

N00204.AR.005255
NAS PENSACOLA
5090.3a

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION RESPONSE TO COMMENTS
FOR DRAFT REMEDIAL INVESTIGATION REPORT OPERABLE UNIT 16 SITE 41
WETLANDS NAS PENSACOLA FL
9/1/2000
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

**NATIONAL OCEANIC AND ATMOSPHERIC
RESPONSE TO COMMENTS
DRAFT REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 16 – SITE 41 (NAS Pensacola Wetlands)
NAS PENSACOLA**

Major Comments and Recommendations:

Comment 1:

Risks to higher trophic level fish (e.g., sea trout) are inadequately characterized. Risks posed by the dietary pathway have been completely ignored. This is a serious deficit because persistent bioaccumulative compounds (e.g., PCBs, DDT, mercury) are among the site-related contaminants.

Other deficiencies include:

- a) The primary measurement endpoint, comparison to water quality criteria, indicates metals and dieldrin pose risk to fish at wetlands 64, 3, 5A, 33, and 75. These risks must be more thoroughly discussed. Also, explain why surface water samples were not collected at wetlands 16 and 18.
- b) One of the measurement endpoints, correlation of fish tissue residues to effects values in the literature (Table 8.2-141), was never pursued in this report.
- c) A larval fish toxicity bioassay was conducted at the freshwater wetland sites in Phase IIB. The corresponding test for larval fish was not conducted at the estuarine wetland site.
- d) To adequately characterize risk to both forage fish and higher trophic level piscivorous fish, present then discuss the multiple lines of evidence (dietary risk, comparison to water quality criteria, bioassays, residue-effects) then integrate the results via weight of evidence.

Modeling dietary risk to higher trophic level fish and/or additional fish sampling would also benefit the human health risk assessment (8.3). Currently, only a qualitative assessment is attempted. The document recognizes this deficiency in the last two sentences in Chapter 8 (page 8-381); Because bioaccumulation and bioconcentration effects and game fish tissue data are not available, the uncertainty and variability in this assessment was too great to quantify risks. Risk managers could consider game fish data at Wetlands 18, 19, and 64 to be a potential data gap. In my opinion, this is a large data gap which could be filled with additional fish sampling and/or modeling to higher trophic level fish.

Response:

Impacts to higher trophic level fish will be quantified, where possible, through the food chain model. For freshwater wetlands such as 3 and 5, impacts to higher trophic level fish are not an issue because these wetlands are too small and intermittent to support these species. This point is clarified in the Section 10 wetland specific evaluations.

- a) The assessment endpoints associated with Wetlands 16 and 18 were originally: 1) Survival, growth, and reproduction of macroinvertebrates associated with the benthic environment and, 2) Health of birds and terrestrial fauna. Neither of these assessment endpoints nor their measurement endpoints required the collection of surface water samples. However, fish tissue data from Wetland 18 was used to predict impact to foraging fish and higher trophic level fish species.
- b) Possible effects from the tissue residue levels detected was researched and documented in the report.
- c) The species selected were considered most appropriate for estuarine and freshwater environments.
- d) A weight of evidence approach was used to quantify effects along multiple lines of evidence.

Comment 2:

Provide greater explanation why some stations/wetlands were dropped from further consideration and how extrapolations among stations/wetlands were to be conducted. For example:

- a) Justify excluding the following sites with elevated HIs from Phase IIA.
 - wetland 6, station 01, HI @ 300
 - wetland 15, station 01, HI @ 250
 - wetland 48, station 01, HI @ 2600
- b) Justify excluding the following sites with elevated HIs from Phase IIB.
 - wetland 3, station 01, HI @ 570
 - wetland 5B, station 01, HI @ 400
 - wetland 18, station A1, HI @ 1900
- c) On page 8-168, a "back-calculation or regression analysis" was mentioned as a way of extrapolating Phase IIB results to untested wetlands. This analysis was never described nor utilized. Also need to more fully explain/justify the statement, "Based on a review of contamination and potential receptors, Wetland groups D and E were removed from any further sampling and analysis."
- d) Explain/describe wetland Groupings A through E by summarizing memo referenced in Section 8.2.4.

