NAVY RESPONSE TO EPA COMMENTS DATED OCTOBER 3, 2008 ON THE DRAFT ADDITIONAL DATA REPORT IN SUPPORT OF THE ECOLOGICAL RISK ASSESSMENT AT SWMU 14 DATED JUNE 27, 2008

(*EPA comments are provided in italics, while Navy responses are provided in regular print.)*

EPA GENERAL COMMENTS

1. *The human health risk assessment (HHRA) uses an on-line screening-level version of the Johnson and Ettinger Vapor Intrusion Model (Johnson and Ettinger 1991) to evaluate residential exposure to volatile chemicals of potential concern (COPCs) in groundwater. Due to the detection of volatile organic compounds (VOCs) in soil (e.g., 2-hexanone), residential exposure to volatile COPCs in soil via vapor intrusion should also be evaluated using the Johnson and Ettinger model. Revise the HHRA to incorporate the evaluation of indoor air inhalation of volatile COPCs in soil under the residential exposure scenario or provide rationale for excluding this exposure pathway. Please also provide the model outputs for the soil and groundwater indoor air evaluations in an appendix to the Report as supporting documentation for the HHRA.*

Navy Response to EPA General Comment No. 1: The most recent version of USEPA Regional Screening Levels (SLs) (dated November 2010) used in this HHRA revealed no volatile COPCs in soil. As such, the HHRA will not be revised to include an evaluation of indoor air inhalation of volatile COPCs in soil. In response to the second part of the comment concerning the presentation of the model outputs, the results of the groundwater indoor air evaluation are presently located at the end of Appendix G (Risk Calculation Spread Sheets). However, reference to the location of these results was inadvertently left out of the HHRA. The HHRA will be revised to reference the location of the model results where appropriate.

2. *The HHRA warrants explanation of several parameters that are not discussed in the text, but appear in the supporting tables and appendices. For example, while the use of surrogate chemicals, toxicity equivalency factors (TEFs), and particulate emission factors (PEFs) are not discussed in the HHRA, they are presented in the tables and appendices of the Report. Similarly, the HHRA makes reference to non-cancer hazards associated with specific target organs, but the methodology for conducting target organ analyses is not explained. For completeness, revise the HHRA to incorporate discussions of these issues.*

Navy Response to EPA General Comment No. 2: The HHRA will be revised to include discussions on the use of surrogate chemicals, TEFs, PEFs, and the methodology for conducting target organ analyses.

3. *As acknowledged in the Report, the U.S. Environmental Protection Agency (EPA) has issued Regional Screening Levels for Chemical Contaminants at Superfund Sites (EPA 2008) that replace the screening levels established by Regions 3, 6, and 9. The Regional Screening Levels (SLs) represent a collaborative effort among Regions 3, 6, and 9 and provide the user with the best information that EPA has available. In subsequent revisions to the HHRA, the Region 9 Preliminary Remedial Goals (PRGs) (EPA 2004) used in the risk-based screening and selection of COPCs for the HHRA should be replaced by the SLs.*

Navy Response to EPA General Comment No. 3: The HHRA will be revised to use the most recent version of the Regional SLs (dated November 2010) for the risk-based screening and selection of COPCs.

4. *Several contaminants of concern (COCs) were removed during the COC reevaluation in step 3a based on criteria other than those stated in Navy (2003). The Navy guidelines provide five steps to reevaluate the COCs identified in the Tier 1 Screening-Level Ecological Risk Assessment (SLERA):*

1) Revise exposure factor assumptions and recalculate Hazard Quotients (HQs); 2) Remove COCs with HQs <1.0; 3) Compare maximum concentrations to background levels; 4) Examine detection frequencies; and 5) Consider bioavailability. COCs that were removed in step 3a based on criteria other than the five listed above are discussed in specific comments below.

Navy Response to EPA General Comment No. 4: Please see the Navy Responses to the EPA Specific Comments.

