-----Original Message-----

From:	**Ramanauskas.Peter@epamail.epa.gov [mailto:Ramanauskas.Peter@epamail.epa.gov]**
Sent:	Friday, August 30, 2002 4:13 PM
To:	Brent Thomas J CNIN; gateswh@efdsouth.navfac.navy.mil
Cc:	dgriffin@dem.state.in.us
Subject:	SWMU 4, 5, 9, 10 Comments

Comments on RFI Report SWMU459...

Attached is an electronic copy of the comments on the SWMU 4, 5, 9, 10 RFI Report. These are minus the Human Health Risk Assessment comments. Mario has a copy of the report and hopes to have something ready for you in September. I thought this would be useful for you as a head start.

Let me know if you'd like these sent via formal letter as well.
Have a great weekend.
Pete
(See attached file: Comments on RFI Report SWMU45910 no HHRA.wpd)

REVIEW OF DRAFT RFI REPORT
FOR SWMUs 4 (McCOMISH GORGE), 5 (OLD BURN PIT),
9 (PESTICIDE CONTROL/R-150 TANK AREA), AND 10 (ROCKEYE)

NAVAL SURFACE WARFARE CENTER - CRANE DIVISION
CRANE, INDIANA

GENERAL RFI COMMENTS

GENERAL COMMENTS

1. The RCRA Facility Investigation (RFI) report does not provide a detailed discussion on the recommendations for further actions at the site. Table ES-1 indicates that a Corrective Measures Study (CMS) should be implemented for groundwater at all four solid waste management units (SWMUs) and soils at SWMU 5. However, the RFI report does not provide a detailed discussion of these CMS measures or what specifically will be included in the study. In order to fully evaluate the RFI report and/or focus the CMS, detailed information on subsequent investigations or actions should be provided. In addition, as noted in several of the General and Specific Comments to follow, it is not apparent that the "nature and extent" of contamination has been fully delineated. Therefore, the lack of detail regarding future CMS activities becomes even more important if any additional investigations, or data gap completions, are necessary. Revise the RFI report to provide additional information regarding the need for future investigations and the CMS.

2. A detailed discussion on the nature and extent of contamination at the SWMUs is not provided. The RFI report simply summarizes the analytical data and identifies the sample location(s) where the maximum concentrations of the constituents were detected. However, the RFI report does not provide sufficient explanation regarding the extent of contamination or whether the contamination is considered to be adequately defined. Revise the RFI report to include additional detail (if available) about the extent of contamination.

3. For example, at several SWMUs, the maximum concentrations of certain constituents were detected at the most downgradient sample locations or the sample locations closest to the site boundaries. Many of these maximum detected concentrations exceed the corresponding screening criteria and, therefore, the extent of the contamination may not be fully defined. Several examples are included in the Specific Comments below. However, please note that these do not identify every instance where the extent of contamination is not fully defined. Since the RFI report does not include any discussion about recommendations for further action at the site, it is unclear if further investigations are anticipated which will further characterize the extent of contamination or if the CMS measures implemented for groundwater (as indicated in Table ES-1) will address other media as well. Revise the RFI report to include additional detail (if available) about the extent of contamination.

4. The second paragraph in each *Surface Soil* section (Sections 4.4.1, 5.4.1, 6.4.1 and 7.4.1) indicates that the summary table for each SWMU (Tables 4.3, 5.3, 6.3 and 7.3) presents a summary of information for the samples, including a "comparison to background." However, while the *Nature and Extent of Contamination* section for each SWMU states that "no background samples were collected for groundwater, surface water and sediment...", it is not known exactly how background soil concentrations have been established, nor has it been presented in sufficient detail to determine whether the methodology used is adequate. Clarify how background soil levels were determined and how subsequent comparisons to background demonstrate its adequacy.

SPECIFIC COMMENTS

5. **Section 2.6.2, Soil Sampling.** Both surface and subsurface soil sampling appears to have been limited to the general areas proposed in the RFI work plan. However, the RFI work plan indicated that at each SWMU, if field observations warrant, additional samples may be collected. Revise the RFI report to include a discussion regarding whether any additional samples were collected and the reasons supporting why additional samples were or were not collected.

6. **Section 2.6.2.1, Surface Soil Sampling.** The RFI report indicates that the surface soil samples to be analyzed for volatile organic compounds (VOCs) were collected from the one to two foot below ground surface (bgs) interval, whereas the surface soil samples to be analyzed for the remaining parameters were collected from the zero to two foot bgs interval. It is unclear why the surface soil samples collected for VOC analysis were collected from a different sampling interval range than the subsequent surface soil samples. The one to two foot bgs interval range may not be representative of the exposure scenarios presented in the risk assessment evaluations. Revise the RFI report to explain the selection of this sampling interval range.

