



UNITED STATES ENVIRONMENTAL PROTECTIO
REGION IV
345 COURTLAND STREET. N.E
ATLANTA. GEORGIA 30365

32501.000
03.01.00.0068

N00204.AR.000522
NAS PENSACOLA
5090.3a

MAR 30 1993

4WD-FFB

Commanding Officer
Attn: Ms. Linda Martin - Code 1851
SOUTHNAVFACENGCOM
P.O. Box 190010
North Charleston, South Carolina 29419-9010

Re: Review of Draft RI/FS Work Plans for Investigative Category 4: Sites 40
Bayou Grande) and 42 (Pensacola Bay);
NAS Pensacola, Florida
EPA Site ID No.: FL 9170024567

Dear Ms. Martin:

The Environmental Protection Agency (EPA) has completed its review of the the Navy's Draft RI/FS Work Plans for Category 4 Sites 40 (Bayou Grande) and 42 (Pensacola Bay). Our comments are enclosed. Please feel free to contact me if you have any questions or require further clarification on these issues. In accordance with the schedules in the FY93 Site Management Plan, the revised Draft Final RI/FS Work Plans which incorporate our comments are due in this office within 120 days of your receipt of this letter.

Sincerely yours,

A handwritten signature in cursive script, appearing to read "Allison W. Drew".

Allison W. Drew, RPM
Department of Defense Remedial Section
Federal Facilities Branch

Enclosure

cc: Ron Joyner, NAS, Pensacola
Eric Nuzie, FDER
Henry Beiro, Ensafe/Allen & Hoshall

TECHNICAL REVIEW AND COMMENTS
DRAFT RI/FS WORK PLANS FOR
OPERABLE UNIT 40 (BAYOU GRANDE) AND OPERABLE UNIT 42 (PENSACOLA BAY)
NAVAL AIR STATION (NAS) PENSACOLA
PENSACOLA, FLORIDA

COMMENTS APPLICABLE TO BOTH WORK PLANS:

(Note: page and paragraph numbers provided are for the "Bayou Grande" Work Plan. Identical text requiring revision in the "Pensacola Bay" Work Plan may occur at slightly different locations, although section numbers should be the same.)

1. Page 1-1, Section 1.0, Paragraph 1:

The Florida Department of Environmental Regulation (FDER) is a Party to the Federal Facilities Agreement. Please make the necessary correction.

2. Page 1-1, Section 1.0, Paragraph 2:

This paragraph must also briefly summarize plans to conduct and prepare a Baseline Risk Assessment for the Operable Unit.

3. Pages 1-1 through 1-2, Section 1.0, Paragraph 3:

The components described in this paragraph (i.e. the SAP (including FSP and QAPP) and the HSP) are essential components of the RI/FS Work Plan. Consequently, the RI/FS Work Plans for the subject Operable Units cannot be considered for approval until these components are received and approved.

4. Page 2-8, Section 2.3.4, Paragraph 3:

The EPA Groundwater Classification for the surficial aquifer must be provided in this description as well.

5. Pages 2-8 through 2-12. Section 2.3.4:

A map depicting the direction of groundwater flow for NASP for each zone of the Sand-and-Gravel aquifer should be included in this section. The results of the forthcoming well inventory, together with existing hydrogeologic data and information which has been collected during previous investigations (E&E, Geraghty & Miller, etc.) should provide adequate information on which to base such maps.

6. Page 3-1, Section 3.1:

The text states that the scope of proposed work for the RI/FS will be discussed in Sections 5 and 6. However, Section 6 is a list of references and does not include such a discussion. Please clarify this point.

7. Page 3-3, Figure 3-1:

The figure states that Site 36 is not shown. The text should discuss where Site 36 is located and its relationship to the contamination of the Bayou (/Bay).

8. Pages 3-7 through 3-9, Section 3.3 (Section 3.2 for "Pensacola Bay" Work Plan):

This section presents a reasonable preliminary, or conceptual, identification of potential contaminant migration pathways and potential impacts on public health and/or the environment. However, while comprehensive, the information presented is too general to be of extensive use in directing and refining

sampling plans. As a result, the sampling schemes proposed in subsequent sections consist of numerous sampling stations positioned at regular intervals along the entire length of the NASP coastline. While it is recognized that most of the available data is questionable due to the use of lower DQO analytical levels and less than rigorous QA/QC methods, some focusing of sampling efforts should still be possible through (i) an identification of likely contaminant pathways (GW, SW), (ii) the use of available survey results, site histories and (iii) conservative use of the available chemical data. In addition, given that higher DQO Level data for individual sites will be forthcoming prior to actual implementation of the "Bay" and "Bayou" work plans, an addendum to this work plan aimed at focusing the proposed sampling scheme should be submitted following receipt and evaluation of this new site-specific data.

