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LETTER AND ATTACHED RESPONSES TO U S EPA REGION I COMMENTS ON THE  
DRAFT FINAL FIVE YEAR REVIEW FORMER NCBC DAVISVILLE RI  
03/24/2008  
TETRA TECH



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C-NAVY-03-08-2663W

March 24, 2008

Project Number G00986

Mr. Curtis Frye  
Remedial Project Manager  
Base Realignment and Closure  
Program Management Office, Northeast  
4911 South Broad Street  
Philadelphia, Pennsylvania 19112-1303

Reference: CLEAN Contract No. N62467-04-D-0055  
Contract Task Order No. 472

Subject: Transmittal of Responses to EPA Comments on the Draft Final Five-Year Review  
Former Naval Construction Battalion Center Davisville  
North Kingstown, Rhode Island

Dear Mr. Frye:

Attached to this letter are the responses to EPA Comments dated March 19, 2008 on the Draft Final Five-Year Review for the Former Naval Construction Battalion Center (NCBC) Davisville in North Kingstown, Rhode Island. Through copy of this letter, these responses are being provided to the recipients listed below. The Final Five-Year Review will be distributed to this same list on or before March 28, 2008. If you have any questions regarding this material, please do not hesitate to contact me at (978) 474-8444.

Very truly yours,

Stephen A. Vetere, P.E.  
Project Manager

SAV

Attachment

- c: D. Barney (NAVFAC Mid-Atlantic) w/attach.
- D. Barcliff (NAVFAC Mid-Atlantic) w/attach.
- B. Capito (NAVFAC Atlantic) w/attach.
- C. Williams (U.S. EPA) w/attach.
- R. Gottlieb (RI DEM) w/attach.
- K. Campbell (CDW Consultants) w/attach.
- S. King (QDC) w/attach.
- J. Reiner (Town of North Kingstown) w/attach.
- A. Barton (Battelle) w/attach.
- S. Anderson (TtNUS Pittsburgh) w/attach.
- T. Evans (TtNUS Pittsburgh) w/attach.
- L. Sinagoga (TtNUS Pittsburgh) w/attach.
- J. Trepanowski (TtNUS Philadelphia) w/attach.
- File G00986-3.2 w/attach.

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**RESPONSE TO EPA COMMENTS DATED 19 MARCH 2008 ON  
DRAFT FINAL SECOND FIVE-YEAR REVIEW  
FORMER NAVAL CONSTRUCTION BATTALION CENTER DAVISVILLE  
NORTH KINGSTOWN, RHODE ISLAND**

**EPA COMMENTS ON NAVY RESPONSES TO EPA COMMENTS ON DRAFT DOCUMENT**

EPA comments were numbered for ease of reference.

1. *General comment: In several comments, EPA requested evaluation of VOCs in pore water for both toxicity to infaunal benthic organisms and accumulation of VOCs in shellfish to levels that may pose a risk to wildlife and human consumers of shellfish. The Navy has responded to these comments with its agreement to consider developing trigger levels for these endpoints in future DQO meetings. EPA agrees that this response is acceptably responsive to the EPA comments, provided that such trigger levels are actually developed and that VOCs are actually measured in pore water and shellfish in the future if the trigger levels are exceeded.*

**Response:** Comment noted. The development of trigger levels, and actions to be taken if trigger levels are exceeded, will be included on the agenda for future DQO meetings.

2. *Introduction: OU8 Calf Pasture Point Revised Issues & Recommendations Tables: the recommendation #2 does not address the plume expansion to the south and east, the source area investigation is the only recommendation. Please move this issue to be part of #1.*

**Response:** The table will be edited as requested. The second sentence in Issue #2 will be moved to the cell for Issue #1.

3. *Introduction: OU1 Allen Harbor Landfill Revised Issues & Recommendations Tables, recommendation #2 and Comment #70: The recommendations do not solve the issue of increasing VOC concentrations. The recommendation of #1 should help solve this issue. While EPA understands Navy has plans to repair/replace various wells, EPA does not concur that these are the only wells that need to be added to the LTMP. For consistency between Issue and Recommendation tables for both OUs, it is recommended that the Navy planned specifics to the revision of the LTMP for OU1 be removed and a more general recommendation be inserted in the table such as the recommendation #1 for OU1.*

**Response:** Issue/Recommendation #2 and #3 will be deleted from the Five-Year Review Summary Form and from the tables at the end of Section 3.0. The general issue/recommendation stated in #1 will be retained.

