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LETTER AND ATTACHED THE U S NAVY RESPONSE TO RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT AND U S EPA REGION I COMMENTS ON THE DRAFT REMEDIAL INVESTIGATION REPORT SITE 22 NS NEWPORT RI
04/23/2015
RESOLUTION CONSULTANTS

Resolution Consultants
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April 23, 2015

U.S. Environmental Protection Agency, Region 1
Federal Facilities Superfund Section
Attn: Mr. William Lovely
5 Post Office Square, Suite 100
Mail Code: OSRR07-3
Boston, MA 02109-3912

Rhode Island, Department of Environmental Management
Office of Waste Management
Attn: Mr. Nicholas Noons
235 Promenade Street
Providence, RI 02908-5767

RE: Response to Comments on Draft Remedial Investigation (RI) Report IR Site 22, Naval Station (NAVSTA) Newport, Rhode Island

Dear Mr. Lovely and Mr. Noons:

On behalf of the Naval Facilities Engineering Command (NAVFAC), Mid-Atlantic (MIDLANT), Resolution Consultants is pleased to provide this Response to Comments (RTC) package on the RI report for IR Site 22. If you have any additional input on the proposed revisions, please do not hesitate to call or request a meeting via conference call or in person.

Please note that in additional to providing a response to each comment, some of the key issues were discussed in the RPM meeting held on March 18th. Also, we included a proposed revision (added "Next Steps") to the conclusions section of the draft RI document for your review.

Please address your input to me (978.905.2314), Mark Kauffman, Activity Coordinator (978.905.2262), and/or Jim Gravette, Navy RPM (757.341.2014).

We look forward to continuing our work with you on this program.

Sincerely,

Neil Thurber, CTO Manager
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RIDEM Comments (3/11/2015) on the
DRAFT REMEDIAL INVESTIGATION (RI) REPORT
Site 22, Carr Point Storage Area
Naval Station (NAVSTA) Newport, Rhode Island
Responses provided in italic text

GENERAL COMMENTS:

1. Further investigation of soil and groundwater at the site is required in order to assess the extent of the trichloroethylene (TCE) and tetrachloroethylene (PCE) releases. In particular, a definitive source area (i.e. significant soil contamination) related to the GA/GB Groundwater Objective exceedances in the vicinity of the former drum storage area and the oil-water separator has yet to be identified.

Response: As discussed in the March 18th RPM meeting in Newport, additional measures will be implemented to confirm the presence or absence of a related source of VOCs to those sample locations that have exhibited detections of VOCs, namely PCE and TCE. At the meeting, it was agreed that the rationale for the additional sampling locations would be addressed in a modification to the existing SAP. The SAP will be reviewed with EPA and RIDEM prior to the additional data gathering. The data will be used as part of the FS and will be presented as part of the FS with other data that may be obtained to help delineate the extents of impacts encountered during the RI.

2. Inconsistent references are made to the time the RI field investigation was conducted. Section 1 indicates the RI field investigation was conducted in 2013/2014. Section 2 indicates the field investigation was conducted between March and July 2014. The data summary tables for the RI include data collected in 2013. The SAP referenced in text of the report is dated 2013; however the final SAP is dated 2014. Please review and correct all references to the time the RI field investigation was conducted and properly reference the draft and/or final SAP.

Response: The statement that field investigation was conducted in 2013/2014 is correct. Clarification to date references will be changed to "field work was conducted from late fall 2013 to the spring of 2014." Additional clarification will indicate that sample locations SB221, -303, - and -324 were completed in 2013 as a result of a continuation of the field efforts that occurred at MRP Site 1. The SAP reference will be corrected as noted.

3. Some figures present analytical results in terms of total concentrations (i.e., total polycyclic aromatic hydrocarbons (PAHs) on Figures 4-1 and 4-2) or in comparison to regulatory criteria. Please provide the totaled results and comparison to regulatory criteria in tabular format. In addition, with respect to figures showing subsurface concentrations, please indicate the depicted concentration is the maximum concentration for a discrete sampling depth if multiple subsurface samples are taken. For example, on Figure 4-10, the posted concentration of 2.9 mg/kg at SB305 was collected from the 4-6 foot interval (and does not include the 1.9 mg/kg from the deeper 8-10 foot sample).

Response: Note that since the delivery of the draft RI report, the Navy has agreed to include data comparisons on the figures as a result of comments made on the MRP Site 1 RI report and discussions among meeting participants. Figures will be updated and select PAHs will be shown

and compared to RIDEM DEC values. Data for subsurface intervals will be shown for the highest value within that location, and only locations above the groundwater table will be noted.

4. Some tables do not include notes (e.g., Tables 4-1 and 4-2) and some tables include an incomplete set of notes (e.g., bold is not defined on Table 4-3). Please conduct a thorough review of the tables to include a consistent set of applicable notes. In addition, please check qualified data as some results appear suspect, including, but not limited to Table 4-2 (e.g., Aroclor 1232 at "**23.U** and **29.U**" at SB305) and Table 4-3 with qualifiers of "ULL".

Response: Tables will be reviewed for correctness. A page of notes will be presented at the front of the tables that can be used for notes that apply to all tables.

SPECIFIC COMMENTS:

1. P. 1, Section 1.0, Introduction**.** In the last sentence, please change, "… that contributes assessing site…" to "…that contributes to assessing the site…"

Response: Edit will be made as requested

2. p. 2, Section 1.3, Operational History**.** The draft RI does not specify what types of materials were stored at the site, or what types of materials were contained within the drums stored at the site. Please provide a discussion that supports laboratory analyses at the site. In addition, please provide further discussion of the uses of site buildings and how they may/may not have contributed to contamination at the site, including unlabeled structures presented on Figure 1-2.

Response: Please note that the laboratory analyses were presented in the SAP, and clarification related to the decision for those analyses will be added to Section 2.1. The exact types of materials stored was not identified other than what is presented in the SI report. The use of the buildings was evaluated at the time of the preparation of the SAP, and there was no additional information related to uses of the buildings that indicates activities that would have contributed to site impacts. The unlabeled buildings are features that are shown on historical plans indicating building outlines, but without labels or uses shown on such plans. Additional clarification will be included in the RI report so this is clear to the reader.

3. p. 2, Section 1.3, Operational History**.** The second paragraph indicated the former drain pits were located adjacent to former Building 187 and in the vicinity of the former material storage area in the southern portion of IR Site 22; however, Figure 1-2 presents one drain pit at a distance of approximately 100 feet from former Building 187 in the central portion of the northern former material storage area and the second drain pit within the southern former material storage area. Similarly, the former oil-water separator is described as near the former drum storage area, but is shown on Figure 1-2 at a distance of over 100 feet from the former drum storage area within the southern material storage area. Additionally, the text indicates a 12-inch vitrified clay pipe was reported to be present under the northern portion of the site, but the location is either not shown or corresponds with the existing stormwater drain line on Figure 1-2. Please clarify the descriptions of these site features to more accurately reflect known or approximate location of these features.

Response: The second paragraph of Section 1.3 will be modified as follows: Infrastructure associated with the historic features at IR Site 22 consisted of two former drain pits, a former oil-water separator, drainage lines and a railroad spur. The former drain pits were located (1) south of former Building 187, near the center of the northern former materials storage area, and (2) south of the former drum storage area. Each appeared to service the former drum storage area based on historical figures. A former oil-water separator is shown on historic reports south of, and apparently originating from, the former drum storage area, with an underground 12-inch reinforced concrete pipe that discharged to Narragansett Bay. As part of off-site stormwater control, an underground 12-inch vitrified clay pipe was reported to be present under the center portion of IR Site 22, emanating from the Defense Highway. The inactive railroad spur is present in the southeastern portion of the site, mostly running parallel to the highway.

4. p. 5, Site Investigation Planning, Site Preparation and Clearing**.** In the third and fourth sentences of subsection, respectively, please change "…SB313, MW10…" to "…SB313, SB312/MW-10..." and "...SB314 and SB311…" to SB314/MW14 and SB311…"

Response: Edits will be made to the location names as requested.

5. p. 5, Section 2.1, Site Investigation Planning, Geophysical Survey**.** In the first sentence of this subsection, please change, "March April, 2014" to "March to April, 2014".

Response: Edit will be made as requested.

6. p. 6, Section 2.1, Site Investigation Planning, Geophysical Survey. In the first sentence of the paragraph following the bulleted items, please change, "…due to access limitation at each…" to "…due to access limitations at each…"

Response: Edit will be made to read "…due to access limitations at each…"

7. p. 6, Section 2.1, Site Investigation Planning, Geophysical Survey**.** In the third sentence of the paragraph following the bulleted items, please change, "…designed to located medium…" to "...designed to locate medium…"

Response: Edit will be made to read "…designed to locate medium…"

8. p. 6, Section 2.1, Site Investigation Planning, Geophysical Survey**.** In the first sentence of the second paragraph following the bulleted items, please change, "…former drain pit were located…" to "…former drain pits were located…"

Response: Edit will be made to read "…former drain pits were located…"

9. p.7, Section 2.1, Site Investigation Planning, Geophysical Survey**.** In the last paragraph of this subsection, please note that the results of the geophysical survey are further discussed in Section 3.4 of this report.

