DEPARTMENT OF THE NAVY
ATLANTIC DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
1510 GILBERT ST
NORFOLK VA 23511-2699

TELEPHONE NO:
(757) 322-4736

IN REPLY REFER TO:
5090
EV23KC:EVS

SEP 05 2002

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

Subject: U.S. Naval Station Roosevelt Roads, Puerto Rico
RCRA Corrective Action Program
RCRA/HSWA Permit No. PR2170027203
EPA Comment Letter dated October 4, 2001

Dear Ms. DiForte:

Enclosed is the Navy response to the EPA Comment letter dated October 4, 2001 for the comments associated with SWMU 9 only. As indicated in the Navy's letter dated November 27, 2001, response to the EPA Comment letter could not be prepared due to lack of funding at that time and had to be delayed until funding was available. As of August 2002, funding was provided and we were able to resume work on the SWMU 9 site.

If you have any questions please contact me at (757) 322-4736.

Sincerely,

KEVIN CLOE, P.E.
Navy Technical Representative
Installation Restoration Section
(South)
Environmental Programs Branch
Environmental Division
By direction of the Commander

Enclosure

Copy to:

Ms. Nicoletta DiForte
US Environmental
Protection Agency
Region II
290 Broadway - 22nd Floor
New York, NY 10007-1866

Ms. Kathy Rogovin
Booz, Allen & Hamilton
22 Batterymarch Street
2nd Floor
Boston, Massachusetts
02109

Mr. Mace Barron
1134 Avon Lane
Longmont, CO 80501

Mr. Carl A. Soderberg
U.S. Environmental
Protection Agency
Caribbean Environmental
Protection Division
Centro Europa Building,
Suite 417
1492 Ponce de Leon Ave.
Santurce, PR 00907-4127

Ms. Madeline Rivera
Naval Station Roosevelt
Roads
Public Works-
Environmental
Building 31
Ceiba, PR 00735

Mr. Carmelo Vasquez
Environmental Quality
Board
Land Pollution Control
Area
431 Ponce DeLeon Avenue
Hato Rey, PR 00917

Mr. John Tomik
CH2M Hill, Inc.
5700 Thursto Ave.
Suite 116A
Virginia Beach, VA 23455

Mr. Mark Kimes
✓ Baker Environmental, Inc.
Airport Office Park,
Bldg. 3
420 Rouser Road

RESPONSE TO EPA COMMENTS DATED 04 OCTOBER, 2001
DRAFT CORRECTIVE MEASURES STUDY
INVESTIGATION REPORT FOR SWMU 9
JULY 2, 2001
NAVAL STATION ROOSEVELT ROADS
CEIBA, PUERTO RICO

BAH General Comment No. 1:

In general, the July 2, 2001 Draft Corrective Measures Study (CMS) Investigation Report for SWMU 9 (CMS Report) provides acceptable information to support the ecological risk assessment (ERA). Naval Station Roosevelt Roads (NSRR) should incorporate the recommendations presented in the specific comments below in order to finalize the report.

Navy Response to BAH General Comment No. 1:

Please see the responses to the specific comments below.

BAH General Comment No. 2:

Total petroleum hydrocarbon (TPH) data for surface soil have been collected but are not used in assessing risks to soil invertebrates and plants. Surface soil TPH data should be included as an additional line of evidence in the assessment of terrestrial ecological risks to soil organisms. Although the TPH levels reported for site surface soils are very low, EPA requests their inclusion because: (1) TPH was detected in surface soil; (2) risks could not be assessed for all polycyclic aromatic hydrocarbons (PAH) analytes (e.g., missing benchmarks); (3) TPH benchmarks are available for soil invertebrates and plants (see references provided below); and (4) TPH quantifies the complex mixture of petroleum that is not quantifiable by specific analytes. Inclusion of this information will provide additional confidence in the conclusions regarding terrestrial risks from petroleum hydrocarbons.

