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MARE ISLAND
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United States Department of the Interior

FISH AND WILDLIFE SERVICE
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IN REPLY REFER TO:
FWS/EC-97-056-

May 20, 1997

Mr. Juris A. Sinats
Remedial Project Manager
Engineering Field Activity, West
Naval Facilities Engineering Command
900 Commodore Drive
San Bruno, California 94066-5006

Subject: Draft Final Ecological Risk Assessment Field Sampling and Analysis Plan, Onshore Areas, Mare Island, Vallejo, California

Dear Mr. Sinats:

Thank you for providing the U.S. Fish and Wildlife Service (Service) the opportunity to comment on the draft final Ecological Risk Assessment Field Sampling and Analysis Plan, Onshore Areas. It is significantly improved over the draft version reviewed in December 1996, and the Service appreciates the effort that this revision represents; however, some additional revisions are needed before the plan will be acceptable to the Service.

As a general comment, the soil sample depths and numbers proposed for the inactive dredge spoil ponds are only minimally adequate for conducting a qualitative risk assessment. The single sampling depth proposed for the active ponds (0-0.5 feet bgs) is not adequate for conducting a qualitative risk assessment. In addition, the Service does not consider the proposed sampling for either class of ponds sufficient to support a decision of no further action.

The following specific comments are provided:

Page 4, Section 1.4. The last sentence of this section is potentially misleading, in that it identifies sites not requiring further sampling to complete the ecological risk assessment as sites "not requiring further study". This could be interpreted as meaning that the identified sites are not included in the risk assessment. Using the word "sampling" vice "study" is recommended.

Page 5, Section 1.5. The discussion of assessment endpoints is vague in that it does not indicate what toxic effects receptor populations or individuals will be protected from or to what level. This information is important in evaluating the appropriateness of measurement endpoints. For example, the measurement endpoints for assessing risk to piscivorous birds of reproductive injury from contaminant exposure may be different than measurement endpoints for assessing risk of acute mortality.

Page 15, Section 2.5. Insufficient information is provided for the discussion of risk to salt marsh harvest mice at the hypothetical site. There is no previous or subsequent discussion of the hypothetical site that allows this section to be understood in the context of the document.

Page 15, Section 2.6. The second paragraph states,"Previous data indicate some degree of ecological risk in some areas but are inadequate to support decisions regarding the extent of remediation required. The decision to

physically disturb a sensitive habitat to remove contaminant must be based on data indicating that the risk to receptors of concern is significant enough to warrant some degree of habitat destruction." The logical conclusions, that sufficient data must be collected to minimize uncertainty in decision making, and that mitigation may be required to compensate for incidental take of endangered species during remedial actions, are not stated.

Page 20, Section 3.4.1 Food-chain modeling for freshwater wetlands should also include data from tissue of resident fish and amphibians if risk to piscivorous birds is being assessed. Additionally, it is not indicated how non-pickleweed vegetation samples will be composited for analysis (i.e., all species composited together, samples composited by species, samples composited by type of metabolism, etc.).

Page 21, Section 3.4.2. See previous comment regarding plant tissue samples. The same concern should be addressed for invertebrate tissue samples. Consideration should also be given to performing two invertebrate bioassays and two plant bioassays, as proposed for the freshwater wetlands. Increasing the number of bioassays will make other analytical results easier to interpret.

Page 21, Section 3.4.3. The introduction for this section states that the analytical methods will provide data for the food-chain model. Since the work plan proposes no tissue collections in the active dredge ponds, it is not clear how this statement applies. Subsequent discussion indicates that food-chain modeling will "be applied using wetland transfer factors". Whether this means transfer factors developed from the freshwater wetland samples proposed in section 3.4.1 or transfer factors from literature is also not clear. However, the appropriateness of freshwater wetland transfer factors for the dredge ponds should be evaluated in the context of soil/sediment pH, salinity, SEM/AVS, and other factors that can affect the bioavailability of contaminants. Given the possible uncertainties, collection of tissue samples from the dredge ponds seems prudent. This section also proposes to collect soil/sediment samples only from the 0-0.5 foot depth, as opposed to sampling at 0-0.5 feet and 1.0-1.5 feet, as will be done in other habitats. The Service believes that the active ponds should be sampled to the same extent as other habitats. Lastly, the comment above regarding the number of invertebrate and plant bioassays applies to this section as well.

Page 22, Section 3.4.4. With the exception of those addressing sampling depths, the comments above regarding the active dredge spoil ponds also apply to the inactive ponds.

Page 22, Section 3.4.5. This section seems to have typographical errors that make it difficult to determine what sampling depths are actually proposed for the dredge spoil pond berms; however, if the actual intent is to sample only at 0-0.5 feet, then the Service considers the proposal inadequate.

Page 23, Section 3.4.6. Comments regarding bioassays and tissue samples in sections 3.3.2 and 3.3.3 apply to the Western Tidal Marsh.

Page 23, Section 3.4.7. Comments regarding bioassays and tissue samples in sections 3.3.2 and 3.3.3 apply to the Carquinez Area RMZ.

Page 36, Section 4.9.1. Consideration should be given to standardizing plant tissue collections to allow assessment of biomass at each sampling site. The rationale for sedge and non-sedge sampling groups in wetlands and grass and non-grass groups in uplands should be clearly explained and supported by citations if possible.