4. *Protectiveness Statement OU1 Allen Harbor Landfill: As requested above, please remove the specifics of which wells the Navy plans on repairing/replacing. EPA does not agree that these changes are the only ones that need to be made to the LTMP and would prefer to discuss the needed changes during a DQO meeting.*

**Response:** The second paragraph of the protectiveness statement for Site 09 will be edited as follows:

"In order to verify that the remedy continues to be protective for the long-term, changes to the long term monitoring program are warranted. The objectives and scope of these changes will be developed through the DQO process as described in the *Uniform Federal Policy for Quality Assurance Project Plans* (UFP-QAPP) Guidance."

5. *General Comment #1: EPA does not agree that the plume has been proven to be stabilized, or that the Navy has refuted this conclusion. The ROD assumption of a stabilized plume has been disproved by the evaluation of the monitoring data in both EPA and Navy's evaluation. The plume is moving. EPA has requested the Navy determine when the plume will reach the shoreline since the Navy's 2007 conceptual site model had a range of 2.9 to 69 years. While EPA appreciates the increase in sampling frequency and the proposal to develop trigger values, what will be triggered? An additional restriction? A new remedy? This must be agreed upon by the BCT before the revisions to the LTMP can be agreed upon.*

**Response:** The Navy and EPA are in disagreement over the stability of the plume at Site 07. The Navy's evaluation of the monitoring data has not disproved the assumptions of the ROD. The ROD states that the LTMP will verify that the extent of the plume is stable or decreasing. Based on a comparison of CVOC isoconcentration maps from the mid-1990s to 2007, it is apparent that there has been migration of CVOCs within the limits of the plume, with relatively little expansion of the limits of the plume.

The development of risk-based trigger values, and a discussion of the appropriate steps to be taken if trigger values are exceeded, will be part of the DQO process.

The Navy notes that elevated chemical concentrations (i.e., the plume) reached the shoreline several years ago, prior to signing of the ROD. At the time, the remedy was agreed to be protective of human health and the environment, and Navy and EPA are in agreement that the remedy continues to be protective of human health and the environment in the short term. The data contained in Table 5 of the CSM report summarizes groundwater flow velocity estimates and was designed to show how differences in lithology result in significant variation of flow velocity and travel time; it was not designed to predict plume migration rates toward the shoreline. These estimates are indicative of advective groundwater flow and travel time, and do not account for attenuation of chemical transport due to dispersion, sorption, or degradation. The Navy believes that continued monitoring at the proposed increased frequency is capable of detecting changes in contaminant concentrations in a timely manner.

6. *On page 5, 3rd paragraph: Navy Response: "One important fact that should not be excluded from the discussion of plume migration in regards to remedy protectiveness is that VOCs were not identified as a contaminant of concern during the Allen Harbor Landfill ecological risk assessment and the only actionable human health risks associated with exposure to VOCs at Site 09 was through ingestion of deep groundwater or exposure to vapors during showering."*

*EPA Response: It doesn't matter whether VOC's were previously identified as a COC. If in the course of the 5-year review they are identified as a new potential COC the Navy needs to evaluate the protectiveness of its remedies to take the new contaminant into account and determine whether existing remedies need to be amended or modified through a ROD amendment or ESD.*

**Response:** Comment noted. The Navy does not believe that VOCs are a new potential COC for ecological exposures to groundwater at Site 09.

7. *General Comment #2: Part of this response states that the limits of the plume have not changed. EPA disagrees that the Navy has all of the data to determine this. The leading edge of the plume in the harbor or bay has not been delineated, so it is impossible to determine if the limits have changed. If the Navy is referring to the northern or western extent, then EPA agrees that the wells, when sampled (22, 7, 8 & 30), have not had any hits above risk levels since the inception of the investigation at the site. Please clarify.*

**Response:** The Navy response does not state that the limits of the plume have not changed. In fact, a portion of the response reads, "The Navy attributes [decreasing trends in the upgradient area and increasing trends in the downgradient area] to the migration of contaminants within the limits of the groundwater plume (migration

of the plume core), with some expansion of the plume to the southeast of the source area." The Navy does not believe the plume extends to Narragansett Bay.

