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UNITED STATES ENVIRONMENTAL PROTEC
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET, S.W.
ATLANTA, GEORGIA 30303-3104

October 16,1997

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Commanding Officer,
Southern Division, NAVFACENGCOM
Attn: Mr. Bill Hill (code 1851)
P.O. Box 190010
North Charleston, South Carolina 29419-9010

RECEIVED
OCT 24 1997

SUBJ: Draft Remedial Investigation Report
Operable Unit 13, Sites 8 & 24
Naval Air Station Pensacola
EPA Site ID No.: FL9170024567

Dear Mr. Hill:

The U. S. Environmental Protection Agency (EPA), has completed the review of the above subject document, dated June 20,1997. Comments are enclosed.

If you have any questions please contact me at (404) 562-8538.

Sincerely,

Gena D. Townsend
Senior Project Manager
Federal Facilities Branch

Enclosure

cc: Ron Joyner, NAS Pensacola
Henry Beiro/Brian Caldwell, Ensafe, Pensacola
Allison Dennon, Ensafe, Memphis
John Mitchell, FDEP

1.0 GENERAL COMMENTS

1. Section 6.0, Page 6-1, Paragraph 2 indicates that Florida and/or EPA's RBCs, guidance concentrations and promulgated standards have been defined as PRGs for this investigation. For the groundwater, the PRGs are EPA's MCLs/SMCLs and Florida drinking water standards. However, it should be noted that Region 4 requires RBCs as criteria for COPC screening. Since MCL/SMCL are not regarded as risk-based values, these values should not be used for the COPC screening. This section should be revised to follow the Region 4 guidance.

2. Section 6.0, Page 6-1, Paragraph 2 discusses the use of the RBCs as PRGs to screen potential contaminants prior to discussion of the nature and extent of contamination However, it is the Region 4 policy not to use human risk-based screening in the nature and extent of contamination section because such approach may overlook the ecological risks. Furthermore, the use of the term PRG at this point is inappropriate because PRGs should be used after contaminants of concern have been developed. This section should be re-written accordingly.

3. Section 6.1.1, Page 6-8, Paragraph 1, Sentence 2 states that benzo(a)pyrene (BAP) exceeded its PRG in Site 8 soils. However, a review of SVOC tables in Appendix F revealed that other carcinogenic PAHs were detected It is suggested that all carcinogenic PAHs be selected if one is selected. The screening should be revised, and the figures should be redrawn

   This comment also applies to the PAH issue in Site 24.

4. Section 6.1.2, Page 6-10, Paragraph 2, Sentence 2 states that there were two antimony exceedances of the MCL, below RC of 30.2 ppb. However, this high RC concentration may have eliminated antimony as a COPC. This issue should be revisited.

5. Figure 6-1 shows background sample locations. However, the background sample location that relates to samples 01GS69, 01G170 and DSW51 may have been improperly located. Groundwater flows north northeast at the site. As such, this may have an effect at the subject location which is situated cross gradient of the area of concern. Using this location for background samples should be revisited to ensure that the background location is free of contamination.

6. Figure 6-2 shows inorganics detected in soil samples exceeding PRGs. However, according to the Region 4 guidance, inorganic screening should be conducted by comparing the 2x mean background results. However, since arsenic has its PRG as 0.43 ppm and its 2x mean background as 1.56 ppm (see Appendix D). Arsenic is not an exceedance where the 2x mean background is used for the screening. The figure should be revised accordingly.

This comment also applies to other figures in Section 6.

7. Section 10.2, Page 10-8, Paragraph 1, Sentence 3 states that the Navy recommends "no further action" for Site 8 soil, and Sites 8 and 24 groundwater give the limited exposure potential to these media. However, the text needs to discuss in greater detail what is meant by "the limited exposure potential to these media" as it relates to contamination of soil at Site 8 and soil and groundwater at Sites 8 and 24. The "no further action" recommendation should be clearly justified. The text should be revised accordingly.

2.0 SPECIFIC COMMENTS

1. **Section 3.**
This document does not have a map showing the surface and groundwater flow and topography of the site. Maps showing the aforementioned characteristics should be included in the document.

2. **Section 4.1, Page 4-4, Paragraph 0, Sentence 1.**
The text states that Phase 11 sampling activities were designed to delineate concentrations exceeding PRGs of interest. However, the text does not indicate which PRG is being used in the comparison. The text should state that the RBC in the appendix was compared to the sample analytical results.

