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NB NORFOLK
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RESPONSE TO THE U S EPA REGION III COMMENTS ON THE THIRD FIVE YEAR REVIEW
REPORT NB NORFOLK VA
11/01/2013
DEPARTMENT OF THE NAVY

NSN Five-Year Review
Response to Comments – USEPA
November 2013

Toxicologist/Hydrogeologist Comments

General Comments

1. When submitting future Five-Year review reports, please include the raw analytical data package in an Addendum to the report, so the actual results and associated reports can be reviewed. The current maps (Figures 4-3 and 4-4) do not allow for review of the data package (duplicate results, detection limits, data validation, etc.). EPA has a requirement to make sure there is a QA check looking for transcription errors from the data source to the 5YR. Let's talk about this one. If this is already done I don't think we need to repeat this step.

Response: 10% QC of data completed by CH2M HILL. All data is provided as an electronic data deliverable format. Each data table and corresponding figure is QC'd as part of CH2M HILL's document delivery process. While not provided as part of the document, signature sheets for document review and QC are kept on file.

2. Please update the dates for planned/additional investigations noted in sections 9.3.2 and 9.4.2.

Response: Will update language based on progress by 10/30/2013. The Tier I partnering team discussed and assigned completion dates during the October 2013 meeting.

Site 1 – Camp Allen Landfill – 3rd Review

3. Table 4-1. The table provides "COC's Requiring Action" for groundwater in Area A as 1,2-DCA, benzene, PCE, toluene, 1,2-DCE, vinyl chloride and TCE and for Area B as 1,1,1-TCA, 1,2-DCA, PCE, 1,2-DCE, benzene, vinyl chloride, TCE and arsenic. However, according to the Decision Document and ROD the following contaminants may also require action for Areas A and B; 1,1-dichloroethane, chlorobenzene, trans-1,2-trichloroethene, 1,1,2-trichloroethane, 1,2-dichloropropane, 1,4-dichlorobenzene and chloroform.

Response: Groundwater cleanup goals are listed in the DD and ROD for Site 1. The COCs listed are 1,2-DCE, cis-1,2-DCE, 1,1,1-TCA, benzene, ethylbenzene, PCE, toluene, TCE, VC, and xylenes. The 1996 DD for Site 1 was prepared prior to NSN being listed on the NPL. The 2010 ROD for Site 1, which included review and approval signature by EPA, re-affirmed the selected remedy and identified the COCs listed above.

4. Table 4-1. Area B. The Performance Metric/Cleanup level for arsenic in groundwater is listed as "Not established." The current MCL for arsenic is 10ug/L.

Response: During the August 2007 NSN partnering meeting, the team agreed that there was no discernable plume for dissolved arsenic at Site 1 based upon the data provided in the RI report. Additional sampling was conducted in 2008 and documented in a 2009 Technical Memorandum. Results indicated two monitoring wells that had arsenic at notable concentrations: B-20W and A1-MW9A. Monitoring well B-20W is located within the landfill area

and continues to be monitored for free product; when it is observed the product is removed by vacuum extraction. A1-MW9A is also located within the landfill.

5. Table 4-2. Issue from Second Five-year Review Report. Since additional vapor intrusion sampling will be collected, the "Future Affects Protectiveness" column should not be answered with a "no" but rather with a "TBD."

Response: The table will be revised as requested.

Site 2 – NM Slag Pile – 3rd Review

6. Section 5.3.1, Remedy Selection. The report states, "The lead cleanup goal for sediment was 218 mg/kg and was based on the Effects Range-Median (ERM) Concentration." Although the reference for ERM was provided by the Navy in their September 30, 2008 comment letter, this reference is no longer accepted by EPA. Instead, current guidance now requires the use of the IEUBK and or Adult Lead Models to predict cleanup goals. It is likely these guidance's were not available for sediment before the October 2000 ROD. In any case, current guidance should be applied to assure protectiveness. The Navy indicates "LUC are in place to limit exposure to the subsurface soil (sediment)." However according to Figure 5-3, the Land Use Control Area (2007) does not include portions of the Area of Sediment Removal. EPA highly recommends applying the IEUBK and/or Adult Lead Model to determine if the sediment cleanup goal of 218 mg/kg is still considered protected using current EPA guidance. At a minimum, this evaluation change should be discussed under the Technical Assessment, Changes in Risk Assessment Methodologies. Please be reminded the entire purpose of the Five-Year Review is to identify changes that could affect the protectiveness of the remedy. This change could affect the protectiveness of the remedy and thus any decisions that were made prior are now considered moot.

