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COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY

September 10, 1993

Captain J. W. Craine, Jr.
Commanding Officer
Naval Air Station Oceana
Building 230
Virginia Beach, Virginia 23460-5120

RE: RCRA Facility Investigation Draft Report

Dear Captain Craine:

Thank you for providing the Department of Environmental Quality, Waste Division Superfund Federal Facilities Program, the opportunity to comment on the "RCRA Facility Investigation Draft Report, Oceana Naval Air Station, Virginia Beach, Virginia".

Attached are our comments and questions concerning the draft report. The draft report was reviewed by the Superfund Toxicologist Pat McMurray and the ARARs portion of the work plan was reviewed by the Superfund ARARs Coordinator Michele Monti. Additional comments have been received and incorporated into this letter from Mr. David Grimes, Water Division of DEQ (Office of Environmental Research and Standards).

If you have any questions concerning these comments or questions, please contact me at (804) 225-3257.

Sincerely,

Erica S. Dameron

Erica S. Dameron
Remedial Project Manager
Federal Facilities Program

Attachment

cc: Richard Hylton, NAS Oceana (Building 830)
James Harris, LANTDIV
Harold Winer, DEQ Waste Division
Virginia Beach Regional Office
K. C. Das, DEQ Waste Division

101 N. 14th Street, James Monroe Building, Richmond, Virginia 23219

RCRA Facility Investigation Draft Report Comments for the
Oceana Naval Air Station
Virginia Beach, Virginia

General Comments

1. Throughout the document, concentrations for some metals are listed as < with a value. The footnote states that the value was less than the IDL or was not detected. It is not clear whether the number presented is the IDL or an estimated value. If the chemical was detected, it would be preferable to present the result as estimated even if it is lower than the IDL.

2. Page 4-2 describes the general methodology used for the Human Health and Environmental Assessments (HEAs). It appears that the human health assessments for this investigation are basically a comparison to relevant criteria. While the potential for exposure to terrestrial and aquatic organisms has been fairly well assessed, an exposure assessment for human receptors is virtually non-existent.

   In addition to the comparison to selected criteria, the HEA for each site should also include an analysis of potential human exposure pathways. For example, the following questions should be considered and discussed for each site. Can the groundwater be used for drinking or other purposes currently or in the future? Is there a potential for humans to be exposed to contaminated soil? Is the surface water at the site used for recreational purposes? Does the surface water support commercial or recreational fishing? Does the surface water flow into a water body that is used as a drinking water source?

   What are the potential future uses for each site? The Recommendations section for each site should discuss whether a detailed risk assessment is warranted, based on the results of the criteria comparison and the exposure analysis.

   Risk-based concentrations (RBCs) should also be used for comparison to contaminant levels in applicable media. (See EPA Risk-Based Concentrations: R.L. Smith, 05/10/93)

   If surface water at the site supports fishing, the ambient water quality criteria for fish ingestion should also be used as a comparison criteria for the human health evaluation.

3. Have Acid Volatile Sulfide (AVS) measurements been made of any of the soils or sediments ? AVS content of ~~soils and~~ sediments is a major factor governing the bioavailability of metals.

This data would be useful in assessing risk levels at the sites.

4. In the discussion of terrestrial and aquatic organisms (page 2-11 and 2-12), white-tail deer and fishery resources are mentioned. Are these organisms hunted and/or ingested by installation personnel ?

5. It is not clear if groundwater at the installation or an individual site is used for drinking water purposes, or if there is the potential for the groundwater to be used as a drinking water source in the future. Future use must also be considered in the human health evaluation. If the determination is made that there is no future potential use of groundwater as a drinking water source, then depending on the potential exposure pathways, a determination of whether the contaminants in the groundwater are a problem should be based on risk to human health or the environment. Where groundwater discharges to surface water, the state ARAR would be the Virginia Surface Water Standards for the protection of aquatic life.

Specific Comments

1. Chapter 2 Environmental Setting Page 2-3 Regional Geology and Hydrogeology - A graphic presentation of the various geologic units and formations would facilitate the understanding of this section.

2. Chapter 4, Individual Site Investigation, Introduction
On page 4-2, Rather than use proposed RCRA action limits, we suggest that you use promulgated state and federal standards, criteria, policies, or guidance to assess the degree of contamination at the sites. Presently, the Department of Environmental Quality-Waste Division is using the "U.S. EPA Region III Risk-Based Concentration Table" by Roy L. Smith as interim guidance for determining appropriate cleanup standards for environmental contaminants. We recommend using this RBC table as a starting point for determining the need to perform a site specific risk assessment. This table is updated quarterly and can be used to determine whether the potential for adverse human health effects exist.

