

ENSAFE INC.

ENVIRONMENTAL AND MANAGEMENT CONSULTANTS

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January 20, 1999

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U.S. Environmental Protection Agency  
Attn: Ms. Gena Townsend  
Atlanta Federal Center  
100 Alabama Street SW  
Atlanta, Georgia 30303-3104

NAS PENSACOLA  
5090.3a

Re: Final Remedial Investigation Report  
Site **40**, NAS Pensacola  
Contract # N62467-89-D-0318/036

Dear Ms. Townsend:

On behalf of the Navy, EnSafe Inc. is pleased to submit one copy of the Final Remedial Investigation Report for Site 40, Bayou Grande at the Naval Air Station Pensacola in Pensacola, Florida. Responses to comments are also enclosed. FDEP comments were received verbally and have been incorporated into the document.

If you should have any questions or need any additional information regarding the document, please **do** not hesitate to call me.

Sincerely,

EnSafe Inc.



Allison L. Harris  
Task Order Manager

Enclosure

cc: Bill Hill, Code 1851 SOUTHNAVFACENGCOM without enclosure  
Ron Joyner, NAS Pensacola - 3 copies  
Tom Dillon, NOAA - 1 copy  
EnSafe Inc. file - 1 copy  
EnSafe Inc. Knoxville - 1 copy  
EnSafe Inc. Library - 1 copy  
Administrative Record

U.S. ENVIRONMENTAL PROTECTION AGENCY, REGION IV  
RESPONSE TO COMMENTS  
DRAFT REMEDIAL INVESTIGATION REPORT  
OPERABLE UNIT 15 - SITE 40 (BAYOU GRANDE)  
NAS PENSACOLA

GENERAL COMMENT 1:

Section 3.3, Page 3-6, Paragraph 0 states that protected embayments of the bayou contain a relatively diverse group of species. However, the text does not include a discussion of the location of these protected embayments since species diversity may be very different between the protected embayments and the narrow sandy strands. Such a discussion should be included.

Response:

The term "protected embayment" fails to communicate a perspective of size to the local inlets and sloughs of Bayou Grande. This term was not intended to infer the macro scale of a "Tampa Bay" or "Pensacola Bay" but rather to imply an undulating coastline with sloughs and inlets. The text shall be rewritten to reflect the lesser scale implied by "protected embayment" by replacing the word "embayment" with "inlet".

Further, field observations do not indicate differences in species diversity within Bayou Grande on a macro scale. On a micro-scale, certainly nursery grass beds compared to beaches are different. The locations of these micro-resources were not objectives within this investigation since the study was to assess the nature and extent of contamination. Later phases (Phase IIB/III) of field work assessed specific areas based on chemical analysis of sediment. The resources associated with the areas were then described and evaluated in Section 10. The text will be revised to discuss these points.

General Comment 2:

Section 4.0, Pages 4-1 through 4-10 discuss the preliminary survey. The text indicates that for ease of assessment and discussion, sections of Bayou Grande shoreline were separated into four assessment zones (AZs) based on the known site influence and sediment type. However, according to the results presentation (most tables and figures in Section 7), there is no discussion on the results from each zone. Therefore, the significance of the four zone division is unclear since all the results are combined. The text should address the significance of the zone division related to the results.

Response:

The sampling results did not encourage a continuance of a zone by zone discussion and were omitted from the text. Bayou Grande is one operable unit, and therefore, was discussed as one entity. However, the text is now divided by assessment zone.

**Comment 3:**

Section 7.0, Page 7-1, Paragraph 1 presents the Nature and Extent of Contamination. The text indicates that Phase II sampling approach was based on results of Phase I sampling: Phase II used modified CLP methods. However, this document does not show any significant differences between Phase II and Phase III except different sampling periods. If there are no significant differences between Phases II and III, the analytical results of the two phases should be combined instead of separated. This issue should be clarified accordingly.

**Response:**

Phase II and III are significantly different in that they were sampled two years and two hurricanes apart. Phase IIA was performed to collect data on chemical contamination within the sediment of the bayou to assess the nature and extent of contamination. Those locations shown to be of concern were prioritized for sampling during Phase IIB. Samples collected during Phase IIB were analyzed for chemical contamination and associated toxicity. Phase III samples were analyzed for bioaccumulation from areas where contaminants could potentially bioaccumulate throughout the food chain. Phase III samples were collected concurrently with the samples collected during Phase IIB. In other words, Phase II assessed the potential pathway to a receptor while Phase III sampling assessed the potential effects from these contaminants. These phases and the data requirements of each phase are described in detail in the work plan and SAP. Therefore, Section 7 has been revised to only include the Phase IIA sample results. Phase IIB/III are now only included in Section 10.

**Comment 4:**

Section 7.0, Page 7-1, Paragraph 2 presents the Nature and Extent of Contamination and this paragraph describes the figures in the report. It appears from the figures that all results including the rejected non-detects are included in these figures. The figures should be revised such that the rejected non-detects are not included in the presentation of the data. In this way, the coverage of the analyses can be assessed. In addition, the figures should display the boundaries of the Assessment areas.

**Response:**

The rejected non-detects will be excluded from the figures. The assessment zone boundaries will also be included in the figures.

**Comment 5:**

Section 7.1, Page 7-1, Paragraph 3 presents the Nature and Extent of Contamination of the metals and this paragraph describes the summary table for the metals. However, the summary data is not subdivided into assessment areas. This table and the tables presenting the organic results should be subdivided into assessment areas so that the pattern of contamination can be assessed.

**Response:**

The figures, text and tables have been subdivided into assessment zones.

**Comment 6:**

Section 9.0, Page 9-1 presents a very brief discussion of the fate and transport of contaminants into and within Site 40. This discussion does not address the specific properties of the individual contaminants, does not discuss the biotransformation and bioaccumulation of the contaminants and does not discuss the sediment migration pathways. The above information is important since the major exposure pathways for both human and ecological concerns are via contaminated biota which is the only exposure pathway for humans. Therefore, it is imperative that the pathways of contaminant transport be clearly stated in this report. This section should be re-written accordingly.

**Response:**

The fate and transport section **has** been revised. Biotransformation and bioaccumulation of contaminants are discussed in Section **10**.

**Comment 7:**

Section 9.2, Page 9-1 presents a general discussion on contaminant migration. However, biotransformation and bioaccumulation are not discussed. In particular, the biotransformation of inorganic mercury into methyl mercury is an important factor of fate and transport of mercury compounds in the coastal marine environment. Discussions on biotransformation and bioaccumulation of mercury should be added to this section.