Response: The lead cleanup goal for sediment of 218 mg/kg was based on ecological receptors. The IEUBK and Adult Lead Models are based on exposure to lead by human receptors. Use of the IEUBK model and Adult lead model would result in cleanup levels higher than the ERM concentration, and may therefore not be protective of ecological receptors. The lead cleanup goal based on residential receptors would be 400 mg/kg. Sediment lead samples were last collected at Site 2 in 2007; results of three samples collected were 115 mg/kg, 48.3 mg/kg, and 10.4 mg/kg.

Site 3 – Q Area Drum Storage Yard – 3rd Review

7. Table 6-1, Remedy Performance Standards. 1,1,1-trichloroethane should be included in this listing since it was identified as a COC for groundwater.

Response: 1,1,1-trichloroethane will be added to Table 6-1 as requested.

8. Table 6-1, Remedy Performance Standards. FYI. The performance standard for TCE (5 ug/L) may need to be revised. Short-term TCE risk is currently being evaluated by EPA since fetal cardiac malformations may occur when the mother is exposed to TCE during a 21-day gestation window. To protect against fetal heart malformations short-term not-to-be exceeded

concentrations averaged over any 21-day period of time should be considered **2 ug/m3 for residential scenarios (24 hours/day); 6 ug/m3 for commercial and industrial (8 hours/day)**. Although Headquarters has not, as of yet, adopted this as policy it is currently being deliberated. Although there are currently no buildings or structures at the site, cleanup goals for TCE in association with indoor air should consider this potential change in policy in the future. Protectiveness is best established when cleanup goals are believed to have been achieved by performing a risk assessment on current data utilizing the most up to date toxicity values and guidances.

Response: Comment noted. No buildings are currently present above contaminated groundwater with TCE concentrations greater than the MCL. Once USEPA revises the Tier I toxicity values for TCE, the NSN Partnering Team will determine the path forward for the site. At a minimum, TCE in groundwater will be evaluated in the next Five Year Review for NSN (2018).

Site 6 – CD Landfill – 3rd Review

9. Section 7.4.2, Action Summary. Long-term Monitoring Data Review. The report states, “In April 2013, the Site 6 CD Landfill Human Health Risk Assessment and Piezometer Installation Summary, Naval Station Norfolk, Technical Memorandum was submitted for regulatory review and approval.” This report was not reviewed by the site assigned toxicologist to verify and confirm the accuracy of the results.

Response: Comment noted. The purpose of the Technical Memorandum was to refine groundwater flow direction at the site and to evaluate current potential human health risks associated with site groundwater as compared to the risk drivers identified in the human health risk assessment conducted in the mid 1990’s. The originally identified COCs and the COCs resulting from the updated risk assessment are to be sampled in groundwater prior to the next Five Year Review.

10. Table 7-1, Groundwater. The correct MCL for antimony is 6 ug/L.

Response: Text revised as requested.

Site 18 – Former Naval Magazine Storage Area – 1st Review

11. Please provide the ROD for the site to verify the COCs Requiring Action in Table 8-1 are correct.

Response: COPCs listed in Table are correct. The ROD states the following:

The conclusion of the semiquantitative human health risk evaluation was based upon a semiquantitative assessment comparing site data to conservative human health risk-based screening values. Potential unacceptable human health risk was identified for exposure to groundwater. The following VOCs were determined to be contaminants of potential concern (COPCs) in groundwater at Site 18:

- TCE
- *cis-1,2-dichloroethene (cis-1,2-DCE)*

- VC
- 1,1-dichloroethene (1,1-DCE)

There are no 'COCs' identified for Site 18, only COPCs.