8. *Page 9, 5th paragraph, Navy Response: "The Navy does not agree with the EPA's suggestion that the "No Wading" signs be changed to "No Digging". The June 2007 Human Health Risk Assessment of Shoreline Surface Waters and Sediments, and Groundwater in Shallow Piezometers evaluated a digging scenario (shellfish collection) and determined that there was no unacceptable risk associated with digging in the entrance channel, where the highest VOC concentrations are present."*

*EPA Response: The "No Wading" signs are not part of the current remedy (let alone any prohibition on digging). If there is a CERCLA risk from wading, an ESD needs to be issued at least to modify the current use restrictions for the site to include prohibition on wading (and it needs to be incorporated into the ELUR). Otherwise the signs should be removed until there is a risk from either digging or wading and then the Remedy needs to be changed by an ESD and a change to the ELUR.*

**Response:** The Navy is aware that the "No Wading" signs are not part of the remedy. The June 2007 risk assessment, concurred with by EPA and RIDEM, verified that the protectiveness of the remedy does not depend on a wading prohibition. The signs have remained as a precautionary measure, and because the decision to remove them is outside of the Navy's jurisdiction.

9. *Last paragraph on page 10. EPA is also concerned with the source area loss of 4,000 ppb of CVOC at the source area that is not accounted for as increased concentrations in the downgradient overburden. This 4,000 ppb must have gone somewhere. EPA postulates that it has migrated downward into the bedrock and may be moving toward the southern shoreline at the 21 location. EPA is looking forward to a source area investigation planned in 2008/2009.*

**Response:** Comment noted.

10. *Comment #4, page 16: The next to last paragraph on page 16 states that access restrictions are not required to ensure the protectiveness of the remedy. Although it is the responsibility of the land owner to enforce the prohibition on the use of motorized vehicles or any other activity that might impact the integrity of the cap, it is ultimately the responsibility of the Navy to ensure the protectiveness of the remedy. If the town does not enforce the prohibitions, then the Navy must revisit the remedy, which may include access restrictions or, ultimately if the prohibition is not enforced, another remedial alternative, such as removal of the landfill may have to be performed. The Navy cannot remove itself from responsibility just because it no longer owns the property.*

**Response:** Comment noted. Navy is not trying to remove itself from responsibility for the maintenance of the landfill. The intent of this response was to clarify that the protectiveness of the remedy for Site 09 does not depend upon restrictions to access and that recreational users of the site are not at risk of exposure to contaminants.

11. *General Comment #4, graph on p. 17: if the year 1&2 data had been included the increases would be more apparent. In year 1 the CVOC in MW09-09S was around 50 ppb, in year 2 the contaminate levels increased to around 200ppb. Year 3 is shown on the graph around 300 ppb. Why did the Navy pick May 2003 as their starting point instead of the beginning of the monitoring program or the data collected during the RI?*

**Response:** This intent of this response was to refute EPA's contention that CVOC concentrations in MW09-09S are increasing at an exponential rate. The Navy's response reads, "The exponentially increasing trend calculation is heavily influenced by the concentrations present prior to the remedy (1993 and 1995), but not

representative of the recent concentration trends for this well.” The graph referred to by EPA is presented by the Navy in support of this statement.

The CVOC data from MW09-09S suggests that the change in site conditions resulting from the placement of the low permeability cap resulted in a change in groundwater conditions (in this case, an increase in CVOC concentrations) that appears to have stabilized after approximately 6 monitoring events.

