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LETTER OF TRANSMITTAL AND U S NAVY RESPONSES TO U S EPA REGION I AND
RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT COMMENTS ON
DRAFT SAMPLING AND ANALYSIS PLAN FOR PLANNED QUONSET DEVELOPMENT
CORPORATION OUTFALL 001 REMEDIAL INVESTIGATION NCBC DAVISVILLE RI
8/22/2013
RESOLUTION CONSULTANTS

Resolution Consultants
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August 22, 2013

U.S. Environmental Protection Agency, Region 1
Federal Facilities Superfund Section
Attn: Ms. Christine Williams
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. Richard Gottlieb
235 Promenade Street
Providence, RI 02904

**RE: Response to Comments
Draft Sampling and Analysis Plan
QDC Outfall 001 Remedial Investigation
Former NCBC Davisville
North Kingstown, Rhode Island**

Dear Ms. Williams and Mr. Gottlieb:

On behalf of the Naval Facilities Engineering Command (NAVFAC), Mid-Atlantic (MIDLANT), Resolution Consultants is providing you with the Response to Comments on the Draft Sampling and Analysis Plan (SAP) for the planned Quonset Development Corporation (QDC) Outfall 001 Remedial Investigation (RI) at former Naval Construction Battalion Center (NCBC) Davisville, North Kingstown, Rhode Island.

The Navy Remedial Project Manager (RPM) for this site is listed below:

Naval Facilities Engineering Command, Mid-Atlantic
Attn: Mr. Jeffrey Dale, Code EV
4911 South Broad Street
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Philadelphia, PA 19112
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215.897.491



If you have any questions regarding the responses, please contact Mr. Jeffrey Dale, the Navy RPM, using the contact information provided in this letter.

Sincerely,

A handwritten signature in blue ink, appearing to read 'R. Shoemaker', with a stylized, cursive style.

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**NAVY RESPONSES TO
U. S. ENVIRONMENTAL PROTECTION AGENCY
COMMENTS DATED APRIL 29, 2013
ON THE DRAFT SAMPLING AND ANALYSIS PLAN,
QDC OUTFALL 001 REMEDIAL INVESTIGATION,
FORMER NAVAL CONSTRUCTION BATTALLION CENTER (NCBC) DAVISVILLE,
NORTH KINGSTOWN, RHODE ISLAND
(MARCH 29, 2013)**

During July 2013 Quonset Development Corporation (QDC), in coordination with Rhode Island Coastal Resources Management Council (CRMC) removed the plugged culvert discussed on page 21 of the SAP. The site description and conceptual site model described in Worksheet 10 will be updated to reflect this change. All references to the “plugged culvert” will be changed to “former plugged culvert” throughout the Sampling and Analysis Plan (SAP).

Two of the sample locations in the Area Subject to Stormwater Flow (ASSF) will be moved based on observations during a site visit by the Navy and U. S. Environmental Protection Agency (EPA); one location will be moved downgradient of the former plugged culvert and one location will be moved to where a small drainage feature and debris are located on the north side of the ASSF. Figure 10-6 and all appropriate sections of the SAP will be updated accordingly.

Navy responses to EPA comments on the Navy’s Draft SAP QDC Outfall 001 Remedial Investigation (RI) are presented below. The EPA comments are presented first (in italics) followed by Navy’s responses.

EPA General Comments

***EPA General Comment 1:** The QAPP worksheets provided present all of the information specified in the UFP-QAPP guidance. However, several worksheets are missing. EPA understands this document was prepared in accordance with the Navy's Tier II Sampling and Analysis Plan (SAP) format, which provides the framework for a streamlined SAP process. The omission of these worksheets should be explained by the Navy, perhaps in the Executive Summary, to inform the reader why the document appears to be incomplete. EPA is not taking issue with the format of the document, only suggesting that the reasoning behind the format is provided.*

Response: Text will be added to the executive summary to provide clarification and reasoning of the Tier II SAP format.

***EPA General Comment 2:** The description of field sampling procedures provided in Worksheets 14 and 17 do not always provide specifics about the procedures that will be used to support this particular investigation, instead referring the reader to SOPs provided in Appendix A. The SOPs are detailed and comprehensive, but frequently provide multiple approaches to a particular task, as is typical of SOPs. The SOPs provide general guidelines for the performance of each task, but the text of the SAP should provide details relative to how certain portions of the SOP will be applied to collect the data required to achieve the objectives of this particular investigation. The Navy should provide more specific detail in the text about the soil, sediment,*

groundwater, and surface water sampling planned for this project. Additional detail is provided in Specific Comments, below.

Response: Please see responses to the specific comment regarding this topic.

EPA General Comment 3: *The SAP proposes to advance a soil boring 50 feet down gradient from CB-3 and at other locations along the drain line where evidence of water infiltration is observed. As EPA has commented in the past, EPA believes test pitting is a more effective way to evaluate potential releases of contamination from the drain line to the surrounding environment. Test pitting also enables a more complete evaluation of the extent of the compromised portion of the pipe and permits the collection of soil samples from material immediately adjacent to the drain line. The advancement of soil borings introduces the risk that subsurface soil samples collected are not representative of the materials adjacent to the pipe, either because they are collected from the wrong depth or from a location too distant from the drain line.*

Response: The depth of a test pit near CB-3 or other catch basins would make visual observation of and sampling the sidewall impractical. The Navy also believes test pits adjacent to existing catch basins could compromise the integrity of the catch basin. The Navy believes that proposed soil borings will adequately identify impacts from potential releases from the pipe or catch basin. The previous video inspection of the drain line during the Study Area Screening Evaluation (SASE) does not indicate any compromised portions of the drain line, except for the location 50 feet downgradient of CB-3, where water was observed to be entering, not leaving the pipe.

EPA General Comment 4: *The PDF version of the document is useful in that bookmarks are inserted into the text for easy reference to individual worksheets. The PDF document would be even more useful to both reviewers and field sampling staff if bookmarks were inserted to reference individual SOPs within Appendix A or if in-text references to individual SOPs were hyperlinked to the specific SOP within Appendix A.*

Response: Bookmarks will be added to the individual SOPs.

EPA Specific Comments

EPA Specific Comment 5: Page 8, Worksheet 5: *The Health and Safety Officer should have a line of authority to the Field Team Leader/Site Safety Officer.*

Response: Agreed, this change will be made.

EPA Specific Comment 6: Pages 12-16, Worksheets 9-1, 9-2, and 9-3: *EPA notes there was no EPA or RIDEM involvement in scoping meetings. The UFP-QAPP process is intended to be collaborative in nature and should involve as many stakeholders as possible. At the very least, these worksheets should clearly define what, if any, input was received from the regulatory agencies and how this input was incorporated into the sampling design and risk assessment approach for the project.*

Response: If necessary, a scoping meeting with EPA and/or Rhode Island Department of Environmental Management (RIDEM) will be arranged to discuss the response to comments and

path forward for finalizing the SAP. The Navy did incorporate input received on the Drain Line Investigation report from EPA and RIDEM while developing this SAP.

EPA Specific Comment 7: Page 17, Worksheets 4, 7, and 8: *This page is out of order. EPA would recommend moving this worksheet before Worksheet #5.*

Response: Agreed, this change will be made.

EPA Specific Comment 8: Page 19, Worksheet 10, 2nd Paragraph: *Please expand in text on the "plugged culvert" referenced in the last sentence of this paragraph (or refer the reader to the Site Description on Page 21), as it is not discussed previously in the description of the site.*

Response: Text will be added to refer the reader to the Site Description Section. As stated previously, the Site Description Section will also be updated to reflect the removal of the plugged culvert.

EPA Specific Comment 9: Page 21, Worksheet 10, 2nd paragraph: *This paragraph states the contaminants detected in the Drain Line Investigation and Data Report are not "entirely consistent" with those known to have been released at Sites 2 and 3 and Study Areas 1 and 4 (Former Construction Equipment Department), however Building 224 (and the vehicle wash pad and oil-water separator adjacent to Building 224) are identified as probable sources of contamination to the outfall. Has the Navy considered additional investigation in the Building 224 area to rule out subsurface contamination originating from the vehicle wash pad and oil-water separator?*

Response: The Navy is not proposing investigation at the former wash pad or oil water separator, which were demolished or removed by QDC. The conceptual site model is that the wash pad received contaminants and the storm drain transported them to the oil water separator and subsequently to the wetland.

EPA Specific Comment 10: Page 23, Worksheet 10: *In the summary of the remote video inspection, Navy notes there were connections to two other drainage systems observed. The first is from the former oil/water separator associated with Building 224 and the second is "believed to be" from catch basins within the former leach field (Study Area 01). However, Figure 10-4 (potential Exposure Pathways) identifies the Building 224 drainage system as the sole source of contamination to the outfall. Why is Study Area 01 not considered a source of contamination? If Study Area 01 is excluded because of uncertainty over its connection to the outfall, Navy should perform additional drainage system investigation to determine from where the second connection originates. See comment EPA Specific Comment 13 in RTC on Drain Line Investigation report.*

Response: The Navy considers the catch basins in the area of Study Area 01 as a component of the "Building 224 drainage system." This will be clarified in the text.

EPA Specific Comment 11: Pages 25-26, Worksheet 10: *Navy should be more specific when making reference to the Davisville metals background surface soil data. Which data set is being utilized for the comparison of site data to background?*

Response: The data set that will be used for the soil metals background is from the NCBC Davisville Phase II RI background data set. This will be clarified in the text.

EPA Specific Comment 12: Page 26, Worksheet 10, 5th paragraph: *The text should indicate that petroleum droplets were observed in sediment and in porewater samples where samples PW-17 and PWS-17 were located. In addition, it is noted that these samples were taken in 2007. While the Army took those samples, Army & Navy have been cooperating in the investigation of Navy site 3 & Army FUDS Nike PR-58 long enough that this outfall site should have been investigated as soon as the field information was received by Navy. Please explain.*

Response: The text is adequate as is in reference to historical information collected by others. The Navy did not recognize the significance of the Army Corps of Engineers (ACOE) observation at the time. Had either EPA or RIDEM communicated any concern with this finding at the time Navy would have responded appropriately.