3. **Table 5-1, Page 5-4.**
Table 5-1 summarizes monitoring well construction information and water level elevations. However, there are several dashes on the table. It is not clear what the dashes signify. The dashes should be removed and "Not Applicable" or "Not Available" added to the table as deemed appropriate. An explanation regarding the water level should be added to the text.

4. **Section 7.1.3, Pages 7-5 and 7-6**
This section discusses blanks indicating the use of 10x and 5x rules to determine the positive detections. However, in a discussion of acetone concentration in Site 8, the text gives the impression that the 10x rule does not apply to the detection of acetone due to the potential cross-contamination (See page 7-6, paragraph 1). If acetone in Site 8 can be an exception to the 10x rule, this section should be revised or clarified accordingly.

5. **Section 10.1, Page 10-3, Paragraph 0, Sentence 1**
The text states that the extent of all organic PRG exceedances is limited to the Site 24 area. However, this statement is inaccurate because Figure 6-3 shows organics detected in soil samples exceeding PRGs at Site 8. The discrepancy should be resolved.

6. **Section 10.0**
The text draws various conclusions from this RI. However, the text lacks references to tables, figures, and comparisons to support the conclusions. The conclusion summary should be revised to provide reference data that supports the results of the investigation and conclusions drawn from the report of the site.

7. **Appendix B**

Well construction diagrams and soil boring logs are presented in Appendix B. However, the groundwater levels are not shown graphically in the logs. These levels should be shown on all monitoring logs.

8. **Appendix D**

Appendix D tabulates the Preliminary Remediation Goals (PRGs) for soil and groundwater contaminants. However, the NASP reference concentration given for aluminum in soil does not match that in Appendix G. In addition, to be consistent "reference concentration" in Appendix G should read as "NASP reference concentration."

9. **Appendix D**

Appendix D presents the Preliminary Concentration Goals. However, footnotes explaining the superscripts "N", "C", and "CG" should be included in the table. In addition, the references for the listed EPA and FDEP values should be given at the end of the table along with an explanation for the NASP reference concentration.

10. **Appendix E**

This section displays only the contaminants and the samples in which the PRGs were exceeded. However, an appendix should present the data for all analytical results for all samples, including the samples which had nondetected values for the detected contaminants. This appendix should be revised accordingly.

11. **Appendix F.**

Sampling results are presented in tabular form in Appendix P. However, a key to match sample I.D.s in the appendix with the samples to figures in the report is missing. A key for the sample designation should be presented.

12. **Appendix G**

Appendix G includes a summary table of background groundwater sample results. However, sample number DSW50 and DSW51 (background) identified on Figure 6-1 are missing from the aforementioned table. An explanation should be given for excluding the subject sample numbers from the table.

13. **Appendix G**

Appendix G includes a summary of analytical results for background soil samples. However, the table lacks sample numbers. The sample numbers for the soil samples should be included in the table.

14. **Appendix G**

It was observed that the stated antimony detection limit (30 ug/L) for the background samples is greater than the FPDWS (6 ug/L). However, it is noted that lower detection limits for antimony can be achieved through graphite furnace atomic absorption where a detection limit of 5 ug/L can be achieved. Therefore, it is suggested that these wells be re-sampled for antimony and analyzed by the graphite furnace method.

RISK ASSESSMENT

1.0 GENERAL COMMENTS

1. Section 6.0, Page 6-1, Paragraph 2 discusses the use of RBCs as PRGs to Screen potential contaminants prior to discussion of the nature and extent of contamination. However, it is the Region 4 policy not to use human risk-based screening in the nature and extent of contamination section because ecological impacts can be ignored by such an approach. Furthermore, the use of the term PRG at this point is inappropriate. PRGs Should be used after contaminants of concern have been developed. This section should be re-written and the RBC screening should be removed accordingly.

2. Section 9.1.2.1, Page 9-40 discusses the sampling at Site 8. However, after reviewing the data for Site 24, it is apparent that some samples labeled as Site24 samples are, in fact, Site 8 samples (Site 24 samples are located on Site 8). These samples are shown on Figure 6-6 as 24S04, 24S05, 24S13, 24S14, 24S15, 24S16, and 24S17. Since dieldrin was detected in this soil group, the text should have adequate discussions for the site- wide dieldrin contamination. Because of this sampling error and lack of discussions on dieldrin contamination, the soil portion of the risk assessment for these sites is not acceptable.