Navy Response to BAH General Comment No 2:

After careful review of the toxicity benchmarks for TPH (Dorn et al., 1998; Saterbak et al., 1999) information, we disagree that these values be used to make or support conclusions regarding SWMU 9. The rational for this decision is that the TPH species used to develop the toxicity benchmarks may not have been derived from the same diesel petroleum product stored at Area B (diesel fuel marine) and/or have the same relative proportions of individual petroleum constituents. The latter, being greatly influenced by weathering. Because TPH is a complex mixture of numerous petroleum constituents it is not appropriate to compare a risk-based generated TPH screening value for a particular species of TPH to another potentially weathered TPH concentration without first comparing the relative contributions of individual petroleum constituents of the site TPH to that of the TPH used to generate the benchmark. Given that this information is not known it is not appropriate to compare the SWMU 9 TPH values to the referenced TPH benchmarks. In addition, the primary constituents of TPH have already been evaluated during the VOC and SVOC risk analysis.

BAH SPECIFIC COMMENTS

BAH Specific Comment No. 1:

Section 2.4 Surface Water and Sediment Background Investigation

1. *Page 2-5 provides justification for the selection of surface water and sediment background locations. In addition to the justification provided, the following is requested to provide additional support for the selected background locations: (1) a topographic map that shows the fuel farm is downgradient of the road; and (2) a brief summary of groundwater regime that shows fuel farm groundwater is not impacted and/or does not flow towards the background locations. These aspects have been noted in previous discussions between NSRR and EPA. EPA requests this information because it is critical that the CMS Report demonstrate that the selected background locations are appropriate. Background data are used to eliminate contaminants of potential concern (COPC) in the baseline ERA, and thus are key components of the ERA for SWMU 9.*

Navy Response to BAH Specific Comment No 1:

The Draft Final Corrective Measures Study Task I Report for the TWFF dated July 9, 2002 included a Stormwater Drainage Map (Figure 3-7). This figure shows that surface run-off from the TWFF is toward the Ensenada Honda, not the SWMU 9 surface water and sediment background stations.

The phase separated hydrocarbons (PSH) plume associated with the TWFF is located in the lower TWFF and along Forrestal Road (see Figure 1). Groundwater flow in these areas is to the southwest towards Ensenada Honda not towards the SWMU 9 Background Surface Water/Sediment stations.

The direction of groundwater flow in the upper TWFF area is toward the west (average hydraulic gradient of 0.0044 ft/ft), with radial flow to the northwest and southwest (see attached Figure 1). The average water table elevations shown on Figure 1 were derived from historical groundwater elevation data for the period from 1997 to 2001. Because groundwater from the upper portions of the TWFF flows in the general direction of the SWMU 9, an evaluation of groundwater quality was performed. The evaluation, presented in Table 1, involved a comparison of analytical data (detected concentrations) for monitoring wells UGW31, UGW34, and 7MW19 to surface water screening values. These three wells represent the TWFF monitoring wells located nearest the SWMU 9 background stations (see Figure 1). The specific analytical data used in the comparison were generated from groundwater samples collected during a recent monitoring event conducted in January 2002 (Baker 2002).

As evidenced by Table 1, three metals were detected in one or more of the groundwater samples at concentrations greater than surface water screening values. Copper was detected in 7MW19 and UGW31 at 0.083 mg/L and 0.0054 mg/L, respectively, nickel was detected in 7MW19 at 0.035 J mg/L, and silver was detected in 7MW19 at 0.0056 J mg/L. Although copper and nickel were detected at a concentration greater than the screening value in one or more of the upper TWFF groundwater samples, detected concentrations were less than maximum copper and nickel background concentrations (0.352 mg/L and 0.0737 mg/L, respectively). The silver detection in 7MW19 exceeded the surface water screening value. This metal was not detected in any of the background groundwater samples. Although silver was detected in 7MW19 at a concentration greater than the screening value, there is no evidence that suggests groundwater from the TWFF is impacting surface water and sediment quality at the SWMU 9 background stations. Silver was not detected in any of the SWMU 9 background surface water and sediment samples. It is noted that the evaluation did not take into consideration dilution and attenuation. Given that 7MW19

is approximately 2,100 feet from the nearest background station (9SW/SD12 [see Figure 1]), it is unlikely that silver would migrate with groundwater to the SWMU 9 background stations at ecologically significant concentrations.