The Virginia Groundwater Standards are not usually used to define action levels or cleanup goals for contaminated aquifers. Because the groundwater is not used a source of drinking water, however, they are relevant and appropriate for consideration at Oceana. For any constituent for which there is no groundwater standard, a health-based assessment, taking into consideration all potential human exposure pathways,

should be made. While the groundwater in the Virginia Beach area may not be used as a source of drinking water, it is used to water lawns and to wash cars. These uses are potential pathways of human exposure and as such justify a risk assessment based on dermal absorption.

Where groundwater discharges to surface water, the state requirements would be found in the Virginia Surface Water Standards for the protection of aquatic life.

3. Site 1 - West Woods Oil Disposal Pit

On page 4-3, what is the chemical composition and chemical use of PD-680 and agitine ?

This site may require additional sampling. The groundwater from this site generally runs off into tributaries and wetlands associated with London Bridge Creek (a tributary of Lynnhaven Bay). Flooding of the site also occurred when the pit was open. It is recommended that a couple of sediment samples from the wetlands at the North end of the site's drainage ditch system (bordering the sub-division of London Bridge) be taken. Sediments in the wetlands would undoubtedly have a higher TOC content than those of the drainage ditch and would therefore have a higher tendency to accumulate trace amounts of PCBs. It would also be advisable to perform some tissue collections in the wetlands area because of the concern that the compounds found at this site can bioconcentrate.

Page 4-8, In your description of this site it is unclear whether there is a ditch adjacent to a surface water stream, or if the stream referred to on page 4-13 runs through the ditch. It would be helpful if you could clarify this in the body of the report and on
Figure 4-1-4.

Page 4-13, first paragraph states that all metals concentrations were low. It should be noted, however, that the levels of arsenic and beryllium exceeded risk-based concentrations. This statement should therefore be deleted or amended.

Page 4-13, third paragraph does not indicate whether surface water and sediment samples were analyzed for pesticides. (Table 3-4 indicates that they were not). Since pesticides were detected in some of the soil samples, this section should discuss the potential for pesticide contamination in surface water and sediments. Likewise, it appears that groundwater samples were not analyzed for pesticides. The potential for

pesticide contamination in groundwater should also be discussed in the Groundwater section. The rationale for not performing pesticide analyses should also be discussed.

Page 4-13, fourth paragraph states that zinc, nickel, cobalt, barium, and arsenic were the only metals detected. It appears from Table 4-1-10 that aluminum, calcium, iron, magnesium, manganese, and sodium were also detected. This apparent discrepancy should be either corrected or explained.

Page 4-14 notes the contaminants that exceed applicable standards and criteria. In addition to the contaminants mentioned, it should be noted that arsenic as a carcinogen exceeds the risk-based concentrations for both commercial and residential soil (.68 and 1.6 ppm respectively). Since RCRA action levels do not include arsenic as a carcinogen, the risk-based concentration would be an applicable criteria.

Page 4-15, second paragraph discusses the inorganic contaminants in surface water that exceed ecological standards. It is not clear why organic contaminants are not also discussed since chloroform and bromodichloromethane exceed the selected comparison criteria. A discussion of these two contaminants should be added.

Page 4-15, last paragraph, the word organic needs to be corrected to inorganic.

Page 4-17, there is mention of collection of additional background samples for site 1 and other sites. If additional background samples are taken the location and sample analysis should be submitted for approval. However, the DEQ Waste Division is also using health-based risk levels rather than natural background levels for the determination of contamination. The risk-based concentrations presently used for comparison are found in "U.S. EPA Region III Risk-Based Concentration Table" by Roy L. Smith. This table is updated quarterly and can be used to determine whether the potential for adverse human health effects exist.

In addition, soil cleanup levels are developed by using the more stringent concentration level resulting from the following analyses: (1) risk assessment taking into account all potential soil exposure pathways; (2) soil modeling to determine the concentration of contaminants that can remain in the soil such that water in equilibrium with the soil will not result in contaminant concentrations in the groundwater greater than MCLs; and, (3) soil modeling to determine the concentrations of contaminants that can remain in the soil such that water in equilibrium with the soil will not lead to

a natural discharge to surface water resulting in an in-stream contaminant concentration greater than its surface water criteria.