3. Section 9.2, Page 9-117, Paragraph 2 is the introductory paragraph for the ecological risk assessment. However, a list of the references used as guidance sources for this section is not provided. The text should be revised to include a list of the guidelines used as references for the ecological section of this document.

4. Section 9.2.1, Page 9-117, Paragraph 3 states that only pesticides, PCBs, lead, and SVOCs were the only "significantly elevated soil constituents at the sites." However, it is unsure what criteria were used to determine which constituents were "significantly elevated". The text should be revised to screen COPCs using the Region 4 guidance (EPA, 1995). Any COPCs that exceed the screening criteria must be included in a full ecological risk assessment.

5. Section 9.2.2, Page 9-118, Paragraph 0 states that insect populations may be at risk from contaminants at the site due to direct exposure. However, the text should be modified to include a brief discussion of other potential terrestrial invertebrates at the site such as earthworms.

6. Section 9.2.3., Page 9-118, Paragraph 1 states that the assessment endpoint selected for terrestrial wildlife is the maintenance of well-balanced terrestrial wildlife populations and communities. However, this endpoint is too vague and should be modified to select an appropriate assessment endpoint which is an "explicit expression of the actual environmental value that is to be protected" (EPA, 1992a). In addition, according to EPA guidance, the assessment endpoint(s) should be selected based on: 1) the constituents present and their concentrations, 2) mechanisms of toxicity to different groups of organisms, 3) potential species present, and 4) potential complete exposure pathways. Therefore, the assessment endpoints should be revised to incorporate the criteria stated in EPA guidance.

7. Section 9.2.3, Page 9-126, Paragraph 2 discusses the effects of lead and the uncertainty

associated with its potential risk to receptors. However, although this discussion is appropriate for inclusion in the ERA, this discussion should be included in a separate uncertainty section. The text should be moved to the uncertainty section of the document.

8. Section 9.2.4, Page 9-126, Paragraph 3, Sentence 3 states that the NOAEL is a level that typically provides a low degree of confidence. However, this statement is not necessarily true and the rationale supporting this statement should be included in the text. If no rationale can be provided, then this statement should be removed from the text.

9. Section 9.2.4, Page 9-126, Paragraph 3 states that the fact that these maximum lead and DDD concentrations do not exceed the established LOAEL values is more significant. However, this statement is incorrect for DDD. Specifically, Table 9-41 shows that the DDD values were PDE-0.13, NOAEL-0.003, and the LOAEL-0.028 for the American Robin. The PDE for the American Robin exceeds both the NOAEL and LOAEL for DDD. Therefore, the text should be revised to appropriately address risk to the American Robin from DDD.

20 SPECIFIC COMMENTS

1. **Section 6.1.1, Page 6-8, Paragraph 1, Sentence 2.**
This sentence states that benzo(a)pyrene (BAP) exceeded its PRG in Site 8 soils. However, a review of the SVOCs table in Appendix F revealed that other carcinogenic PAHs were detected. Since it is likely that the PAHs act at least additively, all carcinogenic PAHs should be selected if one is selected. To do so, a TEF concentration equivalent could be calculated and used. The screening should be revised and the figures should be re-drawn. This comments also applies to the same.issue in Site 24.

2, **Section 6.1.2, Page 6-10, Paragraph 2, Sentence 2.**
This sentence states that there are two antimony exceedances of the MCL below the reference concentration (RC) of 30.2 ppb, so antimony is not a chemical of concern. However, according to the Region 4 guidance, if the level of a chemical in a given medium exceeds a state or federal chemical specific ARAR, that chemical should be a COC (EPA, 1995). Therefore, antimony should be a COC due to its exceedance of MCL. This comment also applies the same issue in Section 9.1.3.3.

3, **Figure 6-5, Page 6-11.**
This figure only shows the concentrations that exceeded the respective screening concentrations. However, once a constituent exceeds a screening concentrations, all concentrations should be displayed for all samples because such approach will help to define the plumes. This comment applies to all concentration figures.