Response: A note to Section 3.4 will be made as requested.

10. p. 7, Section 2.2, Soil Sample Collection**.** In the first sentence of the first paragraph, please change, "…soil sampling locations, as well investigation…" to "…soil sampling locations, as well as investigation…"

Response: Edit will be made to read "…soil sampling locations, as well as investigation…"

11. p. 8, Section 2.2, Soil Sample Collection, Hollow Stem Auger**.** Please include MW-08D in the paragraph. Also please verify the HSA termination depths for MW-4D and MW-6D, which differ from the information presented on the appended logs.

Response: A reference to MW-08D and the hollow stem refusal depth will be included. Well MW-08D was not included in this section because no soil samples were collected from the boring for analyses. Note that the well was also advanced by rock coring and is discussed in greater detail in the Monitoring Well Installation discussion under Section 2.4. Termination depths will include MW-08 and be changed to read "between 14 and 30 feet bgs."

12. p. 8, Section 2.2, Soil Sample Collection, Hollow Stem Auger**.** Please delete the sentence, "At well pairs, the deeper of the pairs were sampled while the adjacent shallow wells were advanced directly to depth with no sampling." This does not appear to be true for this site.

Response: For clarity, this sentence will be deleted.

13. p. 8, Section 2.2, Soil Sample Collection, Direct Push**.** In the second sentence of the second paragraph in subsection, please change "…soil boring OF002…" to "…soil boring OFS002…"

Response: Edit will be made as requested.

14. p. 8, Section 2.3, Sediment Sample Collection**.** In the first sentence, please delete "(OFS001 and OFS002)". Please include appropriate identifiers in the text and figures to match Photographs 13 and 14 (Outfalls 002 and 003, Appendix E, p. 6).

Response: Edit will be made as requested. The outfall identifiers will be clarified.

15. p. 10, Section 2.4, Monitoring Well Installation and Groundwater Sampling, Groundwater Sampling. In the first sentence of subsection, please change "…and the six existing well at IR Site 22…" to "…and six of the seven existing wells…".

Response: Edit will be made to read "six of the seven existing wells".

16. p. 12, Section 2.5, Final Survey and Demobilization, Well Survey and Sample Coordinates**.** In the second sentence of this subsection, please change, "June, 25, 2014" to "June 25, 2014".

Response: Edit will be made as requested.

17. p. 12, Section 2.5, Final Survey and Demobilization, Investigation Derived Waste**.** The second paragraph of the subsection indicates samples of drums were collected weeks prior to collection of monitoring well sampling purge water. Please verify the dates waste characterization samples were collected.

Response: The dates of waste characterization are correct. Aqueous investigation derived waste was collected from purge water generated during well development on June 9 and 10, 2014. The

Navy considered this purge water to be representative of purge water generated during groundwater sampling conducted several weeks later.

18. p. 12, Section 2.6, Laboratory Analysis**.** The analyses described in the text for soil and groundwater samples do not match the corresponding tables within the text. Please correct.

Response: The referenced text will be deleted and the table checked for accuracy and updated if needed.

19. p. 16, Section 3.1, Demography and Land Use**.** In the first sentence of the section, please change, "…fenced area is used an RV storage facility for navy personnel…" to "…fenced area is used as an RV and boat storage facility for Navy personnel…"

Response: Edit will be made to text as requested.

20. p. 16, Section 3.2, Surface Features**.** In the second sentence of the second paragraph, please change, "…of the site 0.6 miles to the northwest…" to "…of the site and 0.6 miles to the northwest…"

Response: Edit will be made to text as requested.

21. p. 17, Section 3.3, Narragansett Bay Conditions**.** In the third sentence of the last paragraph, please define "MHT" and include it in the List of Acronyms and Abbreviations beginning on Page v.

Response: MHT will be replaced with "mean high tide".

22. p. 18, Section 3.4, Former Subsurface Site Structures**.** In the last paragraph, please correct the following two misspellings: "case iron pipes" and "caste iron piping."

Response: Edits will be made each error as requested.

23. p. 19, Section 3.5, Geology, Site Geology**.** The second sentence of the first paragraph states, "rock quality datum values of 14% to 22% in the upper 10 feet (see Boring Log MW-08D)"; however, the RQDs shown on the log are 13.33%. Please review and correct.

Response: The RQDs shown in the text are correct. The log for MW-08D will be fixed.

24. p. 21, Section 3.6, Hydrogeology, Site Hydrogeology**.** In the first sentence of this subsection, please change, "…measurements, calculated…" to "…measurements, and calculated…"

Response: Edit will be made as requested.

25. p. 21, Section 3.6, Hydrogeology, Site Hydrogeology**.** In the second sentence of this subsection, please change, "…and shallow bedrock well screened in the upped…" to "…and shallow bedrock wells screened in the upper…"

Response: Edit will be made to "upper" as requested.

26. p. 21, Section 3.5, Geology, Site Hydrogeology**.** In the fifth sentence of this subsection, please change, "…two deep overburden…" to "…three deep overburden…"

Response: Edit will be made as to "three" requested.

27. p. 21, Section 3.6, Hydrogeology, Site Hydrogeology**.** In the third paragraph of this subsection, the last sentence is incomplete. Please correct.

Response: The sentence will be deleted.

28. p. 22, Section 4.0, Nature and Extent of Contamination**.**

Response: There was no text associated with the comment number.

29. p. 22, Section 4.0, Nature and Extent of Contamination, Data**.** In the last sentence of the subsection, please change "…including data collecting during…" to "…including data collected during…"

Response: Edit will be made to text as requested

30. p. 22, Section 4.0, Nature and Extent of Contamination, Figures**.** The second sentence indicates that chemicals selected for figure representations were those identified as potential chemicals of concern; however, this statement is not accurate. For example, arsenic and manganese were identified as chemicals of potential concern in sediment; however there are no corresponding figures for any analytes detected in sediment. Please restate the rationale for chemicals selected for figure representation.

Response: The third sentence of the last paragraph on Page 22 will be modified to read as follows "The chemicals selected for figure representation were those identified as potential chemicals of concern in soil."

31. p. 23, Section 4.1, SVOCs in Soil**.** The third paragraph indicates that 47 surface soil samples were analyzed for PAHs and 3 samples were non-detect. The corresponding Figure 4-1 presents only 34 shallow soil samples, 2 of which are non-detect. Please review and correct the text/tables/figure accordingly (refer to General Comment #3). Also, please use consistent language between the text and figures (surface soil versus shallow soil). The same comment applies to the shallow soil samples presented on Figures 4-3, 4-5, and 4-7.

Response: The value 47 was a typo, as there were 37 samples including duplicates. The correct number of shallow soil samples analyzed for PAHs is 35, excluding duplicates. This and other values corresponding to data will be reviewed for accuracy.

32. p. 23, Section 4.1, SVOCs in Soil**.** Figures 4-2, 4-4, 4-6, and 4-8 present subsurface PAH concentrations. Please clarify if these figures show the maximum PAH concentration(s) detected for a discrete subsurface depth interval or the maximum PAH concentration(s) for all subsurface depth intervals (refer to General Comment #3).

Response: The intent of these figures was to show the maximum PAH concentration(s) detected in subsurface soil samples collected from the vadose zone (approximately 1 to 12 ft bgs). Notes

on the corresponding figures will be edited to clarify and data will be cross checked for accuracy.

33. p. 23, Section 4.1, SVOCs in Soil. The second sentence of the fourth paragraph indicates sample SB-306 contained greater than 10 mg/kg total PAHs; however the corresponding Figure 4-2 indicates a concentration of 4.1 mg/kg. Please review and correct.

Response: The total PAHs for SB-306 appear to be less than 10 mg/kg. That reference will be stricken from the text.

34. p. 23, Section 4.1, SVOCs in Soil**.** In the third sentence of the fourth paragraph, please change, "…higher concentrations were detected in samples away…" to "…higher concentrations were detected in surface samples away…"

Response: Edit will be made to the text as requested.

35. p. 27, Section 4.6, Sediment**.** In the last paragraph, please indicate that hexavalent chromium was not detected in sediment samples.

Response: Correct, edit will be made as requested.

36. p. 28, Section 4.7, Groundwater, Organic Compounds in Groundwater**.** In the second sentence of this subsection, please change "Tables 4-7 and 4-9" to "Tables 4-16 and 4-15".

Response: Edits will be made as requested.

37. p. 28, Section 4.7, Groundwater, Organic Compounds in Groundwater**.** Following the third sentence of this subsection, please provide a further description relative to the data posted on Figures 4-19 and 4-20. It appears that these figures exclude data from the 2009 (Tetra Tech) sampling events, please justify why this data was excluded.