4. Site 2B - Line Shack 130-131 Disposal Area

On page 4-19, what is the chemical composition and chemical use of turco ?

Page 4-28 in the **Health and Environmental Assessment** section does not discuss surface water contamination. It should be noted that the concentration of cis-1,2-dichloroethylene exceeds the federal Ambient Water Quality Criterion for water and fish ingestion. Since these criteria have been used as comparison criteria for other sites, the applicability of the criteria for this site should be discussed.

On page 4-29, it is noted that the chlorinated volatiles in surface water are likely to be transported to the southeast drainage ditch and this ditch ultimately flows off the station to the south. What interim activities are planned to prevent the contamination from going off site ?

In the recommendations on page 4-30, sediment contamination definitely needs to be addressed in the CMS.

Table 4-2-4, why do you list every possible organic contaminant when in many instances less than 50% of the list is NA, not analyzed ?

5. Site 2C - Line Shack 400 Disposal Area

On page 4-31, what is the chemical composition or constituents of B&D 3400 Engine Cleaner ?

What was the approximate size of the disposal area south of Building 400 ?

Page 4-33 states that the ditch at this site may be contaminated. It is therefore not clear why surface water samples were not taken at this site.

It is mentioned on page 4-34 that the vegetation in the ditches appeared stressed. Why were the soil samples only analyzed for chlorinated volatiles ?

Page 4-39, last paragraph states that surface water transport does not appear to be a significant risk. As noted in the previous comment, it does not appear that surface water

contamination has been investigated. The **Recommendations** section on page 4-40 should include a discussion of surface water investigations.

Page 4-40, while shallow ground water is not used on the base, are you aware of the uses of the shallow ground water in the surrounding community ? Are any of the wells in the area located in the water table aquifer ? Ground water sampling has not been extensive enough to rule out contamination of the deeper aquifer, the Yorktown aquifer.

6. Site 2D - Line Shack 125 Disposal Area

On page 4-41, it is mentioned that a bulldozer sank several feet into oil-saturated soil during construction activities. Were historical aerial photographs of this area reviewed ? Could this be the location of a disposal pit versus just "dumping over the fence" ?

Since it appears that no soil or surface water samples have been collected for this site, the **Recommendations** section should include a discussion of the soil and surface water sampling to be performed.

On page 4-46 it is stated that vinyl chloride was not detected in the monitoring wells, however, this contaminant is not listed on Table 4-4-3.

7. Site 2E - Line Shack 109 Disposal Area

On page 4-50, it is stated that during the groundwater sampling event, CH2M HILL personnel discovered a 7-foot thick layer of free product in 2E-MW1 and it was believed to be diesel fuel. This information has been forwarded to the DEQ Water Division's Tidewater Office. A determination must be made where the free product originated. If it is already in an abatement program with the Water Division, it should be noted. If it is not in an abatement program with the Water Division, it is encouraged that the product be removed through a product recoverer/recycler and that a determination be made of the actual amount of free product in the aquifer.

It is stated on page 4-52 that beryllium is not known to be a waste product generated by station activities. However, according to the ATSDR toxicological profile for beryllium, it can be generated by the burning of coal or fuel oil. It can also be generated by the processing and machining of metal containing beryllium. Higher than background concentrations in soils over much of the station could be attributed to these activities.

On page 4-52, in addition to the contaminants already noted, it should be noted that arsenic concentrations at this site exceed risk-based concentrations.

On page 4-53, it is stated that only mercury and zinc exceeded Federal or state standards. It should be noted that cadmium was present in concentrations exceeding the Virginia Groundwater Standards (0.4 ppb), and thallium (2.0 ppb; MCL) and manganese (200 ppb; MCLG) exceeded federal MCLs or MCLGs.

Page 4-54 in the Recommendations section should also include plans for soil sampling down gradient of 2-EMW1, where the free product was discovered.

8. Site 11 - Firefighting Training Area

It is noted on page 4-55, that a land farming operation occurred in an area west of the firefighting training areas. Has this area been identified through historical aerial photographs? What is the potential of DNAPLs in this site area?

Figure 4-1-2 shows an emergent wetland adjacent and down gradient to the fire training areas; have you made any attempts to detect a potential ecological impact from fire training activities on this wetland ?

