32501.038
03.01.38.0022

N00204.AR.001256
NAS PENSACOLA
5090.3a

December 16,1996

4WD-FFB

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

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

SUBJ: NAS Pensacola
Draft Remedial Investigation Report
Site 38

Dear Mr. Hill:

The U.S. Environmental Protection Agency (EPA) has completed its review of the above subject. The risk assessment comments are enclosed.

If you have any questions or comments, please call 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. This risk assessment has several serious deficiencies: the lack of consideration of subsurface soil samples, use of the FI/FC factor, missing exposure pathways, flawed screening for the COPCs, and treatment of non-detected values in the statistical summaries. Also the presentation of the "risk" maps tend to show risk estimates that are higher than the average risks. Corrections of these deficiencies will require some recalculation as well as major text revisions.

2. Section 10.2.7, Pages 10-13, 10-17; Section 10.2.10, page 10-56; Apps. N,O. Use of an FI (fraction ingested from contaminated source) term is appropriate to assess "hot spot" situations. This risk assessment, however, has used FI inappropriately. The FI term should not be used to account for the fraction of the site that is not paved or not covered by buildings. In the case pavement covering large parts of a site, the exposure unit (for surface soil) becomes the area that is unpaved. The soil/dust that the individual incidentally ingests would then be assumed to come entirely from the unpaved portion of the site. Use of an FI term would be appropriated if the majority of that unpaved area is uncontaminated.

   Tables N-3, O-3 list FI percentages used to adjust exposure point concentrations (EPC). Determination of the FI for inorganic chemicals - said to be based on "number exceeding RBC/number analyzed"- is not appropriate. Once a chemical is selected as a COPC, the EPC is usually determined by using all the data for the exposure unit area. Use of an FI term would indicate that the remainder of the exposure unit area, outside of the "hot spot", has none of that particular chemical. This assumption is invalid for most inorganics. FI determination by "frequency of detection" is not appropriate for groundwater which should use a simple average of the "hot spot" wells to derive the EPC.

3. Section 10.2.7, Page 10-13, Paragraph 2, addresses exposure pathways (also see Table 10-1). However, the text does not address the scenario where the construction worker is exposed to subsurface soils, particularly along the sewer lines where construction or repair work may occur. In addition, risks to the current or future construction worker will be less than the future worker or resident, but before stating that the risk is to the construction worker is not significant, the risks should be calculated.

   The air pathways are incompletely addressed. Although the soil data do indicate that volatilization is minimal, potential inhalation of re-suspended particulates should be considered, at least qualitatively.

4. Section 10.2.7, Page 10-18; App.P. The figures and tables in App. P showing "location-specific risk" do not follow the concept that estimated risk should be based on an entire exposure unit. In future submissions of risk assessments, it would be preferred that figures and tables such as these be presented as RGO (remedial goal option) exceedances so as to not misrepresent the risk results.

5. Section 10.3.1.5, gives the risk characterization results. For clarity, the future scenarios should be designated as such (e.g. "Hypothetical Site Worker" should be "future Hypothetical Site Worker").

6. Appendix N and Appendix O, Tables N-1, N-2, O-1, and 0-2, present risk summaries for Buildings 71 and 604, respectively. However, surface soils and subsurface soils are presented together in the tables. The surface and subsurface soils should be classified and screened separately. In addition, the SSLs (soil to leaching to water) are covered in Section 9, but it is not clear how these values were applied in the appendix tables. Each RBC value should be identified. Tables N-2 and 0-2 need to be revised using only the lower of the RBC values and Florida water criteria for groundwater screening. These tables should be included in the text, not in the appendix, and the table title should be revised accordingly.

2.0 SPECIFIC COMMENTS

1. **Section 10.2.4, Page 10-8, Paragraph 0.**

The text addresses limitations of analytical results by including estimated concentrations for nondetected parameters, using one half of the "U" value as an unbiased estimate of the nondetected. However, this procedure may underestimate concentrations, although such underestimation is likely to have a small effect in most cases.