In summary, there is no indication that chemicals are migrating from the TWFF to the SWMU 9 surface water and sediment background stations. Section 2.5 will be revised to include the information presented above.

BAH Specific Comment No. 2:

Section 3.1.2 SWMU 9 Background

2. *Page 3-2 states that six analytical results for antimony were rejected and not used in the background analysis. Because of the importance of background data in the ERA for Areas A, B, and C, additional clarification of the rationale for data rejection should be provided.*

Navy Response to BAH Specific Comment No 2:

Antimony results for the six background surface soil samples (9BGSS01, 9BGSS01D, 9BGSS02, 9BGSS03, 9BGSS04, and 9BGSS05) were rejected due to low matrix spike/matrix spike duplicate (MS/MSD) recoveries. The recoveries for the associated MS/MSD were less than 30 percent. The text will be revised to include the rationale for data rejection.

BAH Specific Comment No. 3:

Section 4.0 Analytical Results

3. *Table 4-7, Summary of Organics Detections in Sediment, lists estimated and non-detected values for semivolatiles in sediment, and shows that detection limits range from 31 to 1,500 ug/kg (48 fold variation). Given the importance of the detection limit evaluation in the ERA, the high variability in detection limits for PAHs should be clarified in the text of the report. The text should include a discussion of specific screening benchmarks (e.g., detection limits in sample 9SW/SD19 exceed screening benchmarks).*

Navy Response to BAH Specific Comment No 3:

Detection limits for PAH's will vary due to specific matrix effects and sensitivity differences between analytes. It is not uncommon for this to occur. Comparison of PAH screening values to max detection limits is usually performed in the screen and ½ the DL's are used in the refinement for all non-detects. The text will be revised to include a discussion of the variability associated with PAH reporting limits. A comparison of PAH screening values to maximum detected concentrations (or maximum reporting limits in the case of non-detected PAHs) is presented in the sediment screening tables for Area A/B and Area C (see Tables 5-20 and 5-27, respectively). As such, Section 4.0 will not be revised to include a discussion of reporting limits as they compare to screening values.

Specific Comment No. 4:

Section 4.2.1 Sediments - Areas A and B

4. *Page 4-3 discusses solvents that occur in pesticides, herbicides, and insecticides. The text should clarify if the discussed pesticides are currently used or banned organochlorine compounds historically used at the site. The cited references for these compounds (Spectrum Laboratories, as referenced in Section 7.0) only*

provide a chemical abstract service (CAS) number and do not indicate the name of the compounds. Clarification of the pesticides discussed in Section 4.2.1 is necessary for the reader to understand the types of materials used and the associated levels of concern.

Navy Response to BAH Specific Comment No 4:

Carbon disulfide is used as agricultural fumigant (USEPA 1994a and 1994b) for the post-harvest treatment of agricultural commodities during storage and shipment. Carbon disulfide is also used as an agricultural fumigant for the control of insects, nematodes, bacteria, viruses, and fungi in soil. Based on its use as an agricultural fumigant in the production, storage, and shipment of agricultural commodities, it is unlikely that the presence of carbon disulfide in two sediment samples collected from Area A/B can be attributed to pesticide usage at SWMU 9 Carbon disulfide occurs naturally in the environment from biodegradation of organic material by microorganisms living in sediments on the sea floor and marshes. As such, the presence of carbon disulfide in sediment samples collected from SWMU 9 could be attributable to naturally occurring processes.

