "=" has an incorrect spelling for "indicates."**
    c. **The table has an incorrect spelling for Aroclor (the "h" should be deleted).**

Navy Response:
a. The occurrence is likely due to false positives, as the reported values are near the detection limits of the methods used.
b. The spelling was corrected in the footnote to read "indicates".
c. The spelling was corrected in the Table to read "AROCLOR".

32. **Table 4-2 – Typographic error. The footnote for "=" has an incorrect spelling for "indicates."**

Navy Response: The spelling was corrected in the footnote of Table 4-2 to read "indicates".

33. **Table 4-4 –**
    a. **Typographic error. Correct the spelling of the word "factor" in footnote "3."**
    b. **Typographic error. The footnote for "=" has an incorrect spelling for "indicates."**

c. See Comment to Page 4-4, Bullet 2 regarding the rationale for using a DAF of 10 for the SSL.

Navy Response:
a. The spelling was corrected in the footnote of Table 4-4 to read "factor".
b. The spelling was corrected in the footnote of Table 4-4 to read "indicates".
c. Please refer to response to comment 15b above.

34. Table 4-4 - There are two concentrations listed for zinc at the same location both sampled in December 2000. Affected samples include NDAHSS01, NDAHSS02, and NDAHSS09. In addition, on Figure 4-1, the lower of the two results was reported for NDAHSS01 and NDAHSS02. Please clarify why there are two values reported on the same date collected and why the lower of the two values is included on Figure 4-1 for 2 of the 3 samples affected.

Navy Response: Surface soil samples collected inside the building were incorrectly labeled without their "A" designations as SS01, SS02, SS03, and SS04 on Table 4-4. An "A" was added to the appropriate sample designations in Table 4-4. The revised Table 4-4 is shown in Attachment K. There are not two concentrations for NDAHSS09 in Table 4-4 as the comment states. Figure 4-1 is correct as presented. There are concentrations shown for the SS01, SS02, SS03, and SS04 samples and for the SS01A, SS02A, SS03A, and SS04A samples.

35. Table 4-5 –

a. Typographic error. The footnote for "=" has an incorrect spelling for "indicates."

b. The SSL is not suitable as the sole basis for screening subsurface soil. The site conceptual model presented in Figure 5-1 contemplates construction workers as the only potentially complete exposure pathway associated with subsurface soil. Screening the subsurface soils with the less conservative SSLs may not be sufficiently protective. Justify the use of the SSL as the sole comparison criterion or include the residential PRGs for subsurface soil screening.

c. See Comment to Page 4-4, Bullet 2 regarding the rationale for using a DAF of 10 for the SSL.

Navy Response:
a. The spelling was corrected in the footnote of Table 4-5 to read "indicates".
b. This comment is repeated several times in these comments. Please refer to response to comment 15b. It should be noted that the surface soil, which has higher number of organic COPCs in a greater number of samples, did not result in significant risks; therefore, the suggested additional evaluation is not necessary because of the lower concentrations with much less frequency reported in subsurface soil samples. It is unclear what the comment, "Justify the use of the SSL as the sole comparison criterion or include the residential PRGs for subsurface soil screening" means, as subsurface soil were screened against industrial PRGs. This is

Comment [CH17]: We cannot use this term. Risks are either acceptable or unacceptable. Please revise this sentence. Vijaya.

consistent with EPA Region 2 policy and what was implemented at other site RIs within west Vieques.

Comment [CH18]: Cite documents where this was accepted by the agencies. Vijaya.

c. Please refer to response to comment 15b.

36. Table 4-6 – Typographic error. The footnote for "=" has an incorrect spelling for "indicates."

Navy Response: The spelling was corrected in the footnote of Table 4-6 to read "indicates".

37. Table 4-7 - Typographic error. The footnote for "=" has an incorrect spelling for "indicates."

Navy Response: The spelling was corrected in the footnote of Table 4-7 to read "indicates".

38. Table 4-8 - Typographic error. The footnote for "=" has an incorrect spelling for "indicates."

Navy Response: The spelling was corrected in the footnote of Table 4-8 to read "indicates".

39. Table 4-9 –

a. Typographic error. Correct the spelling of the word "factor" in footnote "4."

b. See Comment to Page 4-4, Bullet 2 regarding the rationale for using a DAF of 10 for the SSL.

Navy Response:

a. The spelling was corrected in the footnote of Table 4-9 to read "factor".

b. Please refer to response to comment 15b, above.

40. Table 4-10 –

a. Typographic error. Correct the spelling of the word "factor" in footnote "3."

b. The SSL is not suitable as the sole basis for screening subsurface soil. The site conceptual model presented in Figure 5-1 contemplates construction workers as the only potentially complete exposure pathway associated with subsurface soil. Screening the subsurface soils with the less conservative SSLs may not be sufficiently protective. Justify the use of the SSL as the sole comparison criterion or include the residential PRGs for subsurface soil screening.

c. See Comment to Page 4-4, Bullet 2 regarding the rationale for using a DAF of 10 for the SSL.

Navy Response:

a. The spelling was corrected in the footnote of Table 4-10 to read "factor".

b. Please see response to comment 35b.

c. Please see response to comment 15b.

41. Table 4-11 - Clarify that the PRG used for comparison was the tap water PRG for hexavalent chromium.

Navy Response: See response to comment 30**.**

42. Table 4-11 –

a. The site-specific background concentration for dissolved antimony should be ND (not 95 µg/L), according to Table 4-1.

b. The site-specific background concentrations for total and dissolved chromium should be reversed, according to Table 4-1.

c. The site-specific background concentration for p,p'-DDD should be ND not NA, as this compound was analyzed for in the background sample, according to Table 4-1.

Navy Response:

a. Table 4-11 does list dissolved antimony as ND, not 95 µg/l as the comment states.

b. The chromium levels were corrected in the revised report. Revised Table 4-11 shown in Attachment H.

c. The organic chemicals were not expected in the background; thus, they were not used as background levels for comparison. Therefore, it was correctly indicated as 'not applicable' (NA).