7. **Section 2.6.2.3, Subsurface Soil Sampling.** Clarify the procedures used for collecting subsurface soil samples for VOC analysis using an EnCore sampler. The procedures included in Sections 2.6.2.1 (Surface Soil Sampling), 2.6.2.3 (Subsurface Soil Sampling) and 2.6.4 (Sediment Sampling) appear different. For surface soil and sediment sampling, it appears that the samples were collected using an EnCore sampler and then placed directly in a cooler. Whereas for subsurface soil sampling, the "soil to be analyzed for VOCs was collected first using EnCore samplers, placed in sealable plastic bags, labeled, placed in a cooler..." Revise the RFI report to describe why these sampling procedures differ. It is understood that the sampling interval for subsurface soils was not pre-defined and may have been chosen based on instrument readings, which may account for these differences, however these differences may have an impact on the VOC sample results. Clarify the procedures used to ensure that the VOC sample results are truly representative of subsurface soil conditions.

8. Section 4.2, Site Investigation. It is previously stated in Section 1.4.1, SWMU 4 (page 11-

1), that small arms ammunition may have been buried at this site, and Section 1.6.1, indicates that two explosives were detected in subsurface soil samples in past sampling activities. However, explosives are not included on the analyte list for environmental media for the most recent site investigation. Revise the RFI report to discuss the lack of investigation of explosives at SWMU 4 as a data gap, or provide sound rationale for not sampling media for explosives.

9. **Section 4.2, Site Investigation (Surface Water and Sediment).** In the RFI report, sample location 04SW/SD04 is located along the eastern edge of the marsh/wet area. However, in the RFI work plan, this sample location was to be located in the center of the marsh/wet area. Revise the RFI report to include an explanation for this change in sample location and whether the resulting data would be expected to be of comparable quality and usability.

10. **Section 4.4.3, Groundwater.** The RFI report indicates that Sample 04GW0101, which was collected from monitoring well 04-01, is the SWMU 4 upgradient groundwater sample. However, Section 5.5.2 of the RFI work plan indicates that monitoring well 04T01 was to be installed to establish water quality conditions upgradient of the site due to its location to the west, and outside of, the SWMU boundary. It appears that monitoring well 04T01 represents a more appropriate upgradient monitoring well location when compared to monitoring well 04-01, which is located within the (estimated) boundaries of the disposal area at SWMU 4. Revise the RFI report to denote Sample 04GWT0101 as the upgradient groundwater sample for SWMU 4, and revise any resulting assumptions accordingly.

11. **Section 4.4.3, Groundwater.** The extent of iron contamination in groundwater at SWMU 4 does not appear to be defined. Iron was detected in groundwater at a maximum concentration of 33,300 ug/L, which exceeds the maximum detected concentration of 32,300 ug/L from previous investigations. This concentration was detected in the most downgradient sample location (04T03), indicating that at a minimum the extent of iron contamination has not been horizontally defined. Revise the RFI report to delineate and further investigate the full extent of iron contamination in groundwater at SWMU 4.

12. **Section 5.4.4, Surface Water.** The extent of inorganic and VOC contamination in surface water at SWMU 5 has not been adequately defined. Several of these types of compounds were detected above screening criteria at downgradient sample locations (05SW/SD03 and 05SW/SD04). Revise the RFI report to include determining the nature and extent of surface water contamination at SWMU 5.

13. **Section 6.4.3, Groundwater.** The extent of metals contamination in groundwater at SWMU 9 does not appear to be adequately defined. The maximum detected concentrations of select inorganic constituents were identified in two of the most downgradient sample locations (09T02 and 09-02). Revise the RFI report to include contingencies for further characterization of the extent of metals contamination in groundwater at SWMU 9.

14. **Section 7.2, Site Investigation (Surface Water and Sediment).** Sample location 10SW/SD05 in the RFI report is located further southwest than where it was proposed in the approved RFI work plan. Revise the RFI report to include an explanation for this discrepancy in sample locations and whether the resulting data would be expected to be of comparable quality and usability.