2-Butanone is identified as a List 3 inert chemical (i.e., solvent) for pesticide formulations (USEPA 2001). However, 2-butanone is also recognized as a common laboratory contaminant (USEPA 1999). 2-Butanone is slightly water soluble and one of the most widely found lab contaminants.

Given that carbon disulfide occurs naturally in the environment and2-butanone is a common laboratory contaminant, the text on Page 4-3 is misleading and incorrectly suggests that their presence in sediments samples collected from Area A/B is attributable to routine pesticide usage.

References:

USEPA. 1994a. Chemicals in the environment: carbon disulfide (CAS No. 75-15-0). Office of Pollution Prevention and Toxics. EPA 749-F-94-008.

USEPA 1994b. Chemical summary for carbon disulfide. Office of Pollution Prevention and Toxics. EPA 749-F-94-008a.

USEPA 1999. National functional guidelines for organic data review. Office of Emergency and Remedial response, washington, D.C. EPA 540/R-99/008.

USEPA. 2001.Lists of other (inert) pesticide ingredients. Office of Pesticide programs. http://www.epa.gov/opprd001/inerts/lists.html.

BAH Specific Comment No. 5:

Section 5.2.2 Identification of Chemicals Evaluated for Ecological Risks

5. *Page 5-10 states that a discussion of uncertainties associated with the exclusion of pesticides from the monitoring program will be provided in Section 5.8. The report, however, does not contain a Section 5.8, nor is this information presented elsewhere in the document. The CMS Report should be revised to include this information.*

Navy Response to Specific Comment No. 5:

A discussion of the uncertainties associated with the exclusion of pesticides from the monitoring program will be provided in Section 5.6.4 (Uncertainties).

BAH Specific Comment No. 6:

Section 5.3.1 Preliminary Conceptual Model

6. *Figure 5-4 presents the Preliminary Conceptual Site Model (CSM), and indicates that the direct contact exposure pathway from sediment to benthic invertebrates would only be qualitatively evaluated. The figure should be revised to show that this pathway was quantitatively evaluated (e.g., screening sediment concentrations against sediment benchmarks). In contrast, fish exposure to sediment is shown as being quantitatively evaluated, although this pathway was not considered. In addition, the CSM depicts mammals as being quantitatively evaluated, but mammals were not included in the ERA. The CSM should be revised to reflect the pathways and receptors evaluated in the CMS Report.*

Navy Response to Specific Comment No. 6:

The preliminary conceptual model will be revised to reflect the pathways and receptors evaluated in the ecological risk assessment (ERA).

BAH Specific Comment No. 7:

Section 5.3.1.3 Endpoints and Risk Hypothesis

7. *Page 5-14 indicates that assessment endpoints were selected based only on aquatic receptor groups. Terrestrial receptors (soil invertebrates, plants) should also be noted in the text because these communities were included in the ERA, and are included in Table 5-6, Preliminary Assessment Endpoints, Risk Hypotheses, and Measurement Endpoints.*

Navy Response to Specific Comment No. 7:

The text will be revised to include terrestrial receptor groups (i.e., terrestrial plants and invertebrates).

BAH Specific Comment No. 8:

Section 5.6.2.1 Area B Surface Soil

8. *Page 5-36 discusses Area B surface soil risks but does not discuss TPH. Furthermore, risks are not screened for TPH in Table 5-23. TPH was detected in Area B surface soil (Table 4-3) and toxicity benchmarks are available (e.g., Dorn et al., 1998; Saterbak et al., 1999). Risks from TPH in site soil should be screened (see General Comment 2). One concern is that there is only one sample in proximity to the former waste pit (Figure 2-4). The evaluation of soil risks should include a discussion of whether potential ecological exposures have been adequately characterized in this area. The weight of evidence assessment for petroleum risks in surface soil should include a discussion based on TPH measurements, historical operations, spatial extent of potential surface petroleum contamination in the waste pit, and the potential for any downgradient contamination.*