**Response:**

Biotransformation and bioaccumulation of chemicals of potential concern are discussed in Section 10. However, the concern for mercury is not warranted nor explained because mercury was not linked to any terrestrial site at NAS Pensacola and because of its volatile nature could have been the responsibility of another party. Furthermore, mercury was detected in only **14%** of the samples analyzed at levels commonly found in Florida and at one-half the rate of that of selenium, which is an important antagonist of inorganic and organic

mercury (Eisler, R., 1987. "Mercury Hazards to Fish, Wildlife, and Invertebrates: A Synoptic Review". U.S. Fish and Wildl. Serv. Biol. Rep. 85(1.10). 90 pp.). However, it is agreed that the above example given for mercury should **be** provided in the text when possible for any contaminant exceeding a sediment screening value **as a** line of evidence.

Comment 8:

Section 9.2.2, Page 9-7, Paragraph 1, Sentence Bullet 4 discusses the migration pathways for the Site 40 contaminants and this bullet briefly presents the concept of sediment movement. However, the magnitude of sediment movement and direction of sediment movement is not presented. This section should be expanded to include a discussion of the transport of contaminants to Site 40 and the movement of sediment within Site 40. This discussion should be presented based on assessment area since the sediment transport is likely to be different within each assessment area.

Response:

A predictive study of sediment movement was not performed. Instead, a sediment mapping survey was performed during Phase I to determine what types of sediment were present within the bayou and where these types of sediment were located. Conclusions concerning the transport of sediment within Site 40 is based on the results of the sediment mapping survey. The results of this survey are presented in Section 4. However, Section 9 has been revised to better reflect site-specific conditions.

Comment 9:

Section 10.2.1.2, Page 10-29, Paragraph 3 indicates that sample location **AZ3-24** (stormwater discharge point off the Navy Boulevard Bridge) had the most significant tPAH and individual compound PAH contamination. The text should include a discussion of the potential impacts associated with the golf course outfall via Wetland 4.

Response:

A discussion of sediment and surface water contamination within Wetland 4D (Golf Course Pond) will be included in the text. Based on contaminant levels detected within Wetland 4D, **impacts to the bayou are not expected to be a concern.**

Comment 10:

Section 10.2.1.2, Page 10-31, Paragraph 1 states that pesticides appear to be ubiquitous within the bayou and concentrations of DDD, DDT, and total PCBs could affect sensitive benthic fauna or

be biotransferred to upper-level vertebrates. However, the text should state that DDD, DDT, and total PCBs should be examined as part of a more focused ecological risk assessment.

Response:

DDD, DDT and total PCBs were further examined in the Phase IIB/III investigation. Two composite samples of fish tissue were both analyzed for pesticides and PCBs. Those tissue concentrations were modeled to determine whether there was a potential impact to the great blue heron. It was determined that these tissue concentrations did not pose an ecological risk to the heron.

Comment 11:

Section 10.2.1.2, Page 10-32, Paragraph 2 states that concentrations of PAHs suggest a moderate risk to ecological receptors in these areas. However, it is unclear how it was determined that risk from PAHs provided a "moderate risk" especially since HQs for individual PAHs ranged from 236 to 1490, and tPAH had HQs up to 163.8. Therefore, the text should state that due to the elevated concentration of PAHs in sediments, risk to ecological receptors is predicted. Additionally, the range of HQs calculated for PAHs should be added to the text.

Response:

The text will be revised to state that there is a potential risk predicted to receptors due to the levels of PAHs detected within the sediment. However, these impacts are not associated with an IRP site but are instead suspected to be due to impacts from the Navy Boulevard bridge. The samples were collected near a scupper from the bridge. Vehicular traffic and storm water runoff are the suspected source of the PAH contamination.

Comment 12:

Table 10-4, Page 10-36 lists the assessment endpoints selected for Site 40. However, the benthic macroinvertebrate community assessment endpoint is too vague and it is unclear what part of the benthic community is to be "protected". The Region 4 (1995) and the EPA Process Document (1997) state that the definition of an assessment endpoint "is the explicit expression of an environmental value that is to be protected." Based on this definition, this assessment endpoint fails to provide an explicit expression of an environmental value that is to be protected. Therefore, this assessment endpoint should be rewritten to be more specific in stating what about the benthic macroinvertebrate community is to be protected (for example, protection may mean the maintenance of a diverse and abundant benthic community). Also, an additional column should be added to this table stating which species was used to represent each appropriate assessment endpoint. For example, the great blue heron was selected to represent fish eating birds.

**Response:**

Assessment **and** measurement endpoints were approved by the Tier I Partnering **Team** based on the recommendations of the **eco** subcommittee. Endpoints chosen **are** described in detail in Section **2.4** of the approved May **1997 SAP** Addendum. Impacts to survival, growth, and reproduction through toxicity and diversity were selected **as** endpoints and are described in detail in the **SAP** addendum.

**Comment 13:**

Section 10.2.2.1, Page 10-38, Paragraph 2 states that locations for Phase III sampling were selected based on relatively high, medium, and low bulk sediment contamination concentrations observed from the Phase II data. However, no information which allows for a correlation of Phase II sampling locations to Phase III sampling locations is provided. Without this information, it is difficult to determine how Phase III data corresponds to Phase II data. Thus, the interpretation of Phase III data is limited. The text should state what sample locations from Phase II correlate with sample stations in Phase **III**.

**Response:**

The individual phases and their data requirements are detailed in the original Site **40** work plan and SAP. These data requirements and the correlations of the Phase **II** with the Phase **III** sampling locations will be included in the text and are summarized in Table **10-13**.

**Comment 14:**

Section 10.2.2.1, Page 10-39, Paragraph 0, Sentence **4** states that forage fish were sampled and analyzed of tissue content of PCBs from Station 40-06. However, it appears from data in Table 10-12 that only two fish were sampled. To clarify the fish sampling issue, the following items need to be discussed: the number of fish sampled, if replicate samples were used, **fish** species sampled, and weight **of fish** sampled.

**Response:**

**As previously stated, two fish samples were analyzed.** Those samples were species specific, **either killifish or pinfish, composed of several fish collected over several days.** A table will be provided to describe the details of these samples in Section **5**.

**Comment 15:**

Figure 10-2, Page 10-40 depicts the hazard indices produced for contaminant concentrations at Phase III stations. However, a legend should **be** added to this figure showing Phase III sampling stations compared to their corresponding Phase II sampling locations.