15. **Section 7.4.6, Summary.** Analytical results from surface soil samples at sample location 10SB09, as well as groundwater, surface water and sediment sample results in the surrounding areas, indicate elevated concentrations of explosives and inorganic compounds exceeding the screening criteria. It appears that the extent of contamination emanating from the "pink water discharge" area has not been fully defined. Revise the RFI report to include an evaluation of these noted detections and to allow for determining the extent of contamination surrounding this area.

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FOR SWMUs 4 (McCOMISH GORGE), 5 (OLD BURN PIT),
9 (PESTICIDE CONTROL/R-150 TANK AREA), AND 10 (ROCKEYE)

NAVAL SURFACE WARFARE CENTER - CRANE DIVISION
CRANE, INDIANA

ECOLOGICAL RISK ASSESSMENT COMMENTS

GENERAL COMMENTS

16. The process used for selection of chemical of potential ecological concern (COPECs) is not clearly presented and does not appear to provide a conservative methodology recommended by the 1997 EPA Ecological Risk Assessment (ERA) guidance (*Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments*, Office of Solid Waste and Emergency Response, EPA/540/R-97/006). For example, the *Ecological Screening* sections (Sections 4.7.4, 5.7.4, 6.7.4, 7.7.4) present Ecological Effects Quotients (EEQs) for soil, sediment, and surface water (Tables 4-24, 4-25, and 4-26, respectively). The EEQs are based on a comparison of maximum detected concentrations to the EPA Region 5 Environmental Data Quality Levels (EDQLs). It is presumed that if an EEQ is greater than 1, then additional investigation is warranted for this compound. However, Section 3.4.3, Ecological Screening (page 3-72), indicates that inorganic contaminants which have a maximum detected concentration that does not exceed the maximum upstream or upgradient concentrations are not retained as COPECs. Therefore, the COPECs with EEQs that are greater than 1 are actually eliminated from further consideration based on the comparison to an upgradient concentration. It is not evident that the "upgradient" locations are adequate to represent unimpacted conditions. The use of "upgradient" samples is not recommended for use during the screening level ecological risk assessment (SERA). Revise the approach and tables to indicate all chemicals that have EEQs greater than 1 based on a comparison to the EDQLs.

    The screening approach also includes a comparison to "alternative benchmarks" (Section 3.4.4.1) and presents the benchmarks in Appendix H.2. The alternative benchmarks are ultimately used in the "Step 3a refinement process" in order to provide justification for eliminating COPECs that were found to be above Region 5 EDQLs (i.e., EEQs greater than 1). Specific alternative benchmarks for each COPEC identified in Tables 4-24, 4-25, 4-26, are discussed for each SWMU in Sections 4.7.5, 5.7.5, 6.7.5, and 7.7.5. Therefore, if a COPEC concentration is less than the alternative benchmarks, then dose-modeling to evaluate upper trophic level birds and mammals is not performed. The document is not clear for several reasons. First, the text and tables indicate that the comparison to the EDQLs and alternative benchmarks includes assessment of terrestrial birds and mammals. However, in general, review

of the benchmarks indicates that they may be associated with protection of invertebrates or plants, and not associated with upper trophic level mammals. While it is recognized that in some cases it may be implied that the generic soil or sediment benchmarks may also be protective of mammals and birds, this is not true for bioaccumulative, persistent, or toxic (PBT) chemicals (e.g., PCBs).

Second, the alternative benchmarks are presented as a second tier of the SERA process with the objective of eliminating COPECs with concentrations below the proposed benchmarks. Thus, each COPEC that was above an EDQL is discussed and if the detected concentration is below the alternative benchmark, the text indicates that the chemical is not considered a COPEC for terrestrial plants and invertebrates. However, the subsequent presentation of dose models presented in Appendix H.5 includes some of the COPECs (e.g., pentachlorophenol, 2,4-D) that were previously discussed as being below the alternative benchmark values. It is noted that the COPECs that are included in Appendix H.5 dose models are PBTs, and it is appropriate to calculate dose exposures for these compounds. However, the screening approach has not been clearly stated. It is recommended that the alternative benchmarks be presented with EDQLs in order to facilitate a relative comparison of each benchmark with its corresponding EDQL. Thus, the document would clearly indicate, in tabular format, which COPECs were above EDQLs, but below alternative benchmarks. The screening process should also be revised to clearly state that all PBT compounds will be retained and evaluated in upper trophic level dose models. Finally, as indicated in the following comments, the Step 3a refinement process should be eliminated from the SERA.

