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FEB 23 2000

U. S. Environmental Protection Agency  
Region II  
Attn: Ms. Nicoletta DiForte  
Chief, RCRA Caribbean Section  
290 Broadway-22nd Floor  
New York, New York 10007-1866

Re: U.S. Naval Station Roosevelt Roads, Puerto Rico  
RCRA Corrective Action Program  
RCRA/HSWA Permit No. PR2170027203  
EPA Comments on Final CMS Work Plan for  
SWMUs 1 (Army Cremator Disposal Site) and 2  
(Langley Drive Disposal Site) and the Final  
CMS Work Plan for SWMU 45 (Areas Outside  
Building 38), Operable Units (OU) 3/5

Dear Ms. DiForte:

This letter is in response to your comment letter, dated January 20, 2000, pertaining to the above listed U.S. Navy submittals previously transmitted to the United States Environmental Protections Agency, Region II (USEPA) on October 29 and December 10, 1999. The U.S. Navy has reviewed both EPA's and Booz Allen & Hamilton (BAH) comments pertaining to the Final Corrective Measures Study (CMS) Work Plan for SWMUs 1 (Army Cremator Disposal Site) and 2 (Langley Drive Disposal Site), and Final CMS Work Plan for SWMU 45 (Areas Outside of Building 38) dated January 7, 2000. The enclosure to this letter provides the Navy's responses to your comment letter. Please note that EPA's and BAH's comments are included in Italics before each response for ease of review.

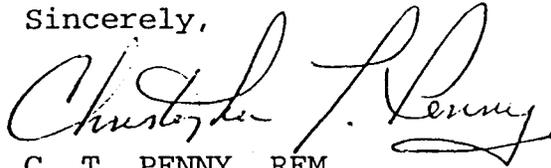
NAVY CLEAN

Date Received: MARCH 1, 2000  
Project Manager: M KIMES  
COP Number: 277  
See: PROT F (orig): M KIMES/PROT F; J Edel;  
J Malinowski; DAILY FILE  
Subfile No.: 8

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Building 38), Operable Units (OU) 3/5

Please do not hesitate to call me at (757) 322-4815 if you have any questions or desire further clarification of any of the points discussed in the enclosure.

Sincerely,



C. T. PENNY, REM

Navy Technical Representative  
Installation Restoration Section  
(South)

Environmental Programs Branch  
Environmental Division

By direction of the Commander

Enclosure

Copy to:

US EPA Region II (Mr. Tim Gordon)

NSRR (Ms. Madeline Rivera)

Booz Allen & Hamilton (Ms. Constance Crossley, Messrs.

Isreal Torres, Mr. Mace Barron)

PREQB (Ms Luz Muriel-Diaz)

Baker Environmental, Inc. (Mr. Mark E. Kimes)

CH2M Hill (Mr. John Tomik)

US EPA Caribbean Office (Mr. Carl Sodderber)

*Sodderberg*

## NAVY RESPONSE TO EPA AND BAH REVIEW COMMENTS

(Final CMS Work Plan for SWMUs 1 (Army Cremator Disposal Site) and 2 (Langley Drive Disposal Site) and the Final CMS Work Plan for SWMU 45 (Areas Outside Building 38), Operable Units (OU) 3/5 U.S. Naval Station Roosevelt Roads, Puerto Rico)

### NOTE:

The General Comments presented below pertain to the comments for both CMS Work Plans. The General Comments for the Final CMS Work Plan for SWMUs 1 and 2 and the General Comments for the Final CMS Work Plan for SWMU 45 are identical. As such, the responses to General Comments presented below pertain to the comments for both CMS Work Plans:

### EPA/BAH General Comments:

1. *The maximum contaminant levels referenced in the Work Plan may not be protective of ecological receptors. Ecological risks should be considered in the development of corrective measures standards by incorporating standards that are determined to be protective of ecological receptors during the ecological risk assessment process.*

#### Navy Response

Section 2.2 of the Final CMS Work Plan for SWMUs 1 and 2 and Section 2.2 of the Final CMS Work Plan for SWMU 45 will be revised to include a statement that the development of Corrective Measures Standards will identify ecological risks and incorporate such standards that are determined to be protective of ecological receptors during the ecological risk assessment process.

