UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
290 BROADWAY
NEW YORK, NY 10007-1866

APR - 9 2004

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Kevin Cloe
Navy Technical Representative
Installation Restoration Section (South)
Environmental Program Branch
Environmental Division,
Atlantic Division (LANTDIV), Code EV23KC
Naval Facilities Engineering Command
6506 Hampton Blvd.
Norfolk, VA 23508-1278

Re: Naval Activity Puerto Rico (former Naval Station Roosevelt Roads) - EPA I.D. Number PRD2170027203

1. January 30, 2004 Draft Additional Data Collection Investigation Report and Screening Level Ecological Risk Assessment (Step 3A) for SWMU 45

2. February 13, 2004 Draft Additional Data Collection Investigation Report and Screening Level Ecological Risk Assessment (Step 3A) for SWMUs 1 and 2

Dear Mr. Cloe:

The United States Environmental Protection Agency (EPA) Region 2 has completed its review of the above documents which were submitted on behalf of the Navy by Baker Environmental's letters of January 30 and February 13, 2004, respectively. As part of our review, EPA requested our contractor, Booz Allen Hamilton, to review both documents. Based on Booz Allen's and our own reviews, EPA has found that certain sections of both of the above documents need to be revised and/or clarified to address the comments given in the two enclosed Technical Reviews.

Within 45 days of your receipt of this letter, please submit either revised documents, or addenda to the above two documents, addressing the respective comments given in the two enclosed Technical Reviews.

If you have any questions, please telephone me at (212) 637- 4167.

Sincerely yours,

Timothy R. Gordon

Timothy R. Gordon,
Remedial Project Manager
Caribbean Section
RCRA Programs Branch

Enclosures (2)

cc: Ms. Yarissa Martinez, P.R. Environmental Quality Board, with encl.
Mr. Julio I. Rodriguez Colon, P.R. Environmental Quality Board, with encl.
Mr. Sindulfo Castillo, Public Works Dept., Naval Activity Puerto Rico, with encl.
Ms. Kathy Rogovin, Booz Allen & Hamilton, w/o encl..
Mr. Mark Kimes, Baker Environmental, w/o encl.

TECHNICAL REVIEW OF THE JANUARY 30, 2004, DRAFT ADDITIONAL DATA COLLECTION REPORT AND SCREENING LEVEL ECOLOGICAL RISK ASSESSMENT AND STEP 3A OF BASELINE ECOLOGICAL RISK ASSESSMENT AT SWMU 45

NAVAL STATION ROOSEVELT ROADS
CEIBA, PUERTO RICO

REPA3-1203-026
March 31, 2004

I. GENERAL COMMENTS

1. Review of the January 30, 2004 Draft Additional Data Collection Report and Screening Level Ecological Risk Assessment and Step 3A of the Baseline Ecological Risk Assessment at SWMU 45 (hereafter referred to as the ADCR) revealed a number of technical inadequacies. As detailed in the comments below, key deficiencies include: unprotective food web model assumptions for the West Indian manatee, a threatened and endangered (T&E) species; elimination of all non-detected chemicals from further evaluation without adequate justification; potential errors in calculations; and use of background concentrations from locations that have not been documented. Naval Station Roosevelt Roads (NSRR) should address the comments below and submit a revised draft ADCR.

2. Analysis of inorganics in Solid Waste Management Unit (SWMU) 45 surface soil was limited to the eight RCRA metals. Because other inorganics (e.g., copper) were detected at concentrations exceeding background in downgradient Puerca Bay sediments, EPA is concerned that soil contamination at SWMU 45 has not been adequately characterized. NSRR should address this issue in the ecological risk assessment, and propose additional sampling and analysis.

3. Many chemicals of potential concern (COPCs) are eliminated from further evaluation based on comparisons to background concentrations. Complete descriptions and maps of all background locations, however, are not presented. This information must be included in the ADCR to justify the use of background data (see Specific Comment 12).

4. NSRR has not tabulated prey exposure concentrations or calculated doses for wildlife receptors. These values should be tabulated and attached to the ADCR to ensure that the results presented can be reproduced by readers.

II. SPECIFIC COMMENTS

Sections 2.2 and 2.3, Surface Water Investigation and Sediment Investigation

1. These sections do not describe the open water background samples that were planned in the August 10, 2001, Draft Additional Data Collection Work Plan in Support of Ecological Risk Assessment at SWMU 45. Based on data presented in the risk assessment, it appears that these samples were collected. Revise the text and tables to include information regarding the background samples analogous to the information provided for the site samples. Additionally, revise the text to provide the rationale for the selected locations of the background samples, and add a figure depicting the locations of the background samples to the ADCR.

Section 3.0, Investigation Results

2. Section 3.0 does not include results of the background samples collected. Revise the text and tables to present these results in addition to site sample results.

Section 4.3.1.3, Exposure Pathways and Routes

3. The final paragraph on page 4-11 states, "although this represents an uncertainty in the assessment it is assumed that terrestrial reptile and amphibians are not likely to be more sensitive to chemical exposures than the other receptor groups that are included in the screening-level ERA." It is likely that sufficient toxicity data for amphibians, and perhaps, reptiles exist to permit a more rigorous analysis. EPA suggests examining recent publications that review herpetofauna toxicity data (e.g., Sparling et al. 2000) to evaluate whether herpetofauna are more sensitive than other receptors for detected constituents at SWMU 45. If this analysis suggests that risks may be significantly underestimated by omitting herpetofauna as receptors in the risk assessment, then a quantitative analysis of risks may be required.

