



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

JUL 13 2005

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 (NAPR), formerly Naval Station Roosevelt Roads,
EPA I.D. Number PRD2170027203, EPA Comments on:

- 1) Navy's April 8, 2005 responses to EPA's comments on SWMU 54 and 55 Draft Corrective Measures Study (CMS) Final Report, dated October 2004
- 2) Navy's April 8, 2005 responses to EPA's comments on Draft Work Plan for Steps 3b and 4 of Baseline Ecological Risk Assessment for SWMU #9 Area B (Tanks 214 and 215), dated December 1, 2004.
- 3) Navy's May 19, 2005 responses to EPA's comments on the SWMU 45 Draft Final Additional Data Collection Report and Screening Level Ecological Risk Assessment and Step 3a of the Baseline Ecological Risk Assessment Report
- 4) SWMU 1 and 2 Draft Final Additional Data Collection Report and Screening Level Ecological Risk Assessment and Step 3a of Baseline Ecological Risk Assessment Report, dated March 2005.

Dear Mr. Cloe:

The United States Environmental Protection Agency (EPA) Region 2 has completed its review of the above documents, and has the following comments on them:

Responses to EPA's comments on SWMU 54 and 55 Draft Corrective Measures Study (CMS) Final Report

Based on our review of the Navy's April 8, 2005 responses to EPA's January 7, 2005 comments on the October 2004 Draft CMS Report for SWMU 54 and 55, EPA has determined that the responses are acceptable. Therefore, pursuant to Condition III.E.7(c)(ii) of the facility's existing RCRA permit, within 45 days of your receipt of this letter please submit a revised CMS Report for SWMU 54 and 55 which incorporates all necessary changes to reflect your April 8, 2005 responses.

If following its submission to EPA, the revised CMS Final Report for SWMU 54 and 55 is found to acceptably incorporate all necessary changes to reflect your April 8, 2005 responses, then pursuant to Condition III.E.9 of the RCRA permit, the selected remedies must undergo public review and comment before being fully approved by EPA.

Responses to EPA's comments on Draft Work Plan for steps 3b and 4 of BERA for SWMU 9 Area B (Tanks 214 -215)

As you know, EPA had previously commented on the Navy's December 1, 2004 proposal for conducting steps 3b and 4 of the Baseline Ecological Risk Assessment (BERA) for SWMU 9 Area B (Tanks 214 and 215), and indicated that the December 1, 2004 draft Work Plan for steps 3b and 4 of the BERA submitted on behalf of the Navy by Baker Environmental was acceptable, except that prior to implementation of the work, EPA requests that the Navy submit, for EPA's concurrence, a table and/or map giving the exact number and/or locations where samples will be collected for the *Leptocheirus plumulosus* toxicity tests described in Section 6.3.1.2 of the December 1, 2004 Work Plan for steps 3b and 4 of the BERA (refer to EPA's letter dated January 7, 2005).

The Navy submitted that material on April 8, 2005. Based on our review EPA has determined that the April 8, 2005 data is acceptable. Therefore, pursuant to Condition III.E.6 of the facility's existing RCRA permit, within 30 days of your receipt of this letter please either commence implementation of the December 1, 2004 Work Plan for steps 3b and 4 of the BERA, as modified to reflect your April 8, 2005 submission, or submit an updated schedule for its implementation and completion of the CMS for SWMU #9.

Responses to EPA's comments on the SWMU 45 Draft Final Additional Data Collection Report and Screening Level Ecological Risk Assessment and Step 3a of the BERA

EPA requested our contractor, Booz Allen Hamilton (BAH) to review the Navy's May 19, 2005 responses to EPA's March 30, 2005 comments on the SWMU 45 Draft Final Additional Data Collection Report and Screening Level Ecological Risk Assessment and Step 3a of the BERA. Based on that review, EPA has determined that the responses are not fully acceptable, as discussed in the enclosed Technical Review. Within 35 days of your receipt of this letter please

submit a revised response to address EPA's original March 30, 2005 comments along with those in the enclosed Technical Review dated June 17, 2005.

