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From: Commander, Atlantic Division, Naval Facilities
Engineering Command, Code 1823
To: Commanding Officer, Navy Environmental Health Center
Subj: MEDICAL REVIEW OF INSTALLATION RESTORATION PROGRAM
DOCUMENTS FOR MARINE CORPS BASE, CAMP LEJEUNE, NC
Ref: (a) NEHC ltr 5090, ser 611/5211 dtd 26 Nov 93
(same subject)
Encl: (1) Response to Comments from the Navy Environmental
Health Center (NEHC) for the Draft Final RI/FS Work
Plan and Sampling and Analysis Plan, Operable Unit
No. 10 (Site 35), MCB Camp Lejeune, North Carolina

1. Thank you for your assistance in providing a medical review of the subject document. Responses to your comments and recommendations included with reference (a) are provided in enclosure (1). As indicated in the responses, these comments have been incorporated into the Final version of the documents.

2. Any questions concerning these responses should be directed to Ms. Katherine Landman at (804) 322-4818.

L. A. BOUCHER
By direction

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**Responses to Comments from the Navy Environmental Health Center
(NEHC) for the Draft Final RI/FS Work Plan and Sampling and
Analysis Plan, Operable Unit No. 10 (Site 35)
MCB, Camp Lejeune, North Carolina
Comments Letter Dated November 26, 1993**

RESPONSE TO COMMENTS

General

1. No response required.
2. Section 5.6 of the Work Plan (Task 6 - Risk Assessment) has been modified with the addition of the information specified in this comment.
3. No response required.

Sampling and Analysis Plan

1. Section 5.6 of the Work Plan (Task 6 - Risk Assessment) has been modified to include a statement that hunting is prohibited in the vicinity of Site 35. As a result the consumption of terrestrial animals as an exposure pathway will not be included in the quantitative Risk Assessment. Section 5.6.1.4 indicates that the consumption of fish will be considered under the Risk Assessment.
2. The new modified Section 5.6 of the Work Plan (Task 6 - Risk Assessment), which was included in response to the previous comment, addresses the concerns of this comment. Human health risks from consumption of Biota are specifically addressed in Section 5.6.1.4 - Exposure Assessment.
3. The new modified Section 5.6 of the Work Plan (Task 6 - Risk Assessment) addresses the concerns of this comment. The exposure pathways applicable to current and future exposure scenarios, including a future residential pathway, current and future land uses, are listed in Section 5.6.1.4 along with site-specific information to characterize exposed populations. Distant exposed populations will not be evaluated because the risk assessment will consider more conservative scenarios that have a higher potential impact.
4. Air pathways will be evaluated in the baseline risk assessment. Volatile as well as fugitive dust emissions will be evaluated. This will cover all chemicals of potential concern at the site.

Air data will not be collected at Site 35 because of the complexity of identifying site-specific source from permitted emissions, automobile exhaust, etc. Air concentrations from volatile emissions and fugitive dusts will be modeled if it is necessary to quantify concentrations associated with the pathway. The details of the modeling will be presented in the baseline risk assessment of the Remedial Investigation Report.

5. The text has been revised because a preliminary risk assessment was not conducted per se. If contamination is present at the site the potential for human and ecological risks does exist. This is an intuitive statement and supports generally, the need for additional site information. No other methodology was used for the purposes of this Work Plan.
6. The fish collected from the designated stations at Site 35 will be used for both the ecological and human health risk assessments. For the ecological risk assessment purposes, an examination of upstream and downstream effects are warranted for the site investigation. The sampling strategy considers the spatial distribution of potential contaminants as well as extent of contamination within the Brinson Creek aquatic system. Consideration of potential harvest areas by human receptors is not appropriate for data to be used in an ecological risk assessment. However, these streams are used by estuarine fish species that migrate seasonally up and down tributaries leading to the New River estuary. Therefore, fish that have been exposed to the environmental conditions within the tributary have the potential to be harvested both while in the tributary and when they travel out of the tributary and into the New River estuary. For human health risk assessment purposes, the tissue data collected will be used to assess the risk from these harvest areas of concern. Although no sampling locations have been selected in the New River, Site 35 is located approximately 3,000 feet upstream of the confluence of Brinson Creek and the New River.
7. The term "shallow" has been changed to "surface" in Section 3.2.1 (Surface Soil Sampling). The surface soil samples will be collected from the interval 0 to 12 inches in accordance with EPA Region IV guidance.
8. The text of Section 5.3.4.3 of the Work Plan (Groundwater Sampling and Analysis) has been modified to indicate that groundwater will be obtained for the analysis of both total (unfiltered) and dissolved (filtered) metals. The risk assessment will be based on total metals analysis results and the dissolved metals analysis results will be used for comparison.

9. The text has been revised in accordance with this comment.
10. See Response Number 6.
11. There are a total of three stations where fish will be collected and composited for tissue analysis. Therefore, the maximum statistical sample size for the fish collection effort at Site 35 is three for each species of fish collected. However, if sampling success precludes obtaining the same species of fish from each station, the statistical sample size for the fish collected will be less than three. The benefit of composite sampling is to ensure that adequate sample volume is collected for the laboratory to conduct their analytical sampling. There are many field conditions that are not within the control of the field sampling team that potentially may impact the success rate of the fish collection effort. Although fishing success rate does affect the number of samples collected, previous studies have successfully collected an adequate number of fish from similar tributaries on MCB, Camp Lejeune to ensure that equal numbers of similar size fish have been included in each composite from the designated stations.

Stations have been sampled in the White Oak River as reference stations. Based on conversations with representatives of the North Carolina DEHNR, stations were located in Hadnot Creek. In addition, fish and shellfish currently are part of state and Federal contaminant monitoring programs and will provide additional opportunity for statistical comparison of tissue concentrations.

The fish collected and composite tissue samples analyzed will be used to conduct CERCLA ecological and human health risk assessments. CERCLA guidance was used to guide the selection of appropriate sample size and target species for conducting the risk assessments and for making risk management decisions.

12. For whole body analysis, the entire fish will be composited and the tissue analyzed. These results will be used to address ecological risk assessment endpoint evaluations. For the fillet composites, which will be used to provide the body-burden input into the human health risk assessment equations, the following procedure will be used:

Fish with scales will have scales removed but not the skin. Scaleless fish will have the skin removed. The fillets will include side flesh from immediately behind the base of the pectoral fin to the base of the tail. The belly flap and dark muscle tissue in the vicinity of the lateral line will not be separated from the light muscle tissue mass. Bones will be removed that remain in the tissues after filleting. The

selection of the side flesh including white and dark muscle tissue for tissue analysis is appropriate for the targeted receptors because it is not believed that the fisherman that harvest fish caught will consume all the edible portions of the fish.

For cost-effectiveness, the tissue analysis only will include fillets from fish species considered to be edible. Tissue analysis of eviscerated fish will not be conducted. The fillet data will provide the necessary tissue body-burden information for conducting the human health risk assessment as per CERCLA guidance. Because the number and size of fish collected is subject to site-specific environmental conditions, only selecting the fillet tissue analysis preparation procedure will ensure that adequate and similar tissue quantities will be generated to maintain the highest number of samples for statistical consideration.

Work Plan

13. Baker views the RAGS Manual as a guidance document rather than as a set of specifications. The information identified in this comment will be presented in the baseline risk assessment, however, Baker feels it would be inappropriate and excessively costly to address format and presentation questions in the Work Plan.
14. See Response Number 2 under "General."
15. See Response Number 14.