9. Pages 3-8 through 3-9, Section 3.3 and Figure 3-2:

Estuarine systems can have high loads of suspended particulate matter (e.g., suspended silt or detritus) in the water column. Contaminants can adsorb onto this suspended particulate matter as well as being dissolved in the water. This could result in bioaccumulation by organisms such as filter-feeders. The following changes should therefore be made to the text and table to reflect these possibilities:

- A. In the 6th and 7th sentences of Paragraph 3, mention adsorption of contaminants onto suspended particulate matter in the water column.
- B. In the 8th sentence, change "accumulated contaminants" to "adsorbed contaminants".
- C. In Figure 3-2, under the second occurrence of "Primary Sources", either add a third box for adsorbed contaminants, or amend the box for "dissolved contaminants in surface water" to include a reference to contaminants adsorbed onto suspended particulate matter.
- D. Also in Figure 3-2, add suspended particulate matter to the box under "Primary Release Mechanisms".

(Note: The proposed measurement of total Suspended solids, in Section 5.2.1, page 5-7, should yield useful information on the amount of Suspended particulate matter in the water column. It is not recommended that the proposed surface water samples be filtered for chemical analysis. If chemical analysis of the surface water samples indicates elevated concentrations of contaminants that might not be expected to partition into water, such as hydrophobic organic chemicals, analysis of particulate and dissolved fractions of surface water samples might be appropriate during a later phase of the investigation.)

10. Page 3-9, Figure 3-2:

Please make the following additional changes to this figure:

- A. Delete "terrestrial biota" from the "Secondary Sources" heading. Contaminants in Bayou Grande would first bioaccumulate in aquatic organisms;

ingestion of these organisms by terrestrial biota could then lead to bioaccumulation in the terrestrial biota.

B. Draw a direct line from the "Bioaccumulation" box (Secondary Sources) to "Consumption of Affected Ecological Resources* (Pathways), since many benthic macroinvertebrates (e.g., infauna) are sessile and do not migrate.

11. Page 3-10, Table 3-2:

Please revise the format of this table to more clearly indicate that any of the "General Response Actions" or "Remedial Technology Types" may be used to achieve either human health or environmental/ecological "Remedial Action Objectives".

12. Page 4-1, Section 4.0:

A. "As analytic data becomes available from other site specific investigations completed at NASP, this work plan will be re-evaluated." In order to assure meaningful and timely incorporation of this forthcoming data into the present, more conceptual plans, the logistics of this "re-evaluation" process must be clearly specified in some section of the present RI/FS Work Plan. For example, will data-supported modifications to the present sampling plans be submitted as a work plan addendum, technical memo, or in some other format? Would it be feasible (technically defensible, cost effective) to consider submitting any such addendums in pieces (e.g. west Bayou Grande, east Bayou Grande) so that work can commence on at least a portion of the Operable Unit? An adequate schedule for this "re-evaluation" process must also be provided so that a realistic start date for implementing these work plans can be established. This schedule should include such information as (i) anticipated completion dates for "Phase 11" data collection, validation, and evaluation efforts at each individual PSC, and (ii) proposed submittal dates for addendums to the "Bay" and "Bayou" RI/FS Work Plans. Adequate planning of this process up front will assure timely initiation and completion of an effectively designed RI/FS for these "ecological" Operable Units.

B. Please delete the 4th and 5th sentences of this section, and replace them with more general terminology, such as the following:

"Biological effects will be investigated through the collection and taxonomic analysis of the benthic macroinvertebrate community."

The EMAP approach as contained in the document Ecological Indicators (EPA/600/3-90/060) is not appropriate, per se, for this site. The focus of the EMAP program is the ecological health of an area, while the focus of a Superfund investigation is cause and effect (i.e., determining whether ecological effects are related to site contaminants). Although some of the elements contained in this document can be applied to the investigation of Site 40, reference to the EMAP program, the Ecological Indicators document, and the EMAP terminology should be deleted to avoid confusion.