5. *The results of the wildlife HQ calculations (presented in Table 7-19) were double-checked for accuracy. Soil ingestion appears to have been systematically excluded from the exposure calculations, such that the daily doses only reflected food ingestion. Soil ingestion needs to be included in the daily doses. Revise all of the food chain modeling calculations by adding soil ingestion as part of the receptor diet. This effort will also involve re-evaluating the wildlife COCs to be retained for further evaluation.*

Navy Response to EPA General Comment No. 5: The Navy respectfully disagrees with this comment. As evidenced by the example presented below (mourning dove exposures to vanadium in SWMU 14 surface soil), dietary intakes for each chemical-receptor combination includes contributions from incidental ingestion of surface soil.

As indicated in Section 7.5.2.2.2, the dietary intakes for upper trophic level receptors, including the dietary intake of vanadium by the mourning dove, was derived using the following formula:

$$DI_{xj} = \frac{[[\sum_i [(FIR_j)(FC_{xi})(PDF_i)]] + [(FIR_j)(SC_x)(PDS)]][AUF_j]}{BW_j}$$

where:

DI_{xj} = Dietary intake of chemical x by receptor j (mg chemical/kg body weight/day)
FIR_j = Food ingestion rate for receptor j (kilograms per day [kg/day]; dry-weight)
FC_{xi} = Maximum concentration of chemical x in food item i (mg/kg; dry weight)
PDF_i = Proportion of diet composed of food item i (unitless; dry weight basis)
SC_x = Maximum concentration of chemical x in soil/sediment (mg/kg; dry weight)
PDS = Proportion of diet composed of soil/sediment (unitless; dry weight basis)
BW_j = Body weight of receptor j (kg; wet weight basis)
AUF_j = Area Use Factor for receptor j (unitless)

The equation reflects a daily dose from ingestion of prey (terrestrial plants; $[(FIR)(FC_{vp})(PDF_p)]$) and incidental ingestion of surface soil $[(FIR)(SC_v)(PDS)]$. Specific input parameters used in the derivation of the dietary intake of vanadium in surface soil by the mourning dove are as follows:

FIR_j = 0.1723 kg/day 9see Table 7-12)
FC_{xi} = 1.7765 mg/kg (derived by multiplying the maximum surface soil concentration [420 mg/kg; see Table 7-14 and Appendix J]) by the soil-to-plant BCF [0.0097; see Table 7-10])
PDF_i = 0.95 (see Table 7-13)
SC_x = 420 mg/kg (see Table 7-14 and Appendix J)
PDS = 0.05 (see Table 7-13)
BW_j = 0.115 kg (Table 7-12)
AUF_j = 1.0

Input of these parameters into the dietary intake equation yields a dose of 3.72725 mg/kg-BW/day. When this number is divided by the NOAEL-based TRV identified in Table 7-7 for vanadium (0.344 mg/kg-BW/day), a hazard quotient (HQ) of 10.84 is calculated. This value is identical to the NOAEL-based vanadium HQ value for the mourning dove contained within Table 7-18. If incidental surface soil ingestion was omitted from the dietary intake calculation (i.e., an assumed diet of 100 percent plants), an HQ of 1.77 would have been calculated. Based on this example calculation, revisions to the document addressing this comment are not necessary.

6. *An important inconsistency was noted between discussing analytical data from subsurface soil and sediment samples and eliminating several COCs in those matrices on the grounds that they were not likely to represent a significant exposure point for ecological receptors. A decision needs to be made about whether or not subsurface soil and sediment samples represent reasonable exposure media for ecological receptors at SWMU 14. If the answer is no, then those media – and their associated analytical data - need to be removed from the SLERA altogether. If the answer is yes, then the depth argument cannot be used to eliminate COCs. Resolve this issue and modify the text, as appropriate.*