**Response:**

The Phase III samples were collected **as** near **as** possible to Phase II locations. Phase III samples were not replicates nor designed to judge reproducibility of the sampled matrix. The Phase III sediment chemical analysis **was** analyzed concurrently **with** toxicity data to correlate contaminant levels with an observed effect. The Phase IIA and corresponding Phase IIB locations are listed in Table 10-13.

**Comment 16:**

Section 10.2.2.1, Page 10-41, Paragraph 3 references Table 10-7 (page 10-44). However, the text does not contain a discussion of the results of the Shannon-Weiner diversity, Pielow's Evenness, or MacArthur's Equitability tests. Based on the results shown in Table 10-7, stations 40-04, **40-09**, and 40-10 appear to have different tests results than other sample stations. The text should include a more expanded discussion **of** the results of the tests presented in Table 10-7. Additionally, a new figure should be added to the text depicting the results of the Shannon-Weiner diversity, Pielow's Evenness, Margalef's Richness, and MacArthur's Equitability tests compared to HIs in one figure. This new figure would allow for a more complete comparison **of** the tabular results presented in Table 10-7.

**Response:**

The text has been expanded to discuss the results of the tests. The uncertainty associated with species diversity analysis will also be discussed.

**Comment 17:**

Section 10.2.2.1, Page 10-41, Paragraph 3 **states** that no benthic sample was taken at Station 8. However, there is no explanation why benthic samples were not taken from Station **8**. The explanation should be added.

**Response:**

An error in the sampling process caused the benthic sample at Station 8 to not be collected. This will be added to the **text**.

Comment 18:

Section 10.2.2.1, Page 10-46 references the data presented in Table 10-9 as the source of variables used to calculate HQs due to exposure to concentrations of tDDT and tPCBs from fish tissue. The text should reference where the original data set for the fish tissue concentrations are located.

Response:

The text will reference where this data **can be** found. The data is located in Appendix C and begins with the sample identification "040J."

Comment 19:

Section 10.2.2.1, Page 10-46, Paragraph 1 states that no impacts to fish communities are expected from water-borne contamination at Site 40. However, the text does not discuss potential impacts to fish from concentrations of contaminants present in sediments. The text should be revised to discuss sediment concentrations of contaminants on fish.

Response:

Based on the approved May **1997** SAP addendum, impacts to fish were to be determined by comparing surface water chemistry to water quality standards. Impacts from sediment were quantified by acute and chronic toxicity tests for select benthic species and bioaccumulation studies in foraging fish species. In addition, impacts to upper trophic level fish from the foraging fish have been modeled and added to the text.

Comment 20:

Section 10.2.21, Page 10-46, Paragraph 2 discusses the potential impacts to piscivorous birds, such as the great blue heron, from oral ingestion of tDDT and tPCBs in fish tissue. However, it appears from the text that only one individual killifish and pinfish were sampled. It is unclear how any statements could be generated on impacts of contaminants from tissue of only two individual fish. In addition, it is unclear if killifish and/or pinfish would be considered prey by a great blue heron. The text should be revised to 1) discuss the limitations inherent with only using two fish samples, and 2) address the issue of whether killifish/pinfish are considered to be food prey species for the great **blue** heron.

Response:

Section **2.4.1** of the May **1997** SAP addendum justifies the use of native foraging fish species such as killifish and pinfish in quantifying impacts to the great blue heron. Each fish sample is a composite of many fish and thus represents a wide range of potential contaminant exposures. Based on information in the EPA Wildlife Exposures Handbook (EPA/600/R-

93/187a), killifish and pinfish are representative of prey species for the heron. These points will be described in the text.

Comment 21:

Section 10.2.2.1, Page 10-46, Paragraph 2 discusses the potential impacts to piscivorous birds, such as the great blue heron, from oral ingestion of tDDT and tPCBs in fish tissue, sediment, and water which were below 1. However, data from Table 10-9 shows that no tDDT was detected at sample 40-06 and this nondetect results in a lower calculated impacts from tDDT. Results from Phase II sampling indicated that maximum concentrations were 16.0 ug/kg (DDD), 13.0 ug/kg (DDE), and 22 ug/kg (DDT). Therefore, it is unclear how station 40-06 is supposed to represent the high bulk sediment contamination concentrations based on the results from the Phase II data. The text should include a discussion on the lack of correlation for sediment tDDT concentrations between Phase II and Phase III sampling sites.

Response:

Station 40-06 was collected within Redoubt Bayou, which contained relatively high concentrations of DDT and PCBs from Phase II. Therefore, this area was chosen for Phase III sampling. However, DDT was not detected in the sediment near those sample locations chosen for fish tissue bioaccumulation. The absence of DDT was probably due to the Phase II and Phase III samples not being collected from the exact same location and the variances in contaminant distribution within the sediment. Even though DDT was not detected in the one Phase III sediment sample, the fish species collected would be exposed to DDT-contaminated sediment known to exist in the area of Redoubt Bayou based on the Phase II data. A more detailed summary of the Phase II data collected from Redoubt Bayou and how Phase II and Phase III data may not always correlate will be included in the text.

Comment 22:

Section 10.2.2.1, Page 10-50, Paragraph 2 states that tissue concentrations from fish were not at concentrations which pose a risk to fish eating birds. However, since it appears that only two individual fish were sampled, this statement cannot be verified. The text should be revised to state that only two individual fish were sampled so risk to fish eating birds may be over or underestimated based on the limited fish samples.

Response:

The fish tissue collected represented a number of fish. This point will be clarified in the text. A table presenting the number of fish in each sample has been added to Section 5.

**Comment 23:**

Table 10-10 Page 10-51 presents a list of the uncertainties associated with the ecological risk assessment at Site **40**, Bayou Grande. However, the list should be expanded to include, at minimum, the uncertainty associated with the following:

- a. Fish sampling consisting of two individual fish
- b. Lack of correlation between Phase **II** and Phase **III**, especially with regards to tDDT sediment concentrations

**Response:**

The uncertainty will discuss sampling fish from a limited area of the bayou. The uncertainty section will also discuss the variances in sediment sample results due to factors such as sample placement and contaminant distribution. However, as previously stated, Phase **III** samples were collected to confirm the presence of target contaminants in sediments being analyzed for toxicity testing. Phase **III** samples were not intended for nature and extent.

**Comment 24:**

Section 10.3 presents the human health **risk** evaluation. The sediment samples from the entire **OU** are summed together even when there are obvious differences between assessment areas. This risk evaluation should be subdivided according to assessment areas such that a risk management decision could be made on each assessment area.