12. Please keep in mind, a risk assessment should be performed when cleanup goals are believed to have been achieved to verify groundwater is below EPA's risk criteria. Cumulative MCLs goals may not be protective since risk is not considered when developing MCLs.

Response: Comment noted. When clean up goals of all COPCs have been achieved, the NSN Partnering Team will discuss site closure in accordance with CERCLA.

13. It is unclear if 1,4-dioxane will be reanalyzed since the detection limit was above the RSL. Although the report states 1,1,1-TCA has never been detected at the site, 1,4-dioxane analysis is encouraged.

Response: Comment noted. Consideration to sample for 1,4-dioxane will be discussed by the Partnering Team.

Site 20 – Building LP-20 – 3rd Review – 2nd Review

14. Section 9.7, Protectiveness Statement. Please include Vapor Intrusion investigation of occupied buildings within 100 feet of the COC plume will be conducted as stated under the Changes in Risk Assessment Methodologies section.

Response: Agree. Text revised to clarify that vapor intrusion investigation will be conducted at buildings within 100 feet of the COC plume.

15. Since 1,2-DCA (dichloroethane) has been identified as a COC and is included as such in Figure 9-3, please include this contaminant in Table 9-1, COC Requiring Action column.

Response: Text revised as requested.

Site 22 – Camp Allen Salvage Yard – 2nd Review

16. Section 10.2.1, Site Description. The first sentence in the paragraph refers to Figure 9-1. The correct figure should be 10-1.

Response: Text revised as requested.

17. Table 10-1. The table identifies carcinogenic risk for antimony when this is impossible because antimony is not cancer causing. These results are likely to be associated with Arsenic since it is cancer causing. Please confirm the reported risk results.

Response: The table will be revised to indicate the correct risk values.

BTAG

Executive Summary:

1. The Executive Summary notes for Site 6 (OUa6 and OU7) that no exit strategy to cease groundwater monitoring is defined. Developing this strategy should be a recommendation.

Response: The text and tables will be revised to include an exit strategy recommendation.

2. Page 4-5, Section 4.3.2 Remedy Implementation: Regarding Site 1, the text indicates that two feet of sediment was removed from approximately 2,100 feet of creek in the vicinity of Site 1 and backfilled with 1 foot of clean fill. Please indicate if any confirmatory sampling occurred in this excavation area and what, if any, sediment monitoring has been performed.

Response: As stated in the Final Bousch Creek Removal Action EE/CA:

The RAO for this interim action is to implement measures at Bousch Creek that would reduce or eliminate risk drivers in sediment that pose unacceptable potential ecological risk. Sediment in the primary and secondary areas has been identified as the principal source of potential ecological risk in the upper and upper-middle reaches of Bousch Creek. The Navy, in partnership with the USEPA and VDEQ, agrees that ecological risk within the upper and upper-middle reaches of Bousch Creek will be acceptable following removal of sediment.

No confirmation sampling nor monitoring of sediment was completed following the removal action, as indicated in the final EE/CA, because the excavated areas were capped with 1 foot of clean fill, the low energy nature of this system makes erosion of this cap highly unlikely, source areas have been addressed, and potentially active transport pathways (groundwater discharge) are being controlled and monitored.

3. Page 4-7, Section 4.4.2 Actions Summary: Under Groundwater Monitoring Data Review, this report needs to confirm if the groundwater discharges to Bousch Creek. Wherever the groundwater discharges to surface water, the sediment and surface water in that area need to be sampled and analyzed for concentrations of contaminants of potential risk to ecological receptors.

Response: Surface water samples were collected from 1996 – 2010; results indicated only trace of VOCs were present. Contaminated groundwater is being controlled through an active extraction and treatment system. There is no known groundwater contamination discharging to Bousch Creek. Site inspections are conducted quarterly; any change in site conditions or evidence of discharge of groundwater to surface water would be noted and addressed.

4. Page 5-3, Section 5.3.2 Remedy Implementation: At Site 2 the text indicates a 24 inch soil cover consisting of 18 inches of common fill and four inches of topsoil. This amount of fill and topsoil do not equal 24 inches. Please confirm the cover is 24 inches deep.