Navy Response to Specific Comment No. 8:

Risks from TPH in site surface soil will not be screened for the following reasons: (1) TPH (diesel range organics) was detected in one of seven samples collected from Area B (15 mg/kg in 9SS08). As evidenced by Figure 2-4, sample 9SS08 was collected at a location downgradient from Tank 214 and surface soil samples 9SS04 and 9SS09. TPH was not detected in these two surface soil samples. Given the location of 9SS08 in relation to 9SS04 and 9SS09, there is no evidence of a petroleum release to surface soil associated with SWMU 9. (2) The storage tanks and suspected sludge disposal pit at Area B are located below ground. As such, any release from these potential sources would not represent a release to surface soil. (3) The literature-based TPH toxicity benchmarks may not have been derived from the same diesel petroleum product stored at Area B (diesel fuel marine). (See Response to BAH General Comment No. 2)

BAH Specific Comment No. 9:

Section 5.7.1.2.3 Frequency of Detection

9. *Page 5-51 states that cyanide was detected in a single surface water sample in Area A/B and thus should not pose a risk to aquatic organisms. The discussion fails to note that the marine ambient water quality criterion (AWQC) is 1 ug/kg for cyanide, resulting in a hazard quotient (HQ) of 61 (USEPA, 1999). Given the high HQ exceedence of a marine AWQC, and a 25% detection frequency (1 of 4 samples), additional sampling is merited.*

Navy Response to Specific Comment No. 9:

The total cyanide concentration reported for 9SW01 in Appendix D, Table D.18, Table 5-19, Table 5-39, and Table 5-40 (61 ug/L) is incorrect. The actual concentration reported by the laboratory is 6.1 Jug/L (see Revised Draft RCRA Facility Investigation Report for SWMU 9). This concentration was verified by the analytical laboratory (personal communication with Betsy Beauchamp. Severn Trent laboratories [Savannah, Georgia], August 20, 2002). Use of the correct total cyanide concentration in Step 2 results in surface water HQ value equal to 6.1 and a Step 3a HQ value equal to 5.28.

Although the Step 3a HQ value for total cyanide is greater than 1, the collection of additional surface water samples is not warranted based on the following:

- The total cyanide concentration in surface water sample 9SW01 (6.1 J ug/L) was reported at a value less than the detection limit (10 ug/L).(
- Surface water sample 9SW01 was duplicated in the field. The total cyanide concentration reported for the field duplicate (9SW01D) was 10 U (non-detect).
- The cyanide screening value used in the ERA (1.0 ug/l) is expressed as free cyanide. Comparison of total cyanide data to a screening value expressed as free cyanide is highly conservative. In addition, the method is a total cyanide analysis. Most free cyanide is not bioavailable in the environment as it quickly complexes with cations.
- Cyanide is not a component of material previously or currently stored at SWMU 9 (aviation gasoline, unleaded gasoline, and diesel fuel marine [Potter and Simmons, 1998]).

The text and tables will be revised to reflect the correct total cyanide concentration in surface water sample 9SW01.

References:

Potter, T.L. and K.E. Simmons. 1998. Total petroleum hydrocarbon criteria working group series: Volume 2 – Composition of petroleum mixtures. Amherst Scientific Publishers, Amherst, MA. 102 pp.

BAH Specific Comment No. 10:

Section 5.7.1.3.2 Bioavailability of Ecological COPCs

10. Page 5-53 indicates that sediment benchmarks for organics were derived using the equilibrium partitioning theory (EqP) for the bioavailability evaluation in the refined risk assessment. The derived benchmarks appear to be extremely high relative to other sediment toxicity values, even exceeding effects range medium levels (ER-M). For example, NOAA (1999) lists marine sediment benchmarks for chrysene of 0.1 to 2.8 mg/kg. In contrast, Table 5-45 lists a chrysene benchmark of 256 mg/kg. Also, the EqP-derived benzo(a)anthracene benchmark was 770 mg/kg, compared to NOAA (1999) benchmarks ranging from 0.7 to 1.6 mg/kg. The EqP benchmarks appear to be exceedingly high, even accounting for organic carbon in site sediment. Sediment risks of PAHs in the refined risk assessment should be reevaluated using standard benchmarks, unless the derived benchmarks can be shown to be consistent with consensus based benchmarks (e.g., McDonald et al., 2000) or other standard values (NOAA, 1999).