e) Explain why reference wetlands changed between Phase IIA and IIB. Explain how reference wetland results are used to evaluate results with IRP wetlands. More fully describe the reference wetlands selected in Phase I, IIA, IIB. Reference 75 appears to be an unacceptable reference site due to unexpected levels of contaminants and toxicity.

f) Provide verification that "Sample locations for Phase IIB were selected in areas of the wetlands exhibiting relatively high, medium, and low levels of contamination." (page 8- 179, emphasis mine).

Response:

a) These justifications will be provided in Section 10. Wetland 6 was excluded because the HI values were primarily due to pesticides and the wetland contained lack of receptors. Wetland 15 is one of the group C wetlands. Wetlands 16 and 18 were sampled to represent the group C wetlands. Wetland 48, one of the two group E wetlands, was not evaluated further because the wetland lacked receptors.

b) These justifications will be provided in Section 10.

Locations 3 and 7 in Wetland 3 were selected because of the potential impacts from metals toxicity. Station 01, sampled for toxic effects to the fathead minnow, was located in the most downgradient portion of the wetland and will capture effects from other portions of the wetland. Wetland 5B, as part of Group D, was removed from further sampling and analysis. Sample location Wetland 18B1 was considered an appropriate sample location to gauge effects within the entire wetland.

c) Back calculation or regression analysis was not used since the only wetland initially concluded to pose an ecological risk was Wetland 64, which had no other representatives in its group. However, wetlands 5A and 3 are now being considered to pose an ecological risk. Therefore, back calculations were made for the other wetlands in that group.

d) This information is summarized in Section 7.8.

e) Wetland 75 was added as a reference wetland and Wetland 32 was removed as a reference wetland due to concerns about the suitability of Wetland 32 as a representative freshwater reference wetland.

Reference wetlands were used more as a comparison in the toxicity and bioaccumulation studies. However, Phase IIA contaminant levels in sediment and surface water were screened against benchmark levels and reference concentrations. These site-specific comparisons are

discussed in Section 10. Phase IIB site specific reference wetland comparisons are discussed in Section 10.

Reference wetlands sampled during Phase IIA are discussed in Section 4.13 of the Site 41 SAP. However, their selection is summarized in Section 7.

Wetland 75 has been eliminated as a reference wetland. The data is not used in evaluating impacts in any of the wetlands of concern. However, Section 10 includes a site specific evaluation of Wetland 75.

f) In those wetlands where only one Phase IIB sample was collected, the most contaminated area of that wetland which had the greatest likelihood of receptor exposure was selected. Those wetlands with more than one sample location were selected along a contaminant gradient. Sampling locations are described in Section 10.

Comment 3:

Fish tissue sampling appears inadequate. Only six samples were collected during this ERA; two each in wetlands 64 and 33, one each in wetlands 18 and 75 (Table 8.2-180). The representativeness of these six samples is not discussed. Missing from Table 8.2-180 are the number, size and species composition for each sample. The text or table should indicate how fish were collected (e.g., seine, traps). Justify why no biota tissue samples were collected at the many sites where high levels of persistent bioaccumulative chemicals were present.

Response:

Sampling techniques are discussed in Section 4.0, Phase IIA and IIB methods. The number, type, and length range of the sample is described are discussed in the wetland specific evaluations in Section 10.

Comment 4:

Evaluate risks to the benthic macroinvertebrate community using the Sediment Quality Triad (SQT) approach. Protection of the benthic macroinvertebrate community is an assessment endpoint in this ERA. The SQT (sediment chemistry, sediment toxicity, benthic community analysis) is the most appropriate framework for evaluating risk to this receptor group. Use this approach in the analysis which begins on page 8-224.

Response:

This approach was used in evaluating impacts to the benthic macroinvertebrate community and the other assessment endpoints.