Response: The text within the draft Five-Year Review is correct; the 24-inch cover applies to the channel slope restoration. The soil cover installed over the former location of the slag pile consists of a minimum of 18 inches of common fill and 4 to 6 inches of topsoil (USEPA, 2007). The text has been revised to state "4 to 6 inches of topsoil".

5. Page 5-4, Section 5.4.2 Actions Summary: For Site 2, the text indicates surface water and sediment monitoring were removed in 2005 per a Tier I Partnering Team Agreement. While sediment samples at that time indicated lead concentrations remained beneath the cleanup goal of 218 mg/kg, there is no indication that this concentration remains below the cleanup goal currently. Please indicate how LTM will be used to confirm specific cleanup goals.

Response: The LTM of sediment was last conducted at Site 2 in 2007 to verify sediment concentrations remain below the clean up goal of 218 mg/kg. Three sediment samples were collected with detected concentrations of lead at 115 mg/kg, 48.3 mg/kg, and 10.4 mg/kg. As documented in the 2008 Five-Year Review, no temporal or spatial trends were evident in the sediment sample results collected from 2000 – 2007. As a result, the NSN Tier I Partnering Team agreed no further sediment monitoring was required because performance standards in the ROD had been met.

6. Page 6-2, Section 6.2.4 History of Contamination: For Site 3, the text indicates there is a 29 acre groundwater plume. The text needs to document that this plume is not contaminated at levels that would potentially produce risk to ecological receptors when it discharges to surface water (Elizabeth River and/or Willoughby Bay). If the potential for risk to ecological receptors does exist, then LTM of sediment and surface water in the discharge area will need to be conducted.

Response: The current BTAG marine surface water screening values are higher than the cleanup levels outlined in Table 6-1. Thus, meeting these cleanup levels (or the MCL, if lower) would also be protective of ecological receptors from the potential groundwater transport pathway when the treatment system (which is currently preventing significant migration off of the site) is eventually turned off. Since all of the COCs are VOCs, and thus would not accumulate in sediments over time, LTM of sediment and/or surface water from the adjacent water bodies is not warranted.

7. Page 6-3, Section 6.3.1 Remedy Selection: The text indicates Site 3 is not conducive to an ecological environment. However, this section needs to adequately address the potential for risk to ecological receptors in the areas where groundwater discharges to surface water.

Response: Please see the response to BTAG Comment 6.

8. Page 7-3, Section 7.3.1 Remedy Selection: One of the selected remedies for Site 6 is to prevent exposure to contaminated sediment by ecological receptors. The text needs to specifically document why the sediment excavation and capping areas do not need to be monitored to ensure risk to ecological receptors does not exist now or in the future.

Response: All contaminated sediment that was not removed during the Fall 1997 action was capped by extending the engineered cover to remaining sediment area that was not addressed by the 1997 action. Disturbance of this cover is controlled by the LUCs that are in place and the cover is inspected quarterly to ensure its continued integrity.

9. Page 7-4, Section 7.3.3 System Operation and Maintenance: The text states “Surface water monitoring was ceased after analysis of the initial 2 years of sampling when COC levels dropped

below screening criteria.” Based on this action, it is not clear how it was confirmed that surface water concentrations continued to be below screening criteria since 2000.

Response: Surface water and groundwater monitoring data was collected from 2000 – 2002 at Site 2; each media indicated a decreasing trend of inorganic concentrations. Once surface water monitoring was ceased in 2002, inorganic concentrations in groundwater continued to indicate decreasing or stable trends, therefore it is reasonable anticipated surface water concentrations would not be impacted and would remain below screening criteria.

Additionally, the CD landfill tributary was included in the 2006 ERA for Bousch Creek.

10. Page 7-7, Section 7.5 Technical Assessment: The text states “Since all sediments at Site 6 have been removed or capped, potential risk pathways to ecological receptors have been eliminated.” The completion of excavation and capping does not mean risk to ecological receptors may not occur at some time in the future. Long term monitoring of sediment and cap integrity will directly address this issue.