**Response:**

The text fails to support the reason for treating the entire Bayou **as a** unit and will be modified to correct this. Samples are now correlated to the **AZ** in which they were collected.

**Comment 25:**

Section 10.3.1, Page 10-52 describes the exposure scenarios for the human receptors. This section states that since the sediment samples were collected at depths where the sediment is always beneath the water, there **is** no direct human exposure to the sediment. Apparently, there were no samples collected at the shoreline (at the tidal interface) where there is potential human exposure. It is not known if the shoreline contamination **is** being addressed in another **OU report**. **However**, the shoreline sediment contamination is a potential exposure pathway for human receptors and is also a very important exposure pathway for ecological receptors. **If** the shoreline sediment contamination is not being addressed in another **OU** report, it should be addressed in this report.

Response:

Shorelines in Bayou Grande are white fine to medium grain sand, extensively winnowed by wind and wave action, and not representative of contamination deposition **as** determined by Phase I sampling. The report will provide this discussion.

Comment **26:**

Section 10.3.1, Page 10-52, Paragraph 5, Sentence 2 presents the human receptor exposure scenarios. This sentence states that since surface water exposure is very dynamic, surface water exposure does not constitute a significant route of exposure. The first paragraph on this page also stated that surface sampling is a snapshot in time and would only validate surface water quality. However, just because concentrations can change rapidly over time does not mean that the exposure pathway is not significant, and the dismissal **of** surface water sampling and exposure in this manner is not appropriate. This issue **of** surface water sampling over time can be addressed by sampling over time to obtain multiple snapshots so that an overall view of surface water contamination can be assessed. This also would address the issue of dynamic exposure. **If** the areas are used for recreational purposes, then surface water exposure to organics can be significant. A point **was** made in Section 3 that the Bayou Grande waters are relatively less dynamic because **of** the partially confined nature **of** the bay. Therefore, it **is** suggested that surface water sampling be performed at the areas where there are discharge points into the Bayou Grande. It is also suggested that this sampling be performed for at least four events.

Response:

The text fails to provide the reader with the purpose of sampling linking the results with the route of exposure. We agree that dismissal of this pathway in this manner is not complete. A complete discussion will be provided to include surface water discharge areas, swimming areas, and other physical characteristics.

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Comment **27:**

Section 10.3.3 is the uncertainty section which discussed the uncertainty relating to the fish analyses and the TBP model. However, the uncertainty relating to the sampling and the completeness of the analytical methods **is** not discussed. This discussion should be added.

Response:

**The human health risk assessment has been revised. Uncertainties related to the sampling and the methods are discussed.**

Comment 28:

Section 11.0, Page 11-1, Paragraph 3 states that no risk to ecological receptors is present from contaminants at Site 40. However, based on the inability to correlate Phase II and Phase III data and the lack of adequate fish data, this statement is not valid at this time. The conclusions concerning ecological risk should only be made after the issues raised during the review are appropriately addressed.

Response:

The distinction between Phase II and Phase III will be described in the text based on the previous comments. The fish tissue data was collected from Redoubt Bayou, which had the greatest distribution and highest concentration of contaminants throughout the entire bayou. Therefore, if no risk is present in Redoubt Bayou it is unlikely that risk will be present within other areas of the bayou.

Comment 29:

Section 11, Page 11-2, Paragraph 4 presents conclusions and recommendations for Site 40 and recommends no further action. However, the data presented in this report is inadequate to support this recommendation. The presence and/or extent of methyl mercury contamination was not addressed and the small fish were not analyzed for mercury or methyl mercury. The data does suggest that there is an accumulation of pesticides and PCBs in fish and that the source of these contaminants may be the sediments. The TBP model and the small fish data indicate that there is a potential for human health concern by predicting risks in the range of  $5 \times 10^{-5}$  to  $5 \times 10^{-4}$ . There was no effort made to address the potential uptake of contaminants by shellfish which may be greater than for game fish. There was a constant reference that the risk estimates were related to subsistence fishing whereas the RBC does not relate to subsistence fishing. The model inputs are not sufficiently conservative to state that there is no risk concern. Finally, there is no relationship or relevance between the TSCA criteria for soils and marine sediments. The recommendations should be that additional biota sampling is necessary and the areas where mercury contamination was observed should be sampled for methyl mercury.

Response:

Fish were collected because they represent an important link in the food chain. Shellfish are not a commodity in Bayou Grande, but could be collected in the Yacht Basin and at the effluent discharge from Wetland 4 to Bayou Grande. However these locations were not locations indicating contaminants above a screening value. The concern for mercury is not warranted nor explained because mercury was not linked to any terrestrial site at NAS Pensacola and because of its volatile nature could have been the responsibility of another party. Furthermore, mercury was detected in only 14% of the samples analyzed at levels

commonly found in Florida and at one-half the rate of that of selenium, which is an important antagonist of inorganic and organic mercury (Eisler, R., 1987. "Mercury Hazards to Fish, Wildlife, and Invertebrates: A Synoptic Review". U.S. Fish and Wildl. Serv. Biol. Rep. 85(1.10). 90 pp.). In addition, the fish ingestion RBCs are based on a daily consumption rate of 54 grams per day for the entire year (350 days per year). This ingestion rate and exposure frequency is equivalent to the per capita intake value of 59g/day reported in the EPA Exposure Factors-Handbook for the Native American Subsistence Fishing Population (USEPA Exposure Factors Handbook, Table 10-85, p. 10-80). A Gulf Coast specific intake rate for the recreational marine angler is reported as 7.2 g/day and 26 g/day for the mean intake and 95<sup>th</sup> percentile intake, respectively.

#### SPECIFIC COMMENTS

Comment 1: Section 5.0, Page 5-1, Paragraph 2, Sentence 2

This section presents the field investigation methods for the report and this paragraph presents the analytical methods. This sentence states that all Phase II and Phase III samples were analyzed for the full TCL/TAL list. However, there is no mention of analyzing samples for methyl mercury. Mercury contamination has been a concern for a number of years. Since it is quite possible some of the inorganic mercury has been transformed to methyl mercury in the coastal sediments, the presence or absence of methyl mercury should be confirmed. There should be a re-sampling for methyl mercury.

Response:

Since selenium is an antagonist to inorganic and organic mercury, its presence precludes the need for methyl mercury analysis. References will be provided.