EPA Specific Comment 13: Page 26, Worksheet 10, last paragraph: *Navy should include additional detail about EBS review item 53. Is it upgradient from the outfall? What types of activities occurred at this location? Why was it identified as an EBS review item? Which contaminants were detected in environmental media? Would we expect impacts to the outfall originating from this area?*

Response: Text will be added to indicate that Environmental Baseline Study (EBS) review item 53 is slightly north and downgradient of the wetland, therefore impacts to the outfall would not be expected. Additional text will also be added that 3 test pits were excavated in the sludge beds of the leach field. Samples were collected for total petroleum hydrocarbons (TPH), gasoline range organics (GRO), volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), Pesticides, polychlorinated biphenyls (PCBs), and Resource Conservation and Recovery Act (RCRA) 8 metals. The detected VOCs, metals, and pesticides were below EPA and RIDEM industrial/commercial screening criteria. TPH, GRO, VOCs, SVOCs, and PCBs were not detected.

EPA Specific Comment 14: Page 26, Worksheet 10 last paragraph: *An additional heading and paragraph should be for the Dec 2012 wetland depth of sediment investigation. Please provide a summary.*

Response: A brief summary will be added.

EPA Specific Comment 15: Page 27, Worksheet 10, Nature and Extent of Contamination, 2nd paragraph: *Navy states the extent of soil contamination must be delineated both horizontally and vertically, however on Figure 10-6 there are no soil samples proposed outside of the excavation area to evaluate the horizontal extent of contamination.*

Response: Two additional soil borings will be added on the northwest side of the excavation and two additional soil borings will be added on the southeast side of the excavation. Text and figures will be updated as appropriate.

EPA Specific Comment 16: Page 28, Worksheet 10, Sources and Release Mechanisms: Navy should consider Study Area 01 as a potential source of contamination to the outfall, since connections to the leach field located within Study Area 01 were identified during the remote survey of the drainage line.

Response: All catch basins connected to the Building 224 drainage system, including those at Study Area 01 will be cleaned prior to conducting the RI on the downgradient wetland. The sampling proposed includes analysis for solvents that could have been released to catch basins or the truck wash pad and transported to the wetland.

EPA Specific Comment 17: Page 28, Nature and Extent of contamination, 1st paragraph: Include test pits instead of borings to determine soil impacts. Please see the Navy's response to EPA comment # 7 dated September 25, 2009, where Navy agrees that test pitting is more useful than borings for this type of investigation.

Response: See response to general comment #3.

EPA Specific Comment 18: Page 29, Worksheet 10, 2nd paragraph: Figure 10-4 should include a footnote for groundwater exposure routes associated with the use of site groundwater as a potable source (i.e. "ingestion as drinking water") stating these pathways will not be considered complete if site groundwater is determined not to be suitable for potable use.

Response: A footnote will be added to Figure 10-4 to clarify the evaluation of groundwater.

EPA Specific Comment 19: Page 30, Worksheet 10: Please include a future residential exposure to soil and groundwater. In the absence of a formal risk assessment, EPA will require Navy to implement both soil and groundwater residential use restrictions. In light of the future cost of these restrictions, Navy should first determine if they are necessary with a risk assessment.

Response: As stated in the SAP, the wetland cannot be developed for residential or commercial/industrial use without filling the wetland. The wetland has also been delineated as a State jurisdictional wetland pursuant to the Rhode Island Freshwater Wetlands Act. In addition, the wetland area is within the Federal Emergency Management Agency (FEMA) flood zone, as shown on Figure 10-3. Therefore, it is assumed that future residential or commercial/industrial development of the on-site area is not likely to occur. For that reason, future on-site residential receptors are not considered likely future receptors and will not be evaluated in the risk assessment.

EPA Specific Comment 20: Page 31, Worksheet 10: In light of the fact that pore water samples were found to contain LNAPL, Navy should consider the groundwater to be a potential threat to the sediment and surface water. Shallow groundwater samples should be taken and evaluated. It is not enough to just evaluate sediment and surface water since the groundwater/surface water interactions could be contaminating the sediment.

Response: During multiple site visits performed by Resolution Consultants (Resolution) during the Winter and Spring of 2013, light non-aqueous phase liquid (LNAPL) was never observed even during times when the water table was high enough to partially fill the grave of the 2008 excavation. Shallow grab groundwater samples will be collected at 5 locations in the wetland

and 3 locations in the ASSF. Shallow groundwater samples will be collected from permanent wells at one location immediately downgradient of the 2008 excavation and one location within the wetland.

EPA Specific Comment 21: Page 33, Worksheet 11, Goal 3: *This goal should also include groundwater not just subsurface soil. In addition, please include reference/figure with this catch basin on it.*

Response: Groundwater will be added. Text will be added to the appropriate sections of the SAP that grab groundwater samples will be collected from the soil boring if there is evidence of impacts (e.g., visual staining, elevated [photo ionization detector] PID hits, olfactory evidence, etc.). A reference to the inset in Figure 10-6 will be added to text.

EPA Specific Comment 22: Table 10-6: *There are no soil samples planned to evaluate the horizontal extent of contamination in the 2008 excavation area.*

Response: See response to comment 15, these 4 additional borings will be added to the figure.

EPA Specific Comment 23: Page 34, Worksheet 11, Step 3: *Include sampling through the catch basin bottoms.*

Response: Text will be added that if the catch basin bottoms are found to be not competent, a sample of beneath the catch basin bottom will be collected with soil boring equipment if feasible. If it is not feasible to sample through the catch basin bottoms, a soil boring will be advanced on the outlet side of the catch basin approximately 4 feet from the basin. Soil borings will be advanced to a depth of four feet below the bottom depth of the catch basin unless field observations (e.g., PID readings, visual/olfactory indicators, etc.) dictate advancing deeper. This will be clarified in the text of the SAP.

EPA Specific Comment 24: Page 34, Worksheet 11: *include/reference to a figure.*

Response: References to Figures 10-5 through 10-8 already included in first paragraph of Step 3.

EPA Specific Comment 25: Page 35, Table 11-1: *This table (or the text) should address how the Navy will determine which samples will be analyzed for hexavalent chromium. Will the selection of hexavalent chromium samples' locations be biased toward areas with higher chromium concentrations, based on historical data, or some other means?*

Response: Text will be added to indicate that the selection of samples analyzed for hexavalent chromium will be such that the samples selected are evenly distributed through the human health risk assessment data set.

EPA Specific Comment 26: Page 35, Table 11-1 PCB Homologs/Congeners: *Congeners should be considered and EPA recommends sampling for PCB congeners, particularly in surface soil, shallow soil, and sediment.*

Response: PCB congeners will not be analyzed. PCBs have been analyzed as Aroclors during previous historical investigations at NCBC Davisville and will continue to do so for consistency.

EPA Specific Comment 27: Page 37, Worksheet 11, Spatial Boundaries: Sampling should be to the water table or 10 feet for residential exposure evaluation.

Response: If PID measurements or other evidence of impacts are observed in the 4' below ground surface (bgs) interval, the borings at that location will be advanced deeper until no PID, visual, olfactory, etc indications of impacts are observed. The water table is anticipated to be very shallow in the study area. Text will be updated accordingly.

EPA Specific Comment 28: Page 37, Worksheet 11, Spatial Boundaries: PGU designated wells have not been re-developed in many years, what steps with Navy take to ensure a representative sample from these wells?

Response: Text will be added to indicate that these historical wells will be re-developed according to SOP 3-13 two weeks prior to sampling.

EPA Specific Comment 29: Page 37, Worksheet 11, Spatial Boundaries, 2nd and 3rd paragraphs: In the 2nd paragraph, the SAP states soil investigations within the 2008 excavation area are anticipated to extend to 4 feet below ground surface "to confirm that the vertical extent of impacts is defined." What measures will be taken by the Navy if soil samples collected at 4 feet below ground surface still contain contaminants above screening levels? Additionally, in the 3rd paragraph, the SAP indicates that surface water samples will be co-located at 5 wetland sediment and 2 ASSF soil locations. What measures will be taken if surface water sediment and soil samples are collected? Is there a plan to remobilize to collect surface water samples at another time? Likewise, please see the following comment.

Response: If PID measurements or other evidence of impacts are observed in the 4' bgs interval, the borings at that location will be advanced deeper until no PID, visual, olfactory, etc indications of impacts are observed, text will be updated accordingly.

EPA Specific Comment 30: Page 38, Worksheet #11, Temporal Boundaries: The discussion of temporal boundaries may be more complex than is stated here, especially given that borings and monitoring wells are planned to be advanced within the wetland. Given the nature of sediment materials within the wetland, the most favorable time of year for investigations involving drilling equipment will be dry (i.e. late summer/fall) or frozen (i.e. winter). These times of year will not be compatible with the favorable seasons for the collection of surface water samples. Please add some discussion here about the timing of each aspect of the investigation with respect to site conditions that are favorable for the planned investigations.

Response: Text will be added to indicate that borings and well installation will be done in later summer/fall or winter when frozen, and that surface water samples will be collected in the spring when the water table is high and surface water is present.

EPA Specific Comment 31: Page 38, Worksheet 11, Temporal Boundaries: Test Pits should be dug at the catch basin.

Response: See response to general comment #3.

EPA Specific Comment 32: Page 38, Worksheet 11, Temporal Boundaries: Since the Navy CED Area OU7 investigation has recently been for CVOC contamination, there doesn't seem to be much in the way of other analytes in the data base for the groundwater monitoring wells upgradient of the outfall. Please evaluate sampling other existing wells near former building 224 for SVOCs and pesticides.