43. Table 4-12 - Typographic error. The footnote for "=" has an incorrect spelling for "indicates."

Navy Response: The spelling was corrected in the footnote of Table 4-12 to read "indicates".

44. Figure 4-9 – All of the sediment locations should be labeled.

Navy Response: The figure has been edited to show all the sediment location names and is included in Attachment O.

45. Page 5-2, Section 5.2, Paragraph 2 and Figure 2-6 – The depth of the ditch should be provided.

Navy Response: The approximate depth of the ephemeral stream is stated in Section 5.2, Page 5-2, Paragraph 2, fifth sentence, as having an average depth of 3 to 6 feet. It is unclear why the depth of the ditch is requested for Figure 2-6.

46. Page 5-2, Section 5.2, Paragraph 3 – The text should identify which screening criteria were exceeded for soil (i.e., industrial PRGs or SSLs).

Navy Response: Page 5-2, Section 5.2, Paragraph 3 (1st Paragraph on Page 5-2) - It should be noted that this paragraph is intended as a brief summary of the conceptual site model. Detailed discussions of screening criteria exceedances are contained throughout this report. However, to provide additional information, the sentence was edited to read: "Chemicals identified as exceeding Region IX PRGs, Ecological Screening Criteria, and/or Soil Screening Levels (SSLs) in site soil comprise inorganics, VOCs, SVOCs, and pesticides."

47. Page 5-5, Section 5.4.2.1, Paragraph 2 – The "ATSDR, 1995" reference in this paragraph appears to be in error because it does not match those provided in the references (Section 9). The reference section includes ASTDR references from a number of dates, including 1995, which refers to a toxicological profile for polycyclic aromatic hydrocarbons (PAHs). The appropriate ATSDR profile for xylenes is not listed in the reference section.

Navy Response: The Reference Section was updated to insert "------. 1995. Toxicological profile for xylenes. August" In addition, the 1995 reference for PAHs was changed to 1995a, as will the reference provided in the text (page 5-6).

48. Page 5-6, Section 5.4.2.2, Paragraph 2 – Provide references, where appropriate, for the information concerning n-nitrosodi-n-propylamine origins, fate and transport properties, etc.

Navy Response: The appropriate reference is ATSDR, December 1989 Toxicological properties for n-nitrosodi-n-propylamine. This reference was added to the revised report.

49. Page 5-6, Paragraph 5 – The citation "Howard, 1991" should be "Howard et al., 1991" to be consistent with the citation in Section 9 (References).

Navy Response: The reference in Section 5.4.2.2, Page 5-6, Paragraph 5 was edited to read: (Howard et al., 1991).

50. Page 5-6, Paragraph 6 and Page 5-7, Paragraph 1 – Provide references, where appropriate, for the information concerning PAH metabolism, etc., in these paragraphs.

Navy Response: The reference "(ATSDR, 1995) was added to at the end of Section 5.4.2.2, Polycylclic Aromatic Hydrocarbons, fourth paragraph of Section, page 5-7.

51. Page 5-7, Paragraph 3 – Provide references, where appropriate, for the information concerning the fate and transport characteristics of chlorinated pesticides.

Navy Response: The following references was added at the end of Section 5.4.2.3 Chlorinated Pesticides, page 5-7, "(ATSDR 1993b, 1993c, 1993d, 1994b)."

52. Page 5-7, Paragraph 4 – Provide references, where appropriate, for the information concerning the fate and transport characteristics of 2,6-DNT.

Navy Response: The following reference was added to the end of Section 5.4.2.4 Explosives, page 5-7: (ATSDR, 1998b), and the following reference was added to Section 9 References "ATSDR, 1998b, Toxicological Profile for 2,4 and 2,6-Dinitrotoluene"

Comment [CH19]: Quotes mean that it will be inserted exactly as written here. Is that true for this? It doesn't look like a formal reference. All we need is a month for the reference. Vijaya/Roni.

53. Page 5-7, Paragraph 5 – See Comment to Page 4-4, Bullet 2 regarding the suitability/protectiveness of the screening criteria applied to subsurface soil. Additional compounds may warrant discussion if other screening criteria are applied (e.g., residential soil PRGs).

Navy Response: Please refer to response to comment 13b and several others where this comment is repeated. The approach used is in accordance with EPA Region 2 guidance and no revision to the approach is warranted.

Comment [CH20]: Either insert a citation to support this assertion or remove this sentence. Vijaya.

54. Page 5-8, Paragraph 2 - Provide references, where appropriate, for the information concerning metals mobility, complexes, hard and soft electron fields, etc. in this paragraph.

Navy Response: References are included in Section 9 for the EPA 1996(d) guidance. Additionally, the references "(EPA 1996d), and (EPA 2004)" were added to Page 5-8, end of Paragraph 2. An additional reference was added to Section 9 References "EPA 2004 – *Framework for Metals Risk Assessment*, *Draft*, Risk Assessment Forum, U.S. Environmental Protection Agency. EPA/630/P-04/068a, July 2004."

55. **Page 5-9, Paragraphs 4 and 5 - Provide references, where appropriate, for the information concerning the fate and transport characteristics of iron and manganese.**

Navy Response: The reference "(ATSDR 2000)"was added to Section 5.4.2.5 Metals, Iron and Manganese. The reference "ATSDR, 2000 Toxicological profile for Manganese, September." was also added to the Section 9 References.
The reference "(ATSDR 1992)" was added to Section 5.4.2.5 Metals, Thallium. The reference "ATSDR 1992 Toxicological profile for Thallium, July" was also added to Section 9 References.
The reference "(ATSDR 1992b)" was added to Section 5.4.2.5 Metals, Arsenic and Vanadium.
The reference "ATSDR, 1992b Toxicological profile for Vanadium, July" was also added to the Section 9 References.

The reference "(EPA 2004)" was added to Section 5.4.2.5 Metals, Fate and Transport of Metals, at the end of the first paragraph on page 5-7. The reference "EPA 2004 – *Framework for Metals Risk Assessment, Draft*, Risk Assessment Forum, U.S. Environmental Protection Agency. EPA/630/P-04/068a, July 2004" was also added to the Section 9 References.