Comment 2: Section 5.0, Page 5-1, Paragraph 2

This section presents the field investigation methods for the report and this paragraph presents the analytical methods. However, it was noted in the data validation section (Section 8) that some of the sediment samples were digested for metals analysis using a specialized technique with hydrofluoric acid. This method of digestion is not discussed here and the purpose of the specialized digestion is not presented. The rationale for this digestion should be presented.

Response:

A description of the specialized digestion technique and the reason for its use will be included with the text.

**Comment 3:**  
**Table 7-1, Page 7-2, Column: Frequency of Detection**

This table presents the data summary for all inorganic sediment data. However, the frequency of detection ratio does not reflect the number of rejected samples. It is customary to decrement the number of samples by the number of rejected samples. This includes the analytes for which the nondetects were rejected. For example, it was noted that there were antimony non-detects which were rejected. This table should be corrected. This comment applies to all the screening tables.

**Response:**  
**The tables have been revised to exclude the rejected data.**

**Comment 4:**  
**Section 7.1, Page 7-4, Paragraph 0, Sentence 0**

This section is a discussion of the inorganic analytical results and this sentence states that the table contains the arithmetic mean of the detected concentrations. However, averaging only the detected concentrations does not have a statistical basis and is a biased average. The bias is towards a higher average. The more appropriate statistic is to compute the arithmetic mean of all the results substituting one half of the sample quantitation limit (SQL) for the non-detected results. This table should be corrected as well as other summary tables.

**Response:**  
**Basing the average detection limit on the number of detections instead of the number of samples analyzed for a particular compound is a more conservative approach. Therefore, this method of data presentation will remain in use.**

**Comment 5:**  
**Section 7.1, Page 7-4, Paragraph 1, Sentence 4.**

This section is a discussion of the inorganic results and this sentence states that the detected concentrations are compared to risk-based screening concentrations. However, it is not stated that the screening concentrations are only ecological screening concentrations. In addition, it should

be noted that the ecological screening concentrations from MacDonald are not entirely based on risk values. **The** text should **be** revised to reflect the above points.

Response:

The text will be changed to reflect these points.

Comment 6:

Figures 7-1 through 7-54.

Section 7 presents a great number of figures. However, some of these figures can be combined or regrouped based on the chemical properties and similar structural properties of the analytes. For example, for the contaminants of the **PAH** group (see Figures 7-22 through 7-28), one figure can be used to present **PAH** contamination. In addition, in order to distinguish "detected" and "nondetected" it is suggested that a dark diamond be used for "detected" **and** a circle for "nondetected" for all the figures.

The figures should also include sample identifications and detected concentrations above screening values. The information **will** be helpful in showing areas that are only slightly above the screening criteria verses significantly above the screening criteria.

Response:

The figures will be changed to show the sample identification numbers from Phase II. Detected concentrations will also **be** shown. Because Phase III samples were not collected to assess nature and extent but were collected to assess the potential effects of contamination, the phase will be deleted from Section 7 and discussed only in Section 10.

Comment 7:

Section 8.1.3, Page 8-6, Paragraph 2, Sentence 1

This section is a discussion of the results of the data validation review of the calibration data. This sentence indicates that several compounds with percent differences outside continuing calibration QC criteria. However, it does not **state** which compounds, **how many times** there were deficiencies, and which samples were affected. This information should be **added** to the report.

Response:

The first sentence states that all SVOC SDGs had acceptable continuing calibration RRFs, except for 241901. The remaining sentences in the paragraph and the paragraph in text table illustrated after the colon present the information requested in the comment.

**Comment 8:**

**Section 8.1.4, Page 8-8, Paragraph 1.**

This section is a discussion of the blank contamination and this paragraph discusses the common laboratory blank contaminants. However, there is not a *summary* table of the **blank** contamination and the samples affected **by** blank contamination. This table should be added. This comment also applies to the same issue in Section **8.2.4** (page 8-17, paragraph 1).

**Response:**

The validation summary reports prepared by EnSafe's subcontractor, Heartland Environmental Services, Inc. will be provided in Appendix G. These summary reports contain detailed information regarding blank contamination and affected samples.

**Comment 9:**

**Section 8.2.7, Page 8-19, Paragraph in text table.**

This section is a discussion of the matrix spikes and duplicates for the metal analyses. This table displays the QC exceedances and the samples affected. It is apparent that many of the antimony results are rejected. However, there is no discussion regarding the antimony rejection. These laboratory discrepancies should be discussed further and a summation of how many antimony results that are rejected should be included. In addition, this is a point for the uncertainty discussion.

**Response:**

Qualifications made to undetected antimony results were presented in sections **8.2.7** and **8.2.10**. Undetected antimony results were rejected because spike recoveries grossly exceeded QC limits. This was discussed in the appropriate sections. In general, matrix interference from the investigative sample itself prevented antimony from accurately being quantitated. The number of undetected antimony results that were rejected for matrix spike and atomic absorption spike recovery QC exceedances were 77. <sup>5</sup>

**Comment 10:**

**Section 8.3.1, Page 8-21, Paragraph 1.**

This section presents a data completeness summary and this paragraph states that there **was** a 98% completeness of all data. In addition, it states that **no** positive results were rejected. However, the presentation of percentage of completeness in this manner does not describe the complete picture. The percentage of completeness should **be** based on individual analytes or analytical fractions (VOCs, SVOCs, etc.). For example, there were some pesticide non-detects which were

rejected. The percentage of completeness of the pesticides should then be expressed. Another issue is if the rejections were concentrated in one assessment area, then this is an important fact.

It is important that no positive results were rejected, but the fact that a number of non-detects were rejected is also important because this lowers the confidence that all important analytes were detected. Some statements about this issue should also be made.

**Response:**

The approved Site QAPP contained in, *Remedial Investigation/Feasibility Study Comprehensive Sampling and Analysis Plan for Naval Air Station Pensacola*, "Data completeness will be expressed as the percentage of total valid tests conducted." Data completeness calculations were performed and presented as was cited in the approved QAPP.

EnSafe calculated completeness per fractions and the results were as follows. This completeness breakdown will be added to Section 8.3.1.