Once the Navy's revised responses have been submitted to EPA and been determined to be acceptable, then pursuant to Condition III.E.7(c)(ii) of the facility's RCRA permit, within 45 days of your receipt of EPA's acceptance of those revised responses, please submit a revised Draft Final Additional Data Collection Report and Screening Level Ecological Risk Assessment and Step 3a of the BERA incorporating the changes described in those responses.

SWMU 1 and 2 Draft Final Additional Data Collection Report and Screening Level Ecological Risk Assessment and Step 3a of the BERA

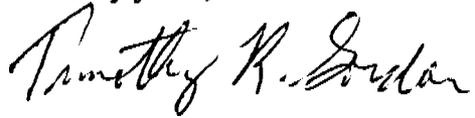
EPA requested our contractor, Booz Allen Hamilton (BAH) to review the Navy's March 2005 SWMU 1 and 2 Draft Final Additional Data Collection Report and Screening Level Ecological Risk Assessment and Step 3a of the BERA. In general, the Draft Final Report has adequately addressed previous EPA comments. A few concerns remain, however, regarding issues such as the presentation of statistical background comparisons and the selection of chemicals of potential concern for inclusion in Step 3b of the baseline ecological risk assessment. These issues are discussed in more detail in the attached (revised) Technical Review dated, July 6, 2005. In addition, as you know, EPA is also currently reviewing your preliminary responses, which were Emailed to EPA on June 17th, to an earlier edition of the BAH Technical Review (dated April 27, 2005). However, due to certain editorial corrections, the April 27 Technical Review has now been replaced by the enclosed July 6th Technical Review. Nevertheless, we have reviewed your June 17th preliminary responses and our preliminary comments on those are enclosed for your information .

Within 35 days of your receipt of this letter please submit a revised response to address the enclosed July 6th Technical Review. Your revised responses should also be guided by the enclosed EPA preliminary comments on your June 17th preliminary responses.

Once the Navy's revised responses have been submitted to EPA and been determined to be acceptable, then pursuant to Condition III.E.7(c)(ii) of the facility's RCRA permit, within 45 days of your receipt of EPA's acceptance of those revised responses, please submit a revised Draft Final Additional Data Collection Report and Screening Level Ecological Risk Assessment and Step 3a of the BERA incorporating the changes described in those responses.

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

Sincerely yours,



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

Enclosures (3)

cc: Ms. Yarissa Martinez, P.R. Environmental Quality Board, w. encl.
Mr. Julio I. Rodriguez Colon, P.R. Environmental Quality Board, w. encl.
Lt. Commander R.G. Terrell, Naval Activity Puerto Rico, w. encl.
Ms. Kathy Rogovin, Booz Allen & Hamilton, w/o. encl.
Mr. Mark Kimes, Baker Environmental, w. encl.

**TECHNICAL REVIEW OF THE MAY 19, 2005, NAVY RESPONSES TO
EPA COMMENTS DATED MARCH 30, 2005, RELATED TO THE
DRAFT FINAL ADDITIONAL DATA COLLECTION INVESTIGATION REPORT AND
SCREENING LEVEL ECOLOGICAL RISK ASSESSMENT (STEP 3A) FOR SWMU 45**