On page 4-59, in addition to the contaminants already noted, it should be noted that arsenic concentrations at this site exceed risk-based concentrations.

It is stated on page 4-59 that it is uncertain if the high beryllium levels could be attributed to site activities. However, since the burning of fuel oil is a potential source of beryllium, it is likely that activities at the fire training site could have resulted in a release of beryllium to this area. Please note comment #7.

On page 4-60, it is stated that mercury was the only contaminant that exceeded groundwater standards. Please note that manganese, antimony, and thallium were present in levels that exceeded federal MCLs or MCLGs (Mn).

9. Site 15 - Abandoned Tank Farm

On page 4-62, it is mentioned that one of the tanks (G-5) was used to store waste oil. On page 4-63, the composition of the

liquid in tank G-5 was not known and may have contained paints, thinners, paint strippers, PD 680, engine cleaner, and naphtha in addition to waste fuels, oils and hydraulic fluid. Yet only one monitoring well was tested for lead. Future site characterization should also include TAL metal analysis.

Page 4-63, how much free product was found in MW-3 once it was completed?

On page 4-68, the **Fate and Transport** section should discuss the possibility of contamination of surface water and soils.

On page 4-69, the **Recommendations** section should also include plans for soil sampling at this site. Surface water sampling should also be considered based on the potential for transport of contaminants into surface water bodies.

Figure 4-7-1 shows that benzene had a detection limit of 10 ppb; the MCL for benzene is 5 ppb.

Figure 4-7-2 shows that benzene was detected at 6.3 ppb; how did you detect this at 6.3 ppb when the detection limit is 10 ppb ?

For Figures 4-7-2 and 4-7-4, the date on these figures (November 1993) is apparently incorrect and should be corrected.

10. Site 16 - Pesticide Storage Area

Page 4-74, the first paragraph states that no human health standards are available for chlorpyrifos, dicamba, copper or lead. Although standards are not available, it should be noted that risk-based concentrations are available for chlorpyrifos, dicamba, and copper. RBCs should be used as comparison criteria for these contaminants. It should also be noted that arsenic exceeds risk-based concentrations at this site.

Page 4-74 also states that the RCRA Action Level for arsenic is based on human health and ecological effects. It should be noted however, that the action level is not based on the carcinogenic effects of arsenic.

On page 4-74, because the Virginia Groundwater Standard for DDT is so low, .001 ppb, natural attenuation of the levels of DDT in the soil would not be expected to bring the levels below the groundwater standard. We suggest some in-situ groundwater monitoring at this site, regardless of the shed roof.

The proposal for no further action should be re-evaluated.

11. Site 18 - Hazardous Waste Storage, Building 200

This site should be referred to as the Hazardous Waste Accumulation Area since it is a less than ninety day accumulation area. The term hazardous waste storage implies that the area has interim status or is a RCRA permitted facility. Has there been any documented evidence that storage occurred at this area for greater than ninety days?

In Table 4-9-1, the units presented on this table appear to be incorrect. If the units are in ppb as shown on Table 4-9-3, the units on this table should be ug/kg.

On page 4-78, in addition to the contaminants already mentioned in the **Health and Environmental Assessment**, it should also be noted that benzo(b)fluoranthene, benzo(k)fluoranthene, indeno(1,2,3-cd)pyrene, and arsenic also exceed RBCs.

It is stated on page 4-78 that it is uncertain if the high beryllium levels were attributable to site activities. Please note comment #7.

12. Site 19 - Waste Oil Storage Area, Building 541

Since this site was found to be contaminated with TPH and lead, site characterization should be continued. It is recommended that individual hazardous constituents be analyzed rather than TPH for use in a risk assessment.

Page 4-82 states that a portion of the forested area is maintained as a park. It would be helpful if this area were defined on the map so that the potential for exposure to recreational users could be assessed.

13. Site 20 - Waste Oil Storage Area, Building 543

The soil has been found to be contaminated, however, the extent of contamination is unknown. The recommendation to determine the extent of contamination is supported as well as a determination of groundwater contamination.

14. Site 21 - Transformer Storage Yard

No further action is planned at this site, however, the TPH concentration in sample 21-SS6 was 242,000 ppb. It is not clear why the Recommendations section does not discuss the TPH contamination at this site. Since the TPH level exceeded the

Virginia guidance, the action to be taken should be discussed. The determination of no further action planned at this site should be re-evaluated.