Volatiles:	4,973 total tests, 10 rejected undetected tests	Completeness = 99.8%
Semivolatiles:	10,176 total tests, 132 rejected undetected tests	Completeness = 98.7%
Metals:	3,956 total tests, 76 rejected undetected tests	Completeness = 98.1%
Pesticides/PCBs:	4,592 total tests, 147 rejected tests	Completeness = 96.8%

**Comment 11:**

**Section 9.1, Page 9-1, Paragraph 2, Sentence 1.**

This section presents the contamination summary for the fate and transport analysis. This sentence states that the Phase II was limited to sediment analysis. However, surface water and biota samples were collected. In addition, sediment data was collected during the Phase III field effort. The fate and transport analysis should include all data. The contamination summary should be revised to include a summary of all data and list the contaminants that were selected for further analysis. In some cases, the contaminants can be grouped together such as for the non-carcinogenic PAHs, carcinogenic PAHs, DDT and daughter products, and so forth. The VOCs should also be included. This contamination summary should be presented by site assessment areas.

**Response:**

A more comprehensive discussion of what data was collected during particular phases will be included in Section 7. The fate and transport of contaminants of particular concern will be discussed.

**Comment 12:**

**Section 9.2.1, Page 9-1, Paragraph 3, Sentence 3.**

This section presents the physical and chemical properties that affect fate and transport and this sentence states that the chemical and physical properties used to evaluate fate and transport are found in Table 9-1. However, the actual physical and chemical parameters for each contaminant are not displayed. A table should be added to include the fate and transport properties for each contaminant.

**Response:**

**Section 9 has been revised to reflect valid site-specific transport mechanisms.**

**Comment 13:**

**Section 9.2.1.2, Page 9-5**

This section presents a general discussion on the media properties affecting fate and transport. However, it does not address the specific effects these properties will have on the fate and transport of the contaminants. In particular, since a partitioning model was used to predict the transport and bioaccumulation of PCBs, this should be examined in detail for the pesticides and PCBs. This section should be expanded to discuss in detail the effects that the media properties have on the major contaminants.

**Response:**

**Specific variables in the partitioning model and their impact on contaminant fate and transport will be discussed. Information on the effects of other media properties on particular contaminants will be included where appropriate.**

**Comment 14:**

**Section 10.3.1, Page 10-55, Paragraph 1.**

This section discusses the human exposure pathways and this paragraph discusses surface water exposure. It is stated in this paragraph that limited surface water samples were taken for ecological risk and that no surface water screening criteria were exceeded. However, the data is not presented. Even though the **data may** have been **taken** for ecological purposes, **it** may have application to human health risk. In addition, the **type** of screening criteria is not presented. A summary table should be included for the surface water data and the screening criteria should be discussed.

**Response:**

**The text will be revised to include the requested summary table.**

**Comment 15:**

**Table 10-12, Pages 10-55 and 10-56.**

This table presents the analytical results of the fish samples and a comparison with the RBCs. However, the data presentation in the table misrepresents the data and it appears at first that there are more than two fish samples. In addition, it is customary to sum the risk results over all contaminants. The following table is an example of how the data should be presented. It should be noted that the overall risk for one of the samples is  $7 \times 10^{-5}$ , which is a significant potential risk. Since the species is lower on the trophic scale than the game fish which are usually consumed and have DDT and PCBs bioaccumulated, it is likely that the tissue concentrations of the game fish will be higher. Therefore, there is a potential concern for the consumption of game fish which can only be resolved by additional sampling.

Comparison of Fish Analytical Data with Fish RBCs					
		Conc.	Fish Ingestion		Estimated
			RBC	Exceeds	
040J400601	4,4'-DDD	2.6	13	No	NC
	4,4'-DDE	12	9.3	Yes	1.E-06
	Aldrin	0.66	0.19	Yes	3.E-06
	Arochlor-	100	1.6	Yes	6.E-05
	Dieldrin	1.3	0.2	Yes	7.E-06
	gamma-BHC	0.53	2.4	No	NC
	gamma-	1.7	9	No	NC
	Lead	1.5			
Total Risk					7.E-05
040J400602	4,4'-DDD	3.8	13	No	NC
	4,4'-DDE	9.7	9.3	Yes	1.E-06
	Aldrin	ND	0.19	No	NC
	Arochlor-	90	1.6	Yes	6.E-05
	Dieldrin	1	0.2	Yes	5.E-06
	gamma-BHC	0.53	2.4	No	NC
	gamma-	1.7	9	No	NC
	Lead	2.2			
Total Risk					6.E-05

(NC: Non-carcinogenic)

**Response:**

The text will be revised to include this information. The presentation has been revised to reflect the maximum contaminant concentrations in the fish samples. All of the detected parameters in fish tissue are carcinogenic.

**Comment 16:**

Section 10.3.1; Page 10-56, Paragraph 1, Sentence 1

This section discusses the human health exposure pathways and this paragraph discusses the risk screening presented in Table 10-12. This sentence states that the Fish Consumption RBC is based on the subsistence fisherman. However, a review of the exposure parameters used for the RBCs and the Exposure Factors Guidance indicates that the fish consumption rate is based on national consumption and not subsistence fisherman. Therefore, the estimated risk is not the most conservative estimate. The text should be changed to reflect these facts.

**Response:**

The fish ingestion RBCs are based on a daily consumption rate of **54** grams per day for the entire year (**350** days per year). This ingestion rate and exposure frequency is equivalent to the per capita intake value of **59 g/day** reported in the EPA Exposure Factors Handbook for the Native American Subsistence Fishing Population (USEPA Exposure Factors Handbook, Table 10-85, p. 10-80). Therefore, the estimated risk is the **most** conservative estimate.

**Comment 17:**

Section 10.3.1, Page 10-56, Paragraph 2.

This section discusses the human health exposure pathways and this paragraph discusses the use of a Thermodynamic Bioaccumulation Potential (TBP) Model. References for this model was not found. A copy of this reference should be provided to the EPA for review. In addition, the preference factor of **4** appears to **be** very low for **PCBs** which have a large potential for bioaccumulation. In addition, the preference factor is likely to be different for shellfish and game fish. This model and the assumptions used in the model should be reviewed by **EPA** prior to screening.

**Response:**

The TBP model has been deleted. Calculated predatory fish data are now used.

**Comment 18:**

Section 10.3.1, Page 10-57, Paragraph 1, Sentences 3 and 4.

This section discusses the human health exposure pathways and this paragraph discusses the inputs to the TBP Model. These sentences state that a log-normal distribution was assumed and the **95<sup>th</sup>** UCL was calculated. Tables 10-13 and 10-14 present the calculations for the PCB concentrations and the Total Organic Carbon (**TOC**) concentrations for the entire OU 40. Since there are a large number of samples, the assumption of a lognormal distribution **is** not warranted. There is sufficient data to check the distribution assumptions. It is apparent for the equations that the uptake of PCBs by organisms **is** related to the local concentration of TOC. Therefore, some form

of a PCB ratio to TOC should be used in the calculations. In addition, since the PCB distribution varies according to Assessment area, a separate calculation should be carried out for each one. Also, since this is a screening level calculation and the risk is inversely proportionally related to the TOC concentrations, the lower 95<sup>th</sup> UCL should be used for each assessment area. However, if a ratio of PCB to TOC is calculated, then the upper 95<sup>th</sup> UCL for the ratio should be used.