17. It is indicated that the aquatic resources associated with each of the SWMUs are not considered viable aquatic ecosystems, and therefore no hazard quotients (i.e., EEQs) are calculated for surface water and sediment. However, it is noted that surface water from each of the SWMUs either discharges to a viable aquatic ecosystem, or provides a temporal aquatic resource for aquatic receptor. The SERA should be used to evaluate potential impacts to aquatic resources in order to ensure that there are no continuing sources of contamination to the downstream water bodies. It should be noted that temporal systems serve an important function in aquatic ecosystems which certain plants and amphibians specifically require for reproduction. It is recommended that the approach be revised to include a calculation and an evaluation of hazard quotients for surface water and sediment.

Additionally, food chain modeling has been conducted to evaluate upper trophic level birds and mammals. The approach indicates that exposures to birds and mammals through sediment and surface water exposures have not been included in the food chain models since it is assumed that the exposures from surface water and sediment would be negligible. However, it is noted that several chemicals are eliminated as COPECs in soil and only occur in surface water and sediment. The approach used may underestimate exposure and risk to chemicals that may have either been missed during soil sampling, or that may have migrated from soil into surface water

and sediment. It is recommended that COPECs detected in surface water and sediment be included in the calculations of dose for birds and mammals.

18. The *Nature and Extent of Contamination* sections for each of the SWMUs (Sections 4.4, 5.4, 6.4, 7.4) indicate that no background samples were collected for groundwater, surface water, or sediment; rather a minimum of one "upgradient" sample was collected and used as background to compare analytes detected in sampled media to determine COPECs. However, organic constituents were detected in the background in either sediment or surface water samples, or both, at many of the sites, indicating that the area selected as background might not be representative of unimpacted conditions. The document should be amended to remove the background comparisons for inorganic constituents for surface water and sediment, and all inorganic constituents should be carried forward if they are above corresponding benchmark concentrations.

19. Statistical comparisons of background and investigative samples were conducted as specified in Section 3.1.6 (Methodology for Background Comparison, Page 3-13) and non-parametric analysis of variance (ANOVA) was the preferred method of comparison. However, the statistical approach that is currently presented as part of the SERA is more appropriately used in a baseline ecological risk assessment (BERA). The rationale for using statistical comparisons of this nature is not consistent with the conservative approach and recommendations for conducting a SERA. According to the 1997 U.S. EPA ERA guidance, the SERA should use the maximum concentrations present at a site in estimating exposures to ecological receptors. Therefore, in order to determine which chemicals may be COPECs, the maximum detected chemical values must be compared to either minimum or average background concentrations of the chemical, rather than a statistical comparison of data sets. Revise the RFI report to provide this type of comparison, which is consistent with U.S. EPA guidance.

    The statistical approach of comparing background and investigative samples may be presented and used for the BERA for the SWMUs. However, based on the 2001 U.S. EPA document, "*Guidance for Characterizing Background Chemicals in Soil at Superfund Site - External Review Draft* (EPA 540-R-01-003, OSWER 9285.7-41)," statistical testing may not be used for data that has been collected in a judgmental fashion. Therefore, a statistical approach for background comparisons to investigative data should only be used on sites where an unbiased sampling design was used. It is recommended that the determination of COPECs be based on comparisons of maximum investigative concentrations and average or minimum background concentrations at sites where biased sampling occurred. This revision should also be applied to the ERA process for SWMUs 4, 5, 9, and 10.

20. The *Site Investigation* sections for each of the SWMUs (Sections 4.2, 5.2, 6.2, and 7.2), indicate that soil media was sampled at two depths, surface soil from zero to two feet bgs,

and subsurface soil from two feet bgs to no greater than ten feet bgs. However, the surface soil interval used to evaluate ecological exposures is typically considered to be within the zero to 0.5 feet bgs. The 0.05 to two feet bgs exposure zone is typically considered as the subsurface soil matrix, which is the assumed maximum depth that mammals will burrow. The combination of data from zero to two feet bgs may underestimate risk by extrapolating a chemical concentration across the entire sampling column. Revise this section and subsequent sections that rely on the soils data to reflect the zero to 0.5 feet bgs and 0.5 to two feet bgs exposure zones. If data are lacking, provide a detailed discussion of this information as a data gap.

21. The *Nature and Extent of Contamination* sections indicate that historical data for the SWMUs may be available (e.g., second paragraph on page 4-6). However, the data is not used for the discussion of nature and extent, nor does this data appear to be used in the COPC screening or in dose modeling. It is not appropriate to eliminate historical data, as this information can be useful in investigating ecological risk at the site. Revise the RFI report to include a discussion of historical data, and, if the data are acceptable and appropriate, incorporate the data into the SERA to be used with the current data set.