Response: No sampling of existing wells near former Building 224 is planned as part of this RI.

EPA Specific Comment 33: Page 40, Worksheet #11, Potential Sources of Error: See General Comment about advancing soil borings to investigate soil conditions adjacent to compromised sections of the drain line. There is a high potential for a sampling error if this investigative technique is utilized to address this problem. Test pitting would be a more effective investigative method.

Response: The Navy does not agree that soil borings have a high potential for sampling error.

EPA Specific Comment 34: Page 43, Worksheet 11, Groundwater Sampling, 2nd paragraph: This paragraph describes anticipated screened intervals for water table wells. What are the anticipated screen depths for the intermediate overburden monitoring wells? In addition, will Navy evaluate both historical and current groundwater flow maps to determine the optimal location for these upgradient well locations?

Response: Available historical and current groundwater flow maps will be used to help determine the optimal location of the upgradient well. However, there is not a lot of existing hydrogeology data for this part of NCBC Davisville.

The following text will be added to better detail the screened intervals of the shallow and intermediate wells in and around the wetland:

“Shallow wells in and adjacent to the wetland will be screened from 2 ft to 12 ft bgs to properly seal the well at the surface. If a clear determination can be made in the field between fill material and underlying native materials, the screen length may be reduced to fully span the upper hydrostratigraphic unit (e.g. if the native materials are observed less than 12 ft bgs, the shallow well will be installed to that depth). Intermediate monitoring wells will be installed using a 10 foot screen length from the upper hydrostratigraphic boundary (fill/native boundary) to 10 feet into the native materials. A determination of the start and end depth of the intermediate monitoring well screens will be determined in the field. If a clear boundary is not observed, then the intermediate well screens will be installed from 12 ft to 22 ft bgs.”

EPA Specific Comment 35: Page 43, Worksheet 11, Groundwater Sampling, 2nd paragraph: Please provide the PGU-Z3-03D data in an appendix.

Response: A historical data appendix will be added that includes PGU-Z3-03D.

EPA Specific Comment 36: Page 47, Worksheet 14, Clearing: How will the Navy address clearing that is required to access the wetland for drilling and sampling activities? What measures will be taken to minimize impacts to the environment from investigative activities?

Response: Coordination with the RIDEM Wetlands Section will take place; all clearing will be performed in accordance with Section 6.14 of the RIDEM Wetlands Regulations and a Coastal Zone Management Consistency Determination (CZMD) will be prepared prior to the start of the RI.

EPA Specific Comment 37: Page 47, Worksheet 14, Utility Clearance: *The utility clearance process should include input from Quonset Development Corporation personnel in addition to DigSafe notification. Additionally, will the actual sampling locations be cleared using ground penetrating radar or similar technology?*

Response: Agreed, utility clearance will be coordinated with QDC in addition to the DigSafe notification, text will updated accordingly. Use of ground penetrating radar (GPR) is not anticipated at this time.

Specific Comment 38: Page 47, Worksheet 14: Surface and Subsurface Sediment Sample Collection: *EPA is concerned over whether the wetland will be accessible to a direct push drilling rig. Furthermore, if a drilling rig is not able to access the wetland, there is concern that the use of hand augers will not permit the collection of samples from a depth of 4 feet or deeper. Navy should consider using hand coring tools with the capability of holding the borehole open so that discrete and representative samples can be collected from each of the targeted depths.*

Response: A track mounted direct push rig should be able to access locations in the wetland. If necessary, plywood or DURA-BASE® mats will be used to further distribute the weight of the track mounted rig. Hand corers were considered, but there are health and safety concerns (e.g., back strain) related to retrieving hand corers from deeper depths. Therefore hand augers were chosen as a safer alternative should direct push access become an issue. The text will be modified to indicate that a tiered approach will be implemented; direct push will be the primary option, hand corers will be the secondary option, and hand augers will be the tertiary option. Health and safety will be the deciding factor on whether to use hand corers or hand augers.

EPA Specific Comment 39: Page 48, Worksheet 14, Monitoring Well Installation: *Please provide an estimated depth of intermediate overburden aquifer monitoring wells, including the screen interval depths.*

Response: See response to Specific Comment 34.

EPA Specific Comment 40: Page 48, Worksheet 14, Surface Water Sampling: *Please change the text in this section to state that at least one surface water sample will be collected for hexavalent chromium analysis.*

Response: The text will be revised to indicate that a minimum of one sample will be analyzed for hexavalent chromium.

EPA Specific Comment 41: Page 49, Worksheet 14, Groundwater Sample Collection: *Please change the text in this section to state that at least one groundwater sample will be collected for hexavalent chromium analysis.*

Response: The text will be revised to indicate that a minimum of one sample will be analyzed for hexavalent chromium.

EPA Specific Comment 42: Tables 12.1 & 12.2 and page 49 of 121: *These two tables indicate that field duplicates will be collected at a frequency of 1 field duplicate per 20 samples, but the text on page 49 (Quality Assurance/Quality Control) indicates that field duplicates will be collected at a frequency of 1 per 10 samples. Please revise either the text or the tables as appropriate so that the frequencies of the field duplicates match.*

Response: Tables in Worksheet 12 will be revised to reflect the Navy requirement of 1 field duplicate per 10 field samples.

EPA Specific Comment 43: Page 50, Worksheet 14, Investigation-Derived Waste Management: *Please add to this discussion that all disposal facilities must be approved in accordance with the Off-Site Rule ~ CFR 300.440). Additionally, please indicate whether IDW will be managed according to RIDEM Policy memo 95-01: Guidelines for the Management of Investigation Derived Wastes (RIDEM, 1995).*

Response: Text will be added to indicate that all disposal facilities must be approved in accordance with Off-Site Rule ~ CFR 300.440 and that IDW will be handled in accordance with RIDEM Policy Memo 95-01 Guidelines for the Management of Investigative Derived Wastes.

EPA Specific Comment 44: Pages 52-73, Worksheet 15: *The comparison of PALs to LODs/LOQs/DLs presented in these tables is clear and comprehensive. However, it would be helpful to add some discussion to Page 52 stating that Navy has reviewed the analyses with LODs/LOQs/DLs that are above PALs and determined that the inability of laboratory analyses to achieve these PALs will not adversely impact the Navy's ability to achieve the project objectives.*

Response: A statement/discussion will be added to Worksheet 15 as requested.

EPA Specific Comment 45: Page 74, Worksheet 17, Field Screening: *This discussion should be more specific with regards to the VOC field screening planned by the Navy. Although there is no specific SOP referenced, EPA assumes Navy will follow SOP 3-19 for VOC headspace screening. This SOP specifies both a "Top Sealing Plastic Bag" and "Jar and Aluminum Foil" method. The method to be employed by Navy for this investigation should be discussed on Worksheet 14 or 17 of the SAP.*

Response: Text will be added to indicate that the "Top Sealing Plastic Bag" method will be employed.

EPA Specific Comment 46: Page 75, Worksheet 17, Sediment Sampling: *If a direct push drilling rig is unable to access the wetland, EPA has concerns about whether the Navy will be able to collect discrete and representative samples from the depth intervals that are targeted for the project. Based on a review of Resolution SOP 3-21, use of the Wildco® hand corer appears to be the best alternative to direct push drilling. Navy should include some discussion about the feasibility of utilizing direct push drilling methods to obtain subsurface samples from the wetland and alternative sample collection strategies if the wetland ground surface is not suitable*

for access by drilling equipment. Presently, the discussion in the SAP is too general to evaluate whether the methods proposed will be sufficient to collect representative data ideally suited to support the risk assessment.

Response: See response to Specific Comment 38.

EPA Specific Comment 47: Page 76, Worksheet 17, Soil Sampling, 2nd paragraph: See previous comment about the potential limitations associated with advancing a soil boring to investigate compromised sections of the drain line.

Response: See response to General Comment 3.

EPA Specific Comment 48: Page 75, Worksheet 17, Soil Sampling, 1st paragraph: Figure 10-6 does not show any soil borings/soil samples planned to delineate the horizontal extent of contamination in the 2008 excavation area. Also, Navy should discuss what, if any, additional investigation will be undertaken to delineate the vertical extent of contamination if PALs are exceeded in samples collected from 4 feet below ground surface.

Response: See response to Specific Comments 15 and 29.

EPA Specific Comment 49: Worksheets 18, 19 and 20, pages 78-81 of 121: Please clarify the hold time for hexavalent chromium in soil and sediment samples. EPA Method SW 846 3060A indicates that soils are stable for 30 days from sample collection, and for up to 7 days after the samples have been extracted.

Response: The hold time will be updated with the method's 30 day hold time from collection to extraction. In addition, footnote 4 will be updated to indicate a 7 day hold time from extraction to analysis for soil and sediment samples.

EPA Specific Comment 50: Page 119, Worksheet 37: Please state whether the data validation memoranda and associated validation worksheets will be provided in the Remedial Investigation Report. Please also include a discussion of data usability in the text of the Remedial Investigation Report.

Response: Data validation memoranda including worksheets will be included as an Appendix to the RI Report. The RI Report will also include a data usability section in the text. Worksheet #37 will be updated to clarify.

The following comments refer to the Ecological Risk Assessment discussion presented in Appendix C.

EPA Specific Comment 51: Figure 10-5, Proposed Sediment Sample Locations: It is recommended that the proposed sediment sampling points be adjusted so that the northeastern most point is closer to the ASSF area and the southern-most is further south, close to the edge of the wetland.

Response: These changes will be made.

EPA Specific Comment 52: Table C-11: Please revise to include other sources of uptake values, if available, for the large number of COCs for which a value of 1.0 was assigned. Use of a value of 1.0 for compounds such as pesticides and PCBs, that are known to bioaccumulate, requires documentation or further justification.

Response: Additional sources will be reviewed to identify uptake factors.