Response:

The TBP model **has been** deleted.

Comment 19:

Section **10.3.2**, Page **10-58**, Paragraph **2**, Sentence **5**

This section presents the uncertainties in the risk evaluation and this paragraph discusses the uncertainties for the small fish evaluation. This sentence states that most contaminants accumulate in the bones and organs. However, this is not true for PCBs and organochlorine pesticides which accumulate in fatty tissues. This sentence should be revised.

This comment applies to all references (Section 10.3.3 and Section 11) regarding accumulation in bones and insufficient rationale to dismiss the small fish data.

Response:

The text will be revised to accurately reflect body burden of accumulated toxins.

Comment 20:

Table **10-15**, Page 10-63.

This table presents ranges of possible risk results by varying the input parameters to the TBP model. However, the rationale for the changes in inputs is not presented. In addition, the possibility of higher risks such as using a lower TOC concentration, a higher preference factor, or a maximum PCB concentration, is not presented. This table should be revised to include the upper limits of risk.

Response:

The TBP **model** has been deleted.

**Comment 21:**

**Section 10.3.2, Page 10-64, Paragraph 3, Sentences 3 and 4.**

This section presents the uncertainties in the risk evaluation and this paragraph discusses the FDA action level for PCBs. The FDA Action Level of 3,000 ppb in fat is not entirely risk based but includes the concept that elevated PCB concentrations in meat may be unavoidable. In essence, this reflects the existing level of PCB contamination in meats. Therefore, the FDA action level has no relevance to this risk evaluation for Site 40. This paragraph should be removed.

**Response:**

**Agreed, the FDA limit is not based on risk, however the fact that FDA has an allowable limit is relevant, because it is "unavoidable". The references to the FDA action level have been removed from the risk assessment.**

**Comment 22:**

**Section 10.3.3, Page 10-65, Paragraph 2, Sentence 1.**

This section presents the conclusions of the risk evaluation and this paragraph discusses the results of the TBP model. This sentence states that the results of the model suggests a risk greater than  $10^{-6}$ , but between the EPA range of  $10^{-6}$  to  $10^{-4}$ . However, this is not true because the actual risk range produced by the model was from  $2 \times 10^{-7}$  to  $5 \times 10^{-4}$ . The only scenarios when the risk which was calculated to less than  $10^{-4}$  was when the concentration was assumed to be at the minimum value and/or the TOC was assumed to be at the maximum value. Therefore, the model actually indicates a potential cause for concern rather than being in the acceptable risk range.

**Response:**

**The TBP model has been deleted. Risk has been estimated using calculated whole-body predatory fish data.**

**Comment 23:**

**Section 10.3.3, Page 10-65, Paragraph 2, Sentence 5.**

This section presents the conclusions of the risk evaluation and this sentence discusses the TSCA requirement of 10 ppm for soils. However, the TSCA requirement for soils has no relevance for submerged marine sediments. This sentence should be removed.

**Response:**

**Reference to TSCA has been removed.**

### 3.0 SPECIFIC COMMENTS

Comment 1: --

Section **5.0**, Page **5-1**, Paragraph 2, Sentence 2.

This section describes the field investigations methods and this paragraph discusses the analytical protocols. This sentence presents the analytical methods for the sediment-samples. However, the analytical methods for the fish samples and surface water samples are not stated. This should be added.

Response:

Analytical methods for the fish tissue samples and the surface water samples will be included.

Comment 2:

Table 7-1, Page **7-3**, Row: Footnote b

This footnote states that footnote b refers to the FDEP screening concentration for sediment, However, this reference was not found in the references. This discrepancy should be resolved.

Response:

This reference was included in the reference section. The document is the Approach to the Assessment of Sediment Quality in Florida Coastal Waters by D.D. MacDonald, MacDonald Environmental Sciences, Ltd., Prepared for the Florida Department of Environmental Protection, November **1994**.

Comment 3:

Section 8.1.3, Page **8-6**, Paragraph **2**, Sentence **2**.

This section is a discussion of the results of the data validation review of the calibration data. This sentence states that these QC deficiencies represented common laboratory practices, However, it should be stated that the QC deficiencies are within the normal fluctuations of laboratory function. This sentence should be revised accordingly.

Response:

The text will be changed accordingly.

**Comment 4:**

Section 8.1.5, Page 8-10, Paragraph 1, Sentence 1.

This section is a discussion of the surrogate data validation. This sentence states that three surrogate %Rs were grossly outside QC Limits. However, the context and position of the paragraph suggests that pesticides are the subject of discussion. This should be clarified.

Response:

The sentence is: *Three VOC surrogate %Rs were grossly outside QC limits.* This is a new paragraph and a new subject (VOCs.) The previous paragraph discussed pesticides.

**Comment 5:**

Section 10.3.1, Page 10-58, Paragraph 1, Sentence 7

This section discusses the human health exposure pathways and this paragraph discusses the results of the TBP Model. This sentence states that the range of risks is presented in Table 10-14. However, the range of risks is presented in Table 10-15. This discrepancy should be resolved.

Response:

The text will be revised as needed.

**Summary**

There are serious and significant deficiencies in this risk assessment and fate and transport evaluation that prevent drawing meaningful conclusions from this document. In my view, the additional sampling will need to be conducted and the report rewritten.

Response:

The only additional sampling requested was to provide methyl mercury data. This is unfounded based on the presence of selenium in sediment. Specific sampling analyses and locations performed in the risk assessment were agreed on in advance by the NAS Pensacola Tier I partnering team which included representatives of EPA, FDEP, NOAA and the Navy.

**General Comments**

**Fate and Transport in Bayou Grande**

**Section 9.0 on** Fate and Transport was boilerplate language that I have seen in other documents. It would have been very helpful to the understanding of the pattern of contamination if there had been an effort made to link the chemicals found in sediment with onshore sources and to determine if tidal water movements could entrain and redeposit sediment. No attempt at all was made to understand these two issues in Bayou Grande. For example, on page 6-8, the text states that a

tidal study would be helpful in understanding the influence of groundwater on surface water and sediments, but **no** indication of this increased understanding was ever presented in the document.