Response: The text will be revised to indicate that the data shown on the figures is the data from the RI report to indicate the most recent data.

38. p. 28, Section 4.7, Groundwater, Organic Compounds in Groundwater**.** In the fifth sentence of the first paragraph of this subsection, please change "…PCE at ME08 in 2009…" to "…PCE at MW08 in 2009…"

Response: Edit will be made as requested.

39. p. 28, Section 4.7, Groundwater, Organic Compounds in Groundwater**.** In the fourth sentence of this subsection, please change, "…(MW06 and MW04), downgradient of the former drain pits…" to "…(MW06/6D and MW04/4D), downgradient of the former drain pit…".

Response: Edit will be made as requested.

40. p. 28, Section 4.7, Groundwater, Organic Compounds in Groundwater**.** In the last sentence of the first paragraph in this subsection, please change, "ME08" to "MW08".

Response: Edit will be made as requested.

41. p. 28, Section 4.7, Groundwater, Metals in Groundwater**.** In the third sentence of this subsection, please change, "MW08" to "MW08D".

Response: Edit will be made as requested.

42. p. 30, Section 4.7, Groundwater, Groundwater Summary**.** In the last sentence of the last paragraph of this subsection, please add, "with the exception of a low concentration of acetone".

Response: Edit will be made as requested.

43. p. 37, Section 6.0, Risk Assessment**.** Please ensure that this entire section is updated following any revisions made to Appendix A (HHRA) or Appendix B (Ecological RA) as a result of RIDEM comments.

Response: The section will be reviewed and revised as suggested once the changes are complete in the HHRA and ERA.

44. p. 51, Section 7.3, Summary of Remedial Investigation Findings**.** The second sentence of the first bulleted item on the page is incomplete. Please correct.

Response: The second sentence mentioned will be deleted.

45. Table 3-1. Well Construction and Groundwater Gauging Summary.

    a. Please correct typographical errors, including, but not limited to: Nothing, completed, and referenced.

    Response: Edits will be made as requested.

    b. Please provide additional information on the significance of Note 7 related to a low tide measurement on an unknown date.

    Response: The date and reference to the published tide chart will be added to the table. The gauging times for June 24, 2014 will be added as well for future references related to groundwater elevation measurements.

    c. Please provide justification for the higher well riser elevations than ground surface for wells MW-06, MW-07, and MW-08.

    Response: Monitoring wells MW-06, MW-07, and MW-08 were installed in vegetated areas of the site. The wells were completed as stickups. As a result, the riser elevation is higher than the ground surface.

46. Table 4-2**.** Please be advised that samples OFS002-0001 and SB320-0001 exceeded the residential direct exposure criteria (RDEC) for dieldrin. Please include a discussion of pesticides detected in soil in Section 4 of the text which notes the aforementioned exceedances and discusses how they will be addressed.

Response: A section with the subheading "Pesticides" will be added to Section 4 to discuss the detection of those compounds. The tables will be updated similar to MRP Site 1, showing comparisons to RIDEM DECs. Additional discussion related to risk management decisions will be presented in the FS.

47. Table 4-9**.** Please be advised that sample SB05-0001, which was collected and analyzed as part of the 2009 (Tetra Tech) sampling events, exceeded the RDEC for Total Petroleum Hydrocarbons (TPH). As a result, more sampling may be warranted in this area to further delineate the extent of petroleum contamination.

Response: At that location, much of the surface is or was once covered with asphalt, which could all contribute to the presence of hydrocarbons. Note that the concentration in the 2-4 foot sample was substantially lower, thus a significant release does not seem apparent. Also, there were elevated concentrations of several PAHs at the same location, which were accounted for in the risk assessment, and impact from the PAHs may likely get carried forward into the FS. This discussion will be incorporated in Section 4.5 for clarity.

Note too that during the development of the SAP, there were discussions related to petroleum hydrocarbons that lead to the possibility of collecting samples at and near the possible drain pipes leading to the former drain pits. However, the need for other hydrocarbon data, beyond the possible observations to be made at the drain pipes, was not substantiated.

48. Figure 3-2. Geologic Cross Section A-A'**.** The information presented on the cross section does not correlate well with the information on the logs provided in Appendix D. For example, the log for SB319 shows approximately 2 feet of sand and/or sand/silt atop approximately 7.5 feet of till; however, the cross section shows the opposite. In another example, the log for SB310 shows sand and silt atop weathered bedrock; however, the cross section shows sand and silt atop till. Please review all soil and rock descriptions and correct any inaccuracies in the geologic units presented on both the logs in Appendix D and on Figure 3-2. This comment pertains to all logs, not just those depicted on Figure 3-2.

Response: The cross-section was prepared as representation of the subsurface conditions along that transect. Information on boring logs are projected onto the cross-section and then interpreted. As a result, exact depth to units may vary between boring logs and the cross-section. Still, the cross sections and borings will be reviewed and updated as necessary.

49. Figure 4-9. Distribution of Total PCBs in Shallow Soil**.** Sample SS01 should be colored red, not orange. Please correct.

Response: Correct, edit will be made.

50. Appendix A. (General Comment) The acronym for "central tendency exposure" is presented as CTE in many places throughout Section 4 of the text, but "CT" in other places in the text as well as on supporting tables. Please revise to be consistent.

Response: Edit will be made as requested.

51. p. 5, Appendix A. Section 2.1, Data Used in the HHRA, Groundwater**.** The HHRA uses groundwater data from samples collected in 2014 and excludes June 2009 data. Please

add justification as to why the 2014 data better represent current groundwater conditions. For example, are the concentrations similar to or lower than those in 2009?

Response: USEPA's March 11, 2014 Memorandum "Determining Groundwater Exposure Point Concentrations, Supplemental Guidance" recommends use of groundwater data collected within the last year to be most representative of current conditions. Therefore, for wells where groundwater data from both 2009 and 2014 were available, the 2014 data was selected to best represent current conditions, consistent with USEPA guidance. For organic compounds, groundwater results from the 2009 sampling event were mostly non-detect and detection limits were elevated in some wells. The detected organics from the 2009 sampling event were mostly below human health screening levels. Those that were above screening levels have generally decreased in concentration in the 2014 sampling event as compared to the 2009 sampling event. For metals, detected groundwater results from the 2009 sampling event are either below human health screening levels or have generally decreased in concentration in the 2014 sampling event as compared to the 2009 sampling event. Therefore, evaluation of the most recent/2014 groundwater data in the HHRA is considered most appropriate to represent current (and potential future) exposure to groundwater. This discussion will be added to the uncertainty assessment section of the HHRA/Appendix A.

52. p. 7, Appendix A. Section 2.2. Background**.** In the first full paragraph on the page, with regard to sediment, copper is identified as consistent with background in Appendix F but is not discussed in Section 2.2. Please add.

Response: Section 2.2 of the HHRA discusses the results of the background evaluation for compounds identified as COPCs for further evaluation in the Tier II HHRA only. Copper was not identified as a sediment COPC in the HHRA because it was detected at concentrations below the human health risk-based screening level. The following text will be added to Section 2.2 of the HHRA: "Of the sediment COPCs retained for the Tier II Evaluation, site and background concentrations of arsenic in sediment were found to be similar based on both the non-statistical and graphical comparisons presented in the background evaluation (included as Appendix F of the RI)."

53. p. 9, Appendix A. Section 2.3.2, Analyses via Multiple Methods**.** Please describe how non-detect results were treated in averaging (e.g., use of one-half the reporting limit etc.)

Response: The second to last sentence in Section 2.3.2 will be replaced with the following: "The combination of intervals was performed as follows: 1) where both samples are not detected, the resulting value is the maximum of the limits of detection (LODs); 2) where both samples are detected, the resulting value is the average of the detected results; and 3) where one of the pair is reported as not detected and the other is detected, the detected concentration is used."

54. p. 11, Appendix A. Section 3.2, Identification of COPCs**.** The HHRA eliminates as COPCs compounds detected in less than 5% of samples. Relative concentration should also be considered in conjunction with low frequency compounds, in order to inadvertently eliminating compounds that may be present at high, albeit localized, concentrations. Please provide further justification of elimination of low frequency compounds as COPCs.

Response: Further discussion about specific compounds eliminated based on a low frequency of detection is included in Section 4.7.2 COPC Selection, which addresses this comment. Reference to this section will be provided in Section 3.2 for clarity.

55. p. 11-13 Appendix A. Section 3.2.1, COPC Selection Criteria**.** Please note that the RSLs were updated in January 2015. Please ensure that any changes to the RSLs would not have resulted in changes to the COPC selection process.

    In the discussion of the screening criteria used for each medium of concern, a target ELCR of 10^{-6} was only specified for the soil RSLs, but not for RSLs used for sediment, groundwater or shellfish tissue. (In contrast, the target HQ of 0.1 was explicitly stated for RSLs applicable to all media of concern.) Please state in text the target cancer risk used for sediment, groundwater and shellfish RSLs.