Navy Response To Specific Comment No. 10:

As evidenced by Tables 5-9, 5-20, and 5-27, the PAH sediment screening values used in the screening-level risk calculation (Step 2 of the ERA process) were marine and estuarine toxicological benchmarks developed by MacDonald (1994) or reported in Buchman (1999). A PAH was identified as a preliminary ecological chemical of potential concern (COPC) in the screening-level ERA if the maximum detected concentration or, in the case of non-detected PAHs, maximum detection limits exceeded screening values. Screening values derived using the Equilibrium partitioning (EqP) approach (USEPA 1993a) were not used as sediment screening values in the screening-level risk calculation. PAHs identified as preliminary ecological COPCs in Step 2 of the screening-level ERA were evaluated in Step 3a of the baseline ERA by comparing mean concentrations (one-half non-detects) to the same toxicological benchmarks used in the screening-level ERA (see Tables 5-43 and 5-58). Because the sediment analytical data for PAHs were compared to bulk sediment toxicological thresholds in Steps 2 and 3a of the ERA process, reevaluation in Step 3a using standard benchmarks is not necessary.

Those PAHs with mean concentrations greater than or equal to bulk sediment toxicological thresholds (i.e., HQs greater than or equal to 1.0) were retained for further evaluation in Step 3a by comparing mean concentrations to EqP-based screening values. The comparison of analytical data to EqP-based screening values was used in Step 3a as an assessment tool to evaluate their bioavailability to benthic invertebrates. The use of EqP-based screening values in ecological assessments is documented from the literature (USEPA 1996 and Jones et al. 1997). Also, the USEPA has used the EqP-approach to develop sediment quality criteria for acenaphthene, fluoranthene, and phenanthrene (USEPA 1993a, 1993b, and 1993c, respectively).

PAHs were dropped from further consideration in Step 3a based on the comparison of analytical data to EqP-based screening values. While it is acknowledged that many of the EqP-based screening values derived from site-specific TOC data are substantially higher than the bulk sediment screening values used in the ERA, the decision to drop

PAHs from further consideration based on the comparison of EqP-based screening values is supported by the following:

- Mean concentrations for detected PAHs retained as ecological COPCs in the initial Step 3a screen fall within the range of marine and estuarine bulk sediment toxicological benchmarks presented in Buchman 1999.

- The use of EqP-based screening values in ecological assessments is documented in the literature (USEPA 1993a, 1993b, 1993c, 1993d, and 1996 and Jones et al. 1997).

- Mean concentrations (and maximum concentrations) for PAHs retained as ecological COPCs in Step 3a would be less than EqP-based screening values derived from a default TOC concentration of one percent (the development of EqP-based screening values using a default TOC concentration of one percent was acceptable to the USEPA).

Based on the preceding discussion, reevaluation of PAH concentrations in SWMU 9 sediments will not be conducted. Furthermore, conclusions regarding the ecological significance of detected PAH concentrations will not be modified.

References:

Buchman, M.F. 1999. NOAA Screening Quick Reference Tables. NOAA HAZMAT Report 99-1. National Ocenaic and Atmospheric Administration, Seattle, WA. 12 pp.

MacDonald, D.D. 1994. Approach to the assessment of sediment quality in florida coastal waters: Volume 1 - development and evaluation of sediment quality assessment guidelines. Florida Department of Environmental Protection, Tallahassee, Fl.