Section 4.4.2, Ingestion-Based Screening Values

4. This section indicates that mammalian no observed adverse effect level (NOAEL) values were not scaled based on body weights of the test species and the receptor species, but does not provide rationale. NOAEL values are appropriately scaled in Step 3a of the risk assessment according to Equation 4-5. Analysis of this equation indicates that the scaled NOAEL value will be less than the original value if the receptor species is larger than the test species. Considering that the receptor species (i.e., West Indian manatee) is likely to be larger than all test species, it is more protective, and therefore necessary, to use the scaled toxicity values in the screening-level risk assessment. Revise the ADCR text and relevant tables accordingly. Additionally, the scaled NOAEL values should be tabulated somewhere in the document.

Section 4.6.2, Uncertainties Associated with the Screening-Level Risk Assessment

5. Several of the uncertainties listed in this section may result in an underestimation of potential risk, but NSRR has not explicitly identified them as such. In contrast, NSRR specifically states that certain uncertainties are expected to result in overestimates of risk. To provide a more balanced discussion, revise this section to specifically state which uncertainties may result in underestimation of risk (e.g., omission of inhalation and adsorption pathways for upper trophic level receptors, omission of herpetofauna from quantitative risk analysis).

6. See Specific Comment 3 regarding risks to amphibians and reptiles. This section should also include discussion of whether the evaluated exposure pathways are likely to be protective of threatened and endangered (T&E) species of sea turtles that may use Puerca Bay.

7. NSRR states that common laboratory contaminants detected in site samples may not be related to site releases. This issue should be discussed in greater detail, giving consideration to whether the relevant common lab contaminants were used in historical operations, and whether they were detected in quality control samples. As the bullet is now written, there is not enough information to evaluate whether or not detection of these constituents is due to laboratory contamination or site release.

8. NSRR should discuss uncertainties associated with extrapolating NOAEL and lowest observed adverse effect level (LOAEL) values from the test organisms to the wildlife receptors. Particularly, it is important to discuss this uncertainty with respect to the West Indian manatee, which requires extra protection. NSRR should list chemicals that would be retained as COPCs for the West Indian manatee if an interspecies extrapolation factor of 5 or 10 had been applied to the NOAEL.

Section 4.7, Step 3a of the Baseline Ecological Risk Assessment

9. Most of the methodological refinements described on pages 4-33 and 4-34 are not appropriate for the West Indian manatee, a T&E species that must be protected at the individual level. Specifically:
   - Maximum, not mean, chemical concentrations should be used in calculating exposures;
   - Uptake factors should be based on 90th percentile, not central tendency, values;
   - Maximum or high-end estimates for body weight and food ingestion rate should be used in favor of central tendency estimates; and
   - NOAEL toxicity values should be used exclusively.

   Revise the ADCR accordingly to ensure that methodologies used are adequately protective.

10. See Specific Comment 4 regarding scaled screening values for the West Indian Manatee. Note that, as discussed in EPA's June 2003 letter, NOAEL values should be used exclusively for the West Indian manatee. Revise this section and applicable tables accordingly.

11. This section does not include discussion of non-detected chemicals with reporting limits greater than screening values, but NSRR appears to be eliminating these chemicals from possible further investigation in the baseline risk assessment. Considering the large number of chemicals (e.g., >60 chemicals in sediment) with mean reporting limits exceeding screening values, and the large magnitude of exceedance (e.g., mean hazard quotient (HQ)>100 for many chemicals in sediments), it is not clear that it is appropriate to eliminate all of these chemicals from further evaluation at this time. The ADCR should consider the following points for these chemicals: 1) the magnitude of the mean HQ; 2) whether the chemicals are expected to be present based on historical site operations and chemical-specific fate and transport considerations; 3) the proportion of samples for which detection limits exceeded screening values; and 4) whether lower detection limits are practicably achievable. Revise this section to justify eliminating these chemicals from further evaluation.

12. Although a number of chemicals have been eliminated from further consideration based on comparison to background concentrations, a complete description of the background data set is not included in the report. NSRR should append to the ADCR text that provides the rationale for the selected background, locations and figures depicting the locations of the all the background samples. The statistical sampling procedure (e.g., random sampling), and the potential for impacts from NSRR or any other anthropogenic sources to the background locations, should also be discussed. This section of the text should refer the reader to the added background information. Chemicals eliminated from further evaluation based on background will be re-evaluated by EPA once this information is made available.

Section 4.7.1.2, Refined Risk Calculation of Risk Evaluation for Surface Water

13. NSRR should strengthen the argument that tin is unlikely to present risks to aquatic receptors by noting that detected concentrations are well below the EPA Region 5 Ecological Screening Level of 180 μg/L (EPA 2003).

Section 4.7.1.3, Refined Risk Calculation of Risk Evaluation for Sediment

14. EPA is unable to reproduce the sediment quality guideline (SQG, based on DiToro and McGrath 2000) values (e.g., 4,427 ug/kg for 2-hexanone) presented in this section. NSRR should submit example calculations to clarify.

15. The discussion of the various sediment screening levels (e.g., threshold effect level (TEL), Effects Range-Low (ER-L)) presented on page 4-40 is not sufficiently descriptive to allow the reader to interpret the meaning of these different screening values. Revise this section to more clearly define the effect levels associated with all screening values.

16. Due to the prevalence of tin concentrations in excess of background concentrations at SWMU 45, the limited toxicity data available for tin, and the absence of data regarding the form of tin present in sediment at NSRR, it is not defensible to eliminate tin from further

evaluation at this time. Unless additional justification can be provided, tin should be retained for further evaluation.

17. NSRR should strengthen the argument that beryllium and thallium are not risk drivers for benthic macroinvertebrates by noting that a comparison of surface water screening values, which are developed based on toxicity tests with a variety of aquatic organisms, indicates that beryllium and thallium are less toxic to aquatic organisms than cadmium, copper, mercury, and vanadium. The detected concentrations of beryllium and thallium in sediments are less than or roughly equivalent to the sediment screening values for these other metals.