EPA Specific Comment 53: Table C-12: Please expand the footnotes to explain how the exposure parameters (e.g. body weight values) were selected from the reported primary source. For example, the value in the first column for shrew is the minimum average value from reported studies.

Response: The footnotes will be reviewed and clarified as needed. As indicated for the shrew, the minimum, maximum, and average body weights listed in the table represent the ‘range of and average of adult body weights’ in the Wildlife Exposure Factors Handbook (USEPA 1993).

EPA Specific Comment 54: Table C-12: Please expand and revise footnotes to correspond to the appropriate receptor. For example, (e) suggests that shrew incidental ingestion was based on quail (mourning dove).

Response: The footnotes will be reviewed and clarified as needed. Page numbers will be added to indicate that this table covers multiple pages. Notes for individual receptors are provided below the table and on pages 2 and 3 of the table. The incidental ingestion note for the shrew (on page 2 of the table) indicates ‘The incidental soil ingestion rate is based on 90th percentile value for shrew (USEPA, 2007).

EPA Specific Comment 55: Table C-12, Column 4 (Food ingestion Rate), for Short-tailed Shrew: EPA (2007) provides a value in Table I (Attachment 4-1), for Food Ingestion Rate (FIR) of 0.209 kg dw/kg bw/day for shrew. Using a body weight value of 0.015 kg for shrew this converts to 0.003 kg dw food/day for the conservative FIR for shrew. Please use this value to be consistent with use of other data from the EcoSSL Guidance EPA (2007), or provide an explanation of why these data are not preferred over the values selected. Similarly, using a FIR of 0.1672 kg Dw/kg bw/day (mean values from EPA 2007) and a body weight value (for BERA) of 0.0168 kg, the FIR for the BERA model would be 0.0028 kg dw/day.

Response: Allometric equations from Nagy (2001) have been used to derive the food ingestion rates for all of the receptors in Table C-12. These statistically significant ($P < 0.05$) regression equations are available for several classes of birds and mammals and account for differences in feeding rates at different body weights. These equations have been selected over individual values presented in EcoSSL Guidance (USEPA 2007) or the Wildlife Exposure Factors Handbook (USEPA 1993) because they represent a statistically significant approach to evaluating ingestion rates relative to body mass. The FIRs identified in EcoSSL Guidance (USEPA 2007) were selected based on small data sets ($n=2$ to 6 depending upon the receptor) while the regression equations presented in Table C-12 are typically based on larger data sets (ranging from $n=4$ for quail to $n=26$ for herbivorous mammals and insectivorous birds). The Uncertainty section of the ERA will discuss the potential changes in risk estimates (higher or lower) based on the use of alternative ingestion rates available in the literature.

The following comments refer to the Human Health Risk Assessment discussion presented in Appendix C.

***EPA General Comment 56:** PCB congeners should be analyzed in surface and subsurface soil to permit better assessment of inhalation exposure to volatile PCBs by the construction worker and to residential soil exposures.*

Response: As stated in the SAP, including Appendix C, exposure to volatile compounds, including PCBs, in soil via the inhalation pathway is considered to be an insignificant exposure pathway and is therefore not quantitatively evaluated in the human health risk assessment (HHRA). Therefore, the evaluation of congeners is not considered necessary for evaluation of the referenced pathway.

***EPA General Comment 57:** The Work Plan notes that USEPA Region I has not provided guidance for use of the data in the 2011 Exposure Factors Handbook (EFH), and that the Work Plan would use the 1997 version of the EFH. The values from the 1997 EFH are represented as the exposure factors to be used in the Risk Assessment in the following tables:*

- *Table C-1, Summary of potential exposure assumptions - recreational/trespassing adult and child;*
- *Table C-2, Sediment adherence factors for the recreational/trespasser adult and child; and,*
- *Table C-4, Summary of potential exposure assumptions - hypothetical future off-site resident.*
- *Table C-3, Summary of potential exposure assumptions - construction/utility worker, uses either EPA guidance specific to exposures by construction workers.*

Prior to conducting the Risk Assessment, the contractor should reassess the status of the 2011 values. With regard to the use of 1997 Exposure Factors Handbook (EFH) instead of the 2011 Exposure Factors Handbook (EFH), EPA Region I makes the general recommendation that the most recent national guidance always be used. With some rare exceptions for particular sites, Region I risk updates are considered to be outdated and should be superseded by national guidance. Although the 1997 exposure assumptions are adequately protective, EPA requests that the exposure factors be updated to the extent possible from the 2011 EFH. If updated factors are not provided by the most recent EFH please default to the previous version.

Response: This comment is inconsistent with previous EPA Region 1 comments at other Navy sites (e.g., NAVSTA Newport). The Navy requests clarification and confirmation from Region 1 that this comment reflects the most recent position regarding the 2011 EFH in order to complete consistent risk assessments in Region 1.

Specific Human Health Risk Assessment Comments

***EPA Specific Comment 58: Section 3.3.1 of Appendix C:** This section discusses methods to be used in the Exposure Assessment. On page 14 of Appendix C, under the heading "Calculation of Exposure Point Concentrations", the explanation of how the Exposure Point Concentration will be calculated needs to be clarified with respect to the minimum number of samples needed to*

calculate a 95 percent upper concentration limit (UCL). The Work Plan correctly states that "UCLs will be calculated where at least 10 samples and at least 6 detects are available." The next sentence also correctly states that "ProUCL version 4.1.01 recommends 10 to 15 or more distinct results for the most accurate and reliable UCL calculation." In the next sentence, the Work Plan states, "When the minimum sample size and number of detects are not met for a dataset the maximum detected concentration will be used as the EPC."

The Work Plan should clarify whether the "minimum" number of samples and detects is "at least 10 samples and at least 6 detects," or if the Risk Assessment will use the "more accurate and reliable ... 10 to 15 or more" distinct results. With smaller sample sizes, it is common to use the lower minimum of 10 samples and 6 detects and not the higher minimum of 10 or more distinct results. Using the higher "minimum" will result in use of the site maximum value as the Exposure Point Concentration for more analytes, which results in a more conservative estimate of risk. We are not recommending one or the other. This comment addresses the confusion in the statement in the Work Plan. The Work Plan should state what will be done more clearly.

Response: The discussion of minimum sample size and minimum number of detects will be clarified.

EPA Specific Comment 59: Figure C-2. Potential Exposure Pathways -Shallow groundwater/pore water: *Exposure to shallow groundwater could be a route of exposure for a future construction worker at the site. This is noted in the Conceptual Site Plan -Figure C-2. Direct contact with and incidental ingestion of shallow groundwater are potentially complete pathways for the construction worker exposed to shallow groundwater during excavation in the area for constructing a pathway, etc. The shallow groundwater should remain as a pathway for this receptor.*

Exposure to shallow groundwater should not be a pathway for other receptors. Exposure to deeper groundwater could be a potentially complete pathway for offsite residential receptors if the groundwater is developed as a drinking water resource in the future. The approach proposed in the Work Plan is appropriate. The Work Plan proposes to assess the groundwater for portability -specifically salinity and total dissolved solids (TDS). If the groundwater does not meet criteria for portability based on these parameters, the human health risk assessment will not consider groundwater as a complete pathway for drinking water by future offsite residents.

Response: A footnote will be added to Figure C-2 to clarify between the evaluation of shallow and deep groundwater, as discussed in this comment.

EPA Specific Comment 60: PCB Homologs/Congeners: *Congeners should be considered and EPA recommends sampling for PCB congeners, particularly in surface soil and shallow soil. Congener analysis will allow a better assessment of inhalation exposure by the future construction worker. Because of differences in volatilities of different congeners, it is difficult to use homolog data to model airborne concentrations of PCBs.*

Response: As stated in the SAP, including Appendix C, exposure to volatile compounds, including PCBs, in soil via the inhalation pathway is considered to be an insignificant exposure pathway and is therefore not quantitatively evaluated in the HHRA. Therefore, the evaluation of congeners is not considered necessary for evaluation of the referenced pathway.

EPA Specific Comment 61: Hexavalent Chromium: *The Work Plan should state how many, or what percentage, of samples analyzed for total chromium will also be analyzed for hexavalent chromium.*

Otherwise, we agree with the approach stated for the Human Health Risk Assessment, which proposes to analyze a subset of samples for hexavalent chromium in order to assess risk to human health. If hexavalent chromium is present in the subset, then it would be appropriate to use the hexavalent chromium toxicity values, which would include cancer values, to assess risk. If hexavalent chromium is not present, then it is appropriate to assume that all chromium detected at the site is trivalent chromium. There is a significant difference in risk from exposure to the two valence states.

Response: The percentage (10%) and minimum number of samples (minimum of 1 per matrix) proposed for evaluation of hexavalent chromium will be added to the Risk Assessment Work Plan Tech Memo.

**NAVY RESPONSES TO
RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
COMMENTS DATED MAY 9, 2013
ON THE DRAFT SAMPLING AND ANALYSIS PLAN,
QDC OUTFALL 001 REMEDIAL INVESTIGATION,
FORMER NAVAL CONSTRUCTION BATTALLION CENTER (NCBC) DAVISVILLE,
NORTH KINGSTOWN, RHODE ISLAND
(MARCH 29, 2013)**

During July 2013 Quonset Development Corporation (QDC), in coordination with Rhode Island Coastal Resources Management Council (CRMC) removed the plugged culvert discussed on page 21 of the SAP. The site description and conceptual site model described in Worksheet 10 will be updated to reflect this change. All references to the “plugged culvert” will be changed to “former plugged culvert” throughout the Sampling and Analysis Plan (SAP).

Two of the sample locations in the Area Subject to Stormwater Flow (ASSF) will be moved based on observations during a site visit by the Navy and U. S. Environmental Protection Agency (EPA); one location will be moved downgradient of the former plugged culvert and one location will be moved to where a small drainage feature and debris are located on the north side of the ASSF. Figure 10-6 and all appropriate sections of the SAP will be updated accordingly.