Response: The HHRA COPC selection will be reviewed/revised based on the January 2015 RSLs. The text in this section will be revised to clarify that USEPA RSLs based on a target ELCR of $1x10^{-6}$ were used for all media.

56. p. 14, Appendix A. Section 4.1, Identification of Exposure Areas, Soil**.** Please discuss exposure areas relative to depth – i.e., surface versus subsurface. Additionally, if the drum storage area and former materials storage area are noted to have elevated concentrations relative to surrounding areas, then these two areas may need to be evaluated as distinct exposure areas for all applicable exposure scenarios, not just the residential receptor.

Response: Additional information on soil depth interval (surface vs. subsurface) will be incorporated into the discussion of soil COPC concentrations, provided in Section 4.1.

On-site workers and trespassers are not assumed to be exposed to specific portions of the site more than others. However, a construction/utility worker (installing/performing maintenance on a utility line for example) could have exposures limited to the higher concentration areas of the site. Therefore, the HHRA will be revised to include a discussion of if/how the results of the HHRA would change if construction/utility workers were exposed to only higher concentration areas of the site. The following text will be incorporated into Section 4.1, Soil:

"For purposes of the HHRA, it is assumed that the site could be developed for residential use under a hypothetical future use exposure scenario. Under this hypothetical scenario, the site may be divided into separate residential lots. In addition, it is assumed that construction or utility maintenance activities may be performed by a construction/utility worker anywhere on site. Therefore, hypothetical future residents and/or construction/utility workers may be exposed to only certain areas of the site, rather than the site as a whole. Therefore, as part of the uncertainty assessment (Section 4.7), these two sub-areas of the site for which higher concentrations of certain COPCs are present were evaluated to determine if the results of the HHRA would change based on exposure to these sub-areas alone."

57. p. 15, Appendix A. Section 4.2, Determination of Exposure Point Concentrations, Soil, Sediment and Groundwater**.** The mean concentration was used as the EPC for lead, for both RME and CTE scenarios. However, EPA guidance on lead models (OSWER 9200.1-78; 2007) recommends that "if a risk assessor seeks to provide a conservative

estimate of the average concentration of lead present in yard soil, an upper bound estimate on the mean may be appropriate for that purpose." (p. 1) The 95% UCL would therefore be an appropriate EPC for the RME condition, considering the size of the site and variability in soil lead concentrations, as well as elevated lead concentrations within certain portions of the site. Although we note that the HHRA later states that lead is elevated in the former materials storage area and may potentially result in unacceptable risk, please quantify this. Please revise the lead EPC to reflect evaluation of this area as a distinct exposure point, and/or use the 95% UCL, as also recommended in Comment #56 above. Additionally, this comment applies to the sediment EPC.

Response: In accordance with the approved Sampling and Analysis Plan (Resolution, 2014), EPCs for lead are equal to the arithmetic mean concentration consistent with USEPA guidance. To address the higher concentrations of lead in soil in the former materials storage area (as compared to the rest of the site), the HHRA will be revised to include the quantitative lead evaluation/lead modeling based on EPCs calculated from this potential exposure area for both the hypothetical future on-site resident and construction/utility worker scenarios as part of the uncertainty assessment, as discussed in the response to Comment 56.

58. <u>p. 20, Appendix A. Section 4.3, Exposure Assessment, Trespassing Teenager</u>**.** It was assumed that a trespassing teenager may access the shoreline and come into contact with COPCs in sediment, similar to the exposure scenario of a future resident. However, unlike the future resident exposure scenario, it was not assumed that the trespasser may also capture and ingest shellfish. Please add a discussion of why this exposure pathway was not evaluated for the Trespasser scenario.

Response: The Trespassing Teenager exposure scenario was evaluated in accordance with the approved Sampling and Analysis Plan (Resolution, 2014). A statement will be made in Section 4.3 stating that the trespassing teenager is not assumed to capture and ingest shellfish.

59. <u>p. 23, Appendix A. Section 4.3, Exposure Assessment, Future On-Site Worker</u>**.** The future on-site worker scenario evaluates a worker who spends 4 hours per day inside and 4 hours per day outside. It is conceivable that a future worker may spend most of his/her time inside a building (such as an office building) with very little time spent outdoors. Given that the vapor intrusion pathway is often significant, use of an exposure time of 4 hours per day may potentially underestimate indoor air inhalation risks for future receptors. Please evaluate an "indoor worker" separately from an outdoor worker (such as a landscaper). Alternatively, this scenario could be semi-quantitatively discussed in the Uncertainty Analysis (for example, risk/hazard from the inhalation pathway would essentially be doubled, assuming an 8-hour workday).

Response: The Future On-Site Worker exposure scenario was evaluated in accordance with the approved Sampling and Analysis Plan (Resolution, 2014) and assumes work is done both indoors and outdoors. A brief discussion will be added to the uncertainty section to address how results would change for an on-site worker who spends 8 hours/day indoors.

60. <u>p. 32, Appendix A. Section 4.6.1, Estimation of Potential Risk</u>**.** The second paragraph on the page states, "In cases where the total pathway HI for a receptor may exceed 1, only COPCs having similar systemic effects (i.e., target organs) are summed for each pathway and medium." However, since the "pathway HI" is already defined as, "The sum of

[HQs] for all chemicals within an exposure point and pathway that have the same target organ or type of toxicity," sentence in question should refer to the receptor-specific HI for each medium, instead of total pathway HI. Please revise to provide receptor-specific HI based on systemic effects where warranted.

Response: The second paragraph in Section 4.6.1 will be revised as follows:

"The total pathway HI for each exposure point was calculated by summing the HQs for COPCs having similar systemic effects. Total HIs for each receptor, by medium, were calculated by summing the total HIs across pathways within the media (e.g., summing dermal and ingestion soil risk estimates). As a first approximation, all COPCs are assumed to have additive effects. Total HIs, assuming additivity of effects, are presented per media and exposure pathway in Appendix I on Tables 7.1.RME/CT through 7.13.RME/CT. In cases where the total HI, assuming additivity of effects, for a receptor may exceed 1, only COPCs having similar systemic effects (i.e., target organs) are summed for each pathway and medium. Receptor-specific HIs per target organ are presented in Appendix H Tables 9.1.RME/CT through 9.36.RME/CT."

61. <u>p. 35-36, Appendix A. Section 4.6.2.1, Description of HI Estimates, Future On-Site Worker and Resident.</u>

Risks/hazards from groundwater exposures are not included in the total risk/hazard estimates for either the future on-site worker or resident. Cumulative risk/hazard should reflect all relevant exposure pathways. Although we understand that each well was evaluated individually, one could conceivably address cumulative risk by presenting a range of values. Please revise the text.

Also, please note that the total HI for the on-site worker for well MW-15 (RME only) exceeds the HI limit of 1 (although target endpoint-specific HIs do not) and should be included in the discussion.

Lastly, please see Comment 59 above with respect to full day indoor air exposures for the future worker scenario.

Response: The discussions provided in Section 4.6.2.1 for the future on-site worker and hypothetical future on-site resident will be revised to include the ranges of total potential hazard estimates based on all potentially complete exposure pathways, as requested. As suggested, due to the large number of groundwater wells evaluated, a range of potential hazards will be presented for each receptor, rather than providing the total hazards based on inclusion of each individual groundwater well.

The following statement will be added to Section 4.6.2.1, on-site worker subsection: "MW15 has a total potential HI above 1 (RME only), however, the potential HIs per target endpoint do not exceed 1. Therefore, groundwater from MW15 does not pose an unacceptable hazard to this receptor."

The Future On-Site Worker exposure scenario was evaluated in accordance with the approved Sampling and Analysis Plan (Resolution, 2014) and assumes work is done both indoors and outdoors. A brief discussion will be added to the uncertainty section to address how results would change for an on-site worker who spends 8 hours/day indoors.

62. p. 37, Appendix A. Section 4.6.2.1, Description of HI Estimates, Lead Evaluation**.** Please conduct a quantitative evaluation of lead risks associated with the former materials storage area. Please see Comment 56.

Response: To address the higher concentrations of lead in soil in the former materials storage area (as compared to the rest of the site), the HHRA will be revised to include the quantitative lead evaluation/lead modeling based on EPCs calculated from this potential exposure area for both the hypothetical future on-site resident and construction/utility worker scenarios as part of the uncertainty assessment, as discussed in the response to Comment 56.

63. p. 37-40, Appendix A. Section 4.6.2.2, Description of ELCR Estimates**.** Please address the cumulative cancer risk from all relevant exposure pathways (see Comment 61 above). Additionally, please refer to Comment 59 with respect to indoor air exposures for the future onsite worker scenario.

Response: The discussions provided in Section 4.6.2.2 for the future on-site worker and hypothetical future on-site resident will be revised to include the ranges of total potential risk estimates based on all potentially complete exposure pathways, as requested. Due to the large number of groundwater wells evaluated, a range of potential risks will be presented for each receptor, rather than providing the total risks based on inclusion of each individual groundwater well.