Response: Quarterly site inspections include a visual inspection of the engineered landfill cap, side slopes, and drainage swales. No deficiencies that would affect the protectiveness of the remedy (cap integrity) have been observed at the site. The referenced sentence will be changed to read as follows: “All sediments for which unacceptable ecological risks were identified at Site 6 have been removed or capped, resulting in acceptable risks to ecological receptors from the sediment exposure pathway. The integrity of the cap is maintained by LUCs and quarterly inspections.”

11. Page 8-1, Section 8.2.2 Physical Characteristics: At Site 18, the groundwater in the Columbia aquifer flows north-northeast through the site toward the drainage channel located immediately north of the site boundary. Please confirm this drainage channel is included in the LTM at this site.

Response: Surface water and sediment sampling within the drainage swale is not included in the LTM program at this site. In the SI, no unacceptable risks were identified for ecological receptors due to site-related contaminants above background levels. Furthermore, no visual evidence of groundwater discharge to the drainage swale was observed during the two groundwater injections conducted as part of the non-time critical removal action (more than 10,000 gallons were injected into the shallow aquifer during each injection).

12. Page 9-3, Section 9.3.2 Remedy Implementation: The text indicates the extraction and treatment system for groundwater was taken out of service while the Navy is evaluating alternatives to return the system to operational. The text should indicate when it is expected that this extraction/treatment system will be back online. Also the potential impacts to the ecological receptors in the areas of groundwater discharge to surface water during the period the groundwater treatment system is out of service needs to be addressed in the LTM both currently and in the future.

Response: It is not currently known when the groundwater extraction and treatment system will be back online. The extraction/treatment system is not intended to provide containment or otherwise affect groundwater in a way that is protective of ecological receptors; it is only

intended to extract and treat contaminated groundwater from the site. Shallow groundwater may discharge into the adjacent Bousch Creek culvert, however, the Lower Reaches of Bousch Creek Step 1 ERA (which included the LP-20 area) and Consensus Statement recommended no further investigation or action as related to potential ecological exposures associated with ERP sites. No chlorinated VOCs were detected during the Lower Reaches of Bousch Creek sediment sampling activities. There is no access to sample water flowing within the culvert adjacent to Site 20.

Additional groundwater investigation activities are ongoing at the site. The results of the investigation will be discussed by the NSN Tier I Partnering Team to identify if revisions to the LTM and/or remedy are warranted.

13. Page 11-2, Section 11.2.4 History of Contamination: The text indicates the Site 23 shop contained a drainage system that extended to the WWTP. Please confirm this drainage system was sampled (including surrounding media), to ensure ecological receptors were not at potential risk.

Response: The drainage system to the Building LP-20 Plating Shop (Site 23) is addressed as Site 20. Additionally, the Lower Reaches of Bousch Creek Step 1 ERA concluded that there were no significant terrestrial exposure pathways for this area and that potential transport to the Bousch Creek culvert did not warrant further investigation or action as related to potential ecological exposures associated with IRP sites (including Site 23).

Additional groundwater investigation activities are ongoing at Site 20. The results of the investigation will be discussed by the NSN Tier I Partnering Team to identify if revisions to the LTM and/or remedy are warranted.

14. Page 11-2, Section 11.2.4: The text states "There is no ecological habitat at the site; therefore, no unacceptable ecological risks were identified at Site 23." Confirm this conclusion includes the area of the drainage system. Indicate if there were contaminants in this drainage system, whether or not they were treated at the industrial WWTP.

Response: See response to comment 13.

USEPA Headquarters

1. On the five-year review summary form, the review time period is the actual time that the review was conducted. It is not the five years, 2008 through 2013.

Response: The text will be revised accordingly.

2. For several OUs that indicate that there is a possibility for dioxin concerns due to the change in the screening level and the potential for VI exposure, I do not agree with a protective statement. I would argue that a short term protectiveness statement would be more appropriate due to the potential for exposure pathway and other chemicals of concerns. I noted OU1 and OU 4 as short term protectiveness.

Response: The Protectiveness statements for OU1 (Site 1) and OU4 (Site 20) identifies the remedies as Short-term Protective. The inclusions of “protective in the short-term’ will be added to the first sentence of each sites protectiveness statement for clarification.

3. Overall, I thought the report was written well. I thought the tables were very helpful.

Response: Thank you.