**Response:**

**The fate and transport section has been revised to better reflect the conditions of the site.**

**Inadequacy of the Risk Assessment**

The assessment endpoints in the ecological risk assessment were too vaguely defined. In general, particular chemicals suggest particular assessment endpoints. Metals present at the site would be expected to be directly toxic, and an assessment endpoint that specified the level of both the diversity and abundance of the benthic macroinvertebrate community would be appropriate. Hence, a discussion of a control area, also lacking in this document, would be needed. For a more complete discussion of assessment endpoints, an ECO Update from EPA, "Ecological Significance and Selection of Candidate Assessment Endpoints" is suggested.<sup>1</sup> Additional discussion is available at the Oak Ridge National Laboratory website, <http://www.ornl.gov>.

Conclusions were drawn about human health and ecological risk at the site based on a sample of two fish - one killifish and one pinfish. This is an inadequate sample, especially based on the size the of the site.

There was no attempt to separate the risk assessment based on the four assessment zones. Indeed, I wondered why the four zones **were** specified in the first place. It would have made more sense to have performed a separate risk evaluation for each zone and to have included the wetlands and other on shore sources. This point harks back to the inadequacy of the fate and transport evaluation. The wetlands were mentioned on page **4-9**, but only in a perfunctory way.

**Response:**

**Measurement and assessment endpoints were developed in coordination with representatives of EPA, NOAA, FDEP and the Navy. They are clearly defined in Table 10-4 of the RI report and are detailed in the SAP Addendum. The assessment endpoint "protection of benthic communities" encompasses benthic community indices as a measurement endpoint. Killifish and pinfish were collected over several days to obtain sufficient volume for the laboratory analysis. The killifish samples was composed of four fish and the pinfish was composed of**

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<sup>1</sup>ECO Update, Ecological Significance and Selection of Candidate Assessment Endpoints, OERR Publication 9346.0-1 | FSI. EPA 540/F-95/037, Jan.

nine fish. Additional text has been added to define the assessment and measurement endpoints. --

Specific Comments:

Comment 1:

Page 1-2, Section 1.1. Even in this section, it was clear that the dynamics of sediment transport should have been considered.

Response:

Section 6 discusses how the low energy regime within the Bayou encourages sedimentation,

Comment 2:

Page 5-4. The common names of the animals used in the toxicity tests should be given.

Response:

Common names will be given where applicable.

Comment 3:

Figure 6-1 and others. Contour maps for this and other figures might have helped to understand sediment transport and the location of contamination. False color showing levels of various contaminants (e.g. fig. 7-1) would have greatly helped understanding. Given the impenetrability of these figures, it is not surprising that the document did **not** support its conclusions.

Response:

The figures in section 7 have been revised to better illustrate contaminant levels. However, contour maps **assume** a relationship or "correlation" between points can be drawn. Contours of this data would exhibit spatially **aliased** data observed as "bulls eyes", which is obvious without the contours. This type of contouring draws a picture of large hot spots but with poor confidence. Again, this sampling was an initial effort to **assess** the nature and extent of resident contamination for the purpose of remediating Navy influences in Bayou Grande. The sampling provided data **to** support fine grained sediments are enriched with specific contaminants.

**Comment 4:**

**Page 6-8,6-9.**

How does the time lag study for site 38 relate to site **40**? The areas are on opposite sides of the base and are in different water bodies. Is it feasible to assume that the conditions in the bay mirror the bayou?

**Response:**

**This discussion will be deleted.**

**Comment 5:**

**Page 6-9, 6-10**

What is the correlation to the high tide sampling in the bay with the bayou? The information presented suggested that the groundwater flow is toward the bay. Should some of the groundwater flow patterns demonstrate the some areas are flowing toward the bayou?

**Response:**

**The discussion will be deleted.**

**Comment 6:**

**Table 7-1**

Screening against risk based concentrations should occur in the risk assessment and not in the nature and extent section.

**Response:**

**This information ~~was~~ included to give the reader a broader perspective on the relative levels of contamination across the entire bayou.**

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**Comment 7:**

**Page 10-4**

The text points out that mapping exceedances identified areas of higher contaminant deposition. This is not correct. Deposition is indicated by fate and transport considerations which were notably absent from the document (see General Comments),

**Response:**

**The mapping was performed to identify areas of higher potential contaminant deposition. The text ~~has~~ been revised.**

Comment 8:

Page 10-5

The Office of Health Assessment in the Region 4 EPA is now called the Office of Technical Services.

Response:

This change will be added to the text.

Comment 9:

Table 10-1 and UCL calculation

For initial screening in an ecological risk assessment, the maximum detected concentration should be used. Screening level ecological risk assessments should be conducted with all factors biased in a conservative direction.

Response:

All sample locations were shown to give the reader a better idea of contaminant distribution across the bayou.

Comment 10:

Section 10.2.2, page 10-33

A figure should be included showing the sampling locations for the eco assessment and the contaminant concentrations.

Response:

A figure will be included showing the area within Redoubt Bayou and other areas chosen for further study.

Comment 11:

Page 10-30

The screening assessment concludes that the risk to ecological receptors is low based on HQs less than 6. The threshold presented in many guidance documents is 1.

Response:

The guidance documents referred to reflect an assumption that the screening value is the cleanup or protective value to be used in a risk management decision. The same guidance

documents refer this to risk managers. The text suggests realism based on the fact that all HQs are of the same order of magnitude.

**Comment 12:**

**Table 10-5**

Given its large home range, one wonders whether the Great Blue Heron adequately represents the assessment endpoint.

**Response:**

The heron **was** selected by the Tier I Partnering Team which includes representatives of EPA, NOAA, **FDEP** and the Navy. Although it may have a large home range, the conservative assumptions made in the model (**SFF=1.0**) negate the importance of home range. In addition, killifish and pinfish are part of the heron's diet

**Comment 13:**

**Page 10-64** and elsewhere

**The** exposure assumptions for the subsistence fisherman are never presented. **It is** unclear why such a receptor would even be considered in this risk assessment. In addition, the **FDA** action level for PCBs in fish **is 2** ppm and is considered a level appropriate for occasional consumption - for example, those who purchase fish in the grocery store.

**Response:**

The text has been revised to better explain the potential receptors. The subsistence fisher **was** used to present the most conservative estimate of excess risk. The FDA action level **has** been deleted from the risk assessment, however, its use **as** a risk management tool will be discussed in the conclusions section.