The Future On-Site Worker exposure scenario was evaluated in accordance with the approved Sampling and Analysis Plan (Resolution, 2014) and assumes work is done both indoors and outdoors. A brief discussion will be added to the uncertainty section to address how results would change for an on-site worker who spends 8 hours/day indoors.

64. p. 44, Appendix A. Section 4.7.3, Toxicological Data**.** Rather than qualitatively addressing arsenic bioavailability in the Uncertainty Analysis, please use the EPA recommended soil bioavailability value of 60% in the HHRA.

Response: The evaluation of arsenic will be revised to include the soil relative bioavailability factor of 60%.

65. Appendix A. Tables 2.1 through 2.7, Occurrence, Distribution, and Selection of Chemicals of Potential Concern (by receptor and medium). Define the ARAR/TBC acronym in the notes.

Response: ARAR/TBC will be defined in the notes as: "Potential Applicable or Relevant and Appropriate Requirements (ARAR)/To Be Considered (TBC) values", consistent with USEPA's RAGS Part D Guidance (2001).

66. Appendix A. Attachment H. Table 2**.** The Exposure Time and Fraction Soil Ingested for the current onsite worker appear to be reversed for the CTE and RME scenarios – the CTE values (4 hours per day/50% daily soil ingested) are twice those of the RME values. At a minimum, the CTE values for these two parameters should be the same as the RME values, consistent with the values used for the future onsite worker. Please ensure that related risk calculations incorporate this change.

Response: The Current On-Site Worker exposure scenario was evaluated in accordance with the approved Sampling and Analysis Plan (Resolution, 2014). Exposure assumptions were selected based on site-specific current on-site worker maintenance activities, as explained in footnote (d) in Appendix H, Table 2.

The RME scenario represents a typical landscaper who is present on site for 2 hours/event for 2 events/month (equivalent to an exposure of 2 hours/day for 24 days/year). The RME scenario assumes a fraction of soil ingested of 0.25 based on the site-specific exposure time of 2 hours/day (2 hours/8 hours = 0.25). The CTE scenario represents other less frequent maintenance activities that occur for 4 hours/event for 2 events/year (equivalent to an exposure of 4 hours/day for 2 days/year). The CTE scenario assumes a fraction of soil ingested of 0.5 based on the site-specific exposure time of 4 hours/day (4 hours/8 hours = 0.5).

When combined, the associated intake factors for a current on-site worker for the RME and CTE scenarios are:

- *RME Inhalation: (ET of 2 hrs/day) x (EF of 24 days/year) = 48 hours/year;*
- *CTE Inhalation: (ET of 4 hrs/day) x (EF of 2 days/year) = 8 hours/year;*
- *RME Ingestion: (EF of 24 days/year) x (IR of 100 mg/day x (FI of 0.25) = 600 mg/year;*
- *CTE Ingestion: (EF of 2 days/year) x (IR of 50 mg/day x (FI of 0.5) = 50 mg/year.*

Therefore, the RME exposure scenario represents the higher exposure scenario, when combining the exposure assumptions used to quantitatively evaluate potential risk/hazard associated with the exposure scenarios evaluated in the HHRA.

67. Appendix A. Attachment J, Lead Modeling**.** With regard to exposure point concentrations used in the lead models, please see Comment 56.

Response: In accordance with the approved Sampling and Analysis Plan (Resolution, 2014), EPCs for lead are equal to the arithmetic mean concentration consistent with USEPA guidance. To address the higher concentrations of lead in soil in the former materials storage area (as compared to the rest of the site), the HHRA will be revised to include the quantitative lead evaluation/lead modeling based on EPCs calculated from this potential exposure area for both the hypothetical future on-site resident and construction/utility worker scenarios as part of the uncertainty assessment, as discussed in the response to Comment 56.

68. p. 35, Appendix B. Section 4.4.3, Sediment Invertebrates**.** Average values are used to represent sediment exposures to invertebrates, and also for plants in a later section. A point-by-point analysis would be more accurate for these less mobile species, and would more clearly identify hot spots. Please incorporate this analysis into the risk assessment.

Response: Consistent with the Risk Assessment Work Plan Technical Memorandum provided in the SAP, the average and upper confidence limit (UCL) on the mean represented the exposure point concentrations (EPCs) for evaluating potential ecological risks in the Tier 2 step 3a evaluation. As part of the FS, PRGs will be compared against individual concentrations to identify areas that may warrant remedial action and to avoid leaving behind 'hot spots.'

69. Appendix B. Attachment D, Tables 5 (robin) and 6 (vole). RIDEM could not replicate the total dose values and the NOAEL-based HQs for copper or lead, which were reviewed as representative COPCs. Our test calculations suggest that the food component may not have been captured in the equation on these two tables. This same error was identified on this table in the previous MRP Site 1 review. All calculations should be checked and corrected.

Response: The reviewer is correct that the invertebrate dose calculation for the robin and vole was inadvertently linked to the soil ingestion rate in the SRA appendix. The food web calculations will be reviewed and any changes incorporated into the revised ERA.

70. Appendix B. Attachment G, Tables 3. Media and Tissue Concentrations for Tier 2, Step 3A – Average EPC**.** In a random calculation check, the average small mammal tissue EPC for arsenic could not be reproduced from the data and soil-mammal bioaccumulation equations provided. We note that EPA equations are based on dry weight relationships, not wet weight, and results must be converted to wet weight for use in the modelling equations. Please review this spreadsheet.

Response: The result is correct as indicated in Attachment G Table 3.The soil to mammal bioaccumulation equation from the Eco-SSL documentation is indicated below with both the soil and tissue concentration expressed on a dry weight basis:

*ln(small mammal tissue concentration) = 0.8188 * ln(soil concentration) - 4.8471*

For a soil concentration of 13.3 mg/kg and a small mammal tissue percent moisture of 68%, this equation results in a wet weight tissue concentration for arsenic of 0.021 mg/kg.

71. p. 4, Appendix C. Survey Results, Former Drum Storage Area Site**.** The results of the GPR survey note the discovery of several drain lines not depicted in any of the Figures for the site (with the exception of Figure 2 in Appendix C). Please include these subsurface features in all of the Figures (1-1 through 4-20) for the site. Also, these drain lines represent potential preferential pathways for contaminants and should be properly characterized. In particular, the drain line discovered at the southeastern corner of the fenced area that appears to run into a ditch warrants further investigation.

Response: The figures will be reviewed and updated with appropriate features and references. The purpose of the GPR survey was to located potential drain lines from the historically labeled drain pits. One of these lines was not found via GPR. Other lines related to water or electric conduits were not shown and are not believed to be preferential pathways because of their use and shallow depth. Surface draining features, such as the one in the southeastern corner will be added to the figure. This was for surface flow to enhance flow below a portion of an access road. It did not drain from the drum storage area. Clarification will be added to the text.

EPA's Comments on the Draft Remedial Investigation Report
IR Site 22, Carr Point Shooting Range
Naval Station Newport, Newport, Rhode Island
Dated, September 10, 2014
Responses provided in italic text

GENERAL COMMENTS:

1. Based on the historical use of the Site as a drum and materials storage area, the large size of the Site, and the detection of contamination at various locations at the Site, a more comprehensive supplemental sampling effort will be required to complete a reasonable characterization of the Site soil and groundwater before a remedy can be selected for the Site. In particular, a more comprehensive investigation of site soil and groundwater will be required to define the magnitude and extent of the tetrachloroethylene and trichloroethylene contamination at the Site and also the associated impacts from metals mobilization.

Response: As discussed in the RMP meeting dated March 18th, it was agreed that additional delineation efforts would be implemented for assessing the presence or absence of VOCs in soil near the current detections. Additional groundwater monitoring will also be conducted to further assess the presence of these VOCs and additional wells may be added, depending on the soil conditions encountered. At the meeting, it was agreed that the rationale for the additional sampling locations would be addressed in a modification to the existing SAP. The SAP will be reviewed with EPA and RIDEM prior to the additional data gathering. It was agreed that this work would be conducted during the development of the FS, and the data used and presented in the FS for enhanced delineation purposes.

Regarding the presence of metals, and as discussed in the RPM meeting, there is insufficient data to distinguish between naturally reductive zones, and influences (if present) from site-specific activities and releases. Additional geochemical and geophysical parameters are necessary to determine whether the metals are influenced by site-related activities, and this information will be obtained in future groundwater assessment events.

Refer to the proposed "Next Steps" section (see end of RTCs).