56. **Page 5-9, Paragraph 6 - Provide references, where appropriate, for the information concerning the fate and transport characteristics of thallium.**

Navy Response: Please refer to response to comment #55 above.

57. **Page 5-9, Paragraphs 7 and 8 - Provide references, where appropriate, for the information concerning the fate and transport characteristics of arsenic and vanadium.**

Navy Response: Please refer to response to comment #55 above.

58. **Page 5-11, Last Sentence – The text indicating the occurrence of limited migration should be expanded to detail which constituents are migrating and the extent of migration.**

Navy Response: The text immediately above the final sentence details all the various chemicals detected in the respective media, and whether they indicate a cross media transfer or downgradient migration. The findings discussed indicate that no migration is occurring. Therefore, the sentence was changed as follows, " Overall, the data suggest that there is no migration occurring at the site." Insert SSL data here. Beef it up.

Comment [CH21]: This needs to be revised. Clearly, constituents migrate through soil. Please revise this to be specific to what you really mean. Do you mean leaching to groundwater is not producing unacceptable constituent levels.? Let's discuss. Vijaya, John

59. **Table 5-4 –**
    a. **The sources "d" (Spectrum Laboratory) and "e" (Mackay et al., 2000) are not used in this table and should be deleted.**
    b. **The acronyms "VOC" and "SVOC" should be spelled out in the footnotes.**

Navy Response:
a. The sources was deleted.
b. The acronyms VOC and SVOC was spelled out in the footnotes.

60. Figure 5-1 –

aEPA 2001 describes the Construction Worker as a short-term receptor who is exposed to soil contaminants during the workday for the duration of a single construction project (typically a year or less). The activities for this receptor typically involve substantial on-site exposures to surface and subsurface soils. The construction worker is expected to have a very high soil ingestion rate. EPA assumes the Construction Worker to be exposed to contaminants via the following direct and indirect pathways: incidental soil ingestion, dermal absorption, inhalation of volatiles outdoors, and inhalation of fugitive dust. Consequently, the Conceptual Site Model should identify the Construction Worker as a potential human receptor for surface soil.

c. The conceptual site model should include residential exposures to subsurface soil. Future residents could become exposed to subsurface soils through a variety of mechanisms, including excavations for residential building foundations.

d. The conceptual site model should evaluate the potential future residential exposure scenario. Therefore, remove "?" marks and the definition of this mark from Figure 5-1.

e. Figure 5-1 should be consistent with the CSM presented in the risk assessment reported in Appendix J. The CSM in Appendix J evaluates the potential future residential pathway for surface soil, and evaluates ingestion and dermal exposure for subsurface soil.

fA resident could be exposed to surface water and sediment. Therefore, the risk assessment should evaluate ingestion and dermal contact with surface water and sediment as potentially complete exposure pathways.

g. For the future residential exposure scenario, clarify why root uptake of metals and subsequent ingestion in home-grown vegetables is not a pathway of concern for this site.

hDermal contact and incidental ingestion of groundwater is a complete exposure pathway for construction workers, as groundwater is located above development depth (i.e., 10 feet bgs).

Navy Response:
a. Figure 5-1 has been edited to identify the Construction Worker as a potential human receptor for surface soil. Figure 5-1 is shown in Attachment B.
b. Figure 5-1 has been edited to show residential exposures to subsurface soil. Figure 5-1 is shown in Attachment B.
c. The direct exposure to subsurface soil to the future hypothetical residential receptors was included in the risk assessment and the Site Conceptual Model was edited to indicate a potentially complete exposure pathway for subsurface soil exposure under hypothetical residential land use assumptions. Figure 5-1 is shown in Attachment B.

Comment [CH22]: No it has not. Someone needs to do a QC check to ensure everything we say we're going to do, we do. This is a common complaint from TRC and I want to stop giving them ammunition. Vijaya.

Comment [CH23]: No it was not. Vijaya.

d. A hypothetical residential land use was assumed and evaluated in the risk assessment. In Figure 5-1 the '?' was changed to 'x' and a footnote was added to reflect that the scenario is not pertinent to the site; thus is evaluated for hypothetical risk estimation purpose. Figure 5-1 is shown in Attachment B.

e. The recreational adult, youth, and child scenario evaluated represents a nearby resident visiting the ephemeral stream for recreational purpose. Thus, such potential exposure is already evaluated in this risk assessment.

f. There are no significant inorganic releases reported for the site. The outdoor inorganic chemical concentrations at the site are similar to the background levels, particularly for the inorganics identified to contribute to risks, as discussed in Section 6.10.1. Thus, bioaccumulation in plants grown in site soils will not be different from background areas. Also, as indicated in the report, the location of the site makes it undesirable for residential development, thus the home-grown vegetable consumption scenario is far fetched for this small, relatively uncontaminated site.

g. Such a scenario was not evaluated, as any deep trenching is performed by machinery and direct dermal exposure is assumed when groundwater occurs in much shallower depths. Also, the site groundwater had only inorganic chemicals as COPCs, which do not penetrate effectively through skin, and these chemicals are mostly associated with the salinity of the water, not from site releases. Therefore, no change to this exposure scenario in this risk assessment is warranted.

Comment [C24]: Brett thinks this should be removed and is irrelevant. Remove from figure. Roni.

Comment [CH25]: We should not be making these kinds of statements. They are too subjective. We need to make statements that can be backed up with quantitative information. Vijaya. Roni

Comment [CH26]: Again, this is irrelevant for the risk assessment. It can be used in making risk management decisions for the site, but for the risk assessment, it is irrelevant. Vijaya. Roni

Comment [CH27]: Not according to EQB Comment #67. Vijaya. Roni.

Comment [C28]: FYI – for groundwater at this depth, we would typically evaluate the cw scenario, however, the rational presented in the RTC seems ok for not evaluating – may need to add it to the text, if it is not already in there somewhere. (Roni Warren)

61 Page 6-1, Section 6.1, Paragraph 1 - The location of this site near a roadway and the presence of a building on-site also support the assumption that this site could be residential in the future. The statement that the residential exposure scenario is included simply for comparison is misleading. Unless it can be demonstrated that a residential exposure scenario is not a potential future use of this site, this statement along with the statement that the features at the site preclude residential use should be removed here and elsewhere in the report as appropriate.