Navy Response to EPA General Comment No. 6: The following points of clarification are made relative to this comment. The Navy believes that subsurface soil (1.5-foot to 3.0-foot depth interval and 1.0-fot to 3.0-foot depth interval) represents a reasonable exposure point for ecological receptors (e.g., burrowing reptiles, anecic earthworms, and vegetation). In no case was an ecological chemical of potential concern (COPC) not identified as an ecological chemical of concern (COC) in Step 3a of the ecological risk assessment (ERA) based on an argument that subsurface soil collected from the 1.5-foot to 3.0-foot depth interval does not represent a significant exposure point for ecological receptors. However, the Navy does not believe that sediment collected from the 1.0-foot to 2.0-foot depth interval during the February 2008 additional data collection investigation and September 2008 pre-excavation investigation represents a reasonable exposure point for ecological receptors. Therefore, discussions pertaining to subsurface sediment and all associated analytical data will be removed from the SERA and Step 3a of the BERA. The text in Section 7.2 also will be revised to include justification for removal of drainage ditch subsurface sediment from evaluation in the ERA.

EPA SPECIFIC COMMENTS

1. ***Section 6.2.1, Data Evaluation, Page 6-1:*** *Section 6.2.1 states that all of the data presented in Appendix D, Human Health Risk Assessment Data Sets, were used in the HHRA "except for soil samples greater than 10 feet [below ground surface (bgs)] because it is unlikely that contact with soils greater than 10 feet bgs will occur." However, this statement contradicts Section 6.3.1, Potential Human Receptors, which specifies that soil samples used in the risk evaluation for construction workers were obtained from 0 to 12 feet bgs. It is not clear which soil data set, 0 to 10 feet bgs or 0 to 12 feet bgs, was evaluated for the construction worker. Revise the HHRA to resolve this discrepancy.*

Navy Response to EPA Specific Comment No. 1: The statement in section 6.3.1 incorrectly stated that construction workers were evaluated for exposure to soil from 0 to 12 feet bgs. Section 6.3.1 will be revised to reflect the correct depth of 10 feet bgs.

2. ***Section 6.2.2.1, COPC Selection Criteria, Pages 6-2 to 6-3:*** *Section 6.2.2.1 describes the risk-based concentration screen that was used to identify COPCs. As acknowledged in Section 6.7, Summary and Conclusions of the Baseline HHRA (Page 6-27), new Regional SLs issued by EPA (2008) have replaced the Region 9 PRGs (EPA 2004). It is suggested that the SLs be used as part of the COPC selection criteria in the next revision to the HHRA.*

Navy Response to EPA Specific Comment No. 2: As mentioned in response to EPA General Comment #3, the HHRA will be revised to use the most recent version of the Regional SLs for the risk-based screening and selection of COPCs.

3. ***Section 6.2.2.2, Selection of COPCs, Pages 6-5 to 6-7:*** *The last paragraph of each medium-specific discussion (i.e., surface soil, subsurface soil, groundwater, and sediment) in Section 6.2.2.2 indicates that the selected inorganic COPCs are shown in Tables 6-1 through 6-4, respectively. However, these tables also identify the other COPCs selected in each medium. Since the first sentence of each medium-specific discussion already directs the reader to the appropriate table, the additional references in the last paragraph of each medium-specific discussion may introduce confusion regarding whether these tables address inorganic COPCs or all COPCs. For clarity, it is suggested that the table reference appearing in the last paragraph of each medium-specific discussion be removed from the text.*

Navy Response to EPA Specific Comment No. 3: Section 6.2.2.2 will be revised to remove the table reference appearing in the last paragraph of each medium-specific discussion.

4. ***Section 6.3, Exposure Assessment, Page 6-8:*** *The last sentence of this section refers to "CT exposure parameters" and "RME exposure parameters." Since the acronym RME is defined as "reasonable maximum exposure," revise the second phrase in the last sentence of Section 6.3 to read, "RME parameters."*

Navy Response to EPA Specific Comment No. 4: Section 6.3 will be revised to change "RME exposure parameters" to "RME parameters."