Implicit in the use of this procedure is the assumption that all samples in the data set have exactly the same matrix effects on quantitation limits. This assumption is correct for groundwater samples, but is not true for soil samples. How *estimates* of nondetected concentrations were handled for diluted samples is not stated in the text. For example, if a sample was diluted and benzene was a nondetect at 200 ug/kg and there was a sample in the set which had a "J" value of 6 ug/kg, (the benzene contract detection limit was 10 ug/kg) the unbiased estimate for a non-detect value for this sample would be 100 ug/kg, not 3 ug/kg (one half of "J" value) or 5 ug/kg (one half of CRDL). The text should address a more basic procedure for using one half of the individual sample quantitation limit.

2. **Section 10.2.5, Page 10-9, Paragraph 3. Sentence 2.**

The text indicates a source in "Determination of COCs by Risk-Based Screening (USEPA 1994)". However, the source of the screening values should be the most recent edition of the USEPA Region 3 Risk-Based Concentration Table.

3. **Section 10.2.5, Page 10-10, Paragraph 3.**

The text indicates that screening values on surrogate compounds were used if no screening values were available. However, it is not clear how surrogate compounds were selected nor how the surrogates were used m each specific site risk assessment. The text should give more

specific information about the surrogates.

4. **Section 10.2.5, Page 10-11, Paragraph 1, Sentence 3**

The text mdicates that, after risk and hazard-based screening values were compared, CPSSs whose maximum detected concentrations exceeded corresponding background reference concentrations were retained as COPCs. However, the text does not state that this procedure applies only to inorganic compounds. The text should be revised accordingly.

5. **Section 10.2.7, Page 10-16, Paragraph 0, Sentence 0**.

The text indicates that applying the UCL is generally inappropriate with fewer than 10 samples. However, the text does not provide a basis for the statement that the UCL of the log normal mean can not be calculated for less than 10 samples. A justification for this statement should be added to the text.

6. **Section 10.2.7, Page 10-17, Paragraph 2**.

The text addresses the EPC modification (use of FI) for soil where impacts were extremely limited in areal extent (hot spots). However, if "hot spots" are present, they should be dealt with separately and the risks calculated for the remainder of the exposure media. Since contaminants migrate in the groundwater and spread out with time, the presence of "hot spots" may be questionable. The issue of fractional exposure may need to be re-examined.

7. **Section 10.2.8, Page 10-28, Paragraph 2, Sentence 4**.

The Toxicity Assessment m the body of the report should contain the toxicity values (now in App. P), whereas the toxicity profiles could be moved to the Appendix.

8. **Section 10.2.10, Page 10-54, Paragraph 4, Sentence 4**.

The text states that local linearity was assumed to facilitate interpolation of the statistic for each COPC. However, there is a reference (Gilbert, 1987) for the calculation of the H-statistic if a more accurate interpolation is needed. In fact, the appendix tables such as Table N-4 reference a cubiodal interpolation to estimate the H-statistic. The text should be revised accordingly.

9 **Section 10.2.10, Page 10-56, Paragraph 1 and 2**.

The text addresses the use of FVFC for the "hot spot". However, the use of FI/FC for "hot spots" is inappropriate. As a suggestion, if a "hot spot" is identified, then the data from the "hot spot" should be separated from the rest of the samples and the risk computed for both

areas. These paragraphs should be revised accordingly.

10. **Section 10.3.1.3, Page 10-62, Paragraph 1.**

The text indicates that the exposure soil duration for construction workers is relatively short. However, although the construction worker is limited in duration, the degree of exposure is higher. For example, the oral ingestion rate for a construction worker is 480 mg/day as opposed to 50 mg/day. The inhalation rate of particulates and volatiles for construction worker is also likely to be greater. Because of the high exposures to subsurface soils, construction workers should be considered as potentially exposed populations.

11. **Section 10.3.1.8, Page 10-79, Paragraph 1.**

The text indicates that surface soil RGOs for carcinogens in Table 10-8 were based on the lifetime weighted average site resident and site worker, respectively. However, it is not clear if the FI/FC factor was applied to the calculation of the RGOs. If FI/FC factors were used, the RGOs may need to be re-calculated.

This comment also applies to Section 10.3.2.8.