SPECIFIC COMMENTS

22. **Section 3.4, Ecological Risk Assessment Methodology.** The methodology combines several aspects of a screening-level risk assessment with methods that are more appropriately conducted during a BERA. Most significantly, the objectives SERA have not been clearly established, and the scientific management decision point (SMDP) that is recommended to be presented at the completion of the SERA in both the 1997 EPA ERA guidance and the Navy's ERA method (see Figure 3-1), has not been clearly presented. Revise the document to include a clear presentation of the SMDP that culminates EPA Steps 1 and 2 of the SERA. Also see the subsequent "Step 3a" comment regarding this issue.

23. **Section 3.4.2.4.1, Assessment Endpoints.** The fifth paragraph on page 3-69 states that larger carnivorous mammals are not examined in this SERA due to the fact that the sites are small and below the home and feeding ranges typical of carnivorous mammals. However, the consideration of home and feeding ranges, or Area Use Factors (AUFs) are typically addressed within the BERA. While it is agreed that the adjustment of AUFs will result in lower estimated risks to larger carnivorous receptors at specific sites, exposure and potential for risk should still be documented. The SERA should include a conservative examination of a representative for each functional feeding guild that may potentially use the site. Therefore, upper trophic level species (i.e., large carnivorous mammals) should be examined during the SERA using these conservative assumptions (e.g., 100% AUF, 100% consumption of the most contaminated food item) to document if risk to these receptors is possible. Revise the SERA to examine risk to

large carnivorous mammals using conservative assumptions.

24. **Section 3.4.4, Step 3a - Refinement of the Screening.** This section contains information on the Navy's Step 3a, which is similar to the first step in the BERA as described by the 1997 EPA ERA guidance. The document states that Step 3a is conducted after the completion of the ecological screening using Region 5 EPA EDQLs to determine COPECs. It is indicated that the Step 3a refinement screening process includes an evaluation of the maximum detected and average detected media concentrations compared to benchmark values that present average risk at the SWMUs, an examination of the magnitude of criterion exceedance, frequency of chemical detection, contaminant bioavailablity, and available habitat. However, this approach follows neither the 1997 EPA ERA guidance nor the Figure 3-1 flow chart presented in the document, titled Navy's Ecological Risk Assessment Tiered Approach, NSWC Crane, Crane Indiana (page 3-183). Both the EPA and Navy guidance documents indicate that exposure estimates and risk calculation are completed as part of the SERA (i.e., prior to the refinement of COPECs). Most recent EPA guidance (U.S. EPA 1997) specifically states that the SERA does not provide definitive estimates of actual risk, generate cleanup goals, and is not usually based on site-specific assumptions. It should be noted that the purpose of the SERA is to assess the need, and if required, the level of effort necessary to conduct a BERA. Therefore, the Step 3a refinement of COPECs should only occur as part of the BERA. Revise the screening approach to eliminate the refinement of the screening process, and conduct Steps 1 and 2 in accordance with EPA guidance, using conservative estimates for screening and exposure modeling in order to determine potential risk to ecological receptors. The information should be presented in a manner to allow for all risk managers to support the SMDP.

25. Section 3.4.4.2, Terrestrial Food Chain Modeling. A toxicity/body weight extrapolation equation is used for mammals, based on Sample et al., 1996, and involves the use of a metabolic scaling factor of 0.25. More recent publications [Sample, B. and C. Arenal 1999, *Allometric Models for Interspecies Extrapolation of Wildlife Toxicity Data* (Bull Environ Contam Toxicol 62: 653-663)] indicate that the use of the metabolic scaling factor may not be appropriate for toxicity/body weight extrapolation factors. It is recommended that the toxicity/body weight equation be performed without the use of the scaling factor. Alternately, two equations could be used, one with the scaling factor applied, and one without, for comparison.

26. **Section 4.7.5.1, Terrestrial Plants and Invertebrates.** It is stated in section 4.7.2 (Potential Ecological Receptors and Exposure Pathways, page 4-41) that soil invertebrates and terrestrial vegetation will be used as assessment endpoints. However, this section does not clarify which benchmark was used for the selection of COPECs, or whether COPEC selection was based on plants or terrestrial invertebrate soil benchmarks. Both receptors are to be used as assessment endpoints, and therefore both EEQs should be presented and discussed for these assessment

endpoints. Plants and soil invertebrate EEQs should be calculated for each chemical that was retained in initial COPC selection process. Revise the RFI report to include an evaluation of both plants and soil invertebrates to document any potential risk associated with the plant and terrestrial invertebrate communities at the sites. In addition, provide the plant and invertebrate EEQs in table form with Tables 4-27 through 4-30.