5. ***Section 6.4.4, OnSite Johnson and Ettinger Model, Page 6-17:*** *Section 6.4.4 describes the on-line screening-level model (based on the Johnson and Ettinger simplified model) used to evaluate the vapor intrusion pathway. However, the outputs of this model were not provided as supporting documentation to the HHRA. Provide the outputs of the on-line screening-level model to facilitate verification of the results during the technical review.*

Navy Response to EPA Specific Comment No. 5: The HHRA will be updated to use the Johnson and Ettinger model (http://www.epa.gov/oswer/riskassessment/airmodel/johnson_ettinger.htm) rather than the on-line screening-level model to evaluate the vapor intrusion pathway. The results of the groundwater indoor air evaluation are located at the end of Appendix G (Risk Calculation Spread Sheets). However, reference to the location of these results was inadvertently left out of the HHRA. The HHRA will be revised to reference the location of the model results where appropriate.

6. ***Section 6.5.2, Quantification and Characterization of Noncarcinogenic Risks, Page 6-19:*** *Section 6.5.2 describes the approach used to estimate non-cancer hazards. For the residential receptor, the sum of the HQs for the child resident generally represents the total hazard index (HI) for the residential receptor. Please indicate this in the HHRA.*

Navy Response to EPA Specific Comment No. 6: The Navy respectfully disagrees with this comment. Section 6.5.2 describes the general approach used to estimate non-cancer hazards and will not be revised. Also, reporting only the child resident HI may underestimate total noncancer hazards for the residential receptor. The HI for an individual receptor represents a ratio of exposure to toxicity, which is evaluated over a specified time period for each receptor. As such, the HIs for both adult and child resident should be reported.

7. ***Section 6.6.4, Toxicological Assessment, Page 6-24:*** *For consistency, revise the heading of this section to read, "Toxicity Assessment."*

Navy Response to EPA Specific Comment No. 7: The heading of Section 6.6.4 will be revised to read, "Toxicity Assessment."

8. ***Appendix F, Equations For Estimating Intakes, Pages F-2 to F-3****: The second equation associated with the exposure pathway "Inhalation of Fugitive Dust from Soil" is for the parameter "Chemical Concentration in Air as Fugitive Dust," C_a, expressed in milligrams per cubic meter [mg/m^3]. The last paragraph in the discussion of this exposure pathway states that volatilization factors (VFs) used in the HHRA were obtained from the EPA Region 9 PRG tables (EPA 2004); otherwise, VFs were calculated. However, a description of the VF calculation methodology was not provided. Provide a summary of the methodology used to calculate VFs that were not available in the PRG tables. Include all equations and a discussion of the parameters used in calculating the VFs.*

Navy Response to EPA Specific Comment No. 8: Appendix F, as well as Section 6.3.4, will be revised to state that VFs used in this HHRA were calculated using Equation 4-8 and input parameters found in USEPA's Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites (USEPA, 2002).

9. ***Section 7.5.2.2.2, Dietary Intakes, 2nd ¶, p. 7-27, and Table 7-12 (Conservative Exposure Parameters for Upper Trophic Level Receptors):*** *Both EPA (2007) and Navy (2003) state that the most sensitive life stage for each receptor species must be used for exposure estimations. For example, nestlings represent a sensitive life stage in birds. The SLERA references minimum body weights, but is not clear to what life stage these body weights refer. Indicate the life stage which corresponds with the body weight values presented in Table 7-12. The wildlife exposures also should also be reassessed if the original body weights represent adults.*

Navy Response to EPA Specific Comment No. 9: The minimum body weights listed in Table 7-12 are based on data for adults. The Navy acknowledges that nestlings represent a sensitive life stage for birds; however, risk calculations based on nestling body weights are problematic since exposure factors for other species-specific input parameters used in the estimation of dietary intakes (e.g., food ingestion rates) are not readily available from the literature for nestlings. For example, the literature-based allometric equations used to estimate food ingestion rates in the SERA (i.e., those developed by Nagy [2001]), are based on data for adults, not juveniles. It is further noted that literature-based soil ingestion rates, such as those reported by Beyer (1994), are based on data for adults. USEPA methodology used to derive ecological soil screening levels (Eco-SSLs) also provides justification for derivation of dietary intakes using data for adults. Specifically, the exposure parameters used in the derivation of Eco-SSLs for both avian and mammalian species are based on adults. Although adult body weights were used in the SERA, conservative values were selected for food web modeling (i.e., minimum values; see Section 7.5.2.2.2 and Table 7-12). Based on the discussion presented above, the Navy does not believe revisions to the document are warranted.