Comment 5:

Surface water (SW) risks to aquatic receptors are inadequately addressed. SW risks were elevated (i.e., HQs > 1) at many wetland stations (see examples below). These risks are not adequately discussed. For example, explain how surface water risks were used to select /reject wetlands/sites for further evaluation. Indicate how these results factored into the weight of evidence analysis for overall ecological risks? Indicate whether samples were filtered or unfiltered.

wetland 6	SW mercury HQ @ 70
wetland 13	SW mercury HQ @ 100; lead HQ @ 920; many other metal HQs > 1
wetland 19	SW mercury HQ @ 24; lead HQ @ 16; many other metal HQs > 1
wetland 15	SW lead HQ @ 140
wetland 63A	SW lead HQ @ 50
wetland W1	SW lead HQ @ 30, 40
wetland 10	SW DDD HQ @ 20, 50
wetland 72	SW silver HQ @ 370

Response:

Section 10 includes site specific evaluation for each wetland.

Comment 6:

The ecological risk summaries (page 8-166 and 8.2.8) are inadequate. These narratives must be expanded to include the major elements of Risk Characterization described in EPA's ecological risk assessment guidance ("Framework" or "Guidelines", "Process Document" for Superfund). Risks must be presented in terms of the assessment endpoints and their corresponding measurement endpoints.

Response:

Phase IIA was performed as a screening level assessment, meaning that contaminant concentrations were compared to the lowest applicable benchmark in deriving an HQ value. Assessment and measurement endpoint analysis is not performed until Phase IIB/III. This section was expanded to discuss the results of the screening level assessment. Section 10 includes a site specific evaluation for each wetland.

Comment 7:

Discuss results of the ecological risk assessments vis a vis specific IRP sites. Investigations at Site 41 were not specifically designed to link individual IRP sites to the wetland environments. However, at some point, the risk manager must relate these findings to specific IRP sites. This report should make an effort to do this.

Response:

Those wetlands considered to pose a risk are discussed in relation to their associated IR site in Section 10.

Comment 8:

Discuss the substantial reductions in sediment contamination (i.e., decreased HIs) observed between Phase IIA and IIB sampling events. Include in the discussion: 1) possible explanations for this observation, 2) impacts on assumptions of the sampling design (e.g., low, medium, high levels of contamination) and 3) implications for the Phase IIB risk estimates.

Response:

These issues as discussed in Section 7 and Section 10.

Comment 1:

More fully explain/discuss the Phase IIB Conceptual Site Models shown in Figures 8-29 through 8-33. Why and how do they differ? Why are some pathways incomplete? Include a pathway from water to benthic macroinvertebrates to birds. Why were risks to diving birds never assessed?

Response:

These conceptual models are discussed in greater detail, particularly the basis for why and how they differ. It was thought that wading birds would be the most appropriate assessment endpoint as opposed to diving birds based on habitat and feeding issues. This point is also be discussed in Section 7.

Comment 2:

Phase IIB Assessment and Measurement Endpoints (Table 8.2-141) - The measurement endpoint for piscivorous birds is the food web model, not fish tissues per se. Explain why are there no piscivorous birds in wetland groups B & C. Distinguish between forage fish and higher trophic level piscivorous fish. Include food web modeling/residue-effects analysis as measurement

endpoints for upper trophic level fish receptors. Why are terrestrial fauna included as receptors only in group C? Explain why measurements endpoints for fish viability vary in the different wetland groups. The measurement endpoints for protection of benthic macroinvertebrates should be the three elements of the SQT.

Response:

These issues are discussed in the text in Section 7. In general, the different contaminants and habitats in each wetland lent themselves to the selection of particular measurement and assessment endpoints.