Navy Response: The Navy disagrees with the comment. As can be noted from the figures and photos, the site is within 50 ft from the paved edge of the road, and likely within the right-of-way. The 'building' is the remains of the dilapidated concrete walls of the former power house. It is not inhabitable, and would need to be removed for any future development of the site. This small site that is located close to the major access road to this portion of the island is not suitable for residential development. Thus, no change to the existing text is proposed at this time.

Comment [CH29]: I don't think there is any reason to state this. We did the risk assessment under the residential scenario, so I don't see any reason to make statements in the risk assessment sections about the sites not being suitable for residential use. Why not leave these types of statements to sections or documents where we make risk management recommendations/decisions. Also, I'm not sure I agree with our position that because the site is 50 feet from a road and near a ditch that it is unsuitable for residential use. Let's discuss. Vijaya. Roni

62Page 6-5, Section 6.5.1, Paragraph 2 - As stated previously, subsurface soils should be screened using residential PRGs. If additional contaminants are identified as contaminants of potential concern for the residential exposure scenario for the risk assessment, risks associated with exposure to contaminants in subsurface soil should be re-evaluated.

Navy Response: This comment has been repeated several times. Please refer to responses to comments 13, 15, 27 and others above.

63.Page 6-5, Section 6.5.1, Third Bullet - The second sentence is unclear. If the migration to groundwater SSLs were used to eliminate chemicals from evaluation in the risk assessment, then an additional screening should be done to confirm that the migration to groundwater SSL is more conservative than the residential PRG for each chemical that was screened out.

Navy Response: Migration to groundwater screening and COPC screening are two independent processes. No chemical exceeding a PRG was eliminated from risk assessment, and there is no relationship between SSL value exceedence and the PRG exceedence. The technical basis for SSL values is independent from the PRG values; thus, chemicals exceeding SSLs are not included as COPCs for risk assessment. This is according to the EPA guidance. The sentence, "The leachability-based comparison results were discussed in Section 5.0, and were not included as COPCs in this section." was revised to read: "The leachability-based comparison results were discussed in Section 5.0."

Comment [CH30]: Cite the guidance. Vijaya. Roni

64. Page 6-5, Section 6.5.1, Paragraph 7 - Provide further discussion in the text on the applicability of facility-wide background surface water data to site surface water. Include a discussion on the water chemistry of the surface water samples used for background and site surface water (e.g., specific conductance, pH, salinity, turbidity).

Navy Response: As explained in the last paragraph of 6.5.1 "Collection of a background surface water sample was proposed in the work plan; however, due to the absence of standing water south (upstream) of the site, no such background surface water sample could be collected. The site wide background surface water data were used for comparison with AOC H surface water data." The following sentence will be added to the end of Page 6-5, Section 6.5.1, Paragraph 7 which states "The site wide background surface water data were used for comparison with the AOC H surface water data. Details of the site wide background study are included in the report titled Final Soil, Groundwater, Surface Water, and Sediment Background Investigation Report, CH2M HILL, October, 16, 2002."

65. Page 6-7, Section 6.6.1, Paragraph 4 - Clarify whether the 1997 updated *Exposure Factors Handbook* or the 1991 version was used as a reference for exposure parameter data. The 1997 reference is listed in Section 6.1.

Navy Response: The Table 4s in Appendix J includes a comprehensive list of the exposure factors and their source, which includes the 1997 updated reference to the exposure factors guidance.

Comment [CH31]: Again, I don't think we are answering their comment. The first bullet in this section cites the 1989 Exposure Factors Handbook. Vijaya. Roni.

66. Page 6-8, Section 6.6.1.2, First Paragraph - The second sentence states that subsurface soil samples were collected from 0.5 to 10 feet bgs. However, it appears that subsurface soil samples were consistently collected from 4 to 6 feet bgs. As requested earlier, provide further discussion on the depths at which subsurface soil samples were collected, the rationale for selecting that depth, and whether these soils are representative of subsurface conditions from 0.5 to 10 feet bgs.

Navy Response: The nature and extent section of the report discusses the sampling depth and site characterization. Please refer to Section 4.0 for this requested information. Risk assessment uses the data generated during site characterization, thus it is not within the scope of risk assessment to provide justification for sampling depths. Edit sentence to say it was 4-6

Subsurface soil samples were collected in accordance with the regulator approved Work Plan.

Comment [CH32]: This is not an appropriate response. Also, we need to make statements that are consistent with what we say in Section 4. If Section 4 says we collected subsurface soil from 4 to 6, then that's what it needs to say in Section 6.6.1.2 as well. JWS

Comment [C33]: This last sentence is not necessarily true. Risk assessment needs are considered in determining sample collection, I would delete this sentence.
(Roni Warren)

67. Page 6-8, Section 6.6.1.2, Paragraph 2 - The assumption that inorganics do not have the potential to transfer through the skin is not consistent with current EPA guidance on evaluating dermal exposure (RAGS Part E). This guidance states that "...the skin has a limited capacity to reduce the transport rate of inorganic and/or highly ionized organic chemicals. In addition, the viable epidermis will contribute insignificantly as a barrier to these chemicals…" This guidance presents specific methodology for evaluating dermal exposure to inorganics in water. Therefore, the risks associated with this exposure pathway should be quantified for all applicable receptors.

Navy Response: The residential receptor was evaluated for dermal exposure to all site media. However, majority of the selected COPCs are similar to those found in saline waters common to this area of the island located near ocean. Thus, any exposures are quantified, though they are not likely specific to the site.

Comment [C34]: What about other receptors – if not, need to state why. RW. GBD – I don't understand what Roni is stating here. It seems like we evaluated the scenario that they are saying we didn't do. Don't know. Roni

Comment [CH35]: I think we need to clarify the last sentence of that second paragraph, which states no dermal contact with groundwater was not quantitatively assessed. We should clarify that sentence to apply to construction workers. Vijaya.Roni

68. Page 6-9, Section 6.6.1.4 - This paragraph states that the recreational receptor was assumed to visit the site both days of the weekend, 104 days per year. However, the risk assessment evaluates exposure to surface water and sediments for only 52 days per year. The risk assessment should be corrected to represent the number of days of exposure presented in the text.