27. Section 4.8, Conclusions. SWMU 4 is recommended No Further Action (NFA) for all assessment endpoints (see Table ES-1, page ES-7). This conclusions section provides the only justification for this recommendation as follows:

- risk to plants and soil invertebrates is expected to be low based on the fact that few alternate guidelines or toxicity data are exceeded
- risk to aquatic receptors is expected to be low based on the low chemical concentrations based on comparison to screening levels or alternate benchmarks and poor available habitat based on habitat size
- risks to wildlife is expected to be low or negligible

These statements have been made in support of NFA at the site, however, the proposal of NFA has not been supported by site-specific risk characterization. Neither adequate documentation nor proper discussion is provided on potential impacts to standard or sensitive receptors at the site based on the results of dose modeling and resulting EEQs. Additional site-specific and receptor-specific information should be provided in order to facilitate risk management decisions regarding these sites.

For example, risk to the American Robin is present at the site, based on exposure to zinc and on conservative calculations of the EEQ for both a NOAEL (21) and LOAEL (2.4) (Table 4-27). The use of less conservative parameters and assumptions to calculate EEQs shows that risk is still present based on a NOAEL (3.4) (Table 4.29). This trend holds true for additional COPECs and receptors at SWMU 4, and clearly indicates that risk is indeed present at the site. However, no information is provided to indicate where HQ exceedances occurred for the robin within SWMU 4. Revise this section to discuss risk to ecoreceptors with regard to specific hazard quotient exceedances (i.e., HQ greater than 1) at each area sampled at SWMU 4.

In addition, the line of evidence that aquatic habitats at SWMU 4 are poor due to size has not been supported. The Checklist for Ecological Assessment/Sampling, located in Appendix H, shows that the aquatic system contains very good habitat, with a very heterogeneous mixture of substrates with sufficient depth and width and acceptable water

quality parameters. It is stated that no aquatic life was noted, however, no information is given as to how thorough an investigation was conducted in determining the presence/absence of aquatic species. Small order streams can provide ample habitat for aquatic plants, smaller fish species, mussels and other aquatic invertebrates, which both terrestrial and aquatic receptors may use as food resources. It should be noted that the stream was examined in March, which could very well explain why no aquatic life was examined. Therefore, it appears that this aquatic habitat is suitable habitat, and the result of the assessment of risk to aquatic receptors cannot be dismissed based on the size or quality of the habitat present. Revise the RFI report to calculate risk to aquatic receptors, and model the uptake of aquatic receptors by terrestrial receptors for SWMU 4.

7. Section 5.8, Conclusions. SWMU 5 is recommended NFA for all assessment endpoints with the exception of the plant and soil invertebrate pathway (see Table ES-1 page ES-8). This conclusions section provides the only justification for this recommendation as follows:

- risk to aquatic receptors is expected to be low based on the low chemical concentrations based on comparison to screening levels or alternate benchmarks and poor available habitat based on habitat size
- risks to wildlife is expected to be low or negligible

These statements have been made in support of NFA at the site for all receptors with the exception of plants and terrestrial invertebrates, however, the proposal of NFA has not been supported by site-specific risk characterization. Neither adequate documentation nor proper discussion is provided on potential impacts to standard or sensitive receptors at the site based on the results of dose modeling and resulting EEQs. Additional site-specific and receptor-specific information should be provided in order to facilitate risk management decisions regarding these sites.

For example, risk to the short-tailed shrew is present at the site, based on exposure to antimony, based on conservative calculations of the EEQ for both a NOAEL (26,000) and LOAEL (2,600) (Table 5-27). The use of less conservative parameters and assumptions to calculate EEQs shows that risk is still present based on a NOAEL (260) and a LOAEL (26) (Table 5.29). This trend holds true for additional COPECs and receptors at SWMU 5, and clearly indicates that risk is indeed present at the site. However, no information is provided to indicate where HQ exceedances occurred for the shrew and other receptors within SWMU 5. Revise this section to discuss risk to ecoreceptors with regard to specific hazard quotient exceedances (i.e., HQ greater than 1) at each area sampled at SWMU 5.