15. Site 22 - Construction Debris Landfill

This landfill is approximately 0.5-acre unit and was in use at the time of the VSI. The age of the landfill is unknown. Although the landfill was designated a construction debris, there were no controls to prevent the disposal of other types of waste. Was this landfill permitted?

On page 4-98, it is mentioned that there was minimal difference between results upstream and downstream of the landfill. Is the stream tidally influenced?

On page 4-98, it is not clear why this section is entitled **Environmental Assessment** rather than **Health and Environmental Assessment** as for other sites. This discrepancy should be either explained or corrected.

Page 4-98, third paragraph states that no human health based standards or guidelines were exceeded. The next paragraph states the human health values that were exceeded when applied to the protection of terrestrial organisms. This apparent discrepancy should be explained or corrected.

It should also be noted that in addition to the contaminants mentioned, beryllium also exceeds the federal Ambient Water Quality Criteria for both water and fish ingestion and for fish ingestion only. Cadmium and mercury are present in levels that exceed the Virginia Groundwater Standards; manganese is present in levels that exceed MCLGs; antimony and thallium exceeded MCLs. Antimony, beryllium, cadmium, mercury, and thallium should be added to the list of potential contaminants of concern.

The **Environmental Assessment** for this site addresses protection of terrestrial organisms but does not discuss protection of aquatic life. It should be noted that aluminum, iron, mercury, nickel, and silver exceed federal Ambient Water Quality Criteria for the protection of aquatic life.

On page 4-99, it is not clear why it was concluded that significant contamination was not found at this site since several contaminants exceeded the chosen comparison criteria. Further justification of this conclusion should be provided or a recommendation for a CMS should be added.

The proposal of no further action should be re-evaluated.

16. Site 23 - Bowser Building 830

On page 4-101, in addition to antimony and beryllium, the contaminants already noted, please note the arsenic concentration in sample 23-SS1 exceeds the risk-based concentration.

The proposal of no further action should be re-evaluated and/or justified.

17. Site 24 - Bowser Building 840

On page 4-105, in addition to the contaminants already noted, it should be noted the arsenic concentration in both samples exceeded the risk-based concentration.

The recommendation at this site is supported. Additional sampling including groundwater should be conducted to determine the extent of contamination.

18. Site 25 - Inert Landfill

Is there any recreational fishing in the borrow pit near site 25 ? Has any groundwater monitoring been conducted near this site ?

On Table 4-16-3, the footnote "w" has not been defined for this table. An explanation should be added.

Page 4-111, second paragraph states that metals concentrations in surface water did not exceed established health standards. This statement is misleading, however, since several of the contaminants exceed federal Ambient Water Quality Criteria for ingestion of water and fish. This statement should be removed or clarified.

On page 4-111, last paragraph, in addition to arsenic, it should be noted that benzene, beryllium, iron, and nickel may also exceed the Ambient Water Quality Criteria for ingestion of water and fish.

Page 4-111, please note that aluminum, cadmium, mercury, and silver may exceed federal Ambient Water Quality Criteria for the protection of aquatic life.

19. Site 26 - Firefighting Training Area, Building 220

Page 4-116 states that there are no health based or RCRA action levels available to compare to the detected PAHs. It should be noted that a risk-based concentration is available

for naphthalene for comparison purposes.

In addition to beryllium, it should also be noted that arsenic levels in all samples exceed the risk-based concentration. In addition, the concentration in sample 26-SB3 exceeds the average background concentration for the eastern United States.

Page 4-117, last paragraph states that no further action is needed at this site because contaminants are at 2-3 foot depths. The potential for the contaminants to be brought to the surface during future maintenance or construction activities should be assessed before the no-action alternative is finalized.

20. Appendix A

On page A-9, mention is made of correspondence between the facility and the Department of Natural Heritage, these letters were not found in the Appendix, as stated in the document.

Page A-9 states that some chemicals that have an effect on humans may not have an effect on terrestrial organisms. It should also be noted that the reverse of this statement may be true. There may be chemicals that adversely effect terrestrial organisms that may have no known effect on humans (and may not have an Ambient Water Quality Criterion). Therefore, use of the Ambient Water Quality Criteria may not completely characterize contaminants of concern for terrestrial organisms.

21. Appendix G

Several Quality Control (QC) problems have been noted in this section (lack of appropriate blanks for some samples, headspace in some samples, exceeding holding times). QC problems should be acknowledged in the body of the report and the impact that these problems had on the investigation should be discussed.