Section 4.7.1.4.2, Aquatic Food Web Exposures

18. It appears that Equation 4-6 is incorrect. Assuming the hazard quotient (i.e., 0.99) is the calculated dietary intake (DI) divided by the NOAEL, when Equation 4-4 is substituted for DI and the terms are rearranged to solve for the soil concentration, Equation 4-6 is not the correct result. It is also unclear how the concentrations in food items are calculated (i.e., what soil/sediment exposure point concentration is used to model the food item concentrations?). Furthermore, additional discussion should be added to better explain the purpose and the rationale behind this analysis; it is unlikely that the uninitiated reader will understand this analysis as it is currently described. NSRR should correct any errors in Equation 4-6 and make the requested clarifications. Chemicals that were eliminated from further evaluation based on comparison of maximum detected concentrations to the calculated "sediment concentrations resulting in a mean exposure dose greater than or equal to the NOAEL-based screening value" must be re-evaluated once this comment is addressed.

19. For reasons discussed in Specific Comment 9, it is not appropriate to consider mean exposure concentrations in the process of identifying risk drivers for the West Indian manatee. Because maximum concentrations of arsenic and mercury resulted in modeled doses exceeding NOAEL values, these chemicals must be considered risk drivers for the West Indian manatee unless additional justification can be provided. It is also worth noting that the manatee occasionally feeds on fish (http://endangered.fws.gov/i/a/saa0c.html), which would likely have higher tissue concentrations of mercury than aquatic vegetation, and which is not included as a dietary component in the exposure models. This consideration should be discussed in this section or Section 4.7.2.

20. NSRR claims that Puerca Bay is small relative to the foraging range for the belted kingfisher, purportedly 400-800 ha. It is unclear how this foraging range was derived. NSRR should consider the foraging ranges presented in EPA's *Wildlife Exposure Factors Handbook* (EPA 1993), which are more appropriately presented in terms of kilometers of shoreline (i.e., about 1 km on average). NSRR should compare the length of shoreline available at Puerca Bay to the 1 km shoreline foraging range cited by EPA (1993) for a more protective evaluation of risks to the belted kingfisher. If, based on this revised analysis, an area use factor can be applied for the kingfisher, the ADCR should discuss resulting changes in the NOAEL-based

hazard quotient. Additional justification is required to eliminate mercury from further evaluation for the belted kingfisher.

Section 4.7.2, Uncertainties Associated with the Refined Screening-Level Risk Characterization

21. The first bullet on page 4-45 does not present a balanced view of the uncertainties associated with NOAEL, LOAEL, and maximum acceptable toxicant concentration (MATC) values. While the statements made regarding NOAEL values are true, it should also be pointed out that it is possible for actual effect levels to be less than LOAEL or MATC values. Use of these values presents some potential for underestimation of risk. Revise this section accordingly.

22. This section should discuss uncertainty associated with toxic effect levels in sediments and note those chemicals which were identified as preliminary COPCs based on one screening value, but then eliminated from further evaluation based on other screening values. There is uncertainty regarding the potential for effects in the range of concentrations bracketed by the various screening values cited (e.g., TEL and ER-L). Revise this section accordingly.

23. See Specific Comment 8. NSRR should discuss what hazard quotient values for the West Indian manatee would be if interspecies extrapolation factors were applied to the NOAEL.

Section 4.7.3, Step 3a Decision Point and Recommendations

24. NSRR's proposed approach for addressing copper contamination in Puerca Bay sediments should be revised. Sampling sediments in a background location impacted by stormwater drainages will not provide adequate evidence to determine with a high degree of certainty that copper in Puerca Bay is not site related. In the absence of evidence that copper is not site related, NSRR must assume that the copper is site related and identify it as a risk driver. Any analysis designed to determine whether the copper contamination in Puerca Bay is site related must take into consideration the presence of copper in other areas/media that may be transported to Puera Bay. See also General Comment 2.

25. EPA will re-evaluate this section once the issues outlined above are resolved. Revision is likely necessary.

Section 5.0, Conclusions and Recommendations

26. EPA will re-evaluate this section once the issues outlined above are resolved. Revision is likely necessary.

Tables 4-8 and 4-9, Ingestion-Based Screening Values for Birds and Mammals

27. For some chemicals (e.g. arsenic in Table 4-8), toxicity test data are summarized for more than one study. In these instances, it is unclear which NOAEL and LOAEL values were ultimately used in the risk calculations. Revise Tables 4-8 and 4-9 to indicate which values were selected for use in the ecological risk assessment.

Table 4-14, Conservative Exposure Parameters for Upper Trophic Level Receptors

28. Two of the food ingestion rate values (i.e., values for American robin and red-tailed hawk) presented in Table 4-14 are less than the values presented in August 2001 Screening-Level Ecological Risk Assessment Problem Formulation (Step 1) and Exposure Estimate for SWMU 45. Explain this discrepancy and justify the use of less protective values.

Table 4-19, Summary of Hazard Quotients for Food Web Exposures – Terrestrial Habitat

29. Add a footnote to Table 4-19 to explain the "NA" designations. Also, revise this table to clarify which chemicals were never detected.

Table 4-20, Summary of Hazard Quotients for Food Web Exposures – Aquatic Habitat

30. See Specific Comment 29.

Table 4-22, Less Conservative Soil Bioconcentration Factors Used for Terrestrial Plants and Soil Bioaccumulation Factors (BAF) Used for Terrestrial Invertebrates

31. The origin of the soil-invertebrate values listed in this table is unclear. The values listed here are different from both the median BAFs in Table 11 and the mean BAFs in Table 16 of Sample et al. (1998). The mercury BAF used by NSRR (i.e., 1.186) is less than both the mean and median values reported by Sample et al. (1998). Revise this table to clarify the technical basis of the values, and provide justification for a mercury BAF that is less than Sample et al. (1998) values.