4. **Section 9.1.1.1, Page 9-5. Paragraph 2, Sentence 5.**
This sentence states that the subsurface soil results were evaluated in Section 8 with respect to contaminant migration from soil to groundwater or air. However, a review of Section 8 revealed that the soil to air and soil to groundwater RBCs and/or SSLs were not discussed nor used in this evaluation. All detected compounds and analytes should be compared to either site-specific SSLs or default SSLs regardless whether or not they have been previously screened out. Thus, Section 8.3.1 should be revised accordingly.

5. **Section 9.1.1.3, Page 9-6. Paragraph 1, Sentence 5.**
This sentence states that when the maximum detected concentration was higher than one-half the detection limit, this could result in a high bias when one-half the detection limit was substituted for a non-detected result. However, this statement is not correct as the maximum detected concentration should have no relation to the detection limit except in a diluted sample. In general, the Region 4 policy is that the rule of substituting one-half the detection limit should be followed and the substituting of one-half of the minimum detected value is not codified in guidance. (This approach was confirmed by Dr. Ted Simon of Region 4 in a telephone conversation).

6. **Section 9.1.1.5, Page 9-8, Paragraph 2, Sentence 3 & 4.**
These sentences introduce the subject of COCs in the middle of the COPC discussion. However, introduction of the subject of COCs at this point serves no useful purpose. It is suggested that these two sentences be removed.

7. **Section 9.1.1.5, Page 9-9, Paragraph 2**
This paragraph discusses the derivation of the risk-based screening values. However, the language in this paragraph implies that the risk-based values were re-calculated by the risk assessor. It is suggested that the text be modified to show that tables of data were the sources of the screening concentrations.

8. **Section 9.1.1.7, Page 9-12, Paragraph 2, Sentence 2.**
This sentence lists the receptors for the sites. However, cemetery workers is a receptor that is not addressed. In a previous section, the text states that cemetery workers uncovered debris in constructing graves. If the cemetery were to be expanded, then these on-site workers could be exposed. Therefore, this receptor should be addressed.

9. **Section 9.1.1.7, Page 9-12, Paragraph 2, Sentence 3.**
This sentence states that worker-related exposure was addressed exclusively for maximally exposed site workers. The implication is that risk estimates were not prepared for current site workers. However, this decision does not present a reasonable picture of current site risk Even though the current worker may have limited contact with contaminated media, the exposure of the current worker should be estimated. This approach will provide the risk manager information to decide the need for immediate action and/or ranking for future action. Therefore, the current site worker should be added as the receptor.

10. **Section 9.1.1.7, Page 9-13. Paragraph 1, Sentence 4.**
This sentence states that construction workers would not disturb the soil below 2 feet deep because the water table is generally close to the surface. However, the depth to the water table is not stated and it is noted that subsurface soil samples were collected from a depth of 11 feet at Site 8. Therefore, the issue of the depth should be clarified, and the exposure of construction workers to subsurface soils should be considered.

11. **Section 9.1.1.7, Page 9-15, Paragraph 3, Sentence 3.**
This sentence states that many of the COPCs were not in a well-defined plume. However, because of the use of PRG screening in the nature and extent section, there is minimal

delineation and discussion of the plumes. Additional information is necessary and further discussion is needed in Section 6, before Section 9 *can* state that there *are* no well-defined plumes. The issue of defined plumes should be re-examined after the revisions to Section 6.

12. **Table 9-1, Page 9-17.**

This table lists 100 mg/day as the soil ingestion rate for the maintenance worker. However, the maintenance worker (particularly when performing grounds maintenance) is likely to have a much higher soil ingestion rate. According to Region 4 guidance (EPA, 1995), a suggested ingestion rate of 480 mg/day *can* be used. This table should be revised accordingly.

13. **Section 9.1.1.10, Page 9-36, Paragraph 4.**

This paragraph discusses the use of the H statistic in estimating the UCL of a log distribution and implies that, because of the use of exponential and log transformations, the log UCL often overestimates the UCL and it is greater than the maximum value. However, the reason that the log UCL is often greater than the maximum is because the distribution is not log-normal. In particular, the log UCL will be an overestimate when the sample distribution is uniform. That is, the concentration values are equally spaced and there is not a "bell" curve., Therefore, if *the* log UCL is greater than the maximum, then the sample distribution is not log-normal and the form of sample distribution should be checked. If it is determined that *the* sample distribution is normal, then the normal UCL should be used. A simple test using the coefficient of variation *can* be found in Gilbert's 1987 publication (page 164). Thus, this paragraph as well as the second and third paragraphs on page 9-37 should be revised accordingly. **NOTE: If there is an adequate amount of data then the above recommendations should be considered, if not use the lower of the UCL or max.**

14. **Section 9.1.2.1, Page 9-40. Paragraph 3, Sentence 1.**

This sentence notes that five out of the *six surface soil* samples were collected beneath asphalt. However, this means that the five samples are not surface soil samples by definition. In general, if an area is paved there is no current surface soil exposure. This paragraph should be revised.