10. ***Section 7.5.2.2.2, Dietary Intakes, 3rd ¶, p. 7-27, and Table 7-13 (Dietary Composition for Upper Trophic Level Receptors):*** *The text and Table 7.13 present the dietary composition of birds and mammals by percentage of terrestrial plants, soil invertebrates, and small mammals. EPA (1997) and Navy (2003) state that receptor diets should consist of 100% of the most contaminated food item when quantifying exposure in a SLERA. Revise the text and table to show the most contaminated food item in each receptor's diet (specifically, the American robin and the small mammal omnivore) and recalculate the dose for each receptor based on 100% of the diet from the most contaminated food source.*

Navy Response to EPA Specific Comment No. 10: The diets of the American robin and Norway rat (prey item for the red-tailed hawk) will be adjusted in the SERA to reflect consumption of the most contaminated food item (i.e., earthworms). In the case of the American robin, a diet of 89.5 percent earthworms and 10.5 percent soil will be assumed, while a diet of 98.0 percent earthworms and 2.0

percent soil will be assumed for the Norway rat. The text in Section 7.5.2.2.2 and Table 7-13 will be revised to reflect these diet assumptions. It is noted that omnivorous diets will be used in the derivation of refined exposure doses in Step 3a of the BERA. Specifically, a diet of 7.3 percent plants, 8.7 percent soil, and 83.0 percent earthworms will be used for the American robin, while a diet of 2.0 percent soil, 49.0 percent plants, and 49.0 percent earthworms will be used for the Norway rat.

11. ***Section 7.6.2.4, Drainage Ditch Surface Sediment, 1st ¶, p. 7-32, and Table 7-17 (Frequency and Range of Drainage Ditch Surface Sediment Data (Maximum Concentrations) Compared to Sediment Screening Values):*** *Table 7-17 shows that 12 PAHs were detected in the drainage ditch sediment. However, section 7.6.2.4 of the SLERA states that 13 PAHs were detected. Clarify the discrepancy of the numbers of PAHs detected.*

Navy Response to EPA Specific Comment No. 11: The reference to thirteen detected PAHs in Section 7.6.2.4 is incorrect. The text in Section 7.6.2.4 will be revised to indicate that twelve PAHs were detected in drainage ditch surface sediment.

12. ***Section 7.6.2.4, Drainage Ditch Surface Sediment, 3rd ¶, p. 7-33, and Table 7-17 (Frequency and Range of Drainage Ditch Surface Sediment Data (Maximum Concentrations) Compared to Sediment Screening Values):*** *Beryllium and thallium were retained as COCs because of the lack of a sediment screening value (see Table 7-17). The text did not mention that these two COCs were retained for further evaluation. It is suggested to include beryllium and thallium in the text, together with the reason for their retention as COCs.*

Navy Response to EPA Specific Comment No. 12: The text in Section 7.6.2.4 will be revised to indicate that beryllium and thallium were identified as ecological COPCs for drainage ditch surface sediment in the Step 2 screening level risk calculation. The text also will be revised to include the reason for their identification as ecological COPCs.

13. ***Section 7.6.2.5, Drainage Ditch Subsurface Sediment, p. 7-33, and Table 7-18 (Frequency and Range of Drainage Ditch Subsurface Sediment Data (Maximum Concentrations) Compared to Sediment Screening Values): Thallium was retained as a*** *COC because of the lack of a sediment screening value (see Table 7-18). The text did not mention that beryllium was retained as a COC for further evaluation. It is suggested to include this contaminant in the text and the reason for its retention as a COC.*

Navy Response to EPA Specific Comment No. 13: As discussed in the Navy response to EPA General Comment No. 6, drainage ditch subsurface sediment does not represent a realistic exposure point for ecological receptors. Therefore, discussions pertaining to drainage ditch subsurface sediment and all associated analytical data will be removed from the SERA and Step 3a of the BERA, including the discussion presented in Section 7.6.2.5. As such, this comment is not applicable to the revised version of the document.