13. Pages 4-1 through 4-2, "Sediment Chemistry DQOs" and Table 4-1:

The term "chronic effects" usually refers to effects on biological receptors, not on sediment. Clarify this point.

14. Pages 4-2 through 4-3, "Surface Water DQOs" and Table 4-1:
The term "acute effects" usually refers to effects on biological receptors, not on surface water. Clarify this point.

15. Page 4-3, Section 4.1, "Biological Effects DQOs":
An investigation of the benthic macroinvertebrate community, with the subsequent determination of distribution and diversity, should provide valuable information about biological effects. However, it should be noted that additional biological investigations (e.g., sediment toxicity testing, bioaccumulation studies) may be needed at a later point in the investigation in order to provide sufficient information for the ecological risk assessment.

16. Pages 4-4 through 4-8, Section 4.2:
As mentioned above, this investigation is being conducted under the Superfund program, not the EMAP program. Several of the "indicators" presented in this section and the following subsections are applicable to the proposed investigation, but the terminology is not applicable. Please delete Section 4.2 and the indicated subsections (pages 4-4 through 4-8, including tables) and incorporate applicable portions under Section 5.0 (RI/FS Tasks) subheadings, as follows:

Section 4.2 - Delete.

Subsection 4.2.1 - Delete. No detailed discussion is needed. Dissolved oxygen is already included among the general water quality parameters in Section 5.2.1, pages 5-7 through 5-9.

Subsection 4.2.2 and Table 4-2 - Combine this section with Section 5.2.1 (page 5-10). However, in the text on page 4-6, change "Most benthic organisms are sessile" to "Many benthic organisms...."

Section 4.2.3 - Either delete this section, or add a subsection on sediment toxicity testing to Section 5.2.1 (pages 5-6 through 5-10). (It appears that no toxicity testing was planned for the proposed investigation. It might be more appropriate to include sediment toxicity testing in a later investigation phase.)

Section 4.2.4 - Delete.

Section 4.2.5 - Delete. Measurement of water clarity (e.g., Secchi disk visibility?) can be added to a subsection of Section 5.2.1 (pages 5-6 through 5-10).

17. Page 4-0 through 4-9, Section 4.3:
The information contained in this section is overly general. Please refer to comments 8. and 12A.

18. Page 4-9, Section 4.4:
Whenever possible, detection limits used in the chemical analysis of sediment samples should be sufficiently low that the data can be compared to the NOM Effects Range-Low and Effects Range-Median values used as ecological sediment screening values by the USEPA Region IV Waste Management Division. Likewise,

detection limits used in the chemical analysis of surface water samples should be sufficiently low that the data can be compared to the Florida Surface Water Standards and the ecological surface water screening values (including the Ambient Water Quality Criteria) used by the USEPA Region IV Waste Management Division.

19. Pages 5-2 through 5-10, Section 5.2:

A. The proposed extensive transect sampling design appears to be very thorough with respect to determining the extent of contamination in the Bayou (/Bay) sediments. However, EPA is concerned that the planned full scan chemical analyses and the infaunal benthic macroinvertebrate analyses represent a major effort in terms of time and cost. The following comments are provided as recommended ways of decreasing the number of samples while still obtaining sufficient data for the site characterization and risk assessment:

(i) Collect information on the nature of the bottom sediment (e.g., sand, silty sand, silt, etc.) and the water column depth prior to choosing sediment sampling locations. Sediment sampling should then be focused on depositional areas with fine sediments, since many types of contaminants tend to adsorb onto such sediments. (However, some samples would still be needed from coarser-grained sediment locations.)

(ii) Collect sediment samples along all of the proposed sampling transects, but only analyze samples from every second or third transect, or transects near areas likely to have received contaminants from land-based source areas. Depending upon the holding times for chemical analyses, the remaining samples could be held (or extracted and held) until the results of the first sample batch were available. Analyzing benthic macroinvertebrate samples from every other transect (as mentioned in Section 5.2.1, page 5-10) is also a good approach.

If a change is made in the proposed transect design, include an explanation/rationale for the sampling design.