Navy responses to Rhode Island Department of Environmental Management (RIDEM) comments on the Navy’s Draft SAP QDC Outfall 001 Remedial Investigation (RI) are presented below. The RIDEM comments are presented first (in italics) followed by Navy’s responses.

RIDEM Specific Comments

RIDEM Specific Comment 1: Page 21 of 121, Work Sheet 10-1, Conceptual Site Model, Paragraph 2: *This paragraph states that contaminates found in the drain line (ethyl and methyl benzenes, PAHs, PCBs, and TPH) are not entirely consistent with contaminates from Sites 1, 2, 3 and 4. The additional contaminates are attributed to materials handling in the vicinity of Building 224 and agricultural activities associated with the Allen Madison House. It is not clear what other types of material handling occurred in the CED area (save Study Area 1 (CED Drum Storage Area)) and military use of pesticides was not limited to agricultural uses. This would imply that there may be other areas of soil contamination in the CED area that should be more fully investigated since it appears they are being transported through the drainage system.*

Response: Outfall QDC-1 receives drainage from the immediate vicinity of Building 224 and Study Area 01. It also appears to receive surface drainage from the immediate vicinity of Outfall QDC-1 and the Allen Madison House, but not the remainder of the CED area.

RIDEM Specific Comment 2: Page 25 of 121, Worksheet 10-1, Previous Site Investigation Activities, Confirmatory Soil Samples, Paragraph 1: *Please change reference (RIDEM, 2004) to (RIDEM, 2011).*

Response: This change will be made.

RIDEM Specific Comment 3: Page 26 of 121, Worksheet 10-1, Previous Site Investigation Activities, Comparison of residual Material sample results to Soil and Sediment Sample Results, Last Paragraph: This paragraph mentions EBS Review Item 53 which was supposed to be a leach field associated with Buildings 324 and 332. While test pits were dug in the area, the leach field was never found. Of more importance would be EBS Review Item 27 which is former Building 218 which is immediately north of EBS Review Item 53. Building 218 was used as a utility training shop and sand blasting area. Sand blasting grit (Black Beauty) was found at the site and removed. Barium, chromium and lead were detected. It is possible that some of this grit was wind-blown and ended up in the wetlands associated with Outfall 001 which would explain some of the metals concentrations detected.

EBS Review Item 78 (Allen-Madison House) is located to the south of the outfall with groundwater flow from EBS Review Item 78 towards the Outfall 001. The issue at this site was two 275-gallon above ground storage tanks. No samples were taken because the chip samples from the concrete did not show oil staining. Soil Samples were not collected. The only other areas that might have impacted the outfall would have been EBS 24 (Building S-41), EBS 25 (Building 224), EBS 26 (Building A10CT), EBS 56 (Cesspool @ Building 224), Study Area 01 and IR Site 02 all of which are essentially associated with Building 224.

Response: These Environmental Baseline Survey (EBS) Review Items will be reviewed and added to Worksheet 10 if appropriate.

RIDEM Specific Comment 4: In addition, salinity is not a barrier for use as a groundwater source. As noted in an email from Richard Gottlieb to David Barney et. al. dated 8 March 2013 regarding Groundwater ESD for the 5-year review, the Town of Swansea, MA is in the process of constructing a desalination plant which is expected to go on line during the summer of 2013.

Response: The Navy is merely reiterating that RIDEM has designated the groundwater beneath the site as GB which is the RIDEM designation for groundwater “not suitable for use a current or potential source of drinking water.”

RIDEM Specific Comment 5: Page 29 of 121, Worksheet 10-1, CSM Summary, Receptors and Exposure Pathways, Human Health, Current/Future recreational/trespasser (Adult and Child), Bullets 1 & 2: These bullets note that surface soil extends from 0 to 1’ bgs. Please be advised that RIDEM considers surface soil to be from 0 to 2’ bgs. Please also include this analysis in the HHRA.

Response: Surface soil will be defined as 0-1 ft below ground surface (bgs) in accordance with EPA Region 1 guidance, consistent with other sites being evaluated in this program.

RIDEM Specific Comment 6: Page 30 of 121, Worksheet 10-1, CSM Summary, Future Construction/Utility Worker, Bullets 1 & 2: Please explain how the exposure to surface and subsurface soil was determined to be a maximum depth of 4’. The exposure depth at minimum should be based on the maximum invert elevation of the catch basins associated with this drainage system plus an additional foot to allow for base preparation.

Response: The maximum soil depth for evaluation of a construction/utility worker in the human health Risk Assessment (HHRA) was selected based on the deepest depth proposed for sampling

to characterize the nature and extent. A construction/utility worker is not likely to access deeper soils in a wetland area. As stated in the response to EPA Specific Comment 29, if evidence of impacts is observed in the 4 ft bgs soil interval, the borings at that location will be advanced until no evidence of impacts is observed. Soil data collected deeper than 4 ft bgs will be considered for evaluation in the HHRA if they are located above the water table (i.e., are in the vadose zone).

RIDEM Specific Comment 7: Page 30 of 121, Worksheet 10-1, CSM Summary, Hypothetical Future Off-Site Resident: As a baseline, the hypothetical residential scenario should apply the site itself, not just the hypothetical off-site resident. Please include the analysis.

Response: As stated in the SAP, the wetland cannot be developed for residential or commercial/industrial use without filling the wetland. The wetland has also been delineated as a State jurisdictional wetland pursuant to the Rhode Island Freshwater Wetlands Act. In addition, the wetland area is within the Federal Emergency Management Agency (FEMA) flood zone, as shown on Figure 10-3. Therefore, it is assumed that future residential or commercial/industrial development of the on-site area is not likely to occur. For that reason, future on-site residential and commercial/industrial receptors will not be evaluated in the risk assessment.

RIDEM Specific Comment 8: Page 30 of 121, Worksheet 10-1, Ecological: Activities associated with the investigation of this site must comply with Section 6.14 of the RIDEM Wetlands Regulations. In addition, this area is also under the jurisdiction of the Rhode Island Coastal Resources Management Council. Please coordinate with this agency as necessary prior to the start of any activities.

Response: Coordination with the RIDEM Wetlands Section will take place; all clearing will be performed in accordance with Section 6.14 of the RIDEM Wetlands Regulations and a Coastal Zone Management Consistency Determination (CZMD) will be prepared prior to the start of the RI.

RIDEM Specific Comment 9: Page 33 of 121, Worksheet 11-1, Step, Study Goals, Goal 3: If the soil is impacted, it would stand to reason that groundwater could also be impacted. Therefore groundwater should also be investigated.

Response: Text will be added to the appropriate sections of the SAP that grab groundwater samples via temporary well point will be collected from the soil borings if there is evidence of impacts (e.g., visual staining, elevated photo ionization detector [PID] hits, olfactory evidence, etc.).

RIDEM Specific Comment 10: Page 34 of 121, Worksheet 11, Step 3, Information Inputs, Risk Assessment Inputs: Please provide the numerical risk assessment inputs for RIDEM review.

Response: The exposure assumption inputs were provided in Tables in Appendix C (Risk Assessment Work Plan Tech Memo). The hierarchy/sources of toxicity/dose-response values and risk-based screening levels were also provided in Appendix C. The compound-specific values cannot be determined until the list of detected compounds per media is known. RIDEM should be able to provide sufficient review from the hierarchy of sources provided.

RIDEM Specific Comment 11: Page 37 of 121, Worksheet 11, Step 4, Study Boundaries: This paragraph notes that a soil boring will be advanced 30 feet downgradient of CB-3. On page 28 a reference is made to a soil boring 30' downgradient on CB-3. On page 32 there is a reference to a joint with possible infiltration 50' downgradient of CB-3 with a reference on page 33 to investigate the joint. A similar description occurs on pages 38 and 40. Please clarify if the Navy is investigating one or both locations.

Response: Only one location is being investigated. This text refers to the joint approximately 50' downgradient of CB-3 that showed evidence of iron staining. Text in the SAP will be updated to consistently reference 50' downgradient of CB-3.

RIDEM Specific Comment 12: Page 38 of 121, Worksheet 11, Step 4, Spatial Boundaries, Paragraph 1: It is noted that catch basins that do not have competent bottoms will be sampled adjacent to the catch basin for soils. Please state how far both horizontally from the basin will the sample be obtained and vertically how deep below the bottom of the catch basin will the soil sample be obtained.

Response: If feasible, soil borings will be advanced through the bottom of the catch basin. If this is not feasible, soil borings will be advanced on the outlet side of the catch basin approximately 4 feet from the basin. Soil borings will be advanced to a depth of four feet below the bottom depth of the catch basin unless field observations (e.g., PID readings, visual/olfactory indicators, etc.) dictate advancing deeper. This will be clarified in the text of the SAP.

RIDEM Specific Comment 13: Page 38 of 121, Worksheet 11, Step 5, Goal 1, Bullet 3 & Goal 3, Bullet 2: In lieu of an interim removal action please state if the Navy given any consideration to interim LUCs.

Response: There are existing restrictions in the lease with QDC. The Navy is not considering interim LUCs at this time.

RIDEM Specific Comment 14: Page 38 of 121, Worksheet 11, Step 5, Goal 2, Bullet 1: Please note that the deletion of CPOCs must meet the requirements of Section 8.01 of the RIDEM Remediation Regulations.

Response: In accordance with the Formal Dispute Resolution Agreement (January 12, 2012) between the Navy, EPA, and RIDEM, state Applicable or Relevant and Appropriate Requirements (ARARs) need to be addressed under CERCLA if the HHRA identifies an unacceptable site-related cumulative ELCR and/or total HI for a site. Therefore, as part of a remedial technology evaluation (e.g., Engineering Evaluation/Cost Analysis (EE/CA) or Feasibility Study (FS)), if the HHRA identifies any site-related risk-based COCs for the site, concentrations of chemicals detected on-site will be compared to RIDEM's Method 1 Direct Exposure Criteria for Soil and RIDEMs' Method 1 Groundwater Objectives (RIDEM, 2011) for the projected land use, as appropriate. Therefore, RIDEM's Method 1 Objectives are not included in the Tier 1 COPC selection process. The Risk Assessment Technical Memorandum will be revised to state/clarify this.