14. ***Section 7.7, Uncertainties Associated with the Screening-Level Ecological Risk Assessment:*** *The size of the data sets for surface soil (n = 9), subsurface soil (n = 2), groundwater (n = 3), drainage ditch surface sediment (n = 6), and drainage ditch subsurface sediment (n = 6) are too small to draw conclusions about the entire site. Provide a comment acknowledging the small number of samples and the possible biases associated with a small data set for each media in the uncertainty section of the SLERA.*

Navy Response EPA Specific Comment No. 14: Section 7.7 acknowledges the small data set for subsurface soil and the small surface soil data set in the vicinity of the temporary fire training pit (see Bullet Item No. 2 on Page 7-35). This discussion will be expanded to include all media, as well as the uncertainties related to small sample sizes. It is noted that although a limited number of samples of each

medium were collected, sample locations were selected to represent likely locations of maximum detections. For example, surface soil samples collected during the Phase I RFI field investigation conducted in 1996 were collected at locations that exhibited the highest photoionization detector (PID) readings, while monitoring wells installed during the March 2006 RFI field investigation were placed at locations that exhibited elevated PID readings (Baker, 2007).

15. ***Section 7.9, Step 3.a of the Baseline Ecological Risk Assessment, first bullet, p. 7-41:*** *The text states that non-detected chemicals lacking media-specific screening values were excluded from further evaluation in Step 3a. There is a large amount of uncertainty in this decision point due to the small data sets used in step 3a (see Specific Comment 6 above). It is inaccurate to assume that a matrix is not contaminated based on a handful of data points (e.g., n = 2 for subsurface soils or n =3 for groundwater). Please fully elaborate on this issue in the uncertainty analysis (Section 7.9.2) and reflect on how it might affect risk-based decision making.*

Navy Response to EPA Specific Comment No. 15: The Navy believes that the uncertainty associated with this issue was adequately elaborated on in Section 7.9.2. Specifically, Section 7.9.2 states that, "*This approach may have resulted in an understatement of the actual number of ecological COCs if any of the non-detected chemicals lacking screening values are present at ecologically significant concentrations*." Furthermore, as discussed in the Navy Response to Specific Comment No. 14, sample locations were selected to represent likely locations of maximum concentrations. Therefore, non-detected results at these locations likely indicate that chemicals would not be detected throughout the SWMU. Finally, it is noted that with few exceptions, analytical results for all subsurface soil samples are consistent with analytical results for the depth intervals evaluated by the ERA (i.e., 1.0 to 3.0-foot and 1.5 to 3.0-foot depth intervals). Specifically, chemicals that were not detected in subsurface soil samples collected from the 1.0 to 3.0-foot and 1.5 to 3.0-foot depth intervals also were not detected in soil samples collected from deeper depth intervals. This fact reduces the uncertainty associated with the small subsurface soil data set evaluated by the ERA, as well as the small groundwater data set since subsurface soil would represent a source area for migration of chemicals to groundwater.

16. ***Section 7.9.1.2, Step 3a Risk Evaluation for Subsurface Soil, 2nd ¶, p. 7-45:*** *The SLERA states that benzene was detected in one surface soil sample (see Table 7-14), one subsurface sample (see Table 7-15), and two groundwater samples (see Table 7-16). Table 7-15 shows no detects (0/2) for benzene. The frequency of detection for benzene for surface and subsurface samples together is 1 of 11, instead of 2 of 23 as stated in section 7.9.1.2. Revise this section of the SLERA to correspond to the data presented in Tables 7-14, 7-15, and 7-16, or amend the data in the tables, if necessary.*

Navy Response to EPA Specific Comment No. 16: The Navy offers the following point of clarification relative to this comment. A total of 23 soil samples have been collected at SWMU 14 and analyzed for benzene: surface soil collected from the 0.0 to 1.0-foot depth interval during the 1996 and 2006 RFIs (9 samples), subsurface soil collected from the 1.5 to 3.0-foot depth interval during the 2006 RFI (2 samples), and subsurface soil samples collected from depth intervals greater than 3 feet below ground surface during the 2006 RFI (12 samples). Section 7.9.1.2 will be revised to indicate that the frequency of detection refers to benzene detections in all soil samples collected at SWMU 14, including subsurface soil samples collected from depths greater than 3 feet below ground surface. The discussion presented in Section 7.9.1.2 for benzene includes information for all soil samples to demonstrate the low frequency of detection of this VOC in soils throughout the site.