Navy Response: The ephemeral stream adjacent to the site is small, relatively narrow, overgrown, and surrounded by steep edges. It is not similar to a pool of water such as rivers, lakes, or oceans. The frequency of exposure is assumed to be half the time a recreational visitor is present at the site. This is a conservative assumption for this site. Therefore, a change is not warranted. Additionally, the only COPCs found in surface water and sediments are inorganic chemicals that are common to all background media.

Comment [CH36]: I think this is a fine response, but is it stated somewhere in the text our assumption that the frequency of exposure is half the time the visitor is present at the site? Vijaya.Roni

69. Page 6-11, Section 6.6.2.9 - The default PEF is not applicable to construction worker exposure to particulates. The same draft EPA guidance referenced in this section also provides the equation for calculating a PEF applicable to the construction worker exposure scenario.

Navy Response: The site is mostly overgrown with no clear space for mowing/maintenance need. The remains of the former building is fully covered with vines and weeds. Thus there is no exposed soil for generation of dust. The conservative assumptions used in the default PEF derivation by EPA were accepted because this pathway does not significantly contribute to overall intake from various pathways. Therefore, additional efforts were not made to assess a site-specific PEF values, as such value will still have to be hypothetical for the assumptions of

Comment [C37]: I don't think this answers the comment. For construction worker, digging, clearing, etc would liberate more particulates and it would result in a higher risk. However, if doing so would not change our risk management decisions, we can state that here.
RW GBD – I agree with Roni that we did not adequately respond to the comment. Vijaya. Roni

the exposed areas for dust generation, thus will not be any more pertinent to the site. Considering subsurface soil COPCs are every limited, additional efforts are not justified for this insignificant exposure pathway.

70. Page 6-13, Section 6.8 - As stated in EPA's Response to Comments on the National Contingency Plan (EPA, 1990), EPA's preference is to set cleanup levels at the more protective end of the risk range. However, site-specific or remedy-specific factors will enter into the determination of where within the risk range the cleanup standard for a given contaminant will be established. EPA further states that as risks increase above 10^{-6}, they become less desirable. Therefore, the third sentence is misleading and should be eliminated. It is inappropriate to have risk management opinions stated in this section of the HHRA. The second and third paragraphs should be moved to Section 6.10. Section 6.8 should describe the methodology used in developing risk estimates and present those risk estimates. Section 6.10 is dedicated to comparing site data to background.

Navy Response: The target risks and HI are used to determine if a calculated risk is within acceptable limits or if that pathway and receptor need to be further carried forward for risk management decision as can be noted from the risk results discussion for each of the receptor group. Therefore, it is essential to have the acceptable risk ranges in this section. Also this is consistent with EPA policy for risk characterization as stated in the guidance USEPA, 1992, "*Guidance on Risk Characterization for Risk Managers and Risk Assessors.*" Memorandum from F. Henry Habicht II, Deputy Administrator to Assistant Administrators, Regional Administrators, February 26, 1992

Comment [CH38]: The response is fine, but again, we are not responding to their comments adequately. They make a statement that the third sentence is misleading and should be eliminated. Address that specifically. They say the second and third paragraphs should be moved to Section 6.10 (which I agree with). Address that comment specifically. Vijaya. Roni

71. Page 6-14, Section 6.8, current maintenance worker - The risk estimate is within the risk range, not below the risk range. Correct the text here and elsewhere as appropriate. The risk to an overall residential receptor representing 30 years of exposure (i.e., the sum of the adult and child cumulative risk estimates) should be presented.

Navy Response: The acceptable risk range is correctly quoted in the text. When risk is below 1 in a million level, it is below the acceptable risk range. The methodology used for estimating risks is consistent with the work plan and the risk assessments conducted at other sites within west Vieques. The proposed assumptions indicate that a person lives in the same location as a child and as an adult, while majority of the population move on an average every 9 years. Since the values are present next to each other, then can easily be added, if a site management decision requires such an evaluation.

Comment [CH39]: That's not what the comment stated. The comment stated that the risk estimate is within the risk range, not below it. The comment is correct and our text needs to be revised, which is a simple fix. 3.2 x 10-6 is not below the acceptable risk range, it is within it. Vijaya. Jws search

Comment [CH40]: I'm not sure what the relevance of this is. They say we should add adult and child to show a cumulative risk estimate. Is this in accordance with guidance or not. This should be a simple response. Either what they are asking is not consistent with guidance and we state that, or it is in accordance with guidance and we state what the revision will be. Vijaya./Roni

72. Page 6-15, Section 6.9.1, Paragraph 1 - PREQB considers the evaluation of groundwater classified as a potable groundwater resource in the risk assessment appropriate. The Navy has identified exposure pathway specific risk estimates and has provided a discussion on background concentrations for metals. Therefore, including chemicals detected in groundwater in a risk assessment where groundwater is classified as a potable source is not a source of uncertainty. Not doing so would be a source of uncertainty.

Navy Response: The groundwater was evaluated as a potable source. It is saline, thus can not be used as potable water, which is a fact based on site-specific conditions, thus risk assessment conducted is unrealistic and has substantial uncertainty.

Comment [C41]: I don't think this answers the comments. They are saying we need to evaluate risk associated with potable groundwater, and that it is not an uncertainty, we should said we did do that, but use of the groundwater as a potable source is an uncertainty. RW GBD – I agree with Roni. Vijaya./Roni

73. Page 6-16, Section 6.10 - As commented earlier, provide a discussion in the text on the soil characteristics of the facility soil samples used to calculate background concentrations as compared to site soils in which metals were detected.

Navy Response: Section 6.10 is not the appropriate section to discuss background soil characteristics. However, to assist the reader, the following sentences will be added INSERT WHERE THEY WILL BE ADDED: "Background soil characteristics are discussed in the : CH2M HILL 2001c INSERT BACKGROUND REPORT CITATION. The report notes that the soil inorganic concentrations from all soil types were statistically comparable."