RIDEM Specific Comment 15: Page 41 of 121, Worksheet 11, Step 6, Performance Criteria, Managing Decision Error, Laboratory Measurement of Compounds of Interest: Please explain the difference between a “Compound of Interest” and a “Chemical of Concern”. If they are the same then one or the other term should be used, but not both.

Response: “Laboratory measurement of compounds of interest” will be replaced with “laboratory analysis.”

RIDEM Specific Comment 16: Page 41 of 121, Worksheet 11, Step 6, Performance Criteria, Managing Decision Error, Managing Laboratory Sampling Error: This section notes the homogenization of samples. Please be advised that RIDEM does not accept homogenized samples.

Response: For non-discreet (i.e., non-VOC) samples, it is standard practice for the laboratory to homogenize the sample in the sample container prior to selecting an aliquot for extraction/digestion.

RIDEM Specific Comment 17: Page 43 of 121, Worksheet 11, Step 7, Obtaining the Data, Groundwater Sampling: The upgradient well location appears to be located near catch basin CB-05. If this catch basin has a soft bottom contaminants could have percolated through the ground and affect this proposed well location. In addition the proposed upgradient well is due east of Site 1 which also drained into this system based on drainage line drawings in this area. Since groundwater flow would be from Site 1 to the wetland (Outfall 001) it would stand to reason that anything we measured in the proposed “upgradient” well would be the contaminants that came from Site 1 and Building 224. Perhaps another location should be selected for this well.

Response: The location of the upgradient well location will be reviewed against available groundwater contours for the area and moved if appropriate. As RIDEM notes, the proposed well location would be upgradient of the wetland and downgradient of Site 1, Building 224, and the NIKE PR-58 Site.

RIDEM Specific Comment 18: Page 47 of 121, Worksheet 14-1, Summary of Project Tasks, Clearing: Prior to any intrusive activities in the wetlands coordination with the RIDEM Wetlands Section is required.

Response: Coordination with the RIDEM Wetlands Section will take place; all clearing will be performed in accordance with Section 6.14 of the RIDEM Wetlands Regulations.

RIDEM Specific Comment 19: Page 47 of 121, Worksheet 14-1, Summary of Project Tasks, Utility Clearance: Not being familiar with SOP 3-01 please coordinate with Dig Safe and QDC.

Response: Text will be updated to clarify that utility clearance will be coordinated with QDC and Dig Safe.

RIDEM Specific Comment 20: Page 47 of 121, Worksheet 14-1, Summary of Project Tasks, Surface and Subsurface Sediment Sample Collection: Please be advised that RIDEM does not accept composite samples.

Response: See response to comment 29.

RIDEM Specific Comment 21: Page 48 of 121, Worksheet 14-1, Summary of Project Tasks, Surface and Subsurface Soil Sample Collection: Please be advised that RIDEM does not accept composite samples.

Response: See response to comment 29.

RIDEM Specific Comment 22: Page 48 of 121, Worksheet 14-1, Summary of Project Tasks, Monitoring Well Installation, Bullet 1: Please note RIDEM's concerns with the location of the upgradient well.

Response: See response to comment 17.

RIDEM Specific Comment 23: Page 48 of 121, Worksheet 14-1, Summary of Project Tasks, Monitoring Well Installation, Last Paragraph: This paragraph states that well screens will be constructed to bracket the stabilized water table which is expected to be approximately 3 to 10 feet. Please state how deep the Navy anticipates the wells to be and what length of screen is the Navy proposing for the wells.

Response: The following text will be added to better detail the screened intervals of the shallow and intermediate wells in and around the wetland:

“Shallow wells in and adjacent to the wetland will be screened from 2 ft to 12 ft bgs to properly seal the well at the surface. If a clear determination can be made in the field between fill material and underlying native materials, the screen length may be reduced to fully span the upper hydrostratigraphic unit (e.g. if the native materials are observed less than 12 ft bgs, the shallow well will be installed to that depth). Intermediate monitoring wells will be installed using a 10 foot screen length from the upper hydrostratigraphic boundary (fill/native boundary) to 10 feet into the native materials. A determination of the start and end depth of the intermediate monitoring well screens will be determined in the field. If a clear boundary is not observed, then the intermediate well screens will be installed from 12 ft to 22 ft bgs.”

RIDEM Specific Comment 24: Page 48 of 121, Worksheet 14-1, Summary of Project Tasks, Investigation-Derived Waste Management: Please note that IDW must be handled in accordance with RIDEM Policy Memo 95-01 Guidelines for the Management of Investigative Derived Wastes.

Response: Text will be added to note that investigative derived waste (IDW) will be handled in accordance with RIDEM Policy Memo 95-01 Guidelines for the Management of Investigative Derived Wastes.

RIDEM Specific Comment 25: Page 74 of 121, Worksheet 17-1, Sampling Design and Rationale, Field Screening, Paragraph 1: This paragraph states that PID readings will be obtained in the breathing zone of field staff to assess the potential health risks. It is not clear what is considered the “breathing zone” of an individual, however, it is assumed this would be at nose level of a person standing. It is also possible that the breathing zone could be close to the ground if the worker is a mechanic working underneath a vehicle. Conversely, the breathing

zone could be high if it is a maintenance worker changing light bulbs. For the purposes of the risk assessment the height should be based on where the highest concentration of COC would be.

Response: The sentence regarding breathing zone PID readings will be deleted, since this is for health and safety purposes of Resolution employees and not related to sampling or the risk assessment.

RIDEM Specific Comment 26: Page 75 of 121, Worksheet 17-1, Sampling Design and Rationale, Sediment Sampling, Paragraph 1: This paragraph notes that a construction worker would dig to a maximum depth of 4 feet. Please be advised that Rhode Island utilizes TR-16 in the design of sewer systems in the state. TR-161 requires a sewer pipe to be deep enough to prevent freezing. Rhode Island building code considers the frost line to be at 42” below ground surface. RIDEM Water Resources Division2, which oversees sewer construction in this State, requires the top of the sewer pipe to be below the frost line. (There are exceptions to this if the pipe is insulated and additional strength provided for traffic loads) Assuming a standard 8” sewer pipe and a few inches of crushed stone underneath the pipe puts the excavation depth at 5’ and this does not even account for increased depth due to slope of pipe. The Navy may want to consider a greater depth below ground surface for the construction worker.

Response: Due to the site being mainly a wetland, the depth to water in the area where soil samples are being collected is very shallow/close to the ground surface. The maximum soil depth for evaluation in the HHRA (applicable for a construction/utility worker exposure scenario) was selected based on the deepest depth proposed for sampling to characterize the nature and extent. It is anticipated that the vadose zone does not extend deeper than 4 ft bgs adjacent to the wetland in the area of proposed soil samples. As stated in the response to EPA Specific Comment 29, if evidence of impacts is observed in the 4 ft bgs soil interval, the borings at that location will be advanced until no evidence of impacts is observed. Soil data collected deeper than 4 ft bgs will be considered for evaluation in the HHRA if they are located above the water table (i.e., are in the vadose zone)

RIDEM Specific Comment 27: Page 75 of 121, Worksheet 17-1, Sampling Design and Rationale, Sediment Sampling, Paragraph 1, Last Sentence: This sentence states that the ecological risk assessment will evaluate only the surface sediment in the 0 – 0.5 foot range. Is the Navy not considering burrowing animals which can make their homes up to 3 feet below the ground surface?

Response: Sediment samples will be collected from within the emergent wetland which contains standing water. Therefore, burrowing animals are unlikely to be present. Risks to wetland/benthic invertebrates, plants, birds, and mammals will be based on exposure to the surface sediments (0 – 0.5 ft). For soil samples that are adjacent to the wetland, the depth to water is very shallow (i.e., less than 3 feet bgs). Therefore burrowing animals are also unlikely to be present in the soil adjacent to the wetland.

RIDEM Specific Comment 28: Page 76 of 121, Worksheet 17-1, Sampling Design and Rationale, Surface Water, Paragraph 1: This paragraph states that a soil sample will be co-located with a surface water sample in the ASSF. Please explain how the Navy is going to collect a surface soil sample if it is inundated with surface water.

Response: A hand auger or hand coring device will be used. The ASSF rarely contains standing water.

RIDEM Specific Comment 29: Worksheet 17-1, Sampling Design and Rationale, General Comments: Please note that RIDEM does not accept composite samples i.e., samples from different locations mixed together. If it alters sampling procedures, locations or depths the Navy should be considering the residential scenario as a baseline condition even though it is an unlikely scenario for this location.

Response: Non discreet (i.e., non-VOC) samples from individual locations and individual depths (e.g, boring SB-01 2-3') will be homogenized individually in stainless steel bowls prior to collecting the individual sample aliquots for the different analyses. No compositing of samples from different locations mixed together will be performed.

**NAVY RESPONSES TO
RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL
MANAGEMENT COMMENTS DATED JUNE 13, 2013
ON THE DRAFT SAMPLING AND ANALYSIS PLAN,
QDC OUTFALL 001 REMEDIAL INVESTIGATION,
FORMER NAVAL CONSTRUCTION BATTALLION CENTER (NCBC) DAVISVILLE,
NORTH KINGSTOWN, RHODE ISLAND
(MARCH 29, 2013)**

The following comments refer to the Risk Assessment portion of the work plan.