In addition, the line of evidence that aquatic habitats at SWMU 5 are poor due to size has not been supported. The Checklist for Ecological Assessment/Sampling, located in Appendix H, shows that the aquatic system contains good habitat, with potential perennial flow, fair substrates, with sufficient depth and width and acceptable water quality parameters. It is stated that no aquatic life was noted, however, no information is given as to how thorough an investigation was conducted in determining the presence/absence of aquatic species. Small order streams can provide ample habitat for aquatic plants, smaller fish species, mussels and other aquatic invertebrates, which both terrestrial and aquatic receptors may use as food resources. It should be noted that the stream was examined in March, which could very well explain why no aquatic life was examined. Therefore, it appears that this aquatic habitat is suitable habitat, and the result of the assessment of risk to aquatic receptors cannot be dismissed based on the size or quality of the habitat present. Revise the document to calculate risk to aquatic receptors, and model the uptake of aquatic receptors by terrestrial receptors for SWMU 5.

8. Section 6.8, Conclusions. SWMU 9 is recommended NFA for all assessment endpoints (see Table ES-1 page ES-9). This conclusions section provides the only justification for this recommendation as follows:

- risks to plants and invertebrates are expected to be low based on few exceedances of alternate benchmarks
- risk to aquatic receptors is expected to be low based on the low chemical concentrations based on comparison to screening levels or alternate benchmarks and poor available habitat based on habitat size
- risks to wildlife is expected to be low or negligible

These statements have been made in support of NFA at the site for all receptors, however, the proposal of NFA has not been supported by site-specific risk characterization. Neither adequate documentation nor proper discussion is provided on potential impacts to standard or sensitive receptors at the site based on the results of dose modeling and resulting EEQs. Additional site-specific and receptor-specific information should be provided in order to facilitate risk management decisions regarding these sites.

For example, risk to the raccoon is present at the site, based on exposure to aroclor-1248, based on conservative calculations of the EEQ for both a NOAEL (130) and LOAEL (13) (Table 6-27). The use of less conservative parameters and assumptions to calculate EEQs shows that risk is still present based on a NOAEL (22) and a LOAEL (2.2) (Table 6-29).

This trend holds true for additional COPECs and receptors at SWMU 5, and clearly indicates that risk is indeed present at the site. However, no information is provided to indicate where HQ exceedances occurred for the raccoon and other receptors within SWMU 9. Revise this section to discuss risk to ecoreceptors with regard to specific hazard quotient exceedances (i.e., HQ greater than 1) at each area sampled at SWMU 9.

In addition, the line of evidence that aquatic habitats at SWMU 9 are poor due to size has not been supported. Although the Checklist for Ecological Assessment/Sampling, located in Appendix H, shows that the aquatic system contains only minimal habitat, the stream does drain to other aquatic habitats and could represent a continuing source of contamination. It is stated that no aquatic life was noted, however, no information is given as to how thorough an investigation was conducted in determining the presence/absence of aquatic species. It should be noted that the stream was examined in March, which could very well explain why no aquatic life was examined. Therefore, although it is agreed that aquatic habitat is minimal at this site and may only support a limited invertebrate population, the site should be examined due to the potential for contaminant migration to larger more complex aquatic habitats. Revise the RFI report to calculate risk to aquatic receptors, and model the uptake of aquatic receptors by terrestrial receptors for SWMU 9.

9. Section 7.8, Conclusions. SWMU 10 is recommended NFA for all assessment endpoints (see Table ES-1 page ES-10). This conclusions section provides the only justification for this recommendation as follows:

- risks to plants and invertebrates are expected to be low based on few exceedances of alternate benchmarks
- risk to aquatic receptors is expected to be low based on the low chemical concentrations based on comparison to screening levels or alternate benchmarks and poor available habitat based on habitat size
- risks to wildlife is expected to be low or negligible

These statements have been made in support of NFA at the site for all receptors, however, the proposal of NFA has not been supported by site-specific risk characterization. Neither adequate documentation nor proper discussion is provided on potential impacts to standard or sensitive receptors at the site based on the results of dose modeling and resulting EEQs. Additional site-specific and receptor-specific information should be provided in order to facilitate risk management decisions regarding these sites.