USEPA. 1996. Ecotox thresholds. Eco Update, Volume 3, Number 2. EPA/540/F-95/038. 12 pp.

USEPA. 1993a. Sediment quality criteria for the protection of benthic organisms: acenaphthene. Office of Science and Technology, Health and Ecological Criteria Division, Washington, D.C. EPA-822-R-93-012.

USEPA. 1993b. Sediment quality criteria for the protection of benthic organisms: fluoranthene. Office of Science and Technology, Health and Ecological Criteria Division, Washington, D.C. EPA-822-R-93-012.

USEPA. 1993c. Sediment quality criteria for the protection of benthic organisms: phenanthrene. Office of Science and Technology, Health and Ecological Criteria Division, Washington, D.C. EPA-822-R-93-014.

USEPA. 1993d. Technical basis for deriving sediment quality criteria for nonionic organic contaminants for the protection of benthic organisms by using equilibrium partitioning. Office of water 9WH-553), washington, D.C. EPA-822-R-93-011.

Jones, D.S., G.W. Suter II, and R.N. Hull.1997. Toxicological benchmarks for screening contaminants of potential concern for effects on sediment-associated biota: 1997 revision. Environmental Restoration Division, ORNL Environmental Restoration Program. ES/ER/TM-95/R4.

BAH Specific Comment No. 11:

Section 5.7.4 Ecological Risk Assessment Conclusions

11. Page 5-72 presents ERA conclusions that the only chemicals posing ecological risks are lead and zinc in Area B surface soil, and lead in Area A/B sediment. The risk conclusions should be re-evaluated following the reassessment of risks from cyanide in Area A/B surface water, and PAHs in sediment.

Navy response to Specific Comment No 11:

Please see the response to Specific Comment No. 9 and Specific Comment No. 10.

BAH Specific Comment No. 12:

12. Although uncertainties in the screening level risk calculation are discussed in Section 5.6, uncertainties in the refined risk assessment (Section 5.7) are not discussed. The refined risk assessment should include a discussion of uncertainties, including how the risk calculations address special status species that may use site habitats in proximity to Areas A, B, and C.

Navy Response to Specific Comment No 12:

Section 5.7 will be revised to include a discussion of uncertainties associated with Step 3a of the ERA. The discussion will include how risk calculations address special status species that may use site habitats in the proximity of SWMU 9.