B. Despite the extensiveness of the proposed sampling scheme, this approach provides no guarantee that any detected contamination will be adequately delineated. In particular, the work plan should include contingency plans to address the delineation of any contamination associated with an NASP source which is found to extend greater than 300 feet offshore.

C. Indicate which sampling stations will be used as background/control sampling stations for sediment, surface water, and biota.

20. Page 5-5, Paragraph 2:

The text states that temporary monitoring wells will be installed along the coast to determine the quality of groundwater being discharged to the Bayou (/Bay). The proposed locations for the temporary monitoring wells will be useful, but an insufficient number of groundwater sampling locations are proposed. The proposed locations should be supplemented with additional temporary well points and through the sampling of existing monitoring wells. Also, in order to increase the likelihood of locating groundwater hot spots along the coast that are discharging to surface water, additional groundwater

sampling locations should be concentrated in areas of ~~known~~ or suspected contamination. Delineating groundwater hot spot areas along the coast early in the process will help focus surface ~~water/sediment~~ sampling locations for any additional rounds of sampling which may be needed. Specifically, once hot spot areas are identified in the Bayou (/Bay), sediment core samples extending several feet below the bottom of the Bayou (/Bay) should be collected to determine the vertical extent of contamination. The pore water from core samples could also be analyzed for contaminants ~~of~~ concern.

For further, OU-specific recommendations on the placement of additional temporary groundwater sampling locations, please refer to the comments provided for the Bay and Bayou in the following sections.

21. Page 5-5, Paragraph 3:

The number of staff gauges which will be installed in the Bayou (/Bay) should be adequate for acquiring data that will allow for the calculation of groundwater flow velocity, once compared with groundwater level measurements from wells located adjacent to the Bayou (/Bay). However, this data should also be used to calculate the volume of groundwater ~~discharge/recharge~~ to the Bayou (/Bay) over a complete tidal cycle.

22. Page 5-5, Paragraph 4:

A. Why will surge blocks and bailers be used to develop monitoring wells, when peristaltic pumps will be used to purge wells prior to sampling.

B. According to the text, development will be considered complete "when the water has become as clear as possible given the subsurface lithology." This final phrase would appear unnecessary, "Given the predominantly sandy lithology of the area." Please delete.

23. Page 5-7, Paragraph 1:

A. Surface water samples for determination of total suspended solids should be collected at the same time and locations as the surface water samples collected for water quality analyses.

B. Sediment samples for chemical analysis must be collected at both the 0-0.5 ft. interval and the 0.5-2.0 ft. interval. Most benthic infaunal organisms live in the upper part of the sediment, which is the interval that will be sampled by using a Ponar grab. Therefore, sampling the upper interval is recommended for correlation with the benthic macroinvertebrate study. The lower interval should also be sampled, to check for historic deposition of contaminants.

24. Pages 5-7 through 5-8:

Please provide the rationale for the locations of the total water quality stations.

25. Pages 5-7 through 5-8, "Surface Water Sampling":

The following depths should be used in the collection of (i) surface water quality parameters at sediment sampling stations (i.e., temperature, pH, etc.) and (ii) surface water samples and the concurrent water quality parameters at total water quality stations:

<u>Water Column Depth</u>	<u>SW Parameter Measurement Depth</u>
3 ft. or less	Mid-depth
3-10 ft.	1 ft. below water surface 1 ft. above bottom
more than 10 ft.	1 ft. below water surface Mid-depth 1 ft. above bottom

This sampling regime is similar to that **recommended** in the EPA Environmental Services Division's Environmental Compliance Branch Standard Operating Procedures and Quality Assurance Manual for surface water sampling in estuarine waters having a halocline (salinity stratification). The bottom measurements are especially important in conjunction with the benthic macroinvertebrate study.

26. Page 5-8, Paragraph 3:

A. "and during periods when the shallow groundwater level exceeds the adjacent surface water level of Bayou Grande..". How will this determination be made? Will water level measurements be recorded on some regular basis?

B. "...surface water samples will be collected...to determine the quality of Bayou [/Bay] surface water...". Will surface water samples be analyzed for TCL/TAL parameters or only for water quality parameters?