**NAVAL ACTIVITY PUERTO RICO
CEIBA, PUERTO RICO**

REPA3-1203-057

June 17, 2005

I. GENERAL COMMENTS

1. The Navy has adequately responded to all previous comments except those related to further evaluation of the West Indian manatee. The Draft Final Report should be revised in accordance with the Navy's responses. Note that Table 4-20a, as discussed in the response to Specific Comment 4, was not attached to the Navy's response. This table should be included in the revised report. Refer to General Comment 2 below regarding the responses to manatee risk evaluation comments.
2. The Navy has not provided acceptable responses to comments related to risk evaluation of the West Indian manatee. The Navy states that manatee risks to arsenic, cadmium, mercury, and selenium contamination in Puerca Bay should not be further evaluated because these metals cannot be directly linked to Navy CERCLA/RCRA contaminated releases. This argument is not supported because:
 - The Navy has not defined the time frame when Outfall 015 was permitted under the National Pollutant Discharge and Elimination System (NPDES). Pre-NPDES permitted releases are subject to RCRA corrective action authority, and the Navy has not demonstrated that all metals releases occurred after the NPDES permit was put in place.
 - The Navy has not demonstrated that the NPDES outfall is the only source of metals listed above, nor that SWMU 45 or other former Roosevelt Roads SWMUs are the source of the metals in Puerca Bay. Note that a detailed fate and transport discussion of arsenic and mercury (i.e., analogous to the discussion for cadmium and selenium provided on p. 4-52 of the Draft Final Report) has not been provided in the Draft Final Report nor the responses to comments. Furthermore, based on the discussion for cadmium on p. 4-52, it appears that historically elevated concentrations of cadmium in groundwater could have been a source of elevated concentrations in Puerca Bay sediments.
 - It is also noted that threats to the environment from metals in Puerca Bay can be addressed under the RCRA permit pursuant to the "omnibus authority", given at 40 CFR 270.32(b)(2).

For these reasons, the Navy should adhere to recommendations made in March 30, 2005, EPA comments that manatee risks due to arsenic, cadmium, mercury, and selenium be further evaluated, and that the Navy develop a proposal to collect and analyze seagrass samples for these metals.

TECHNICAL REVIEW**MARCH 2005****DRAFT FINAL ADDITIONAL DATA COLLECTION REPORT AND SCREENING
LEVEL ECOLOGICAL RISK ASSESSMENT AND STEP 3A OF BASELINE
ECOLOGICAL RISK ASSESSMENT AT SOLID WASTE MANAGEMENT UNIT
(SWMU) 1 AND 2****NAVAL STATION ROOSEVELT ROADS
CEIBA, PUERTO RICO****REPA3-1203-053v1****July 6, 2005****GENERAL COMMENTS**

1. In general, the Draft Final Additional Data Collection Report (ADCR) and Screening Level Ecological Risk Assessment (SLERA) and Step 3a of Baseline Ecological Risk Assessment (BERA) at SWMUs 1 and 2 have adequately addressed previous EPA comments. A few concerns remain, however, regarding issues such as the presentation of statistical background comparisons and the selection of chemicals of potential concern (COPCs) for inclusion in Step 3b of the BERA. These issues are discussed in more detail in the comments below.
2. A number of ecological COPCs were eliminated from further evaluation under Step 3a based on comparisons to alternate screening criteria (e.g., see discussion of di-n-butylphthalate on p. 4-70). The rationale for the use of alternate criteria discussed in Step 3a of the BERA, as opposed to those presented in the SLERA, is not clearly presented. Although no revision based on this comment is necessary at this time, it is recommended that this practice not be generally adopted in the preparation of future ecological risk assessments. Rather, NAPR should select appropriate screening criteria to be used in the SLERA, so that exceedences of the selected screening criteria more accurately reflect which chemicals should be carried forward into Step 3b of the BERA. The analyses that should be reserved for Step 3a of the BERA are those that consider bioavailability, such as analysis of simultaneously extracted metals (SEM) to acid volatile sulfide (AVS) ratios.
3. In general, the statistical analysis approach used in Step 3a of the BERA, as presented in the flow chart shown in Fig 4-19a, is consistent with the statistical analysis process outlined in EPA's *Guidance for Comparing Background and Chemical Concentrations in Soil for CERCLA Sites* (EPA 540-R-01-003, September 2002). Based on the statistical results presented in Tables 4-46, 4-48, 4-51, 4-53, 4-56, 4-58, 4-65, 4-67, 4-69, 4-71, and 4-73, the Navy's determination of significance and conclusions of site concentrations either being statistically equivalent to or elevated from the background concentrations appear to be consistent with EPA guidance. However, the tables do not provide support

or justification for the use of particular statistical tests. For example, in Table 4-46 it is not clear why the Wilcoxon Rank-Sum (WRS) test is used for certain metals, and the t-test is used for others. The Navy should include notations in all statistical tables to demonstrate that the appropriate tests were conducted. In particular, notations should be made to indicate whether data distributions are normal or lognormal. Without such notations, it is not apparent how the results in the tables relate to the statistical analysis process shown in Fig 4-19a. Additionally, there should generally be at least ten data values in each data set to use the Gehan test; otherwise, the rationale for using this test should be noted on the applicable tables. Revise the tables accordingly.