Table 4-35, Summary of Refined Hazard Quotients for Food Web Exposures – Aquatic Habitat

32. Based on text in Sections 4.6.1.4.2 and 4.7.1.4.2, it appears that two chemicals (i.e., styrene and xylene) have been inadvertently omitted from Table 4-35. Revise the table or the text to correct this discrepancy.

Table 4-36, Summary of Ecological Chemicals of Potential Concern and Potential Risk Drivers

33. Chemicals that were never detected but that had mean detection limits exceeding screening values were retained as chemicals of potential concern in this assessment. These chemicals should be listed within a separate category in Table 4-36. This revision is necessary to ensure that uncertainties resulting from these chemicals are not overlooked by risk managers.

Appendix E, Habitat Characterization Report

34. Appendix E refers the reader to the August 2001 Draft Screening-Level Risk Assessment for the Habitat Characterization Report. Because this ADCR should be a stand-alone document, all relevant habitat characterization reports (i.e., both upland and marine) should be included in Appendix E. Revise the ADCR accordingly.

III. REFERENCES

DiToro, D.M. and J.A. McGrath. 2000. Technical Basis for Narcotic Chemicals and Polycyclic Aromatic Hydrocarbon Criteria. II. Mixtures and Sediments. Environ. Toxicol. And Chem. 19:1871-1982.

EPA. 2003. *Ecological Screening Levels for RCRA Appendix IX Hazardous Constituents*. U.S. Environmental Protection Agency, Region 5. August 22, 2003 update. http://www.epa.gov/reg5rcra/ca/edql.htm

EPA. 1993. Wildlife Exposure Factors Handbook. Volume 1. EPA/600/R-93/187a. U.S. Environmental Protection Agency, Washington, DC.

Sample, B.E., J.J. Beauchamp, R.A. Efroymson, G.W. Suter,II, and T.L. Ashwood. 1998. Development and Validation of Bioaccumulation Models for Earthworms. Oak Ridge National Laboratory, Oak Ridge TN. 93 pp, ES/ER/TM-220. http://www.hsrd.ornl.gov/ecorisk/reports.html

Sparling, D.W., G. Linder, and C.A. Bishop, Eds. 2000. Ecotoxicology of Amphibians and Reptiles. Pensacola, Florida: Society of Environmental Toxicology and Chemistry (SETAC). 904 p.

TECHNICAL REVIEW OF THE FEBRUARY 13, 2004, DRAFT ADDITIONAL DATA COLLECTION REPORT AND SCREENING LEVEL ECOLOGICAL RISK ASSESSMENT AND STEP 3A OF BASELINE ECOLOGICAL RISK ASSESSMENT AT SWMUS 1 and 2

NAVAL STATION ROOSEVELT ROADS
CEIBA, PUERTO RICO

REPA3-1203-027
March 31, 2004

I. GENERAL COMMENTS

1. Review of the February 13, 2004, Draft Additional Data Collection Report and Screening Level Ecological Risk Assessment and Step 3A of the Baseline Ecological Risk Assessment at SWMUs 1 and 2 (hereafter referred to as the ADCR) revealed a number of technical inadequacies. As detailed in the comments below, key deficiencies include: unprotective food web model assumptions for the West Indian manatee, a threatened and endangered (T&E) species; elimination of all non-detected chemicals from further evaluation without adequate justification; potential errors in calculations; and use of background concentrations from locations that have not been documented. Naval Station Roosevelt Roads (NSRR) should address the comments below and submit a revised draft ADCR.

2. NSRR has calculated "concentrations in surface soil resulting in a mean exposure dose greater than or equal to the NOAEL-based screening value" for wildlife receptors in order to examine the spatial extent of risks. It appears, however, that these calculations are incorrect (see Specific Comment 27). Chemicals that were eliminated from further evaluation based on arguments using these calculations should be re-evaluated.

3. Many chemicals of potential concern (COPCs) are eliminated from further evaluation based on comparisons to background concentrations. Complete descriptions and maps of all background locations, however, are not presented. This information must be included in the ADCR to justify the use of background data (see Specific Comment 10).

4. In many cases, maximum detected concentrations of chemicals in surface water and sediments occurred at the northern or southern limits of the sampling effort, calling into question whether the extent of contamination has been adequately characterized. The ADCR provides no discussion and suggests no remedy for this problem. See Specific Comments 23, 24, 42 and 44 below.

5. NSRR has not tabulated prey exposure concentrations or calculated doses for wildlife receptors. These values should be tabulated and attached to the ADCR to ensure that the results presented can be reproduced by readers.

II. SPECIFIC COMMENTS

Section 4.3.1.3, Exposure Pathways and Routes

1. The final paragraph of this section states, "although this represents an uncertainty in the assessment it is assumed that terrestrial reptile and amphibians are not likely to be more sensitive to chemical exposures than the other receptor groups that are included in the screening-level ERA." It is likely that sufficient toxicity data for amphibians, and perhaps, reptiles exist to permit a more rigorous analysis. EPA suggests examining recent publications that review herpetofauna toxicity data (e.g., Sparling et al. 2000) to evaluate whether herpetofauna are more sensitive than other receptors for detected constituents at Solid Waste Management Units (SWMUs) 1 and 2. If this analysis suggests that risks may be significantly underestimated by omitting herpetofauna as receptors in the risk assessment, then a quantitative analysis of risks may be required.