Page 37, Section 4.9.2. It is not indicated whether invertebrates collected in the wetlands will be composited by site for chemical analyses, or if they will be further separated by taxonomic group. Since different phyla can metabolize and bioaccumulate contaminants differently, the Service recommends the latter approach as providing more useful information for the risk assessment.

Page 38, Section 4.9.3. The comment above also applies to upland ground-dwelling invertebrate sampling.

Page 39, Section 4.9.4.2. The Navy currently has personnel who are permitted to trap salt marsh harvest mice following specific protocols. In addition to weight, sex, and various measurements, the reproductive status of each small mammal captured should be determined to the extent possible. For females, this means determining whether or not the animal is lactating; for males, it should be determined whether or not the testes are descended.

Page 39, Section 4.9.4.3. Small mammals collected for chemical analyses should be frozen, not placed in a solution of 10 percent formalin. The work plan should also state clearly whether the analyses will be of whole bodies or of separate organ tissues. The Service's understanding from previous meetings is that only whole body analyses are planned as a means of assessing food-chain transfer of contaminants. To provide an assessment of risk to the mouse populations, consideration should be given to analyzing organ tissues separately. In addition, the Service recommends archiving organ tissue samples from each mouse or a subset of mice for histopathological examination.

Page 40, Section 4.10. The list of species previously observed at Mare Island represents only a fraction of those potentially present on the facility. It is unlikely that a species occurring in the San Pablo Bay National Wildlife Refuge would not also occur on Mare Island, and sufficient information is available for most species to determine qualitatively whether they are breeding, roosting, and/or foraging on the island. The qualitative surveys proposed in the work plan are therefore unlikely to provide much additional information.

Page 43, Section 5.4. See previous comments regarding bioassays (Sections 3.4.2, 3.4.3., and 3.4.4).

Page 44, Section 6.1. The work plans states, "Contaminants that exceed Wetlands Cover or ER-L values will be considered COPECs unless the number of exceedences is very low (generally less than 10 percent)." This statement should be more fully explained or citations provided to support it. It is not clear whether contaminants occurring in less than 10 percent of samples will be excluded from further evaluation under the "weight-of-evidence" approach proposed in Section 6.0. It is also not clear whether 10 percent of samples means 10 percent by site or for the entire facility. The Service believes the decision to eliminate contaminants as COPECs should be made on a case-by-case basis after the weight-of-evidence approach has been applied.

Page 45, Section 6.1. The last paragraph of this section discusses screening using Ambient Water Quality Criteria (AWQC). AWQC do not always provide an adequate evaluation of risk to aquatic receptors via the food ingestion pathway in chronic, sublethal exposures, and might therefore underestimate risk to such receptors, particularly higher trophic level predators. Selenium is a case in point. The four-day average criteria for selenium in freshwater is five ug/l. However, thresholds for bioaccumulative selenium toxicity due primarily to dietary exposure have been observed in water in the 1.5 to 3.0 ug/l range. Alternatives to using the AWQC for selenium would be to use a

criteria of 2.0 ug/l, as recommended by the Service to the U.S. Environmental Protection Agency, or to estimate selenium concentrations in the prey or forage of assessment receptors based on tissue analysis.

Page 48, Section 6.5.1. The discussion of site use factors for use in calculating oral doses is unclear. It does not explain how the areal extent of a contaminant will be estimated using data from the proposed soil sampling plan. It also seems to neglect the time component of site use for migratory species.

Page 49, Section 6.5.2. The discussion of diet composition states, "Diet composition may be affected by changes in season, availability of prey or forage, reproductive condition, individual variation, and many other factors. Since this variability is not easy to incorporate into an exposure model, average estimates will be used as much as possible." Given all of those uncertainties, use of worst case rather than average estimates seems warranted for a phase I qualitative risk assessment unless an evaluation is made on a case-by-case basis. Using waterfowl as an example, the diet of breeding female dabbling ducks, which can be year-round residents at Mare Island, changes significantly during the critical breeding season. The diet of female ducks might contain as little as 5-10 percent benthic invertebrates in the fall, but 75 percent or more during the breeding season. The diet of the ducklings will be high in benthic invertebrates when very young, but shift toward vegetation as they mature. An assessment that averaged those variabilities across seasons would be likely to underestimate the risk of reproductive failure during the breeding season.

Page 52, Section 6.5.4. The discussion of the high dose estimate states that it will be calculated using the lower of either the 95 percent upper confidence interval of the mean or the maximum concentration as the maximum concentration of the COPEC in soil or sediment. The 95 percent upper confidence interval will generally be lower than the maximum concentration measured. To be conservative, the maximum concentration of the COPEC in soil or sediment should be used.

Page 53, Section 6.6. Regarding the discussion of the best-case scenario, the Service, as previously stated, does not consider the sampling proposed for the dredge spoil ponds sufficient to support a decision of no further action.

Page 54, Section 6.7. The stated goal that "this ERA is designed to provide objective technical justification for final decisions on the transfer of Navy property" presumably refers to the entire ERA and not just the Phase I qualitative assessment. Otherwise, the Service emphatically disagrees that the goal can be met. Data gaps should not serve as a basis for no-action.

Page 55, Section 7.0. As a point of clarification, CERCLA does not relieve the Navy of its responsibility to conduct appropriate consultations with the Service as required by Section 7 of the Endangered Species Act.

Again, thank you for providing the Service with the opportunity to comment on this document. Questions should be directed to Jim Haas, Environmental Contaminants Division, at (916) 979-2110.

Sincerely,

for Wayne S. White
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