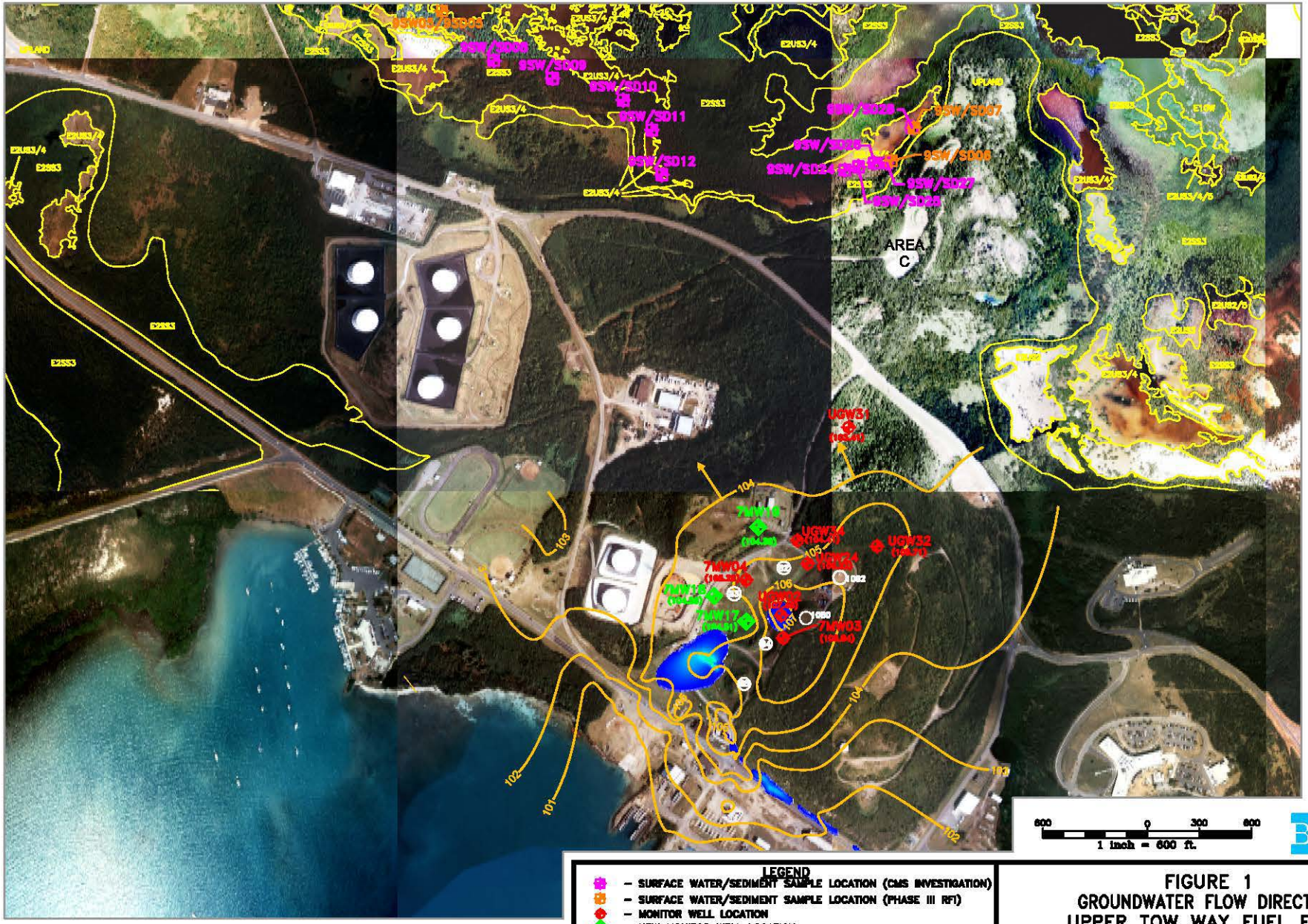
BAH Specific Comment No. 13:

Section 6.0 Conclusions and Recommendations

13. Page 6-1 summarizes the conclusions and recommendations regarding the ERA. The risk conclusions should be reevaluated following the additional sampling for cyanide in Area A/B surface water, the additional evaluation of existing TPH data in surface soil, and the reevaluation of risks from PAHs in sediment.

Navy response to Specific Comment No 13:

Please see the response to Specific Comment No. 8, Specific Comment No. 9, and Specific Comment No. 10. Based upon the referenced responses, the Navy believes that no further sampling is warranted and that the risk conclusions are appropriate.



Baker

LEGEND

- SURFACE WATER/SEDIMENT SAMPLE LOCATION (CMS INVESTIGATION)
- SURFACE WATER/SEDIMENT SAMPLE LOCATION (PHASE III RFI)
- MONITOR WELL LOCATION
- NEW MONITOR WELL LOCATION
- GROUNDWATER FLOW DIRECTION
- (103.41) – CORRECTED GROUNDWATER ELEVATION (FT.)
- E2SS3 – E2SS3 WETLANDS BOUNDARIES
- 101 – GROUNDWATER ELEVATION (FT.)
- FREE PRODUCT THICKNESS – JULY 2002

SOURCE: GEO-MARINE, INC., SEPTEMBER 6, 2000.

FIGURE 1
GROUNDWATER FLOW DIRECTION
UPPER TOW WAY FUEL FARM
SWMU 9, AREAS C AND BACKGROUND
NAVAL STATION ROOSEVELT ROADS
PUERTO RICO