Section 4.4.2, Ingestion-Based Screening Values

2. This section indicates that mammalian no observed adverse effect level (NOAEL) values were not scaled based on body weights of the test species and the receptor species, but does not provide rationale. NOAEL values are appropriately scaled in Step 3a of the risk assessment according to Equation 4-5. Analysis of this equation indicates that the scaled NOAEL value will be less than the original value if the receptor species is larger than the test species. Considering that the receptor species (i.e., West Indian manatee) is likely to be larger than all test species, it is more protective, and therefore necessary, to use the scaled toxicity values in the screening-level risk assessment. Revise the ADCR text and relevant tables accordingly. Additionally, the scaled NOAEL values should be tabulated somewhere in the document.

Section 4.6.1.2.6, Terrestrial and Aquatic Food Web Exposures

3. This section notes that ingestion-based screening values were not available for a number of herbicides and organochlorine pesticides. Toxicity data for a number of these chemicals can be found in the Department of Interior's Handbook of Toxcity of Pesticides to Wildlife (USDOI 1984), or can likely be found in primary literature sources or from EPA's Office of Pesticide Programs. These chemicals should not be eliminated from further evaluation in Step 3a of the risk assessment until a comprehensive search for applicable toxicity data has been conducted.

Section 4.6.2, Uncertainties Associated with the Screening-Level Ecological Risk Assessment

4. Several of the uncertainties listed in this section may result in an underestimation of potential risk, but NSRR has not explicitly identified them as such. In contrast, NSRR specifically states that certain uncertainties are expected to result in overestimates of risk. To provide a more balanced discussion, revise this section to specifically state which uncertainties may result in underestimation of risk (e.g., omission of inhalation and adsorption pathways for upper trophic level receptors, omission of herpetofauna from quantitative risk analysis).

5. See Specific Comment 1 regarding risks to amphibians and reptiles. This section should also include discussion of whether the evaluated exposure pathways are likely to be protective of threatened and endangered (T&E) species of sea turtles that may use Ensenada Honda as feeding habitat.

6. NSRR should discuss uncertainties associated with extrapolating NOAEL and Lowest Observed Adverse Effect Level (LOAEL) values from the test organisms to the wildlife receptors. Particularly, it is important to discuss this uncertainty with respect to the West Indian manatee, which requires extra protection as a T&E species. NSRR should list chemicals that would be retained as COPCs for the West Indian manatee if an interspecies extrapolation factor of 5 or 10 were applied to the NOAEL.

Section 4.7, Step 3a of the Baseline Ecological Risk Assessment

7. Most of the methodological refinements described on pages 4-46 and 4-47 are not appropriate for the West Indian manatee, a T&E species that must be protected at the individual level. Specifically:
   - Maximum, not mean, chemical concentrations should be used in calculating exposures;
   - Uptake factors should be based on 90th percentile, not central tendency, values;
   - Maximum or high-end estimates for body weight and food ingestion rate should be used in favor of central tendency estimates; and
   - NOAEL toxicity values should be used exclusively.

   Revise the ADCR accordingly to ensure that methodologies used are adequately protective.

8. See Specific Comment 2 regarding scaled screening values for the West Indian manatee. Note that, as discussed in EPA's June 2003 letter, NOAEL values should be used exclusively for the West Indian manatee. Revise this section and applicable tables accordingly.

Section 4.7.1, SWMU 1 Refined Risk Calculation and Risk Evaluation

9. This section does not include discussion of non-detected chemicals with reporting limits greater than screening values, but NSRR appears to be eliminating these chemicals from possible further investigation in the baseline risk assessment. Considering the large number of chemicals (e.g., >60 chemicals in sediment) with mean reporting limits exceeding screening values, and the large magnitude of exceedance (e.g., mean HQ>100 for many chemicals in sediments), it is not clear that it is appropriate to eliminate all of these chemicals from further evaluation at this time. The ADCR should consider the following points for these chemicals: 1) the magnitude of the mean HQ; 2) whether the chemicals are expected to be present based on historical site operations and chemical-specific fate and transport considerations; 3) the proportion of samples for which detection limits exceeded screening values; and 4) whether lower detection limits are practicably achievable. Revise this section to justify eliminating these chemicals from further evaluation.

10. Although a number of chemicals have been eliminated from further consideration based on comparison to background concentrations, a complete description of the background data set is not included in the report. NSRR should append to the ADCR text that provides the rationale for the selected background, locations and figures depicting the locations of the all the background samples. The statistical sampling procedure (e.g., random sampling), and the potential for impacts from NSRR or any other anthropogenic sources to the background locations, should also be discussed. This section of the text should refer the reader to the added background information. Chemicals eliminated from further evaluation based on background will be re-evaluated by EPA once this information is made available.

Section 4.7.1.1, Refined Risk Calculation and Risk Evaluation for Surface Soil

11. NSRR recommends additional sampling and analysis of identified risk drivers in the vicinity of locations 1SB03, 1SS06, and 1SD01 to define the spatial extent of potential contamination. Although this proposal appears adequate for most risk drivers, copper contamination at SWMU 1 at levels above screening values is more widespread (e.g., exceedances at 1SS04, 1MW04, and 1MW01). Of particular concern is the detected concentration at location 1MW01 of 169 mg/kg copper, which is more than three times greater than the screening value. The detected concentration of zinc is also greater than its screening value at this location. NSRR should develop recommendations that address these concerns, and revise this section accordingly.

Section 4.7.1.2, Refined Risk Calculation and Risk Evaluation for Subsurface Soil

13. This section omits discussion of carbon disulfide, which is included in Table 4-47. Revise the text or the table to correct this discrepancy.