2. The Tier 2, Step 3A assessment indicated the potential for risk to terrestrial receptors (bird and mammal) within the vehicle storage area. The Tier 2, Step 3A assessment utilizes all reasonable adjustments to exposure factors and effects-based toxicity values. A finding of risk under these circumstances might normally lead to further data gathering in support of a full Baseline Ecological Risk Assessment (BERA), because a full evaluation of the available data cannot rule out adverse effects. EPA recognizes that current conditions provide low habitat value, and is not suggesting that a BERA be performed here. It is suggested that targeted removal of risk-driving chemicals, notably PCBs, be considered to avert any future risk from these persistent chemicals should habitat conditions change. Additional support for this suggestion is provided in the presence of PCBs in sediment near the vehicle storage area. This could be taken as (admittedly circumstantial) evidence that PCBs might have migrated to the marine environment from the site.

Response: The Navy agrees with the basis of the comment. The potential unacceptable risks to the ecological receptors will be taken into consideration during the development of the FS. And, based on the potential unacceptable risks to human health present, management of those risks will benefit also the ecological community. In particular, the Navy recognizes the elevated concentrations of PCBs at the site and the adjacent site, MRP Site 1, and remedial actions for the impacted soils and sediments are necessary.

3. Please revise all the analytical results tables to include columns for screening criteria and highlight analytical results that exceed the criteria. Please also include additional figures to present the concentrations of metals in groundwater at the Site.

Response: Edit will be made as requested. Comparisons will be shown based on published values and a note will be made to indicate that PRGs will be developed during the FS stage and applied at that time for remedial extent.

SPECIFIC COMMENTS:

1. p. *x*, Exec. Summary, ¶5: Please edit the second last sentence to read: "… determined to be consistent with reference locations and therefore may not be site-related but reflective of background concentrations."

Response: Edit will be made as requested to include suggested text.

2. p. *xi*, Exec. Summary, ¶5: Please edit the second last sentence to read: "… while Decision Unit 4-1 at Site 12 is in the …." This edit is required because the remedial design only applies to Decision Unit 4-1, not the entire Site 12.

Response: Edit will be made as requested to reference DU 4-1 and not Site 12.

3. p. *xii*, Exec. Summary: Please edit the references to Site 12 in the sixth bullet to instead refer to Decision Unit 4-1 at Site 12. Also, please clarify how the evaluation of groundwater at Decision Unit 4-1 at Site 12 will have bearing on Site 22. To establish a link additional monitoring wells may be required downgradient of Decision Unit 4-1 in order to demonstrate that groundwater contaminants from Decision Unit 4-1 are impacting Site 22.

Response: To avoid confusion, references to Site 12 (DU 4-1) will be removed from the text except where there is a reference to specific information. The use of data from DU 4-1 will be discussed further in a future SAP and/or the FS. Per the RPM meeting, it was decided to not combine the data from these sites until additional data collection is performed.

4. p. *xii*, Exec. Summary, last ¶: The discussion in this paragraph suggests that Site 22 and MRP Site 1 will be evaluated together as a whole. If that occurs then the ARARs for each Site will be applied to both Sites per EPA policy.

Response: See response to comment 3 above.

5. p. 2, §1.3, ¶1: Has an evaluation or investigation been conducted for PFCs at Site 22? Based on the presence of the fire house a PFC investigation may be warranted.

Response: The historic review of information did not reveal the use of PFC generating substances at the site. Note that an installation-wide evaluation of potential PFC areas of concern is being implemented by the Navy in FY2015.

6. p. 12, §2.5, ¶1: The text states that the vertical datum for the Site survey was based on the National Geodetic Vertical Datum of 1929 because that was the datum used for the 2010 Site investigation. A review of the SI report was unable to determine the vertical datum used, although two mentions of topography being referenced to mean sea level were found. Please clarify the source of the information regarding the vertical datum used for the SI report. Please confirm the vertical datum used for the RI and the rationale.

Response: The use of National Geodetic Vertical Datum of 1929 (NGVD 29) was verified.

7. p. 20, §3.6, ¶3:Please edit the last sentence to read: "EPA requires that groundwater be evaluated as drinking water because Rhode Island does not have an EPA-approved Comprehensive State Groundwater Protection Program."

Response: Edit will be made to the text as requested.

8. p. 21, §3.6, ¶3: Regarding the second sentence, the horizontal hydraulic gradient would be parallel to the groundwater flow direction not perpendicular. Please correct the text or clarify the intent.

Response: Edit will be made as requested to correct the flow description.

9. p. 22, §4.0, ¶1: Please identify what removal actions are being referred to.

Response: The term "removal action" is a reference to the NTCRA at MRP Site 1. Since the two Carr Point sites have been split into two separate RI documents, this reference will be deleted from this paragraph.

10. p. 22, §4.0, ¶2: The meaning of the fourth sentence is not apparent; please rewrite the fourth sentence to clarify the intent.

    Please revise the last sentence to read: "… historical placement of fill (unless it contains CERCLA contaminants), … appropriate application of pesticides and herbicides, …." Delete the reference to past railroad usage or clarify why Navy should not be responsible for the cleanup of CERCLA contaminants along the railroad spur on the Site.

Response: The sentences will be revised as follows: Secondary release mechanisms may include ~~The extent of chemical detection may increase through~~ volatilization of certain VOCs within the soil matrix or from groundwater; chemical leaching from soil into groundwater; groundwater discharge into Narragansett Bay; and food-chain uptake. Additional anthropogenic sources of chemicals not considered to be CERCLA related releases include

historical placement of fill, asphalt pavement, appropriate railroad usage, appropriate application of pesticides and herbicides, and activities related to recreational boat and RV storage and repair (current use).

11. p. 28, §4.7, ¶3: Please correct the first sentence which has mistakenly transposed MW04 and MW06D.

Response: Edit will be made to switch the well IDs in the sentence.

12. p. 28, §4.7, ¶5: In the discussion of metals in groundwater please acknowledge that manganese concentrations exceed the EPA lifetime health advisory value of 300 micrograms per liter (µg/L) and the acute exposure value of 1,000 (µg/L).

Response: That information will be added to the discussion in the risk assessment.

13. p. 29, §4.7, ¶2: Please edit the second sentence to read: "… sources; however, the release of organic contaminants to the subsurface can result in the creation of anaerobic conditions that facilitate the desorption of these metals from the soil."

Response: Edit will be made as requested; however, the term contaminants will be changed to compounds since the presence of organic materials may also be natural.

14. p. 29, §4.7, ¶3: Please edit the second last sentence to read: "… upgradient wells at Decision Unit 4-1 at Tank Farm 4 indicate …."

    Please move the last sentence to become the third last sentence and edit it to read: "Based on the available dataset a defined plume or source area is not currently apparent."

Response: A review of groundwater elevation contours plotted at Decision Unit 4-1 (DU 4-1) at Tank Farm 4 indicates groundwater flows to the southwest across DU 4-1 towards Normans Brook. Therefore, while the majority of Tank Farm is hydraulically upgradient of IR Site 22, DU 4-1 (with the exception of the northern corner) is not This will be corrected throughout the RI.

The edit to the last line will be made, but the sentence order will remain the same. Therefore, the suggested wording for the last three sentences is: "Cobalt and Manganese have also been detected at adjacent sites within NAVSTA Newport (including the adjacent MRP Site 1 to the north and Decision Unit 4-1 (DU 4-1) at Tank Farm 4 site to the east). Data from recent monitoring at these sites indicate these metals are present at higher or similar concentrations in the surrounding groundwater as those in the IR Site 22 wells. Based on the available dataset, a defined plume or source area for metals in groundwater at IR Site 22 is not currently apparent"

15. p. 30, §4.7, ¶1: Please edit the second last sentence to read: "VOCs were not detected in the single shallow bedrock well adjacent to …."

Response: For clarity, suggested wording includes the following replacement sentence: VOCs were not detected in the shallow bedrock well installed within 10 feet of the oil/water

separator, and adjacent to the overburden well where high concentrations of VOCs were detected in soil and shallow groundwater.

16. p. 30, §4.7, ¶2: Rewrite this paragraph to acknowledge that the release of organic contaminants at or upgradient of the Site could be responsible for the elevated metals concentrations detected in Site groundwater. The paragraph must not state that elevated metals concentrations in groundwater are naturally occurring (based on the available data) but rather that further investigations will be conducted to ascertain whether metals concentrations in groundwater could be due to an upgradient source or be naturally occurring.

Response: The paragraph will be replaced with the following text: "Metals are present in the groundwater across the entire site. The presence of the metals in groundwater can be the result of natural geochemical conditions (reducing) combined with the availability of background metals concentrations in soil and bedrock. Additionally, the dissolved metals can be the result of anthropogenic releases of metals to the subsurface and/or the release of organic compounds that through the consumption of oxygen through microbial decomposition alter the geochemical conditions to a reducing environment favorable to the dissolution of metals. While PCE and TCE have been identified, these chemicals are biodegraded only under anaerobic conditions and therefore reducing conditions cannot be attributed to their presence. Based on the current dataset, the spatial distribution and magnitude of available metals concentration data does not follow a pattern that indicates an identifiable source area for the metals, a significant on site organic release has not been identified, and insufficient data is available to determine if natural processes are producing the reducing conditions under which metals results are elevated. Additional data will be collected as part of the FS to determine the mechanism resulting in the reducing conditions.