12. *Navy response to Comment 4, page 17: The last paragraph of the response on page 17 states that VOCs were not a contaminant of concern for ecological receptors and the shellfish sampling efforts do not even include VOC analysis for shellfish tissue. This statement is correct. However, EPA is concerned that VOCs may be increasing to the point where toxicity might occur to infaunal benthic organisms such as shellfish at low ppm levels, and where VOCs may be accumulating to levels (albeit no higher than in pore water) that may have unacceptable risk to human and wildlife consumers of such organisms. EPA contends that VOCs may now be a contaminant of potential concern for these two endpoints and looks forward to developing target screening levels in pore water in the DQO process.*

**Response:** Comment noted.

13. *General Comment#7: EPA will place the final second 5-year review on the EPA public website.*

**Response:** Comment noted.

14. *General Comment #8: The response on page 19 states that the hole in the fence and damage to two wells was out of Navy’s control but will not have significant ramifications on the protectiveness of the remedy. If wells are destroyed or trespassers have the potential to be exposed, then the protectiveness of the remedy is jeopardized. If the town does not protect the remedy (monitoring wells are the remedy in this case), then the Navy must revisit the remedy, which may include access restrictions or, ultimately if the remedy is not protected, another remedial alternative, such as a source area or total remediation of the contamination, may have to be performed. The Navy cannot remove itself from responsibility just because it no longer owns the property.*

**Response:** The Navy is not trying to remove itself from the responsibility of maintaining the remedy. The intent of this response was to clarify that the protectiveness of the remedy does not depend upon restrictions to access and that damage to monitoring wells does not present a risk to users of Calf Pasture Point.

15. *Comment #26: The LTMP is a component of the remedial action under the Site 07 ROD. Under Section 17.7 of the FFA approval by EPA and the State is required to change the LTMP. Providing a rational is not the same as obtaining EPA and State approval. EPA has recently provided comments on the changes the Navy has made to the LTMP. Please set up a meeting to discuss these comments prior to implementation of any reduction in monitoring.*

**Response:** The changes made by the Navy to the LTMP at Calf Pasture Point do not involve a reduction in monitoring. The Navy increased the number of wells and the frequency of sampling at Site 07 in an effort to collect more data for the refinement of the conceptual site model. Reductions in the scope and frequency of monitoring beyond those that are presented in the LTM QAPP will be discussed at the DQO meeting for the Site 07 LTMP.

16. *Comment #57: this comment was not addressed. EPA requested a table of the LTM sediment analytical testing as compared to the sediment analytical testing of the dredge spoils used to create the wetlands because of the Navy’s statement on page 3-22 that “the placement of the dredged material (and the*

porewater within) may have had an impact on analytical data collected from piezometers during the early years of the LTMP". Please provide.

**Response:** Navy will provide this information independent of the five-year review to evaluate the hypothesis that analytical results collected early in the LTMP were influenced by the characteristics of the material placed into the constructed wetland. The evaluation of the protectiveness of the remedy is made through comparison of analytical data collected during the LTMP and the risk-based project action limits developed for Site 09.

17. *Comment #59: this comment was not addressed. EPA's photographs included shots of the drainage in the created wetlands at the old locations of the Land N and Land M seeps. Please provide the Navy's plans to address these ditches during the DQO process for the OU1 LTM plan revision.*

**Response:** This issue will be discussed during the DQO meeting for the Site 09 LTMP.

### **EPA COMMENTS ON THE DRAFT FINAL DOCUMENT**

18. *Five-Year Review Summary Form: this form is a requirement of the EPA guidance. As such, the form should follow EPA guidance. The review period is the period the data was collected and evaluated, from February/March (?) 2003 to October/November (?) 2007. The triggering action date from WASTELAN is the EPA date or March 27, 2003, since the Navy date of March 28, 2003 is not in WASTELAN, (our data base). Please make these changes in order for the form to be consistent with EPA guidance.*

**Response:** This review period on this form will be changed to read: "March 2003 to December 2007" and the triggering action date from WasteLAN will be changed to March 27, 2003.

19. *P. 1-2, Responses to Navy Questionnaire: Please provide EPA with the location for the resident who is requesting well sampling. Is this property west of the landfill? Or is this property on the northern side of the CED area?*

**Response:** This property is located to the north of the PR-58 Nike Site, in an area that is not impacted by Navy contamination.

20. *P. 2-15, Shallow Monitoring Wells: The LTM network includes 9 month wells, 27 month wells, and contingent wells. Please revise the first sentence to read, "The current agreed to Calf Pasture Point LTMP includes 4 shallow wells for the 9 month sampling interval, 2 wells for the 27 month sampling interval, 7 wells for the contingent sampling, and 4 new wells that the interval hasn't yet been decided". The parenthetical phrase could be re written as its own sentence for clarification of the ME08 sampling event.*

**Response:** The first two sentences of this paragraph will be revised to read: "There are 24 shallow monitoring wells at Calf Pasture Point, 10 of which have been sampled during the LTMP at 9-month or 27-month intervals. During ME 08, three contingent monitoring wells were added for a total of 13 shallow monitoring wells." The sections describing the review of data in deep and bedrock wells will be edited similarly.