27. Page 5-13:

Although the Bayou (/Bay) can be considered a possible receptor of contaminants that have migrated from land-based source areas, an area of such contaminants present in the Bayou (e.g. in sediments) could act as a source of contaminants having the potential to migrate elsewhere (e.g. via surface water movement, food chains) The Feasibility Study for the land-based sites will focus on potential remedial alternatives for those sources and their contaminant transport mechanisms. The FS for Bayou Grande should focus on potential remedial alternatives for the Bayou itself.

COMMENTS APPLICABLE ONLY TO OU 40 (BAYOU GRANDE) WORK PLAN:

1. Page 2-1, Section 2.2:

In the first sentence, change "estuarian" to "estuarine". In the fourth sentence, clarify that the net flow in Bayou Grande **is** apparently easterward, but tidal flow reversals also occur in the bayou.

2. Pages 2-3 through 2-6, Section 2.2: Much of the information contained in these pages **pertains** to Pensacola Bay **as a** whole, yet the section **is** titled "Site - Bayou Grande". The text should either be modified and/or expanded to illustrate the relevance of the information presented to the Bayou **RI/FS**, or deleted.

3. Page 2-7, Section 2.3.2:

"Some intermittent streams do flow north into Bayou Grande...". These **streams** should be clearly identified in some figure, along with the potential contaminant sources which may **impact** them.

4. Pages 2-12 through 2-16, Section 2.4:

This section should be limited to a review of previous studies which are directly applicable to Bayou Grande and its interaction with Pensacola Bay.

5. Page 2-16, Section 2.5:

This section states that the average depth of the bayou **is** 6 feet, but Section 2.2, page 2-1, states that the average depth **is** 9 feet. Clarify **this** point.

6. Page 3-7, Section 3.2, "Minimal Impacting Sites":

Please check the results of previous studies conducted by Geraghty & Miller (1984 & 1986) for additional information on **some of** these sites. Several wells may have been installed to monitor a groundwater plume which originated at Site 31 and was believed to be migrating towards Sites 25 and 27 and the small arm of Bayou Grande.

7. Pages 3-11 through 3-12, Table 3-2

The contents of these two pages appear identical. Please check and correct as needed.

8. Pages 5-3 through 5-4, Figures 5-1A and 5-1B:

A. In conjunction with comment 19. in the first group of comments (applicable to both the Bayou and Bay), use data from the USEPA Region IV Environmental Services Division, Environmental Compliance Branch's July 1992 field investigation at NAS Pensacola to help focus the sampling investigation in the Bayou.

B. According to these figures, 10 total water quality stations are planned. Since water quality measurements will be taken at these stations during the **8** surface water sample collection events, the proposed deployment of continuous water quality monitoring instruments at all 10 stations may not be necessary. EPA recommends that these instruments be deployed at a subset of the total water quality stations, to obtain information about water quality fluctuations over time.

9. Page 5-5, Paragraph 2:

The most contaminated ground water that discharges into Bayou Grande appears to be located in the vicinity of Sites 1 and 11. The following additional

groundwater sampling locations proximate to these sites are therefore recommended:

Site 1: Sample existing wells GM42, GM41, GM43, GM04 and GM40. Surface water samples should also be collected from the Bayou adjacent to these well locations.

Site 11: Sample existing well GM26 and proposed Phase II wells 15, 10, 6, 2 and 1. To determine if groundwater discharging from OU10 is adversely impacting the Bayou, temporary well points should be installed near proposed intermediate well 12 and north of this location opposite proposed well 6 (downgradient of the former sludge drying beds at OU10).

10. Page 5-9, Paragraph 3:

In the 4th sentence, add the word "months" before the phrase "of the year". Also, "data sonde" should be capitalized, since it is a trade name.

11. Page 5-10, Section 5.2.1, "Biota Sampling":

This section should be similar to the corresponding section in the Site 42 (Pensacola Bay) Work Plan. For example, sediment lithology data should also be used in evaluating the benthic macroinvertebrate data. In addition to the identification of contaminant indicator species, benthic macroinvertebrate community diversity and distribution should also be determined. Include the diversity and similarity indices and the biotic indices mentioned in the Bay Work Plan.

COMMENTS APPLICABLE ONLY TO OU 42 (PENSACOLA BAY) WORK PLAN:

1. Page 2-5, Paragraph 2:

Discuss the deposition of the sediments that were dredged from Pensacola Bay during the latest dredging event and whether the ~~sediments~~ were tested to determine if they were hazardous waste.