14. NSRR recommends collecting additional soil samples at location 05SS101 and areas downgradient of this sample to establish current levels and define the spatial extent of 4,4'-DDT contamination. The maximum detected concentration of 4,4'-DDT, however, occurred at location 05SS103, according to Figure 4-10. NSRR should either correct the apparent error or explain the rationale for proposed sampling in the area of 05SS101.

Section 4.7.1.3, Refined Risk Calculation and Risk Evaluation for Estuarine Wetland Surface Water

15. NSRR should strengthen the argument that tin is unlikely to present risks to aquatic receptors by noting that detected concentrations are well below the EPA Region 5 Ecological Screening Level of 180 µg/L (USEPA 2003).

Section 4.7.1.4, Refined Risk Calculation and Risk Evaluation for Estuarine Wetland Sediment

16. EPA is unable to reproduce the sediment quality guideline (SQG, based on DiToro and McGrath 2000) values (e.g., 11,800 ug/kg for pyrene) presented in this section. NSRR should submit example calculations to clarify.

17. This section justifies eliminating 4,4'-DDD and 4,4'-DDE from consideration as risk drivers based on a comparison of site and background concentrations. This practice is generally not acceptable for organic constituents. NSRR should provide justification for these background comparisons by discussing historical activities in the vicinity of SWMU 1 and the background locations that could explain the presence of 4,4'-DDD and 4,4'-DDE. NSRR should discuss whether DDT was historically used or stored at SWMU 1. Furthermore, it appears that the nature and extent of contamination by DDT and its metabolites have not been adequately characterized because the highest detected concentrations occurred at location 1EWS01, which is the southernmost location sampled. NSRR must provide additional justification for eliminating 4,4'-DDD and 4,4'-DDE from consideration as risk drivers.

18. The discussion of the various sediment screening levels (e.g., threshold effect level (TEL), Effects Range-Low (ER-L)) presented on page 4-58 is not sufficiently descriptive to allow the reader to interpret the meaning of these different screening values. Revise this section to more clearly define the effect levels associated with all screening values.

19. NSRR indicates on page 4-58 that the descriptive statistics given in Table 4-53 support the conclusion that silver is not a risk driver in the estuarine sediments. Although EPA agrees that silver is likely not a risk driver, the comparison to background data does not support this claim, given that silver was detected in five of nine site samples and none of the six background samples. NSRR should revise this section to eliminate the suggestion that background data support the recommendation for silver.

20. The discussion on page 4-56 regarding cyanide is speculative and does not present concrete evidence that cyanide is not causing risks in the estuarine wetland sediment. Unless additional justification can be provided, NSRR should retain cyanide for further evaluation in the baseline risk assessment.

21. Due to the prevalence of tin concentrations in excess of background concentrations at SWMUs 1 and 2, the limited toxicity data available for tin, and the absence of data regarding the form of tin present in sediment at NSRR, it is not defensible to eliminate tin from further evaluation at this time. Unless additional justification can be provided, tin should be retained for further evaluation.

22. NSRR should strengthen the argument that beryllium is not a risk driver for benthic macroinvertebrates by noting that a comparison of surface water screening values, which are developed based on toxicity tests with a variety of aquatic organisms, indicates that beryllium is less toxic to aquatic organisms than, for example, cadmium, copper, and vanadium. The detected concentrations of beryllium in sediments are less than the sediment screening values for these other metals.

23. NSRR proposes on page 4-60 to eliminate copper from further evaluation if acid volatile sulfides/simultaneously extracted metals (AVS/SEM) data indicate that copper is not bioavailable. This approach may not be adequately protective because AVS/SEM theory has not been tested for copper in long-term studies (although tests have been conducted for other metals, see Ankley et. al 1995). Additionally, the extent of copper contamination has not yet been fully characterized (i.e., highest detected concentrations occur at locations 1EWS01 and 1EWS05, which are the southernmost and northernmost samples, respectively). NSRR should revise its recommendations for copper to address these issues.

Section 4.7.1.5, Refined Risk Calculation and Risk Evaluation for Ensenada Honda Surface Water

24. Because the maximum detected concentration of copper occurred at the northernmost sampling location (1OW05), it is uncertain whether the extent of contamination has been fully characterized. NSRR should retain copper as a chemical requiring further evaluation, or else provide additional justification for eliminating it.

Section 4.7.1.6, Refined Risk Calculation and Risk Evaluation for Ensenada Honda Sediment

25. See Specific Comments 16 and 18.

26. NSRR should strengthen the argument that beryllium and thallium are not risk drivers for benthic macroinvertebrates by noting that a comparison of surface water screening values, which are developed based on toxicity tests with a variety of aquatic organisms, indicates

that beryllium and thallium are less toxic to aquatic organisms than, for example, copper and vanadium. The detected concentrations of beryllium and thallium in sediments are considerably less than the sediment screening values for these other metals.

Section 4.7.1.7.1, Terrestrial Food Web Exposures

27. It appears that Equation 4-6 is incorrect. Assuming the hazard quotient (i.e., 0.99) is the calculated dietary intake (DI) divided by the NOAEL, when Equation 4-4 is substituted for DI and the terms are rearranged to solve for the soil concentration, Equation 4-6 is not the correct result. It is also unclear how the concentrations in food items are calculated (i.e., what soil/sediment exposure point concentration is used to model the food item concentrations?). Furthermore, additional discussion should be added to better explain the purpose and the rationale behind this analysis; it is unlikely that the uninitiated reader will understand this analysis as it is currently described. NSRR should correct any errors in Equation 4-6 and make the requested clarifications. Chemicals that were eliminated from further evaluation based on comparison of maximum detected concentrations to the calculated "concentrations in surface soil resulting in a mean exposure dose greater than or equal to the NOAEL-based screening value" must be re-evaluated once this comment is addressed.