4. The Step 3a uncertainty sections (i.e., Sections 4.7.1.8 and 4.7.2.7) does not include a discussion of the uncertainties associated with the statistical background comparisons. This section should be revised to address the uncertainties associated with the use of the various statistical tests given the samples involved in the BERA.

SPECIFIC COMMENTS

4.7.1.2 Refined Risk Calculation and Risk Evaluation for Subsurface Soil, Page 4-59

1. 4,4'-DDT was recommended for additional evaluation in Step 3b based on the magnitude of the maximum detection above the screening value and the presence of 4,4'-DDT biodegradation products (i.e., 4,4'-DDD and 4,4'-DDE) at elevated concentrations. However, 4,4'-DDE was not recommended for additional evaluation in Step 3b due to a mean hazard quotient (HQ) less than 1.0 and the low magnitude of detections above the surface soil screening value. Considering 4,4'-DDE is a biodegradation product of 4,4'-DDT, further discussion or evaluation of 4,4'-DDE is warranted to be adequately protective of future exposure.

4.7.1.4 Refined Risk Calculation and Risk Evaluation for Estuarine Wetland Sediment, Page 4-66

2. Table 4-53 indicates that silver was not detected in sediment background samples. However, it appears that silver concentrations in estuarine wetland sediment were statistically compared to background. Text indicating a background comparison was conducted should be removed from the document if silver was not detected in background samples. Additionally, recent EPA guidance (*Procedures for the Derivation of Equilibrium Partitioning Sediment Benchmarks for the Protection of Benthic Organisms: Metals Mixtures*, January 2005, EPA-600-R-02-011) recommends including silver in SEM/AVS analyses. Considering that the mean HQ for silver was greater than one, the SEM/AVS analyses should be revised to include silver. Revise Table 4-53a and Section 4.7.1.4 accordingly.

4.7.1.7.2 Aquatic Food Web Exposures, Page 4-86

3. NAPR has identified only mercury as a potential risk driver for the West Indian manatee in SWMU 1. Because concentrations of arsenic and selenium are elevated above background levels and result in HQs greater than one for the manatee, these metals should also be retained for further evaluation. NAPR indicates that arsenic and selenium should not be further evaluated because there is no evidence of a release of these metals from SWMU 1. Whether or not the elevated concentrations of these metals originated specifically from SWMU 1 is inconsequential; the important issue is whether or not the elevated concentrations are *facility* related. Given that detected concentrations exceed background concentrations, it must be assumed that the contamination is facility related, unless NAPR can prove otherwise. Thus, NAPR should present evidence that elevated concentrations are not facility related, or further evaluate arsenic and selenium in the BERA.

It is emphasized that particular care must be taken in evaluating risks to the manatee because this species is known to frequent the area, is listed as a federally endangered species, and is likely to draw public interest. It is recommended that NAPR collect seagrass samples for analysis of metals to further evaluate manatee risks in the BERA.

It is further noted that Table 4-38a, in which risks are calculated based on toxicity reference values that incorporate and inter-species extrapolation factor, indicates HQ values greater than one for several other metals. NAPR should consider whether cadmium, copper, and zinc should also be identified as potential risk drivers for the manatee, given the bioaccumulative potential of these metals. In particular, it appears that copper should be retained because sediment concentrations are elevated with respect to background concentrations. This section should be revised to specifically discuss the potential for risk from these metals to the manatee, and present the rationale for their exclusion from further evaluation.

4.7.2.6.2 Aquatic Food Web Exposures, Page 4-119

4. Maximum selenium exposure doses for the West Indian manatee exceeded no observed adverse effect level (NOAEL)-based screening values. In lieu of sediment background comparison, the maximum surface and subsurface soil selenium concentrations at SWMU 2 were compared to background data. However, because selenium was not detected in background sediment samples, it should not be eliminated from further evaluation in Step 3b. Although a clear relationship between SWMU 2 surface/subsurface soil concentrations and Ensenada Honda sediment concentrations has yet to be defined, selenium should still be identified as a potential ecological risk driver for mammalian herbivore aquatic food web exposure. See also Specific Comment 3 regarding special status considerations for the manatee, and the requirement that NAPR

prove that a chemical is not facility related in order to exclude it from further evaluation in the BERA.