2. Pages 2-13 through 2-15, Section 2.4, Facility-Specific Studies:

The locations of these previous sampling events relative to the locations of the 42 currently-known potential sources of contamination should be shown on some figure. Such a summary map would facilitate the identification of potential problem areas. It would also highlight areas for which little or no data exists, thereby aiding the investigator's efforts to focus and direct future sampling events.

3. Page 2-15 through 2-18, Section 2.5:

Please provide the distance and direction from NAS Pensacola to the City of Pensacola Main Street sewage treatment plant.

4. Page 3-4, "Southeast Waterfront":

Clarify the boundaries of Site 2 with respect to Site 42 (e.g. distance along shoreline and distance into Bay). This is particularly important since the Sampling and Analysis Plan for Site 2 states that the western and easternmost portions of Site 2 will be incorporated into the Site 42 sampling investigations.

5. Page 3-7, "NASP's Eastern Shore of Pensacola Bay":

Since the groundwater contaminants at OU 10 may discharge into the Bay, it would be more helpful (from an ecological perspective) to compare the groundwater contaminant concentrations found at OU 10 with Florida Surface Water Quality Standards for aquatic life (FAC, chapter 17-302).

6. Page 3-8, Paragraph 2:

Change "Sherman Filed.." to "Sherman Field..".

7. Page 3-10, Figure 3-2:

Under "Primary Release Mechanisms" related to the 18 sites, "Fuel Pipeline/AST" should apparently read "Fuel Pipeline/UST".

8. Pages 5-3 through 5-5, Figures 5-1A, 5-1B and 5-1C:

A. In conjunction with comment 19. in the first group of comments (applicable to both the Bayou and the Bay), the attached copies of Figures 5-1A and 5-1B show two areas where the number of transects might be able to be halved (i.e. sample every other transect), based upon the locations of the land-based sources (Figure 3-1) and the probable migration pathways into Pensacola Bay.

B. According to these figures, 16 total water quality stations are planned. Since water quality measurements will be taken at these stations during the 8 surface water sample collection events, the proposed deployment of continuous water quality monitoring instruments at all 16 stations may not be necessary. EPA recommends that these instruments be deployed at a subset of the total water quality stations, to obtain information about water quality fluctuations over time.

C. **Also** with regards to the proposed water quality stations, **it is** recommended that the stations be positioned close to permanent monitoring wells which have been installed near the coast whenever possible. This would allow comparison of groundwater samples collected near the stations with the chemical and physical surface water conditions in the Bay. For example, the proposed water quality station north of OUIO could be repositioned to a location which **is** more proximate to nearby well GM83.

9. Page 5-6, Paragraph 2:

The most contaminated ground water that discharges into Pensacola Bay appears to be located in the vicinity of Operable Unit 10 and Sites 14, 20, 38, 2 and 21. The following additional groundwater sampling locations proximate to these sites are therefore recommended in order to better establish the degree of communication between groundwater and Bay surface water:

OU 10 (Sites 32, 33 & 35): Sample existing wells GM71, GM72, GM73, GM14 and GM83 and collect surface water samples from the Bay proximate to these well locations. If possible, relocate the proposed water quality station just south of OUIO so that it is adjacent to either existing well GM14 or proposed well 11 (for Site 14).

Site 14: Sample proposed wells 11 and 18 and compare the results to adjacent surface water samples from the Bay.

Site 20: If a permanent well exists or is proposed for this site, it should be sampled and compared to the results for a surface water sample collected from an adjacent area of the Bay. If no permanent well exists, a temporary well should be installed and sampled at the site.

Site 38: Sample the two shallow proposed wells located on the south side of the site and compare the results to adjacent surface water samples from the Bay.

Site 2: Install and sample a temporary well at or near this site to provide a baseline of the groundwater quality discharging into the Bay.

Site 21: Sample proposed shallow monitoring wells 20 and 41 and compare the results to adjacent surface water samples from the Bay.

10. Page 5-9, Paragraph 3:

Clarify what is meant by "nearshore" (i.e. distance from shoreline, surface water column depth).

11. Page 5-10, Paragraph 3:

"data sonde" should be capitalized, since it is a trade name.

12. Page 5-11, Paragraph 1:

Change "pollution diversity" to "community diversity".