17. ***Section 7.9.1.3, Step 3a Risk Evaluation for Groundwater, 3rd ¶, p. 7-47and 7-48:*** *Benzene was detected in two of three groundwater samples, with one sample (220 µg/L) exceeding the screening level benchmark of 53 µg/L. The text stated that the spatial distribution of detections in SWMU 14 groundwater did not indicate that benzene was migrating with groundwater off-site. Three samples are not enough to support removing benzene as a COC based on an argument of "spatial distribution." Revise the decision to remove benzene as a COC accordingly.*

Navy Response to EPA Specific Comment No. 17: The Navy respectfully disagrees with this comment. Although benzene was detected in groundwater sample 14TW01 at 220 µg/L, this VOC only was detected at 0.41J µg/L in a groundwater sample collected from a downgradient well. These data, as well as observations during groundwater sampling activities (i.e., absence of static water levels at the time of sampling and low groundwater yields each day wells were sampled) provide evidence that benzene is not migrating off-site at concentrations that would impact water quality within downgradient surface water bodies. However, in order to In order to further evaluate potential off-site mobilization of benzene toward downgradient aquatic habitats, the BIOSCREEN model will be used to simulate contaminant movement with time under current site conditions. BIOSCREEN is a screening model distributed by EPA's Center for Subsurface Modeling Support (CSMoS) and is used to simulate remediation through the natural attenuation processes of advection, dispersion, adsorption, and biodegradation (first order decay) at petroleum release sites. The text in Section 7.9.1.3 will be revised to include the results and conclusions of the BISCREEN evaluation.

18. ***Section 7.9.1.4, Step 3a Risk Evaluation for Drainage Ditch Surface Sediment, 8th ¶, p. 7-51:*** *Chromium was detected in all six drainage ditch surface sediment samples. Two of those samples exceeded maximum site-specific background levels (14S-SB02, and 14D-SB06). Sample 14D-SB-06 is the last sample location along the ditch and furthest away from SWMU 14 site. Even though the detected level of chromium was almost double the maximum site-specific background level, the SLERA did not recommend further evaluation of this metal in the PEM1 wetland area due to spatial distribution of chromium (and selenium and vanadium) along the length of the drainage ditch. The fact remains that chromium at sample location 14S-SB-06 exceeded both its screening benchmark and the site-specific background level. It should therefore be retained as a COC for further evaluation (for example, by confirmatory sampling). Revise the conclusions regarding chromium results in the drainage ditch surface sediment.*

Navy Response to EPA Specific Comment No. 18: The Navy offers the following points of clarification relative to this comment. Since submittal of the Draft Additional Data Collection Report, the Navy has established a background airfield drainage ditch sediment data set. The background data set is included in addendum C of the Revised Final II Summary Report for Environmental Background Concentrations of Inorganic Compounds (Baker, 2010). A statistical evaluation of the SWMU drainage ditch surface sediment and background airfield drainage ditch sediment data sets indicate that chromium concentrations within the drainage ditch are not statistically elevated above background information. It is noted that in addition to the background airfield drainage ditch sediment data set, an airfield soil data set has been established and is included as Addendum B of the Revised Final II Summary Report for Environmental Background Concentrations of Inorganic Compounds (Baker, 2010). Descriptive comparisons of the SWMU 14 surface and subsurface soil data sets to the background airfield soil data set indicate that chromium concentrations in SMWU 14 soil are not elevated above background levels. These data indicate that SWMU 14 is not contributing to chromium levels in drainage ditch surface sediment above background levels. The refined risk evaluation for drainage ditch surface sediment (text and tables) will be revised to include the statistical evaluations referenced above. In summary, based on the information presented above, the Navy believes that an investigation of chromium in PEM1 wetland sediment is not warranted.