74. Page 6-17, Section 6.10.2 - Remove references to site-wide background concentrations for groundwater from this section. Concentrations of metals detected in on-site wells should be compared to site-specific background monitoring well data.

Navy Response: It was previously agreed with the reviewing agencies (including EQB) that both site-specific and facility-wide background data was used during site-specific RIs, as indicated in the background report as well. The methodology used is consistent with what was agreed to by the Navy and the agencies (EPA and EQB).

Comment [CH42]: This is fine as long as you cite the document where this agreement is memorialized. Vijaya.

75. Page 6-19, Section 6.10.2.3, Paragraph 2 - Provide supporting documentation that shows that the ORP and/or pH are reflective of reducing conditions for each groundwater sample where filtered and unfiltered manganese concentrations are similar.

Navy Response: Section 5.0 (Table 5.2) includes further details on groundwater inorganic chemicals concentrations and the data interpretation. When filtered and unfiltered samples have similar concentrations, conditions are favorable for dissolution of inorganics, as observed at this site. If the conditions are altered, then the metal may precipitate out, which could occur under altered pH and ORP conditions. The technical justification provided is only an explanation of the observed site conditions and interpretation of the possible reason. There is no know source of manganese associated with the operations of the former power house. Therefore, pH conditions are favorable for higher solubility of the major cations that otherwise may occur as colloidal particles removed by filtration.

Comment [CH43]: Again, we're really not addressing their comment. They want to know if the ORP and/or pH data support reducing conditions. Do they? Alternatively, is there some other way to make our point in the text? Vijaya.

Comment [CH44]: Not sure how the previous leads to this conclusion. Vijaya. Roni

76. Page 6-19, Section 6.10.2.4 - Provide supporting documentation or a reference to a table on the turbidity or total suspended solids of the samples with elevated thallium detections referenced in this section.

Navy Response: The text states that no dissolved thallium was detected in either of the wells where elevated (with respect to background) total thallium was detected,

therefore this information is the supporting documentation.**7. Figure 6-2 – The locations of the four (4) surface soil samples collected within the building should be indicated and the appropriate arsenic concentrations presented.**

Navy Response: Figure 6-2 has been edited to include the four surface soil samples collected inside the building. Figure 6-2 is included in Attachment P.

78. Page 7-10, Section 7.2.2.1, Paragraph 3 - EPA guidance requires the use of the maximum bioaccumulation values for screening purposes (EPA, 1997). Therefore, 90th percentile BCFs should not be used. The screening should be evaluated to determine if the use of 90th percentile values resulted in the elimination of chemicals from further evaluation that should be included in the risk assessment.

Navy Response: USEPA ERA guidance indicates that conservative assumptions should be used in the screening portion of the ERA (Steps 1 and 2). Although the USEPA guidance suggests that the most conservative BAF values available be considered in the screening ERA, the use of maximum values is likely to be overly conservative for chemicals with large enough data sets to calculate meaningful distributions because outlying values may be present. The use of 90th percentile values is considered adequately conservative for screening ecological risk assessments (Sample et al. 1998a, 1998b; Bechtel Jacobs 1998a, 1998b, cited below). No changes to the text or BAFs will be made.

Bechtel Jacobs. 1998a. *Empirical models for the uptake of inorganic chemicals from soil by plants.* Prepared for U.S. Department of Energy. BJC/OR-133. September.

Bechtel Jacobs. 1998b. *Biota sediment accumulation factors for invertebrates: review and recommendations for Oak Ridge Reservation.* Prepared for U.S. Department of Energy. BJC/OR-112. August.

Sample, B.E., J.J. Beauchamp, R.A. Efroymson, G.W. Suter II, and T.L. Ashwood. 1998a. *Development and validation of bioaccumulation models for earthworms.* Environmental Restoration Division, ORNL Environmental Restoration Program. ES/ER/TM-220.

Sample, B.E., J.J. Beauchamp, R.A. Efroymson, and G.W. Suter II. 1998b. *Development and validation of bioaccumulation models for small mammals.* Environmental Restoration Division, ORNL Environmental Restoration Program. ES/ER/TM-219.

79. Page 7-13, Section 7.2.2.1, Dietary Intakes - Provide a discussion on the assumed dietary composition assumptions (i.e., PDFi) of the dietary intake equation provided in Table 7-8. EPA guidance requires a diet composed of 100% of the most contaminated food item. Therefore, the rationale for varying from the EPA guidance should be discussed in the text of the report.

Navy Response: The screening risk estimates were modified to be based upon exclusive diets. Table 7-8 (Attachment J) has been updated to reflect these changes. Table 7-14 (Attachment J) was also revised to reflect the changes to the HQs resulting from the changes to the dietary composition. Tables 7-15, 7-16, 7-17, and 7-23 (Attachment J) have been modified to reflect changes in the COPCs from Step 2 (based upon the revised results in Table 7-14).

80. Page 7-13, Section 7.2.3.1, Paragraph 2 - EPA has developed ecological soil screening guidance and levels (Eco SSLs) that should be used to screen soils. The latest publication is a memo from the Office of Solid Waste and Emergency Response dated December 23, 2003 on the "*Release of Guidance for Developing Ecological Soil Screening Levels (Eco-SSLs) and Eco-SSLs for Nine Contaminants*." This resource should be consulted first, followed by the resources identified in this section. If screening criteria for sediment are not available from these sources, screening criteria should be calculated using the equilibrium partitioning approach or by deriving a NOAEL-based screening criterion from laboratory studies. EPA's Ecotox database should be reviewed to determine if studies are available for chemicals for which NOAELs will be derived.

Navy Response: For soil, please see the response to Comment 13a. For sediment, there were no detected organic constituents that lacked available screening values.

81. Page 7-14, Section 7.2.3.1, Paragraph 3 - Provide salinity data in this section that shows that the water is saline.

Navy Response: Salinity data is provided in Section 3, Table 3-8, and was referenced in this section. The following sentence was inserted at the end of the first paragraph on page 7-14: Table 3-8 (Section 3) summarizes the field surface water quality parameters for this site. Salinity values at the four surface water stations ranged from 25.8 to 32.2 parts per thousand, and therefore demonstrate that the on-site surface water body is a marine system.