RIDEM Specific Comment 1: Section 1.1, Page 2, First Paragraph: Text states that a culvert connects to an adjacent wetland and that this culvert is "plugged with soil and does not appear to be hydraulically connected to the tidal wetland to the east." Considering that Study Area 01 was used to store 55-gallon drums of solvents and waste oil in the 1960s to 1974 and then was used as a leaching field that received storm water and surface water runoff from a truck-washing area located at Building 224 from December 1991 to April 1992, it is plausible that the culvert was once hydraulically connected during that time and may have transported contaminants to the tidal wetland to the east. It is recommend that Navy collect a sediment sample on the other side of the culvert, if possible, to confirm this assumption and verify whether flowage through this culvert may have historically impacted the tidal wetland.

Response: One additional sample will be collected in the area on the downgradient (east) side of the former location of the plugged culvert.

RIDEM Specific Comment 2: Section 1.1, Page 2, Second Paragraph: Text states that "access to the QDC Outfall 001 area is currently restricted by the chain link fence that surrounds the parking area located at the end of Marine Road". Technically, this chain link fence impedes access but does not restrict access unless the QDC Outfall 001 area is completely surrounded by chain link fence. Please consider rephrasing for accuracy.

Response: Text will be rephrased to state that the access "is impeded but not restricted....."

RIDEM Specific Comment 3: Section 2.0, Page 5, Second Paragraph: Navy proposes to evaluate risk from exposure to surface soils located 0 to 1 feet below ground surface (ft bgs), in accordance with United States Environmental Protection Agency (US EPA) risk assessment guidance. RIDEM Remediation Regulations, 2011 specify that surface soil is located from 0 to 2 ft bgs, that industrial/commercial direct exposure criterion (DEC) be applied to this depth range, and that this depth interval should be evaluated in the risk assessment. In addition, RIDEM residential DECs, if applicable (i.e., no land use restrictions are imposed on the site), as well as either GA or GB leachability criteria must be met throughout the vadose zone. It is unclear in the report at what depth the water table is located and whether soils greater than 4 ft bgs are within the vadose zone. It is therefore recommended that surface soils be defined to include the 0 to 2 ft bgs depth interval and that soils located greater than 4 ft bgs be included in the human health risk assessment (HHRA) if they are located above the water table. Additionally, with respect to subsurface soils, please provide justification why evaluation of impacted soils located at depths greater than 4 ft bgs is not necessary.

Response: Surface soil will be defined as 0-1 ft bgs in accordance with EPA Region 1 guidance, consistent with other sites being evaluated in this program.

In accordance with the Formal Dispute Resolution Agreement (January 12, 2012) between the Navy, EPA, and RIDEM, state Applicable or Relevant and Appropriate Requirements (ARARs) need to be addressed under CERCLA if the HHRA identifies an unacceptable site-related cumulative ELCR and/or total HI for a site. Therefore, as part of a remedial technology evaluation (e.g., Engineering Evaluation/Cost Analysis (EE/CA) or Feasibility Study (FS)), if the HHRA identifies any site-related risk-based COCs for the site, concentrations of chemicals detected on-site will be compared to RIDEM's Method 1 Direct Exposure Criteria for Soil and RIDEMs' Method 1 Groundwater Objectives (RIDEM, 2011) for the projected land use, as appropriate. Therefore, RIDEM's Method 1 Objectives are not included in the Tier 1 COPC selection process. The Risk Assessment Technical Memorandum will be revised to state/clarify this.

Due to the site being mainly a wetland, the depth to water in the area where soil samples are being collected is very shallow/close to the ground surface. The maximum soil depth for evaluation in the HHRA (applicable for a construction/utility worker exposure scenario) was selected based on the deepest depth proposed for sampling to characterize the nature and extent. It is anticipated that the vadose zone does not extend deeper than 4 ft bgs adjacent to the wetland in the area of proposed soil samples. As stated in the response to specific comment 29, if evidence of impacts is observed in the 4 ft bgs soil interval, the borings at that location will be advanced until no evidence of impacts is observed. Soil data collected deeper than 4 ft bgs will be considered for evaluation in the HHRA if they are located above the water table (i.e., are in the vadose zone).

RIDEM Specific Comment 4: Section 2.0, Page 5, Third Paragraph: Please provide justification for collecting soil and sediment samples to only 4 ft bgs. Construction and utility work could extend deeper than 4 ft bgs.

Response: The maximum soil depth for evaluation of a construction/utility worker in the HHRA was selected based on the deepest depth proposed for sampling to characterize the nature and extent. A construction/utility worker is not likely to access deeper soils in a wetland area. As stated in the response to specific comment 29, if evidence of impacts is observed in the 4 ft bgs soil interval, the borings at that location will be advanced until no evidence of impacts is observed. Soil and sediment data collected deeper than 4 ft bgs will be considered for evaluation in the HHRA if they are located above the water table (i.e., are in the vadose zone).

RIDEM Specific Comment 5: Section 2.0, Page 5, Fifth Paragraph: Please define the screening interval of what will be considered a "deeper" well to be used for evaluation of potable water.

Response: The only deep well that will be sampled as part of the RI is existing well PGU-Z3-03D, which has a sampling depth of 61 feet bgs according to the NIKE PR-58 RI Report. The exact well construction details will be included in the Final SAP.

RIDEM Specific Comment 6: Section 3.0, Page 8, Sixth Bullet: *It is understood that US EPA Region I has not implemented (i.e., recommended) the use of the 2011 Exposure Factors Handbook (EFH) update. However, use of the September 2008 Child-Specific EFH has been widely implemented by US EPA. Please reference this guidance document in this section.*

Response: The USEPA Child-Specific Exposure Factors Handbook (2008) will be added as a referenced guidance document.

RIDEM Specific Comment 7: Section 3.2.1, Page 10, Soil: *Please include the RIDEM residential and industrial/commercial DEC's as soil screening levels.*

Response: In accordance with the Formal Dispute Resolution Agreement (January 12, 2012) between the Navy, USEPA, and RIDEM, state Applicable or Relevant and Appropriate Requirements (ARARs) need to be addressed under CERCLA if the HHRA identifies an unacceptable site-related cumulative ELCR and/or total HI for a site. Therefore, as part of a remedial technology evaluation (e.g., Engineering Evaluation/Cost Analysis (EE/CA) or Feasibility Study (FS)), if the HHRA identifies any site-related risk-based COCs for the site, concentrations of chemicals detected on-site will be compared to RIDEM's Method 1 Direct Exposure Criteria for Soil and RIDEM's Method 1 Groundwater Objectives (RIDEM, 2011) for the projected land use. Therefore, RIDEM's Method 1 Objectives are not included in the Tier 1 COPC selection process. The Risk Assessment Technical Memorandum will be revised to state/clarify this.

RIDEM Specific Comment 8: Section 3.2.1, Page 11, Sediment: *Although it is agreed that the dust inhalation pathway is a de minimis pathway for sediment, please provide an explanation in the text why this pathway is not applicable for sediment exposures. Additionally, the site-specific sediment adherence factor of 0.4 mg/cm² (fifth bullet) is lower and therefore less conservative than the recommended values provided in the Child-Specific EFH for children playing in sediment (e.g., hands, legs, and feet are 0.49, 0.71, and 21 mg/cm², respectively). Please provide justification for the basis and application of this adherence factor.*

Response: An explanation will be provided in the text on why the dust inhalation pathway is a *de minimis* pathway for sediment. The Child-Specific EFH adherence factors for children playing in mud/sediment are not considered representative of the likely exposure at the site.

The risk assessment exposure assumptions conservatively assume that hands, feet, and lower legs may come in contact with sediment. It is likely that children would not enter this area without shoes on. However, if they did, as is being conservatively assumed, in areas of the site/wetland where both feet and lower legs are likely to come into contact with sediment, the sediment is covered by surface water. Therefore, most of the sediment that may adhere to the skin as a child walks into the area is likely to be washed off as they exit it. In areas of the site where sediments are not covered by surface water, contact with the sediment is likely to be limited to less than the contact that is being assumed and evaluated in the risk assessment (i.e., bottom of feet or feet). Therefore, the adherence factors recommended in the Child-Specific EFH (or 2011 EFH) for children playing in mud/sediment are considered to overestimate the likely exposure to sediment at this site. It is indicated in the Child-Specific EFH that children playing in mud/sediment are based on play in tidal flats. This exposure scenario does not accurately reflect the exposure scenario for the area of the RI.

The proposed adherence factor of 0.4 mg/cm³ was calculated based on values recommended by EPA based on children exposure to wet soil. Therefore, this adherence factor is considered adequately protective for likely exposure to sediment at this site.

An error was found on Table C-2, footnote (e). This footnote will be revised to reference use of the "Geometric mean of children playing in wet soil."

RIDEM Specific Comment 9: Section 3.2.1, Page 12, Surface Water, 1st Sentence: *The text states that the wetland does not contain fish, although no mention of this is provided in Section 1.1. Please explain in the text why fish consumption should not be considered a relevant pathway.*

Response: Text will be added to Section 1.1 to indicate that the wetland does not contain fish and provide discussion on why fish consumption is not considered a relevant pathway.

RIDEM Specific Comment 10: Section 3.2.1, Page 12, Groundwater: *Please include the RIDEM GA and GB Groundwater Objectives as groundwater screening levels.*

Response: In accordance with the Formal Dispute Resolution Agreement (January 12, 2012) between the Navy, USEPA, and RIDEM, state Applicable or Relevant and Appropriate Requirements (ARARs) need to be addressed under CERCLA if the HHRA identifies an unacceptable site-related cumulative ELCR and/or total HI for a site. Therefore, as part of a remedial technology evaluation (e.g., Engineering Evaluation/Cost Analysis (EE/CA) or Feasibility Study (FS)), if the HHRA identifies any site-related risk-based COCs for the site, concentrations of chemicals detected on-site will be compared to RIDEM's Method 1 Direct Exposure Criteria for Soil and RIDEMs' Method 1 Groundwater Objectives (RIDEM, 2011) for the projected land use. Therefore, RIDEM's Method 1 Objectives are not included in the Tier 1 COPC selection process. The Risk Assessment Technical Memorandum will be revised to state/clarify this.