21. *P.3-4, History of Contamination, first paragraph: please change the last sentence to read as the section 3.2.4 reads. "...In 1972, after landfilling operations had ceased, the landfill was closed by placing a discontinuous 2-foot soil cover over the fill materials."*

**Response:** This sentence will be edited as requested.

22. *P. 3-22, Piezometers, last paragraph: please provide the previously requested table of the LTM sediment analytical testing as compared to the sediment analytical testing of the dredge spoils used to create the wetlands to justify the last sentence.*

**Response:** Please see Navy Response to EPA Comment No. 16.

23. P. 3-24, § 3.5.25, Shellfish: *the ROD requires the baseline be the RI data. In this section, the Navy's evaluation of the shellfish did not adhere to this provision of the ROD. Please re-evaluate the shellfish data in accordance with the ROD or re-write this section to correspond to the shellfish memo where the data was compared to the RI data, although not quite enough of the data. Please see the comments dated, March 11, 2008.*

**Response:** The requested comparison to RI data is already included in this section of the document. Please see the last paragraph on Page 3-24.

24. P. 3-24, § 3.5.25, Shellfish: *EPA has made comments on the shell fish data report and therefore cannot accept this section as written. Please address our comments.*

*In addition, it seems that Navy has inferred that shellfish sampling on the harbor side of the breakwater is inappropriate because this area is not "adjacent" to the landfill. However, this area is adjacent, as the word is defined (lying near, close or contiguous, neighboring), especially because the groundwater connection between the landfill and the area is likely to be contiguous. It is EPA's rebuttable position that there is a major discharge of groundwater contaminated with the highest concentrations of site-related contaminants up through the sediments on the harbor side of the breakwater. Infaunal organisms such as shellfish will be exposed to this emerging groundwater in the pore water before it is appreciably diluted. Since the groundwater in the central portion of the landfill contains CVOCs at several hundreds of mg/L, the possibility that there may be toxic effects in infauna and accumulation of CVOCs to levels equal to that in pore water should be evaluated. Therefore, shellfish sampling should be conducted on the harbor side of the breakwater. In addition, all future shellfish analysis should include the site-related chlorinated volatile organic chemicals because there are now EPA-approved methods (EPA Method 8261A-VD/GC/MS and Method 5032-VD Sample Prep Only). Therefore, EPA requests that Navy add these methods to the QAPP and collect and analyze shellfish from the harbor side of the breakwater for the CVOCs as well as the other chemicals. EPA looks forward to discussing this issue with the Navy during the DQO discussions on changes to the LTM plan.*

**Response:** The Site 09 RI concluded that the potential risks to marine organisms in Allen Harbor were primarily attributable to the erosion of soils from the face of the landfill. Therefore, the appropriate location from which to collect biota samples is at the toe of the landfill to evaluate whether the remedy is effectively controlling the migration of landfill constituents from the landfill face.

25. P. 3-26, Inspection, last paragraph: *please provide the date and the actions Navy performed to repair the sign. When EPA inspected the landfill in January the sign was repaired.*

**Response:** This section will be updated to include the requested information.

26. P. 3-28, second paragraph: *the erosion at the toe of the landfill directly east of the MW20 cluster seems to be more of a drainage ditch from the groundwater/seawater runoff than an overland runoff situation. Please verify, during a joint inspection with EPA.*

**Response:** A joint inspection can be planned to observe the toe of the landfill at low tide. The Navy suggests during the next BCT meeting, tentatively scheduled for April 17.

27. Page 3-31, Section 3.6.2: *The 3<sup>rd</sup> bullet of this section states that it may be necessary to update Table 8-2D of the QAPP for long-term monitoring. Please add this to the action items.*

**Response:** This table will be updated as part of the LTMP revisions and will be covered under Recommendation #1.

28. Page 3-32, Section 3.6.2: In the 1<sup>st</sup> bullet of the section entitled “Changes in Risk Assessment Methods” the text discusses the changes in risks that would occur if the dermal guidance were used. Please document these calculations in appendix G.