For example, risk to the meadow vole is present at the site, based on exposure to HMX, based on conservative calculations of the EEQ for both a NOAEL (27) and LOAEL (11) (Table 7-27). The use of less conservative parameters and assumptions to calculate EEQs shows that risk is still present based on a NOAEL (4.5) and a LOAEL (1.8) (Table 7-29). This trend holds true for additional COPECs and receptors at SWMU 5, and clearly indicates that risk is indeed present at the site. However, no information is provided to indicate where HQ exceedances occurred for the raccoon and other receptors within SWMU 10. Revise this section to discuss risk to ecoreceptors with regard to specific hazard quotient exceedances (i.e., HQ greater than 1) at each area sampled at SWMU 10.
In addition, the line of evidence that aquatic habitats at SWMU 10 are poor due to size has not been supported. The Checklist for Ecological Assessment/Sampling has not been submitted in Appendix H for this site. In addition, Section 7.2 (Site Investigation, Page 7-2) indicates that there are several drainages located at SWMU 10. Therefore, it appears that this aquatic habitat is suitable habitat, and the result of the assessment of risk to aquatic receptors cannot be dismissed based on the size or quality of the habitat present. Revise the RFI report to calculate risk to aquatic receptors, and model the uptake of aquatic receptors by terrestrial receptors for SWMU 10.

REVIEW OF DRAFT RFI REPORT
FOR SWMUs 4 (McCOMISH GORGE), 5 (OLD BURN PIT),
9 (PESTICIDE CONTROL/R-150 TANK AREA), AND 10 (ROCKEYE)

NAVAL SURFACE WARFARE CENTER - CRANE DIVISION
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DATA QUALITY COMMENTS

GENERAL COMMENT

1. Section 3.1.4.2 indicates that "data were qualified based on lab blank contamination, calibration, holding time, linear range exceedance, percent difference between columns, inductively coupled plasma (ICP) serial dilution, and ICP interferences." In addition, only blanks and holding time exceedances are discussed in any detail in Section 3.1.4.2. However, this discussion does not specify the samples affected, extent of the holding time exceedance, etc. Therefore, the information contained in Section 3.1.4.2 of the RFI report is insufficient to evaluate the quality of the analytical data. In order to provide some level of assurance that the data have been validated and qualified correctly, the following information should be provided.

   - A complete list of all quality control (QC) parameters evaluated for each analytical method.
   - The acceptance criteria used to evaluate all of the required QC parameters. This information should be provided in the data quality discussion and not referenced to another document such as laboratory standard operating procedures (SOPs), analytical methods, National Functional Guidelines for Data Review, quality assurance project plan (QAPP), etc.
   - A brief discussion indicating if each of these QC parameters, broken down by method, did or did not meet acceptance criteria.
   - The extent of all QC exceedances.
   - A discussion of the qualifiers applied based on the QC exceedances or the justification for not qualifying the analytical data.
   - A list of samples affected by each QC exceedance.

   Alternatively, the RFI report could be revised to include the data validation reports (DVRs), providing that they contain this level of detail.

SPECIFIC COMMENTS

16. **Section 3.1.2.3, Completeness**. The RFI report states that four surface water pesticide/PCB samples from SWMU 4 were rejected due to holding time exceedances.

    This section should be revised to include a brief statement discussing why these samples were

not recollected.

17. **Section 3.1.4.2, Summary**. The RFI report states that soil pH was not analyzed within holding times, and the pH values could be incorrect. The report also indicated that if accurate pH values are needed in the future, consideration should be given to re-collecting samples for pH analysis. However, the tables in Appendix E report pH values for several samples that are qualified with a "J", indicating an estimated value. To avoid potential confusion in the future, the pH values contained in Appendix E should be revised and qualified with an "R", indicating that the data is unusable.

18. **Section 3.1.4.2, Summary**. The RFI report states that the laboratory did not analyze the cyanide samples within the required holding time. There is no discussion of the data qualification required due to sample analysis outside of the required holding times. The tables in Appendix E show that a majority of the cyanide results are qualified with a "J". The RFI report should be revised to include a discussion of the cyanide data qualification.

19. **Section 3.1.4.2, Summary**. The RFI report states that surface water samples for semivolatile and pesticide/PCB analysis from SWMU 4 also had a high rate of qualification due to holding time exceedances: 55 percent and 67 percent, respectively. However, there is no discussion of the data qualification required due to the holding time exceedances. The RFI report should be revised to include a discussion of the semivolatile and pesticide/PCB data qualification.

20. **Section 3.1.4.2, Summary**. With regard to the holding time exceedances, the RFI report states that Tetra Tech NUS, Inc. (TtNUS) worked with the laboratory to prioritize the parameters of interest and minimize qualification of the data. TtNUS was able to avoid the necessity of resampling the data points by implementing this prioritization. Specifically, the pesticide/PCB data for four surface water samples was qualified "R", unusable. The RFI report should be revised to include a discussion of why resampling was not necessary when the data collected was unusable.