2. *The Work Plan only provides a very general conceptual approach to a screening level risk assessment. Furthermore, existing contaminant data are not summarized in the Work Plan. When complete, the results of the screening level risk assessment should be reported in detail, and include summary tables of contaminant concentrations, the identified toxicity benchmarks, and the results of all risk calculations*

#### Navy Response

The screening-level ecological risk assessment report for SWMUs 1 and SWMU 2 and the screening-level ecological risk assessment report for SWMU 45 will include tables summarizing available analytical data, threshold screening values (toxicological benchmarks), and results of the risk calculations. The Final CMS Work Plans will be revised to include a more detailed discussion of the type of information and level of detail that will be presented and discussed in the screening-level ecological risk assessment documents.

3. *The Work Plan states (p. 3-1) "potential ecological risks have not been evaluated in detail." The Work Plan should summarize the results of any previous ecological screening of contaminants. The Work Plan should also address how the results of any preliminary screening will be used in planning the ecological evaluation proposed in the Work Plan.*

#### Navy Response

A screening-level ecological risk assessment has not been performed at SWMUs 1 and 2, or at SWMU 45. Previous ecological screening of contaminants was limited to a comparison of available sediment analytical data to marine and estuarine sediment quality guidelines developed by Long et al (1995). This screening was included in the Revised Draft RCRA

Facility Investigation Report for Operable Unit 3/5 (Baker 1999) as part of a discussion describing the nature and extent of contamination. The results of the comparison of Long et al. (1995) sediment quality guidelines to sediment analytical data will be summarized in the Final CMS Work Plan for SWMUs 1 and 2 and revised Final CMS Work Plan for SWMU 45. Based on the limited nature of the previous ecological screening of contaminants, results will not be used in the planning the ecological evaluation proposed in each Work Plan.

## **EPA/BAH Specific Comments**

### **NOTE:**

With the exception of Comment No 2, the BAH "Specific Comments" for the Final CMS Work Plan for SWMUs 1 and 2 are identical to the "Specific Comments" for the Final CMS Work Plan for SWMU 45. As such, the responses to identical comments apply to both Work Plans. The responses to Specific Comment No. 2 for the Final CMS Work Plan for SWMUs 1 and 2 and Specific Comment No. 2 for the Final CMS Work Plan for SWMU 45 are addressed separately.

## **EPA/BAH Screening-Level Problem Formulation**

- 1. The Work Plan does not provide an ecological conceptual site model (CSM), but rather proposes CSM development as part of the screening-level risk assessment (p.3-2). The Work Plan should include a preliminary CSM, which can be refined following additional evaluation of pathways and ecological receptors during the screening-level assessment. A preliminary CSM will help focus the assessment and facilitate the proposed habitat evaluation.*

### **Navy Response**

An ecological CSM will be developed and incorporated into the Final CMS Work Plan for SWMUs 1 and 2 and the Final CMS Work Plan for SWMU 45. The ecological CSM will include an evaluation of potential exposure pathways, ecological receptors, and exposure routes.

## **EPA/BAH Comments for SWMUs 1 (Army Cremator Disposal Site) and 2 (Langley Drive Disposal Site)**

- 2. The Work Plan proposes to use only existing data to screen for ecological risks (p. 3-3). The Work Plan should state that potential risks to ecological receptors will also be considered in areas that have not been sampled. The results of the screening-level risk assessment should include an evaluation of potential sources and release areas and contaminant gradients in soil, sediment, groundwater, and surface water.*

### **Navy Response**

Previous sampling events within SWMUs 1 and 2 took into consideration potential sources and release areas (e.g., sampling activities were conducted within or at the fringe of potential release areas). As such, it is expected that areas of greatest contamination were sampled. It is acknowledged that contaminant gradients may exist; however, given that maximum detected contaminant concentrations will be used as exposure point concentrations in the screening-level ecological risk assessment for SWMUs 1 and 2, an evaluation of contaminant gradients will not be conducted. The screening-level ecological risk assessment for SWMUs 1 and 2 will include an evaluation of potential sources and release areas and potential migration pathways and fate and transport mechanisms, as well as an evaluation of uncertainty associated with previous sampling events.