**Response:** Several revised risk estimates are provided within the text of the 1<sup>st</sup> bullet in the referenced section. Back-up calculations for these revised values will be added to Appendix G.

29. Table 2-3: This table shows that the MCL for arsenic is 5 ug/L for 2002 and 2007. The correct number is 10 ug/L. Please revise.

**Response:** Table 2-3 will be revised as requested.

30. Table 3-8: This table shows that the MCL for arsenic is 5 ug/L for 2002 and 2007. The correct number is 10 ug/L. Please revise.

**Response:** Table 3-8 will be revised as requested.

31. Table G-3: Please add footnotes that provide the meaning of the abbreviations I, H, P, E, and M.

**Response:** Relevant footnotes will be added to this table.

32. Table G-13: The tabulated values for EPA Region 9 residential soil PRGs are inaccurate for some of the PAHs. The correct PRGs are 62 ug/kg for dibenz(a,h)anthracene and benzo(a)pyrene. The correct PRGs are 620 ug/kg for benzo(a)anthracene and 6200 ug/kg for chrysene. Please revise the table and calculations. Also please calculate and show cumulative risk of the maximum concentration of each chemical to support the conclusion in the text preceding this table that cumulative risk would not exceed 1E-04 or 1E-05 when the maximum concentrations are evaluated against the Region 9 PRGs and recreational screening levels, respectively. Please revise the text in Section 3.6.2 and 3.6.4 if the revised calculations indicate that the changes could significantly impact the protectiveness of the remedy.

**Response:** The tabulated values on Table G-13 are not in error. They are calculated values based on EPA Region 9 PRG exposure assumptions and reflect the most current guidance from EPA for the evaluation of the carcinogenic PAHs which are among the chemicals that EPA has determined are potentially “carcinogenic via a mutagenic mode of action.” While EPA Region 9 no longer updates its PRG table (i.e., the residential soil PRG for benzo(a)pyrene on the Region 9 table is 62 µg/kg [as referenced by the reviewer]), Region 3 does routinely update its RBC table and the screening levels on the EPA Region 3 table exemplify the application of the new guidance. Specifically, for example, the Region 3 RBC for benzo(a)pyrene for residential soils is 22 µg/kg (similar to the 15 µg/kg calculated value presented for benzo(a)pyrene on Table G-13). The following maximum concentrations (2005-2007) and risk estimates are provided on Table G-13; the summation of these risks does not exceed 1E-04 and 1E-05 respectively for the hypothetical future resident and recreational user, respectively:

Chemical	Maximum Concentration (2005-2007) (µg/kg)	Risk Estimate Residential	Risk Estimate Recreational
4,4-DDD	21.5	9E-09	9E-10
4,4-DDE	8.4	4.9E-09	4.9E-10
4,4-DDT	68.8	4E-08	4E-09
Total Aroclor	647	2.9E-06	2.9E-07
Dibenzo(ah)anthracene	340	2.3E-05	2.3E-06
Benzo(a)anthracene	482	3.2E-06	3.2E-07
Benzo(a)pyrene	820	5.5E-05	5.5E-06
Chrysene	407	2.7E-08	2.7E-09
<b>Total</b>		<b>&lt;1E-04</b>	<b>&lt;1E-05</b>

It should be noted that the PRGs and risk-based concentrations presented in Table G-13 consider exposures to the small child receptor (age 0 to 6 years). However, for purposes of calculating PRGs/risk-based concentrations for a carcinogen (e.g., benzo[a]pyrene), one PRG/risk-based concentration value is provided which is based on age-adjusted factors for a receptor (i.e., the value is not specific to a child or adult receptor, rather the value is adjusted to take into account the varying soil ingestion rates and varying body weights for both the child and adult receptor). The small child only is the target receptor for PRGs/risk-based concentrations calculated for non-carcinogens. The reader is referred to the most current versions of the EPA Region 9 PRG guidance and the EPA Region III Risk-Based Concentration guidance for the exposure factors (including the age-adjusted factors), equations, and toxicity criteria used to calculate the PRGs and risk-based concentrations presented in Table G-13.