15. **Section 9.1.3.3, Page 9-42, Paragraph 3.**

This paragraph discusses the development of exposure point concentrations for Site 8 and development of the FI/FC term. However, the FI/FC term is not derived appropriately. Typically, the FI/FC term is developed on an areal extent and not on the basis of the number of samples unless the sampling was performed on a grid basis. In addition, the "hot spot" cannot be moved about the site depending on which samples had the highest concentration of individual contaminants. This is because the exposure dose is considered to be the "area under the curve" as the receptor moves in a random fashion.

Finally, it should be noted that the statement that dieldrin was detected exclusively in sample #08S000301 may be misleading. The frequency of detection in Table 9-3 was four out of six samples by reviewing the data in Appendix P. After a careful review of the site data, it is determined that the use of the FI/FC term other than as 1.0 is inappropriate, so the risk assessment for soils should be re-calculated.

16. Table.

This table shows the COX screening for the groundwater for Site 8 and that antimony is not selected as a COPC. However, since antimony was detected above MCL (6 ug/L), it should be selected as a COX according to the Region 4 guidance. This table should be revised and antimony should be included in the risk assessment.

17. **Section 9.1.1.3, Page 9-70, Paragraphs 3 and 4.**
These two paragraphs discuss the potential receptors for Site 24. However, a CSM is not presented and a future receptor (cemetery worker) is not addressed. These discrepancies should be resolved.

18. **Section 9.1.3.3, Page 9-71. Paragraph 1, Sentence 2.**
This sentence states that a sufficient number of samples were collected to compute VOC values. However, it is not clear what computing VOC values means in this context. The context of the sentence and paragraph suggests that the acronym UCL should be used. The text should be clarified accordingly.

19. **Section 9.1.3.3, Page 9-71, Paragraph 2**
This paragraph states that due to the pattern of contamination only a small area of samples was used to calculate the exposure point concentration for residential and occupational use. However, the exposure may not be representative because of an overestimate of exposure (the area has the higher levels of contamination occur). In addition, a review of Figures 6-5, 6-6, and 6-7 found that coverage of Site 24 by the sampling locations is inadequate. Particularly, areas to the north and northeast of the site were not sampled It is suggested that additional sampling be performed and the analytical protocols should be for the full TAL/TCL. The risk assessment should then be performed using samples for the entire area.

20. **Section 9.1.3.6, Page 9-80. Paragraph 4, Sentence 4.**
This sentence *suggests* that the elevated iron and manganese concentrations may be due to the periodic application of fertilizer containing these elements and this is acceptable. However, if the fertilizer application is extensive enough to contaminate the groundwater, then this application is contamination of environmental media *caused* by Navy activities and this type of contamination should be addressed as for any other contamination of environmental media by Navy activities. The text should be revised to address *this* issue,

21. **Table 9-22.**
This table shows that the inhalation of particulates for maintenance worker was not considered to be a significant pathway. However, since one of the activities by the worker is mowing the grass and mowing *can* generate dust, this pathway should be considered. This consideration would be helpful in risk communication to workers and the public.

22. **Appendix E**
This appendix displays only the contaminants and the samples in which the PRGs were exceeded. However, as an *appendix,* it should present the data for all detected compounds and constituents for all samples including the samples which had non-detected values for the detected contaminants. This appendix should be revised.

23. **Appendix G, Groundwater Summary Table.**

The table shows that antimony detection limit (30 ug/L) for the background samples is greater than the FPDWS (6 ug/L). It is known that lower detection limits for antimony *can* be achieved through graphite! furnace atomic absorption where a detection limit of 5 ug/L *can* be achieved. Therefore, it is *suggested* that these wells be re-sampled for antimony and analyzed by the graphite furnace method.