Similar to the recommendations made in Specific Comment 3, NAPR should consider whether cadmium, copper, lead, and zinc should also be identified as potential risk drivers for the manatee, given the bioaccumulative potential of these metals, and the risks indicated in Table 4-38b. In particular, it appears that copper and lead should be retained because sediment concentrations are elevated with respect to background concentrations. This section should be revised to specifically discuss the potential for risk from these metals to the manatee, and present the rationale for their exclusion from further evaluation.

4.7.2.3 Refined Risk Calculation for Estuarine Wetland Sediment, Page 4-103

5. In response to Specific Comment 41 from EPA's April 9, 2004, review comments, NAPR has included some additional discussion regarding the potential for toxic effects from thallium to benthic organisms. However, NAPR has not discussed available information on the toxicity of thallium to other aquatic life, which was previously requested in Specific Comment 41. In cases where no toxicological data for benthic invertebrates exposed to contaminated sediments are available, toxicological data for other aquatic life in water-only exposures can be considered. A more rigorous discussion of the toxicity of thallium relative to other metals is needed to clearly document the rationale for eliminating it from further evaluation.

July 12, 2005

Review of Navy's June 17, 2005 preliminary responses to EPA's preliminary comments (dated April 27, 2005, but since replaced by the Technical Review dated July 6, 2005)

EPA requested that our contractor Booz Allen review the Navy's June 17, 2005 preliminary responses to EPA's preliminary comments (dated April 27, 2005, but since replaced by the Technical Review dated July 6, 2005) on the March 18, 2005 Draft Final Additional Data Collection Report and Screening Level Ecological Risk Assessment and Step 3A of Baseline Ecological Risk Assessment at Solid Waste Management Unit (SWMU) 1 and 2 at Naval Activity Puerto Rico, Ceiba, Puerto Rico ("the March 2005 Report"). This review by Booz Allen is a preliminary review, but it indicates that the Navy has adequately responded to all of EPA's April 27, 2005 preliminary comments on the March 2005 Report, except those related to further evaluation of the West Indian manatee in both SWMUs 1 and 2 (Specific Comments 3 and 4).

The Navy states in their June 17, 2005 preliminary responses that manatee risks from arsenic (SWMU 1) and selenium (SWMUs 1 and 2) contamination in Ensenada Honda should not be further evaluated because these metals cannot be directly linked to Navy CERCLA/RCRA contaminated releases. This argument is not acceptable because the Navy has not submitted data demonstrating that the source of these metals in Ensenada Honda is either due to natural background conditions, or caused by releases not associated with one or more of the SWMUs at the former Naval Station Roosevelt Roads. In addition, threats to the environment from the metals releases in Ensenada Honda can be addressed under the RCRA permit pursuant to the "omnibus authority", given at 40 CFR 270.32(b)(2), or under an enforcement order pursuant to RCRA Section 7003 authority, even if the source for the release is not fully defined.

Consequently, EPA requests that arsenic and selenium risks to manatees should be further evaluated, and that the Navy submit a plan to collect and analyze seagrass samples in Ensenada Honda for these metals (and any other manatee risk drivers that were identified in the March 2005 report). The cost of including arsenic in the list of analytes evaluated in SWMU 1 would be relatively low since the Navy has already agreed to collect seagrass samples and analyze them for mercury. The additional data for SWMU 1 could provide valuable information in the event that seagrass concentrations of arsenic are found to pose a risk at SWMU 2, but not at SWMU 1.

Also, our preliminary review of the Navy's June 17, 2005 preliminary responses indicates that no further evaluation is likely necessary for cadmium, copper, lead and zinc. However, EPA suggests that the Navy consult with the US Fish and Wildlife Service (F&WS) to get their concurrence on this conclusion. If such consultation with F&WS is agreeable, please indicate that in your revised responses.