82. Page 7-14, Section 7.2.3.2, Paragraph 2 - Several of the laboratory studies upon which NOAELs were derived are subchronic studies. Since an additional uncertainty factor of 10 should be used to convert subchronic studies to chronic studies, the text and tables of the report should clarify that this was done. If an additional uncertainty factor should be incorporated into the NOAEL, the screening level assessment and the baseline ERA should be evaluated to determine if the application of the uncertainty factor to subchronic studies results in unacceptable risks to the identified assessment endpoints.

Navy Response: The appropriate uncertainty factors were applied to all subchronic studies used as indicated in Table 7-8a (Attachment J), which was added to the ERA. Tables 7-9 and 7-10 will also be footnoted to indicate which uncertainty factors listed in Table 7-8a were applied to derive the values reported in these tables.
The second paragraph of Section 7.2.3.2 (page 7-14) was replaced with the following:
"Growth and reproduction were emphasized as assessment endpoints because they are the most relevant, ecologically, to maintaining viable populations and because they are generally the most studied chronic toxicological endpoints for ecological receptors. If several chronic toxicity studies were available from the literature, the most appropriate study was selected for each receptor species based upon study design, study methodology, study duration, study endpoint, and test species. Ingestion screening values were derived for both chronic No Observed Adverse Effect Level (NOAEL) and chronic Lowest Observed Effect Level (LOAEL) endpoints. The applicable uncertainty factors from Table 7-8a were applied to derive these screening values,

where necessary. Ingestion screening values for mammals and birds are summarized in Tables 7-9 and 7-10, respectively."

83. Page 7-16, Section 7.3.1, Paragraph 2 - Provide a table of the area use factors used in the Step 3A calculations referred to in the last bullet of this paragraph.

Navy Response: Table 7-18 in Attachment J has been updated to replace the Home Range data column with the Area Use Factor values and the supporting data and references used to calculate these AUF values. This table was referenced in the last bullet of Section 7.3.1.

84. Page 7-18, Section 7.3.2.3 - As described in the NOAA SQuiRTs, Apparent Effects Thresholds are values above which adverse biological impacts would always be expected due to exposure to that contaminant alone. Adverse impacts are known to occur at levels below the Apparent Effects Threshold. Therefore, these values are not consistent with the screening criteria used for other environmental media or with this phase of the ERA. The EPA Ecotox database should be reviewed to determine if toxicity data is available that can be used to develop NOAEL-based screening criteria. If data does not exist to develop appropriate screening criteria, these chemicals should be retained as PCOCs. Also, Section 7.3.3.3 provides a list of metals retained as PCOCs that Section 7.3.2.3 indicates were not retained as PCOCs, and the list provided in Section 7.3.3.3 does not include the metals identified in Section 7.3.2.3 as being retained as PCOCs (beryllium and thallium). Clarify this apparent discrepancy.

Navy Response: It is acknowledged that the AET-based values reported in the text (which are actually the lowest of several AET values from multiple taxa) are less conservative than the screening values used in the screening tables. For that reason, these AET-based values were not used in the Step 2 screening tables to conduct the screening. However, as AET-based values are sometimes used to derive clean-up criteria, a comparison to these values for chemicals that lack other, more conservative screening values is useful to determine the likelihood for adverse effects in the Step 3A refined assessment.
Section 7.3.3.3 was revised to discuss only beryllium and thallium which were the only sediment PCOCs retained, as described in Section 7.3.2.3. The following text will replace the existing text of Section 7.3.3.3:
"Beryllium and thallium were identified as PCOCs in sediment from AOC H. Onsite concentrations of these parameters were compared to concentrations in an upgradient sediment sample in Table 7-25. Ratios were developed for comparing maximum site concentrations with upgradient sediment concentrations. Maximum site concentrations of beryllium slightly exceeded the upgradient concentration (ratio of 1.02), while maximum site concentrations of thallium were below the upgradient concentration (ratio 0.4). Because these inorganics were comparable to or below background conditions, they are not likely to pose unacceptable risk to directly exposed aquatic organisms, and therefore they will not be considered further as PCOCs."
Table 7-25, as referenced in Section 7.3.3.3, was also updated to show only the comparison of beryllium and thallium to upgradient concentrations. The updated Table 7-25 is shown in Attachment J.

85. Page 7-18, Section 7.3.2.4 - It is not clear from this section that zinc was not retained as a PCOC. It is not until Section 7.3.3.4 that it is made clear that no chemicals associated with upper trophic level receptors were retained. Provide more detail why zinc was not carried forward as a PCOC.

Navy Response: The last sentence in Section 7.3.2.4, Page 7-18, was changed to the following: "However, the LOAEL was not exceeded for zinc (HQ of 0.19) and the site is small; therefore, the exposure dose for zinc is expected to be protective of the population, which is the assessment endpoint being evaluated. Because none of the LOAELs were exceeded, and NOAELs were not exceeded for any other terrestrial or aquatic receptor, no PCOCs for upper trophic level receptors were retained for further evaluation."

86. Page 7-20, Section 7.3.3.3 - The third sentence states that maximum site concentrations were compared to maximum upgradient sediment concentrations. However the previous sentence references the upgradient sediment sample as the background sample. Clarify in the text what is meant by the maximum background sediment concentration when only one sample was collected upgradient from the site. The last sentence states that barium does not have a literature screening value available and this contributes to the potential for unacceptable risks to be low. Screening values can be derived from studies as described in EPA's guidance *Process for Designing and Conducting Ecological Risk Assessment,* Interim Final. Furthermore, sediment quality criteria can also be calculated from water quality criteria using the equilibrium partitioning approach.

Navy Response: : It is correct that a single upgradient sample was collected at this site. Therefore, the text (and Table 7-25) was modified to remove the word "maximum" when referring to background.
As described in the response to Comment 84, Section 7.3.3.3 was updated to describe only beryllium and thallium, which were the only retained PCOCs. Because barium will no longer be included in this section, the comment regarding development of a screening value for barium no longer applies.