28. To support the argument for eliminating dioxins and furans from further consideration, NSRR notes that these chemicals were not detected in surface water and sediments downgradient at SWMU 1. This argument is not valid because detection limits were greater than screening values in these media and because one would expect concentrations to be greatest in soil locations, which are in closest proximity to the source of potential contamination. To determine whether a low frequency of detection argument can be defensibly used to justify eliminating dioxins and furans from further evaluation, NSRR should discuss whether soil detection limits were below levels of concern for the American robin. If detection limits were greater than these levels of concern, then dioxins and furans should be retained for further evaluation.

29. To better support the argument that butylbenzylphthalate, ethylbenzene, and beryllium are unlikely to cause risks in the terrestrial food web, NSRR should note that detected concentrations of all three of these chemicals are well below Region 5 Ecological Screening Levels (EPA 2003), which were developed based on food web exposure to the masked shrew.

30. Revise the sections regarding further evaluation of 4,4'-DDE on pages 4-68 and 4-69 to indicate that 4,4'-DDD and 4,4'-DDT will also be analyzed, consistent with the discussion in Section 4.7.1.1.

Section 4.7.1.7.2, Aquatic Food Web Exposures

31. See Specific Comment 27.

32. See Specific Comment 17 regarding background comparisons for 4,4'-DDT and its metabolites. NSRR should present a spatial examination of risks for 4,4'-DDD and 4,4'-DDE.

33. See Specific Comments 7 and 8 regarding exposure and effects characterization for the West Indian manatee. Risks to the manatee must be re-evaluated once these comments are addressed. Note that it is not appropriate to discuss mean doses for this receptor; decisions regarding its further evaluation must be made based on maximum exposure point concentrations.

34. On page 4-72, the ADCR states that the double-crested cormorant's foraging range is 49,000 ha, which is considerably larger than the foraging range determined by Custer and Bunck (1992). This study radio-tracked foraging cormorants from two colonies and found that, while birds might go as far as 10 km or so from the nesting site, a substantial proportion foraged within approximately 2 km (about 1,200 ha). NSRR should revise the foraging range to present a more protective estimate, and should discuss the area of contaminated habitat provided by Ensenada Honda.

Section 4.7.1.8, Uncertainties Associated with Step 3a of the Baseline Ecological Risk Assessment for SWMU 1

35. This section should discuss uncertainty associated with toxic effect levels in sediments and note those chemicals that were identified as preliminary COPCs based on one screening value, but then eliminated from further evaluation based on other screening values. Clearly, there is uncertainty regarding the potential for effects in the range of concentrations bracketed by the various screening values cited. Revise this section accordingly.

36. See Specific Comment 6. NSRR should discuss what hazard quotient values for the West Indian manatee would be if interspecies extrapolation factors were applied to the NOAEL.

Section 4.7.1.9, Step 3a Decision Point and Recommendations for SWMU 1

37. NSRR should revise this section in accordance with the comments detailed above. EPA will re-evaluate all subsections within Section 4.7.1.9 when a revised draft is submitted.

Section 4.7.2, SWMU 2 Refined Risk Calculation and Risk Evaluation

38. See Specific Comments 9 and 10.

Section 4.7.2.2, Refined Risk Calculation and Risk Evaluation for Subsurface Soil

39. NSRR has not presented adequate justification for eliminating polycyclic aromatic hydrocarbons (PAHs) from further evaluation. Given the small sample size available (i.e., six samples), it is not clear that risks to terrestrial plants are acceptable. Note that arguments regarding screening values for invertebrates and Region 5 screening values, which were developed based on masked shrew exposures, have no bearing on risks with respect to terrestrial plants. Unless additional justification can be provided, PAHs should be retained as risk drivers in SWMU 2 subsurface soil.

40. NSRR recommends collecting samples in the vicinity of 06SS146 to analyze for identified risk drivers. Concentrations exceeding screening values also occurred at other sampling locations (e.g., 06SS141). NSRR must provide greater justification for not recommending more widespread sampling to fully characterize the extent of soil contamination at SWMU 2.

Section 4.7.2.3, Refined Risk Calculation and Risk Evaluation for Estuarine Wetland Sediment

41. See Specific Comments 16 and 26.

42. The maximum detected concentrations for seven inorganic chemicals (i.e., cobalt, copper, lead, mercury, nickel, tin, and vanadium) occurred at sampling location 2EWS01, which is the southernmost sampling location. Consequently, the extent of contamination of these chemicals in estuarine sediments has not been fully characterized. All seven of these inorganics should be retained for further sampling and analysis unless additional justification can be provided. See also Specific Comment 21 regarding tin.

43. See Specific Comment 23 regarding SEM/AVS analysis.

Section 4.7.2.4, Refined Risk Calculation and Risk Evaluation for Ensenada Honda Surface Water

44. The maximum detected concentration for copper occurred at sampling location 2OW01, which is the southernmost sampling location in Ensenada Honda. Consequently, the extent of copper contamination has not been fully characterized. Copper should be retained for further sampling and analysis unless additional justification can be provided.

Section 4.7.2.5, Refined Risk Calculation and Risk Evaluation for Ensenada Honda Sediment

45. On page 4-92, NSRR indicates that arsenic concentrations in Ensenada Honda sediment are statistically equivalent to background concentrations. This statement conflicts with Table

4-73, which shows that arsenic concentrations in Ensenada Honda sediment are significantly greater than background concentrations. Revise the text to correct the error, and retain arsenic for further evaluation unless additional justification can be provided.