## **Building EPA/BAH Comments for SWMU 45 (Areas Outside 38)**

- 2 The Work Plan proposes to use only existing data to screen for ecological risks (p. 3-3). The Work Plan should state potential risks to ecological receptors will also be considered in areas that have not been sampled. One particular concern, is that nearly all samples depicted in Figure 1-2 are located in Puerca Bay and adjacent to Building 38 and the cooling water tunnel. The results of the screening-level risk assessment should include an evaluation of additional potential source and release areas, and the contaminant gradients in soil, sediment, groundwater, and surface water. The Work Plan should state that the potential for contaminant migration from source areas (e.g., contaminated soils and sediment) to other areas (e.g., downgradient locations that may not have been sampled) will be considered in the screening level assessment.*

### **Navy Response**

Identical to SWMUs 1 and 2, previous sampling activities at SWMU 45 were conducted within or at the fringe of potential release areas. As such, it is expected that areas of greatest contamination were sampled. For the reasons discussed in the response to Specific Comment No. 2 for SWMUs 1 and 2, an evaluation of contaminant gradients will not be conducted. The screening-level ecological risk assessment for SWMU 45 will include an evaluation of potential sources and release areas, potential migration pathways and fate and transport mechanisms, and a discussion of uncertainty associated with previous sampling activities.

- 3. The Work Plan proposes a qualitative habitat assessment that may be used in determining if the risk assessment process may end (p.3-3). Any habitat assessments used to conclude an absence or presence of ecological risks should be rigorous enough to detect a 20% difference in population parameters between assessment and reference areas. The results of the screening level risk assessment should specify which criteria were used to match the habitat characteristics of reference and assessment areas, and provide the results of statistical comparisons of population parameters*

### **Navy Response**

Information from the qualitative habitat assessment is not intended to be used to conclude an absence or presence of ecological risk, nor is it intended to be used to determine if the risk assessment process may end. The purpose of the qualitative habitat assessment will be the identification of habitat units and usage of habitat units by ecological receptors. The Final CMS Work Plan for SWMUs 1 and 2 and the Final CMS Work Plan for SWMU 45 will be revised to reflect the intended use of information collected during the habitat assessment. Language that states the habitat assessment will be used to conclude an absence or presence of ecological risk and to determine if the risk assessment process may end will be removed. It is noted that the information collected during the habitat characterization will most likely result in a refinement of the preliminary ecological CSM discussed in the response to Specific Comment No. 1.

- 4. The Work Plan provides only general statements regarding the identification of ecological receptors. The Work Plan should state that the evaluation of ecological receptors will include seasonal visitors (e.g., migrant visitors) in addition to resident species. The Work Plan should also state that the potential occurrence of and use by special status species in the vicinity of the site will be evaluated.*

### **Navy Response**

The Final CMS Work Plan for SWMUs 1 and 2 and the Final CMS Work Plan for SWMU 45 will be revised to include a statement that the evaluation of ecological receptors will include seasonal visitors (e.g., migrant visitors). It is noted that the selection of ecological receptors will also take into consideration the following criteria:

- The receptors are known to occur or are likely to occur at the site
- The receptors are representative of species known to occur at the site
- Life history information is available from the literature
- The receptors are represented by a complete exposure pathway
- The receptors are valued by society

The Final CMS Work Plans will also be revised to include a statement that the potential occurrence of and use by special status species in the vicinity of the site, such as federally designated threatened or endangered species, will be evaluated. Known occurrences of special status species and the presence of critical habitat for special status species will also be identified in the CMS Work Plans.

### **EPA/BAH Screening-Level Ecological Effects Evaluation**

5. *The Work Plan states that screening thresholds will consist of media-specific toxicological benchmarks (p. 3-4). The screening-level effects evaluation should also consider food chain exposures to predator species, including larger fish species, mammals, and birds. The Work Plan should state that toxicity benchmarks for wildlife (e.g., Sample et al., 1996) will be compared to either measured or estimated contaminant concentrations in prey items.*

#### **Navy Response**

The Final CMS Work Plan for SWMUs 1 and 2 and the Final CMS Work Plan for SWMU 45 will be revised to include a statement that the screening-level ecological risk assessment will consider food chain exposures to predator species. Dietary intake models will be presented and model input parameters (exposure point concentrations, body weights, and ingestion rates) will be identified in the Work Plans. The dietary intake model for a given receptor will take into consideration ingestion of surface soil, ingestion of sediment, ingestion of surface water, and ingestion of prey. It is noted that the specific dietary exposures that will be considered for a given receptor will depend on the presence of a complete exposure pathway. For example, the sediment exposure pathway will be considered incomplete for terrestrial receptors. The Work Plans will also be revised to include a statement that estimated dietary intakes will be compared to toxicological benchmarks for wildlife (Sample et al. (1996). The specific toxicological benchmarks used for a given receptor will also be identified in the Work Plans.