17. p. 33, §5.2, ¶2: Please delete the first sentence which essentially contradicts the last sentence in the first paragraph which states that pesticides do not readily volatilize. Please rewrite the second sentence to clarify the intent. Please revise the third sentence regarding leachability which contradicts the first paragraph which states that pesticides are hydrophobic and bind to soil.

Response: Edits (deletion and clarification) will be made as noted.

18. p. 35, §5.2, ¶1: Please revise the last sentence to remove the implication that elevated manganese concentrations are naturally-occurring in Site 22 groundwater. As noted above, the release of organic contaminants to the subsurface can result in anaerobic conditions in groundwater that will mobilize metals. Such a condition exists at Site 22, so metals concentrations in groundwater may be due more to these releases or even upgradient releases than to naturally-occurring manganese. Please provide a more balanced discussion.

Response: The following paragraph will be added to the discussion:

A low redox environment can be the result of natural or anthropogenic processes. Natural processes may include the microbial decomposition of peats and other organics present due to past environments (not observed at the site), or the discharge of oxygen depleted water from

the underlying bedrock due to upward vertical hydraulic gradients (a condition common adjacent to large waterbodies such as Narragansett Bay). The release of anthropogenic organic compounds, may also result in low redox conditions as the oxygen is consumed during microbial decomposition of the organics. The release and decomposition of organics upgradient can also result in a hydraulically down gradient shadow zone of low redox conditions as the oxygen depleted groundwater travels away from the release but has not had the required time and distance for the dissolved oxygen to be replenished through infiltration of precipitation and mixing with the surrounding water outside of the source zone. However, organics that require anaerobic conditions before decomposition can begin, such as chlorinated solvents (TCE and PCE) will not result in a reducing environment. Additional data will be collected as part of the FS to further assess the mechanism resulting in the reducing conditions.

19. p. 35, §5.2, ¶2: Make the same modifications to the cobalt discussion as requested for manganese.

Response: The following sentence will be added to the discussion: "As discussed above, a low redox environment can be the result of natural or anthropogenic processes."

20. p. 36, §5.2, ¶2: Please edit the fifth sentence to read: "Based on the available groundwater data, the concentrations at the water table …."

    Please edit the last sentence to read: "… deep overburden, they were not detected in the shallow bedrock … groundwater sample collected from the only bedrock well at Site 22, MW08D."

Response: Edit will be made to clarify the text with regards to the comment. The last sentence will be edited to read: "While dissolved phase VOCs are present at the water table and in the deep overburden at the site, VOCs were not detected in the shallow bedrock well (MW08D) located adjacent to the OWS and MW08 where VOCs detected in overburden and groundwater at the Site were highest."

21. p. 46, §7.1, ¶1: Please revise the second last sentence to read: "… historical placement of fill (unless it contains CERCLA contaminants), … appropriate application of pesticides and herbicides, …." Delete the reference to past railroad usage or clarify why Navy should not be responsible for the cleanup of CERCLA contaminants along the railroad spur on the Site.

Response: For clarity, it is suggest that the phrase "not considered to be CERCLA-related releases" be deleted from the sentence.

22. p. 47, §7.1, ¶1: Please correct the partial sentence at the top of the page to read: "… two locations are beneath asphalt surfaces … below the surface sample are …."

Response: Edit will be made to the text as requested.

23. p. 48, §7.1, ¶2: Please add a final sentence that reads: "The release of organic contaminants to the subsurface can result in reducing conditions."

Response: Suggested edit includes the following replacement of the 2nd and last sentences of the paragraph: "The concentrations of these metals are somewhat sporadic and ~~do not appear to~~ may not be attributable to a site-specific activity and/or release. Reducing conditions in the subsurface, based on field data collected, were observed and such conditions can cause the increase in concentrations of these and other metals in the groundwater. Reducing conditions can be present based on naturally occurring organic materials and from organic compounds released at or upgradient of the site.

24. p. 50, §7.3: Please edit the last sentence in the first bullet to read: " The currently known concentrations of VOCs … but they do exceed leachability criteria and they do pose a risk via groundwater exposure."

Response: The sentence will be edited to read as follows: "The concentrations of VOCs in the soil samples collected do not result in a potential unacceptable risk to human health, as determined in the HHRA. At two locations, the PCE was detected above the RIDEM leachability value. Potential human health risks associated with groundwater are discussed in the next paragraph."

25. p. 53, §7.3, ¶1: Please edit the first and second sentences to refer to Decision Unit 4-1 at Site 12.

    Please edit the third sentence to refer to two nearby sites, not three.

Response: Edits will be made as requested to use DU 4-1 and refer to two nearby sites.

26. p. 53, §7.3: First bullet: It is premature to propose a feasibility study for Site 22 groundwater for chlorinated hydrocarbons because the magnitude and extent of contamination is not known. A data gaps investigation or a phase II remedial investigation should be the next step to develop a better understanding of chlorinated hydrocarbon impacts at the site.

Response: See response to general comment #1.

    Fourth bullet: It is premature to propose a feasibility study for Site 22 for localized areas of PCB and lead impacts because the magnitude and extent of contamination is not known. A data gaps investigation or a phase II remedial investigation should be the next step to develop a better understanding of the PCB and lead impacts.

Response: See response to general comment #1.

    Sixth bullet: Please edit this text to refer to Decision Unit 4-1 at Site 12.

    The discussion in the sixth bullet does not address arsenic and chromium in soil but only metals contamination in groundwater. Please address this.

    It is not apparent that implementing the long-term groundwater monitoring program for Decision Unit 4-1 at Site 12 will provide sufficient information to make decisions about Site 22 groundwater impacts from metals. Additional groundwater monitoring at Site 22 appears necessary as does the installation of additional monitoring wells between

Decision Unit 4-1 and Site 22 to document that Decision Unit 4-1 is the source of excess metals concentrations in Site 22 groundwater.

Response: The use of the term Decision Unit 4-1 will be added.

In terms of arsenic and chromium in soil, Navy has considered supplementing the data evaluation to assess potential background concentrations applicable to the site. Related to the groundwater comment, Navy agrees that the effort to assess groundwater further is warranted, and it should be performed under the context of additional data evaluation for IR Site 22 and not specifically included as part LTM at DU 4-1 of Site 12. The sixth bullet will be separated in to two bullets, and edited as follows:

- *Arsenic and chromium in soil are identified as COCs that pose potential unacceptable risks are IR Site 22. The presence of these COCs may be attributed to releases at the site, especially where elevated concentrations exist. In other areas, the concentrations may be at or near background concentrations. Additional assessment of data is necessary to determine how background soil concentrations may be incorporated into the site risk management decisions.*

- *Cobalt and manganese are present in the groundwater at concentrations that pose potential unacceptable risks under a hypothetical future residential drinking water scenario. An additional evaluation of groundwater conditions is warranted to assess the presence of, and potential source of, these compounds.*

Refer also to the response to general comment #1.

27. p. 54, §7.3: Please refer to the relevant comments identified for page 53.

Response: The text below the subheading "Next Steps" will be revised to incorporate related comments and overall approach to moving forward on this project. See proposed text at end of the comment responses.

28. Figure 1-2: Please clarify why the Site boundary does not include the entire former northern materials storage area. Also clarify why the fence does not enclose the entire northern materials storage area.

Response: Note that the limits of the site boundary and former materials storage areas are approximated. The northern portion is adjacent to MRP Site 1. The boundary was adjusted to include areas within Site 22 that were related to storage while placing areas impacted by the shooting range with similarly impacted materials (lead pellets, for instance).

29. Figure 4-9: Please correct either the PCB concentration for SS01 or the color of the circle based on the shown concentration.

Response: The sample location will be changed to red.

30. Figure 4-16: The greatest trichloroethylene soil concentration was detected at SB324 at 66 µg/kg. Equilibrium partitioning suggests that the resultant groundwater

concentration would be more than an order of magnitude greater than the maximum contaminant level (MCL). A similar situation exists for the trichloroethylene concentration detected at SB310. There is no well at SB324 and no well downgradient of SB310 to assess the groundwater impacts from these apparent source areas.

31. Figure 4-19: A trichloroethylene concentration in soil of 1.6 µg/kg at SB06 (see Figure 4-16) could not result in a groundwater concentration of 200 µg/L at MW06D; therefore, there must be an upgradient trichloroethylene source area that has not yet been detected. The trichloroethylene concentration in soil upgradient at SB319 would also result in a groundwater concentration much less than 200 µg/L based on equilibrium calculations. Consequently, further soil and groundwater investigation within the former drum storage area is necessary to identify the magnitude and extent of trichloroethylene concentrations in soil and groundwater.

    Please add the location of MW02 to this figure.