46. See Specific Comment 21.

Section 4.7.2.6, Refined Risk Calculation and Risk Evaluation for Terrestrial and Aquatic Food Web Exposures

47. See Specific Comment 27.

Section 4.7.2.6.1, Terrestrial Food Web Exposures

48. On page 4-94, the ADCR cites a mean foraging range of 956 ha for the mourning dove, which is substantially greater than documented foraging areas for other herbivorous birds (e.g, 4 to 17 ha for the northern bobwhite, EPA 1993). NSRR should ensure that any discussion of foraging range uses an area that would be protective of the herbivorous bird feeding guild, which the mourning dove has been selected to represent. Furthermore, it is unclear what site area would be appropriate for comparison, considering that metals have been detected above background in a number of SWMUs. Revise this section to consider a more protective foraging area and a facility-wide area of contamination, or else eliminate discussion of mourning dove foraging area altogether.

49. See Specific Comment 28 regarding dioxins and furans. Note that a sample size of eleven is too small to eliminate a chemical from further evaluation with a high degree of confidence based low frequency of detection. Dioxins and furans should be retained for further evaluation unless additional justification can be provided

50. See Specific Comment 40 regarding sampling recommendations for risk drivers.

Section 4.7.2.6.2, Aquatic Food Web Exposures

51. On page 4-98, lead and mercury are eliminated from consideration for further evaluation based on comparison to background concentrations. It should be noted, however, that the maximum and 95 percent upper confidence limit on the mean (UCL) values of these chemicals were greater at SWMU 2 than in background. This section should be revised to include this point of information, and discuss the frequency of detected concentrations exceeding wildlife risk-based levels for lead and mercury. Decisions regarding whether these chemicals should be eliminated from further consideration should be re-evaluated taking these factors into account.

52. See Specific Comments 7 and 8 regarding exposure and effects characterization for the West Indian manatee. Risks to the manatee must be re-evaluated once these comments are

addressed. Note that it is not appropriate to discuss mean doses for this receptor; decisions regarding its further evaluation must be made based on maximum exposure point concentrations.

Section 4.7.2.7, Uncertainties Associated with Step 3a of the Baseline Ecological Risk Assessment for SWMU 2

53. See Specific Comments 35 and 36.

Section 4.7.2.8, Step 3a Decision Point and Recommendations for SWMU 2

54. NSRR should revise this section in accordance with the comments detailed above. EPA will re-evaluate this section when a revised draft is submitted.

Section 5.0, Conclusions and Recommendations

55. NSRR should revise this section in accordance with the comments detailed above. EPA will re-evaluate this section when a revised draft is submitted.

Tables 4-10 and 4-11, Ingestion-Based Screening Values for Birds and Mammals

56. For some chemicals (e.g. arsenic in Table 4-10), toxicity test data are summarized for more than one study. In these instances, it is unclear which NOAEL and LOAEL values were ultimately used in the risk calculations. Revise Tables 4-8 and 4-9 to indicate which values were selected for use in the ecological risk assessment.

Table 4-12, Calculation of 2,3,7,8-TCDD Equivalents: Surface Soil, Surface Water, and Sediment at SWMU 1

57. Although this table is useful for showing TCDD equivalents calculations and should be included in this report, the sum of TCDD equivalents should also be compared to appropriate screening values in Tables 4-20, 4-22, 4-23, 4-24, and 4-25. Revise these tables, and if appropriate the tables presenting comparisons to mean concentations, accordingly to ensure that risk managers do not overlook potential risks due to dioxins and furans.

Table 4-18, Conservative Exposure Parameters for Upper Trophic Level Receptors

58. Two of the food ingestion rate values (i.e., values for American robin and red-tailed hawk) presented in Table 4-14 are less than the values presented in August 2001 Screening-Level Ecological Risk Assessment Problem Formulation (Step 1) and Exposure Estimate for SWMUs 1 and 2. Explain this discrepancy and justify the use of less protective values.

Table 4-26, Summary of Hazard Quotients for Terrestrial Food Web Exposures: Surface Soil

59. Add a footnote to Table 4-26 to explain the "NA" designations (e.g., toxicity data not available), and revise this table to clarify which chemicals were never detected. This comment also applies to Tables 4-27, 4-28, 4-29, 4-35, 4-36, 4-37, 4-38, 4-59, 4-60, 4-61, 4-62, 4-74, 4-75, 4-76, and 4-77.

Table 4-41, Less Conservative Soil Bioconcentration Factors Used for Terrestrial Plants and Soil Bioaccumulation Factors (BAF) Used for Terrestrial Invertebrates

60. The origin of the soil-invertebrate values listed in this table is unclear. The values listed here are different from both the median BAFs in Table 11 and the mean BAFs in Table 16 of Sample et al. (1998). For example, the mercury BAF used by NSRR (i.e., 1.186) is less than both the mean and median values reported by Sample et al. (1998). Revise this table to clarify the technical basis of the values, and provide justification for any BAFs that are less than Sample et al. (1998) values.

Table 4-63, Summary of Ecological Chemicals of Potential Concern and Potential Risk Drivers, SWMU 1

61. Chemicals that were never detected but that had mean detection limits exceeding screening values were retained as chemicals of potential concern in this assessment. These chemicals should be listed within a separate category in Table 4-63. This revision is necessary to ensure that uncertainties resulting from these chemicals are not overlooked by risk managers.

Table 4-78, Summary of Ecological Chemicals of Potential Concern and Potential Risk Drivers, SWMU 2

62. See Specific Comment 61.

Figure 1-2, SWMU/AOC Location Map

63. Revise this figure to clearly identify the location of Los Machos National Forest.

Appendix F, Habitat Characterization Report

64. Appendix F refers the reader to the August 2001 Draft Screening-Level Risk Assessment for the Habitat Characterization Report. Because this ADCR should be a stand-alone document, all relevant habitat characterization reports (i.e., both upland and marine) should be included in Appendix F. Revise the ADCR accordingly.

III. REFERENCES

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