87. Page 7-20, Section 7.3.3.4 - Provide further detail on exceedances of NOAELs. The discussion should include information on the magnitude of the difference between a NOAEL and a LOAEL used for screening and the basis for each LOAEL (i.e., endpoint for the study, such as an LD50).

Navy Response: Please see the response to Comment 85.

88. Pages 7-21 to 7-23, Section 7.4 - The uncertainty associated with the lack of screening criteria for sediment and/or water for specific contaminants should be discussed in this section. Each chemical and media should be identified as part of the discussion.

Navy Response: The following text was added to the second bullet in Section 7.4 (page 7-21):

"For the Step 2 screen: (1) 1 pesticide, 12 SVOCs, and 3 VOCs detected in surface soil lacked screening values; (2) 4 inorganics and 1 SVOC detected in surface water lacked screening values; and (3) 8 inorganics detected in sediment lacked screening values. These chemicals were evaluated in Step 3 through a combination of background/upgradient comparisons and a comparison to toxicological information from the literature. Thus, the uncertainty associated with the lack of screening values for these detected chemicals is low because there were other, relevant data that allowed them to be evaluated.

89. Page 7-31, Table 7-6 - Provide a specific reference to Section 7.2.2.1 of the document which discusses the soil-rat BAF.

Navy Response: Table 7-6 shown in Attachment J has been updated to include a specific reference to Section 7.2.2.1.

90. Page 7-60, Table 7-18 - Provide a reference for the allometric equation used to calculate average water and food ingestion rates.

Navy Response: Table 7-18 shown in Attachment J has been updated to include references for the allometric equations.

91. Appendix J, Table 4.1 - Clarify why youths are defined as 9 through 18 for the purposes of determining body weight, but are defined as 8 through 18 for the purpose of determine skin surface area. An age group of 8 to 18 (i.e., data for ages 8<9 up to and including 17<18) is preferred.

Navy Response: In the values provided by EPA, these are the available age groups. An 8 to 18 year old youth was not listed. Therefore, closest age group was selected, which is for the youth between 9 to 18 years of age.

92. Appendix J, Tables 4.2 and 4.3 - Footnote 3 describes the basis for the body weight for a youth, 51 kg, as the average of the mean values for boys and girls ages 9 through 18. However footnote 4 for Table 4.3 states that the basis for the same body weight (51 kg) is the average value for the 6 year old and 18 year old male body weight. Clarify which approach was used. The age groups represented by the youth receptor should be consistent across exposure pathways.

Navy Response: All the footnotes was corrected to reflect consistently and accurately the age group of the population used for the body weight.

93. Appendix J, Table 4.3, Footnotes 7 and 8 - These footnotes state that 25% of the total surface area for either a 6 to 18 year old or 0 to 6 year old was used as the skin surface area exposed to sediments. It is unclear why lower body sizes have been incorporated into the skin surface area for a youth. Lower body size results in lower exposure. It is unclear why a percentage is used when EPA provides specific body part skin surface areas that can be summed to determine an average skin surface area for a particular age group. This approach was used for the adult

receptor and should be used for the youth and child receptor as well. The age groups represented by the youth receptor should be consistent across exposure pathways.

Navy Response: EPA guidance includes the surface area by age-groups. For youth, the 6 to 18 year old group was used for surface area. Because children will be wearing clothing on most of their body, 25% of the skin surface area is assumed to be available for contact with sediment and surface water. The child scenario used surface areas for the age-group 0-6 yr, again taken from EPA guidance. The skin surface area and body weight age groups were not consistently.

Comment [CH45]: How can only 25% of the skin surface come into contact with surface water. Any part of the body in water, clothed or not, will come in contact with surface water. Vijaya. Roni

Comment [CH46]: This sentence is incomplete. Vijaya. Roni

94. Appendix J, Table 4.4, Footnotes 6 and 7 - Refer to previous comment on Table 4.3, Footnotes 7 and 8 above. Also, surface water penetrates clothing; therefore, the skin surface area should include arms, hands, legs and feet for the appropriate age groups.

Navy Response: Comment noted. Skin surface area used is comparable to those proposed in the work plan, however uses the surface area values form the latest guidance. Any minor changes suggested by this comment will not substantially change the existing intake values. Therefore, no changes are proposed at this time to this scenario and pathway.

Comment [CH47]: Sentence is grammatically incorrect and "from" is misspelled. Also, I think we need to be more specific in the response to adequately respond to their comment. Let's discuss. Vijaya. Roni

95. Appendix J, Table 4.5 - Due to weather conditions, it is not protective to assume that maintenance workers will be wearing long pants. It is more protective to assume that the legs will be exposed. The skin surface area exposure parameter value should be adjusted accordingly.

Navy Response: The exposure scenario used is consistent with other site risk assessments previously conducted and consistent with the work plan. Therefore, no changes are warranted.

Comment [CH48]: Cite them. Also, aren't the assumptions used consistent with EPA guidance? If so, cite guidance. Vijaya.

96. Appendix J, Table 4.6 - Due to the tropical weather conditions, it is not protective to assume that a maintenance worker would only be on-site for 6 months each year. The exposure duration should be 2 days per week for 52 weeks per year.

Navy Response: Please see response to comment 68 above.

Comment [CH49]: Comment 68 has nothing to do with a maintenance worker.Vijaya. Roni.

97. Appendix J, Table 4.9 - Refer to comment to Page 6-11, Section 6.6.2.9 regarding appropriate construction worker PEF.

Navy Response: Please refer to response to comment 69.

Comment [CH50]: We did not adequately respond to Comment 69. Vijaya.

REFERENCES

EPA, 1987 *Compendium of Superfund Field Operations Methods*, United States Environmental Protection Agency, EPA/540/P-87/001, 1987.

EPA, 2001 *Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites - Peer Review Draft*, United States Environmental Protection Agency, OSWER 9355.4-24, March 2001.

EPA, 2002 *Ground-Water Sampling Guidelines for Superfund and RCRA Project Managers – Ground Water Forum Issue Paper*, United States Environmental Protection Agency, EPA 542-S-02-001. May 2002.