19. ***Section 7.9.1.5, Step 3a Risk Evaluation for Drainage Ditch Subsurface Sediment, p. 7-54:*** *Nickel was detected in all six subsurface sediment samples and the maximum detected concentration exceeded the maximum site-specific background subsurface sediment concentration. Not identifying nickel as a COC based on a low potential for exposure (sediment collected from 1.0-2.0 foot depth*

interval) and a low magnitude of the maximum detection above the sediment screening value is not a sufficient argument. Revise the decision to not identify nickel as a COC.

Navy Response to EPA Specific Comment No. 19: As discussed in the Navy response to EPA General Comment No. 6, drainage ditch subsurface sediment does not represent a realistic exposure point for ecological receptors. Therefore, discussions pertaining to drainage ditch subsurface sediment and all associated analytical data will be removed from the SERA and Step 3a of the BERA, including Section 7.9.1.5. As such, this comment is not applicable to the revised version of the document.

20. ***Section 7.9.1.5, Step 3a Risk Evaluation for Drainage Ditch Subsurface Sediment, 2nd ¶, p. 7-55:*** *The background concentration argument for including or removing a COC from further consideration is used inconsistently. The SLERA assumes that a COC concentration above background is site-related. Yet, the exact opposite was argued in this paragraph. Chromium in surface sediment sample 14D-SB06, which is the farthest downgradient ditch sample, exceeded both its screening benchmark and background concentration. The text argued that this concentration was not site-related because two sediment ditch samples collected further upgradient did not contain chromium above its screening value or site-specific background. The fact that chromium in 14D-SB06 exceeded its background value made it site-specific, by definition, regardless of the fact that it was present at a lower concentration further upstream (unless it can be argued that the background data set did not fully reflect conditions at the NAPR). Ensure that background is used consistently in the COC decision-making process and modify the text accordingly, where necessary.*

Navy Response to EPA Specific Comment No. 20: As discussed in the Navy response to EPA General Comment No. 6, drainage ditch subsurface sediment does not represent a realistic exposure point for ecological receptors. Therefore, discussions pertaining to drainage ditch subsurface sediment and all associated analytical data will be removed from the SERA and Step 3a of the BERA, including Section 7.9.1.5. As such, this comment is not applicable to the revised version of the document.

PREQB COMMENTS

(PREQB *comments are provided in italics, while Navy responses are provided in regular print.)*

INTRODUCTION

This Technical Evaluation is provided regarding the EPA Technical Review of the Draft Additional Data Report in Support of the Ecological Risk Assessment at SWMU 14, review dated August 13, 2008. This technical evaluation chiefly considered consistency with EPA guidance for conducting human health and ecological risk assessments. In general, the comments are consistent with guidance except as noted below.

EVALUATION

Evaluation of General Comment 3 and Specific Comment 2. Currently, the Regional Screening Level table is unavailable. Therefore, it is suggested that EPA Region 9 PRGs should be used until the Regional Screening table becomes available.

Navy Response: The most recent version of the Regional Screening Table is dated November 2010. Therefore, the HHRA will be revised to use this version of the Regional SLs for the risk-based screening and selection of COPCs.

Evaluation of Specific Comment 6. Reporting just the child HI may under-report total noncancer hazards

for the residential receptor. Since the residential receptor is assumed to reside at a residence as a child through adulthood, a combined child/adult hazard index (HI) may be more representative of the total noncancer hazards. Alternatively, both the HI for the child and the HI for the adult might be presented.

Navy Response: Agreed. The HI for an individual receptor represents a ratio of exposure to toxicity, which is evaluated over a specified time period for each receptor. As such, the HIs for both adult and child resident should be reported. Section 6.5.2 describes the general approach used to estimate non-cancer hazards and will not be revised.

EPA References:

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