6. *The description of food chain modeling (p.3-5) is vague and does not include incidental sediment ingestion as a potential exposure pathway. Sediment exposures should be considered in the evaluation of contaminant exposure. Food chain modeling should also consider the use of literature values of bioaccumulation factors for estimating contaminants on prey items (e.g., Sample et al., 1998 and 1999).*

#### **Navy Response**

As discussed in the response to Comment 5 above, the Final CMS Work Plan for SWMUs 1 and 2 and the Final CMS Work Plan for SWMU 45 will be revised to include dietary intake models that address dietary intakes from incidental sediment, incidental surface soil ingestion, surface water ingestion, and food chain exposures for upper trophic level receptors. The Work Plans will also be revised to include a discussion of the literature-based bioaccumulation factors (Sample et al, 1998 and Sample et al. 1999) that will be used to estimate the concentration of contaminants in the tissue of food items and prey organisms.

7. *The Work Plan proposes that contaminants in groundwater will be screened, but surface water contaminants will not be screened because of the absence of data (p 3-5). The Work Plan should clarify how the groundwater will be used in place of surface water, and what assumptions will be used to screen for risks in surface water.*

#### **Navy Response**

It is acknowledged that groundwater data cannot be used in place of surface water data to evaluate potential risks to surface water organisms since contaminants may migrate to surface water by means other than groundwater discharge (e.g., migration with surface soil as a result of erosion). The evaluation of groundwater data will only be conducted to determine if migration of contaminants within groundwater may potentially impact aquatic life. This will be accomplished by comparing maximum detected groundwater concentrations to threshold screening values, such as EPA National Ambient Water Quality Criteria (NAWQC). The comparison will assume no attenuation or dilution of groundwater contaminants.

#### **EPA/BAH Screening-Level Risk Calculation**

8. *The Work Plan does not address how risk calculations will be performed if multiple toxicity benchmarks are available for a specific contaminant, or what procedures will be followed if benchmarks are not available for a specific contaminant (p 3-6). The Work Plan should state that the lowest available toxicity benchmark will be used unless site specific considerations dictate the use of less protective benchmarks. The Work Plan should also state that contaminants will not be screened out in the absence of available toxicity benchmarks, unless sufficient justification is provided to exclude it as a contaminant of potential ecological concern (COPEC).*

#### **Navy Response**

The final CMS Work Plan for SWMUs 1 and 2 and the Final CMS Work Plan for SWMU 45 will be revised to include a statement that the lowest threshold screening values available from the literature will be used in the screening-level risk calculation. The Final CMS Work Plans will also be revised to include a statement that contaminants lacking a threshold screening value will be retained as COPECs. The Work Plans will identify the threshold screening values that will be used in the screening-level ecological risk assessment and the rationale for their selection.

9. *The work plan does not consider the toxicity of chemical mixtures (p. 3-6). The Work Plan should state that a hazard index (HI) will be computed for chemicals with the same mechanism of toxic action. Chemicals not included in an HI should be justified based on their mechanism of action.*

#### **Navy Response**

The Final CMS Work Plan for SWMUs 1 and 2 and the Final CMS Work Plan for SWMU 45 will be revised to include a statement that the toxicity of chemical mixtures will be considered. HI values will be calculated for specific chemical classes (e.g., inorganic, volatiles, semi-volatiles, and pesticides/PCBs). HI values should only be calculated for those chemicals that produce the same toxic mechanism. It is noted that the toxic mechanism of many chemicals is not known; therefore, the HI values presented in the screening-level ecological risk assessment reports may not represent realistic combined risks from simultaneous exposures to chemicals detected in site media. For this reason, HI values will only be presented in the screening-level ecological risk assessment as components of the risk calculation summary tables.

## References

Baker Environmental, Inc. (1999). Revised Draft RCRA Facility Investigation Report, Operable Unit 3/5, Naval Station Roosevelt Roads, Ceiba, Puerto Rico. Coraopolis, PA: Baker Environmental, Inc.

Sample, B.E., Opresko, D.M., and Suter II, G.W. (1996). Toxicological benchmarks for wildlife: 1996 revision. Oak Ridge, TN: Oak Ridge National Laboratory. (ES/ER/TM-86/R3).

Sample, B.E., Beauchamp, J.J., Efroymsen, R.A., and Suter II, G.W. (1998). Development and validation of bioaccumulation models for small mammals. Oak Ridge, TN: Oak Ridge National Laboratory. (ES/ER/TM-219).

Sample, B.E., Suter II, G.W., Beauchamp, J.J., and Efroymsen, R.A. (1999). Literature-derived bioaccumulation models for earthworms: development and validation. Environ. Toxicol. Chem. 18:2110-2120.