Comment 3:

Toxicity Bioassays (Tables 8.2-178 and 8.2-179). The *Chironomus tentans* bioassay failed the performance standard for control emergence (70%). Unless a reasonable explanation can be provided, data from this test may be considered invalid and require re-testing. Why were stations 2 and 3 in wetland 3 not evaluated with the *Pimephales promelas* bioassay? The station tested (#1) does not appear to be a part of the Phase IIB investigation per Figure 8-36. A larval fish toxicity bioassay was conducted at the freshwater wetland sites. Why wasn't the corresponding test for estuarine larval fish conducted? Elevated surface water metal HQs at wetland 64 appear to justify this bioassay.

Response:

The laboratory which performed this analysis was contacted about the usefulness of the bioassay data considering the reduced emergence in the control samples. According to the laboratory, emergence is the most sensitive parameter because of varied, non-site related factors such as temperature and moisture conditions that can impact adult emergence.

The laboratory does a large amount of egg production analyses with mysid shrimp. This endpoint is analogous to the adult emergence endpoint analyzed in *Chironomus tentans*. In about 40% of the cases, sufficient egg production is not reached in the mysid controls. In these situations, it is common to consider the egg production test only as invalid and simply not consider it in the overall data analysis. This does not invalidate the entire test, particularly provided that the survival and growth endpoint controls are adequate.

The laboratory recommended a similar approach for the adult emergence endpoint analyzed in *Chironomus tentans*. Since the controls for survival and growth were both sufficient to compare the results to the test samples, the emergence analysis will simply not be considered as part of the analysis and the remaining two analyses will be considered valid.

Station 1 was tested for *Pimephales promelas* because this was the only portion of the wetland that had enough standing water to support it. This point is described in the wetland specific evaluations in Section 10.

The tests performed for *Leptocheirus plumulosus* and *Neanthes arenaceodentata* were considered most relevant for an estuarine system. This point is described in the wetland specific evaluations in Section 10.

Comment 4:

Only PCB and tDDT were considered in the risk estimates for piscivorous birds (page 8-228). Other detected compounds and elements (e.g., lead) must also be included. Contrary to the narrative, lead does bioaccumulate.

Response:

The term bioaccumulate was replaced with biomagnify. It is not expected that lead would biomagnify through the food chain to impact the heron.

Comment 5:

Explain how lipid normalization (page 8-230) contributes to the risk assessment or to risk management decision-making.

Response:

This comparison was made to show how lipid concentrations from fish collected in Wetland 75 can impact pesticide tissue residues detected at the whole body level. Since Wetland 75 is no longer used as a reference wetland, this comparison was not made.

Editorial Suggestions

Figure 2-1 Indicate wetland type for wetlands 25 and 27.

Chapter 5 Include figure showing red, orange and blue-coded wetlands.

Figure 5-27 Sample locations in wetland 27 don't correspond to the wetland boundary as shown in Figure 2-1.

Figure 5-28 Sample locations in wetland 32 and 33 appear to be in wetland 27 as shown in Figure 2-1.

Chapter 8 Cite EPA Region 4 ecorisk guidelines in the Introduction.

Chapter 8 Use appropriate number of significant figures when calculating HIs and HQs. Suggest whole integers. Spot checks indicate some HIs were miscalculated.

p 8-138-142 Redundant tables reporting wetland W2 Phase IIA results?

p 8-228 Delete last sentence on the page inferring ubiquitous distribution of DDT throughout PNS NAS based on a single sample from one wetland.

Table 8.2-182 Include ecological risks to fish. "Bioaccumulation" (in last column) is not an effect. Substitute another term/phrase which more accurately reflects elevated risks to piscivorous birds.

p 8-234 Group B - Delete unsubstantiated statements in first paragraph (second and fifth sentences).

p 8-235 Delete second sentence under Uncertainty heading. When properly designed and executed, toxicity, diversity and bioaccumulation studies reduce (not compound) uncertainty.

p 8-235 Delete unsubstantiated statements in first bullet (last sentence) and second bullet (second and third sentences).

p 8-235 Delete last two bullets or clarify their contribution to the uncertainty analysis.

Response:

The above editorial suggestions have been incorporated into the report.