Response: Due to various site conditions, sample techniques and site age, equilibrium calculations should be used as an indicator only and may not be reliable for direct correlation between soil and groundwater concentrations. Note that at SB06 there is an additional concentration of 990 ug/kg in the 22 to 24 foot sample (130 in the field duplicate). An edit will be made to indicate this in the text and on the figure.

Based on the data obtained to date, the results that indicate elevated VOC concentrations near the oil/water separator and detected VOCs nearby are not unexpected. However, as discussed in the March 18th RPM meeting, additional assessment will occur to confirm the presence or absence of VOCs in locations near the detections. Additional groundwater wells may be added, if deemed necessary after additional field observations are recorded and soil data is obtained.

See also response to general comment #1.

Appendix A- Human Health Risk Assessment

1. Although using the average lead concentrations for the lead models to estimate lead risks is recommended by EPA guidance and results in acceptable lead risks for the Site, high levels of lead in soil (maximum level of 1,550 mg/kg) exceeding EPA screening levels of 400 ppm and 800 ppm for residential and worker scenarios, respectively, need to be discussed in the RI. The high lead levels in soil also exceed RIDEM DECs, which would be considered as ARARs, and exceedance of ARARs would usually require taking action. Please provide some discussion on the soil lead levels exceeding EPA screening levels and ARARs.

Response: The HHRA indicates in multiple sections (Section 4.6.2.1, page 37, 2nd paragraph under Lead Evaluation; Section 4.7.4, page 46, Uncertainty Assessment; and Section 4.8, page 48, Summary and Conclusions) that lead concentrations in some surface soil samples are elevated and that exposure to lead in this sub-area of the site may result in unacceptable risk, even though exposure to lead on a site-wide basis does not. In addition, The RI also indicates in several locations that there are areas of the site with elevated lead concentrations and there is a potential unacceptable risk to lead in soils in certain areas of the site. See Section 6.1,

page 41, lead evaluation, and other references in Section 7.2 (page 48) and Section 7.3 (page 51), for example. There are also references for additional lead evaluation during the FS in Section 7.3 (page 53). The paragraph on Page 41 can be enhanced with specific mentioning of the EPA screening levels and RIDEM DECs.

2. Section 4.7.3: The EPA OSWER Directive 9200.1-113 Recommendations for Default Value for Relative Bioavailability of Arsenic in Soil, recommending the use of the default relative bioavailability value of 60% or 0.6 of arsenic in soil was cited in the Uncertainty Section of the RI Report as resulting in over-estimated risk. This relative bioavailability value of 60% needs to be applied to quantifying risks from exposure to arsenic in soil. Please revise the risk assessment to include this change in arsenic risks.

Response: The requested revision will be made for the 60% value.

3. Table 10.1.RME: Please also present cancer risks to future young child/adult resident being exposed to PCE in groundwater via the vapor intrusion pathway.

Response: The requested revision will be made to include the future young child/adult resident.

Appendix B- Ecological Risk Assessment

1. Section 6.2, Ecological Risk Assessment Summary, Page 49
   The section related to sediment risk contains the following statement: "Note that the presence of a stormwater drain outlet it not considered a source of a CERCLA-related release." Please explain what is meant by this statement. When a CERCLA contaminants such as PCBs are located in proximity to an outlet from a drain on a CERCLA site, EPA would normally view the PCBs as being relevant to CERCLA.

Response: Navy believes that additional discussion is warranted related to the outfall of the drain. Since the inlet to the drain is upgradient of the site, the source of the PCBs are not likely from an off-site location (at or near the inlet of the drainage system which is located off-site), but likely from overland runoff/ sedimentation based on the elevated concentrations of PCBs encountered in the upland soil samples. The statement will be revised as such.

2. Figure 2 4-9, Distribution of PCBs in Shallow Soil
   Based on the PCB distribution in surface soils, it could reasonably be inferred that the PCBs found in sediment at the northern end of the site originated in the vehicle storage area. Regardless of the findings of the terrestrial portion of the ecological risk assessment, EPA suggests that some removal of PCBs in soil should be considered to prevent further contamination of the near-shore marine environment.

Response: Navy agrees that remedial actions will be required for the soil with elevated concentrations of PCBs; which would provide risk management for exposures to soils from both human and ecological receptors. Remedial action will provide an additional benefit by removing a potential source to the near-shore environment.

3. Appendix B, Ecological Risk Assessment, 4.6 Tier 2, Step 3a Risk Characterization, page 41. This section suggests that PCBs in sediment are an artifact of discharge from a non-CERCLA related storm drain outfall. The Navy should consider the possibility that the vehicle storage area may also tie into the storm drain system. Also, the fact that PCBs are not detected at elevated concentrations near a similar outfall at the southern end of the site should be noted. Overland run-off and historical materials movement and/or re-grading activities might also have caused PCBs from upland portions of the site to migrate to sediment. EPA acknowledges that the PCBs in sediment are not particularly high, but it seems more likely than not that they originated from nearby PCB-contaminated areas of the site.

Response: Navy agrees with the intent of the comment. The text will be revised to clarify the points about PCBs not detected at the southern outfall and other potential sources such as the on-site migration. The utility plans will be re-checked for on-site connections to the drain system that originates off-site.

Next Steps

The extent of soil, sediment, and groundwater impacts is defined by the cumulative dataset of prior and current investigatory data. Potential risks to current and theoretical future receptors have been quantified. Although data gaps for risk assessment were not identified, additional data enhancements have been discussed for collection during FS or Remedial Design (RD) phases of work to support alternatives for the management of potential risks. Additional data to collect during the FS to support the evaluation of remedial alternatives will include the following data elements:

- Refine the area of impact due to PCBs and lead in soil in the western area of the former materials storage area and the northwestern portion of the site, within proximity to sample locations SS-01, SB-305, -316, -324, and -02. The data would be used in the FS to refine the limits of PCB and lead-impacted soil in terms of aerial extent and depth. Sample locations, parameters and proposed quantities will be provided in a Sampling and Analysis Plan developed for review, approval, and implementation for additional data collection.

- Assess the southern vegetated area, also referred to as the southern former materials storage area, for surficial debris or other signs of dumping on the surface and below, based on visual evidence, followed by soil sample analyses where appropriate. During the field event, the area was very overgrown, and during the winter a drum remnant was spotted. The additional walkover (site observations) occurred April 6th, 2015. Photo-documentation, field notes, and GPS data were collected. This data will be used to determine additional sampling points for enhanced delineation of risk management approaches. The plan for additional data collection, including a figure showing existing conditions and observations from the walkover, will be included in the Sampling and Analysis Plan developed for review, approval, and implementation.

- Refine the extent of VOCs in soil along the southwestern edge area of the site from the oil/water separator north to SB316. Due to the presence of VOCs, specifically PCE and TCE, at current locations, additional assessment will occur to document the presence or absence of a more concentration source(s) of these VOCs. The plan for the data collection, including soil sample collection and contingency for new well installation, will be included in the Sampling and Analysis Plan proposed, and data will be presented in the FS.

- Collect additional groundwater data to assess the presence of metals in groundwater and support the decision for further action. Data collected from additional sampling

events would be considered in the FS to further assess whether concentrations of metals in groundwater are site-related, require further monitoring, and/or require a response action. Indicator parameters, such as TOC, will be evaluated as well. The well locations, parameters, and new wells (if determined necessary) will be included in the Sampling and Analysis Plan proposed for the additional work.

- Develop additional soil data for analysis of selected metals that pose potential risks (such as arsenic, chromium, and/or manganese) to increase the available dataset and further evaluate site-specific background conditions. The increased dataset would be used during the FS to support the selection of remedial goals and remedial extents.

The next step is to prepare a modification to the Sampling and Analysis Plan with sufficient details describing the proposed delineation efforts for the FS. The plan will include data needs based on the RI data and additional observations made at the site in the spring of 2015. Observations from the site walk(s) will be included in the sampling plan in support of the proposed field sampling efforts. The plan will be developed for review by the project stakeholders, including the regulatory agencies, prior to data collection. Once concurrence is reached on the modified Sampling and Analysis Plan, the data will be collected for use in the FS.

The FS will incorporate the newly collected soil and groundwater data. Based on the scheduled date for the submittal of the draft FS, it may incorporate a single additional round of groundwater. If additional rounds are determined to be needed, that data may be incorporated into a later version of the FS, part of the Proposed Remedial Action Plan, or the ROD, depending on concurrence with the project stakeholders.

As part of the FS, per CERCLA RI/FS guidance, the Navy will develop remedial action objectives (RAOs) and associated preliminary remedial goals (PRGs) for the exposure scenarios which pose potential human health and/or ecological risks. The FS will then compare PRGs to chemical-specific applicable or relevant and appropriate requirements (ARARs), select appropriate remedial goals (RGs), and proceed with identifying candidate remediation alternatives to consider. Where reasonable, data and information related to the adjacent MRP Site 1 will be considered for potential efficiencies with risk management and/or further CERCLA phases of work at the site.