RIDEM Specific Comment 11: Section 3.3.1, Page 13, Current/Future Recreational/Trespasser (Adult and Child), First Bullet: *RIDEM Remediation Regulations, 2011 specify that surface soil is located from 0 to 2 ft bgs. Please evaluate surface soils through inclusion of soil data representing the 0 to 2 ft bgs interval. Additionally, please explain why the dust inhalation pathway is considered to be in significant.*

Response: Surface soil will be defined as 0-1 ft bgs in accordance with EPA Region 1 guidance, consistent with other sites being evaluated in this program.

Section 3.3.1 states that "exposure to volatile compounds in soil via the inhalation pathway is considered to be insignificant". However, the inhalation of fugitive dust/particulates from soil pathway is proposed for evaluation.

RIDEM Specific Comment 12: Section 3.3.1, Page 13, Current/Future Recreational/Trespasser (Adult and Child), Second Bullet. *Please explain why the dust inhalation pathway is considered to be insignificant. (See Comment 11 above.)*

Response: Additional explanation will be provided on why the dust inhalation from sediment pathway is considered to be insignificant.

RIDEM Specific Comment 13: Section 3.3.1, Page 13, Future Construction/Utility Worker, First Bullet: *RIDEM Remediation Regulations, 2011 specify evaluation of subsurface soil located from 2 ft bgs extending through the entire vadose zone. Please either include deeper soils in the risk assessment or provide further justification for exclusion of soils/sediments greater than 4 ft bgs.*

Response: See response to specific comment 6.

RIDEM Specific Comment 14: Section 3.3.1, Page 14: Hypothetical Future Off-Site Resident. *If volatile organic compounds (VOCs) are detected in groundwater, then vapor intrusion into indoor air of off-property buildings may be a complete pathway. Please include inhalation of indoor air via vapor intrusion in the HHRA.*

Response: The area surrounding the wetland is wooded and undeveloped, with the exception of the QDC bike path. As shown on Figure 10-3, groundwater flows to the northeast from the wetland toward the ASSF, underneath the bike path, toward Allan Harbor. This entire area is within the Federal Emergency Management Agency (FEMA) flood zone, (also shown on Figure 10-3). Therefore, future residential or commercial/industrial development of the on-site area and off-site area downgradient of the site is not likely to occur, making the future vapor intrusion pathway incomplete. If it is determined during the proposed investigation and evaluation that VOCs could migrate to current or future residential areas, RIDEM's comment will be revisited/reconsidered.

RIDEM Specific Comment 15: Section 3.3.1, Page 15, Calculation of Exposure Point Concentrations: *The text states that the arithmetic mean concentration will be used as the exposure point concentration (EPC) for lead, in accordance with EPA guidance. RIDEM recommends using the 95% Upper Concentration Limit (UCL) of the mean concentration as the EPC for lead for consistency with the approach to development of EPCs for other chemicals of potential concern (COPCs) and to address variability in concentration. Although it is acknowledged that EPA guidance (OSWER 9200.1-78; 2007) states the arithmetic mean should be used for comparison, it is noted that EPA also recommends in this document 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. I) The 95% UCL would therefore be an appropriate EPC, considering the size of the site and potential variability in soil lead concentrations.*

Response: The risk assessment is being conducted following EPA/CERCLA risk assessment guidance per Navy policy and approach taken on other Navy sites. Therefore, use of the arithmetic mean concentration for evaluation of lead is considered appropriate per EPA lead guidance.

RIDEM Specific Comment 16: Section 3.3.3: *Please define ELCR (i.e., ILCR) in text for clarity. Also, the text notes that cumulative cancer risks for construction workers, industrial workers, and recreational users will be compared to the USEPA's target risk range of 1×10^{-4} to 1×10^{-6} . However, the risks should also be compared to the State of Rhode Island cumulative*

cancer risk limit of 1×10^{-5} . Additionally, RIDEM states, for remedial goals, a cancer risk limit of 1×10^{-6} for individual carcinogenic compounds should be used (RIDEM Remediation Regulations, 2011, Section 8.01A). Navy should specify where risk for individual COPCs exceeds the RIDEM individual cancer risk limit.

Response: ELCR is defined earlier in the Risk Assessment Work Plan Tech memo in Section 3.2.1. However, the term will be redefined in Section 3.3.3, as requested. The risk assessment utilizes USEPA/CERCLA's target risk range and the determination of unacceptable risk will be made based on USEPA/CERCLA's target risk range. However, comparison to RIDEM's target risk levels will also be provided for informational purposes.

RIDEM Specific Comment 17: Section 4.2, Tier 1 - Ecological Screening Risk Assessment, Page 22, Third Paragraph: *Burrowing animals and plants with extended root systems may encounter soils located at depths greater than 1 ft bgs. If contamination is found below 1 ft bgs, please include an evaluation of deeper soils in the ecological risk assessment. With respect to the groundwater pathway it is generally agreed that surface water is a more significant pathway for ecological receptors. However, there is the potential for ecological receptors to encounter groundwater via seeps or springs, particularly during drier portions of the year when surface water may not be available. Please provide a more thorough discussion of groundwater hydrology (or reference appropriate sections of the Sampling and Analysis Plan [SAP]) with respect to ecological exposures to rule out this pathway or include a quantitative evaluation of shallow groundwater.*

Response: The 0 to 1 ft horizon is expected to be the most biologically active zone in soil and is therefore, the focus of the ERA. The Navy expects deeper soils to be saturated and therefore not applicable for exposure for burrowing animals or shallow roots. If the delineation of soil concentrations indicates higher concentrations in deeper soils (i.e., 1 to 2 ft, 2 to 4 ft), then additional evaluation of the deeper soils will be conducted to determine whether deep rooted plants and burrowing animals (if present) are likely to be impacted.

It is expected that the evaluation of surface water present within the wetland will be representative of shallow groundwater that ecological receptors may encounter. The surface water will be considered as a drinking water source for birds and mammals and be evaluated in the wildlife food web model and will also be evaluated relative to surface water screening values protective of aquatic receptors.

RIDEM Specific Comment 18: Section 4.2, Tier 1 - Ecological Screening Risk Assessment, Page 26, Footnote 1: *Footnote states that the average total organic carbon (TOC) concentration will be used for Eq-P based sediment screening levels. Although it is acknowledged that this is a practical approach, please take into consideration deriving sample-specific sediment benchmarks in cases where TOC concentrations may be highly variable within a site.*

Response: The range of TOC values detected in the sediment will be considered and, at a minimum, be discussed in the Uncertainty section. Sample-specific Eq-P based screening levels will be considered if the TOC results are highly variable across the exposure area.

RIDEM Specific Comment 19: Section 4.3, Tier 2 - Baseline Ecological Risk Assessment, Page 30, Second Paragraph: Please include consideration of background contaminant levels in the Tier 2 Baseline Environmental Risk Assessment (BERA).

Response: Background concentrations will be considered in the BERA if a suitable soil and wetland sediment data set is available.

RIDEM Specific Comment 20: Section 4.3.1, Step 3a COPC Refinement of Conservative Exposure Assumptions, Page 31, First Bullet, Last Sentence: Concentration should be considered for constituents detected at a low-frequency because a single elevated concentration may represent an isolated source or a hot spot. Please modify sentence to indicate that a COPC evaluated at a low frequency and concentration may not warrant additional evaluation.

Response: It is understood that isolated hot spots may still represent areas of concern. The bullet will be modified to indicate that concentration data will be reviewed for COPCs with low FOD prior to exclusion from further evaluation to ensure that hot spots are not inadvertently excluded.

RIDEM Specific Comment 21: Table C-1: Parameters Used in the Sediment Pathway, Adherence Factor. Please refer to Comment 8.

Response: Please see aforementioned response.

RIDEM Specific Comment 22: Table C-2, Child Recreational/Trespasser, Sediment Loading, Children Playing in Wet Soil: Please refer to Comment 8. Additionally, the Child-Specific EFH provides a sediment loading (i.e., adherence factor) value for feet whereas this table used the value for hands as a proxy for feet.

Response: Please see aforementioned response.

RIDEM Specific Comment 23: Table C-3, Construction/Utility Worker, Exposure Duration : Please note that the exposure duration to be used in the risk equations should be 1 year to be mathematically correct.

Response: An exposure duration of 1 year is proposed for the RME scenario. A shorter exposure duration of 6 months is proposed for the CTE scenario.

RIDEM Specific Comment 24: Table C-5, Ecological Screening Values – Soil: The soil benchmarks for aluminum are pH-dependent, but the benchmark should be a pH of >5.5 (i.e., no adverse effect where pH>5.5). In accordance with the USEPA Soil Screening Level, aluminum should be included as a COPC if the pH is less than 5.5. Additionally, the SAP (Worksheet 17-1) does not include pH testing for soil samples. Please include pH testing of soil samples in the SAP.

Response: Table C-5 will be clarified and sampling for soil pH will be added to the SAP.

RIDEM Specific Comment 25: Table C-12, Exposure Parameters for Ecological Receptors: Note that the home range and fraction dietary assumptions columns apply footnotes I and K to all receptors; however, these footnotes are applicable to only the bobwhite. Please provide the basis of assumptions for other receptors.

Response: Table C-12 includes notes for each of the receptors which include details on each exposure parameter. Page numbers will be added so that it is clear that this table includes multiple pages.

RIDEM Specific Comment 26: Figure C-2, Potential Exposure Pathways: See Comments 3, 4, 11, and 13 regarding soil depth intervals and Comment 14 regarding vapor intrusion, and incorporate this information into the figure as warranted.

Response: Figure C-2 will be updated based on any revisions proposed in the responses to comments provided.