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NWS EARLE
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**DEPARTMENT OF THE NAVY**
NORTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
10 INDUSTRIAL HIGHWAY
MAIIL STOP, #82
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08 FEB 1999

Ms. Jessica Mollin – Project Manager, Federal Facilities Section
U. S. Environmental Protection Agency
30 East 9th Street, Apt. 2D
New York, NY 10003

SUBJ: NAVY RESPONSE TO EPA COMMENTS ON THE DRAFT *FEASIBILITY STUDIES FOR SITE 13 (OU-5) AND SITES 3 & 10 (OU-6)*, DECEMBER, 1997, FOR NWS EARLE, COLTS NECK, NEW JERSEY

Dear Ms. Mollin:

Annotated responses to each comment from your September 17, 1998 letter regarding the subject reports are enclosed. Appropriate language will be incorporated into the Final Feasibility Studies. I will forward the proposed changes for these sections as they are developed. Please let me know if any additional clarification is needed.

Please call me at (610) 595-0567 ext. 157 if you have any questions.

Sincerely,

John P. Kolicius

JOHN P. KOLICIUS
Remedial Project Manager
By direction of the
Commanding Officer

Copy to:
Ms. Alida Karas – USEPA Region 2
Mr. Robert Marcolina - New Jersey DEP
Mr. Greg Goepfert - NWS Earle, Code 043
Mr. Russ Turner – Tetra Tech NUS

# Response to EPA Comments on NWS Earle's Draft Feasibility Studies for Site 13 (OU-5) and Sites 3 & 10 (OU-6)

## Draft Feasibility Study for Site 13

**Comment:** **Executive Summary**. It would be helpful to provide a brief summary of the site risks to provide the reader with a framework to interpret the proposed remediation efforts.

**Response:** Agree. This will be added.

**Comment:** The discussion of the possible use of natural attenuation as a remediation alternative (page ES-4) requires further clarification. What site-specific characteristics are present that will support this as a remediation alternative? No documentation is presented.

**Response:** Agree. A brief discussion of site conditions that promote (or inhibit) natural attenuation will be added.

**Comment:** Table 2-1. It is unclear why the Agency's draft guidance on assessing potential risks to adults from lead exposure was not also considered, especially considering the potential use of this area as an industrial facility.

**Resp nse:** The risks for occupational workers from exposures to lead in soil at Site 13 were estimated using the Interim Approach to Assessing Risks Associated with Adult Exposures to Lead in Soil (EPA, 1996d). The model is based on a biokinetic slope factor that estimates fetal blood lead concentration in women exposed to lead contaminated soil. A simplified (linear) representation of lead biokinetics is used to predict quasi-steady state blood lead concentrations among adults who have relatively steady patterns of site exposures (exposure duration of at least 90 days and exposure frequencies greater than once per week). For an industrial site worker, the intake assumptions used in the model were the representative concentration for surface soil lead concentrations at the site, a 50 mg/day contaminated soil ingestion rate), and a 250 days/yr exposure frequency. The biokinetic model input parameters were a biokinetic slope factor (ug/dl adult blood lead per ug/day uptake) of 0.4, a constant of proportionality between fetal blood lead concentration at birth and maternal blood lead concentration of 0.9, a soil absorption factor of 0.12 (equal to the product of the relative bioavailability of 0.6 and a soluble lead absorption factor of 0.2), a background blood lead (typical concentration for women of child bearing age not exposed to the site) of 1.7 ug/dl, and a geometric standard deviation of 1.8 (representative of a relatively homogeneous population demographic).

The adult lead model was not widely used at the time the remedial investigation was performed and the report was written.

**Comment:** Page 2-19. No reference is provided for the proposed procedure of selecting a maximum background concentration over a risk-based concentration. The use of a maximum background concentration may significantly exceed the risk base concentration as was found with iron.

**Resp nse:** Maximum background was selected in the case of iron, which is not a known or suspected carcinogen, to avoid unrealistic clean-up goals.

**Comment:** The discussion of Risk Based Concentrations needs clarification as to the basis for the development of these values. The only reference provided is a footnote to Table 2-8.

**Resp nse:** Agree. A discussion of the derivation of these values will be added to the text.

**Comment:** Table 2-8. The suggested use of the maximum background concentration would result in a Hazard Quotient of 1.7, exceeding the non-cancer risk range of 1.0. Before applying this approach the authors should consider other potential sources of iron in the diet, the toxicity of iron, and determine that this value is protective of public health.

Response: Currently no toxicity values for iron are published in IRIS or in HEAST. The oral reference dose used to evaluate exposures to iron was obtained from the current USEPA Region III RBC tables. This value is based on an allowable daily intake and not on an adverse effect level. In addition iron is considered an essential nutrient. Consequently, adverse health effects may not be representative of actual conditions for exposures to iron in NWS Earle Media at Site 13.

**C mment:** The type of chromium considered should be identified i.e., +3. +6, or total.

**Response:** Agree. Chromium analytical results used for estimating risks were the total chromium results.

**Comment:** Table 4-1. It is unclear how the magnitude of residual risks were quantified to support the conclusions presented under Alternatives 2 and 3. To make this statement, further clarification of the calculations would be needed.

**Response:** Agree. This section will be rewritten to clarify the evaluation of the residual site-related risk.

**C mment:** ECTran Model. The assumptions used in the model, and the Monte Carlo simulation approach, should be evaluated to assure they are not underestimating the potential concentrations.

**Response:** The ECTran model used the limited data available at the time to perform contaminant transport modeling. This model is used extensively and its predictions are widely accepted by many state and Federal regulatory agencies. In this case, ECTran should not underestimate potential concentrations at the exposure point because of the following:

- The model includes conservative mass-balance calculations that predict contaminant migration through the vadose zone.
- The model does not account for contaminant migration in the vertical direction in the saturated zone. Because of this, the model's predicted concentrations in the horizontal direction along the centerline of the plume tend to be conservative.
- The initial COC concentrations in groundwater that were used as input for the model were the maximum detected concentrations at this site. In ECTran, these concentrations are assumed to exist over the entire source area.
- Typical literature $K_d$ values, most of which are USEPA default values, were used for each COC.
- A site-specific estimate of hydraulic conductivity was used in the model.

The ECTran model can be used to complete Monte Carlo simulations with the Crystal Ball add-on package. However, Monte Carlo simulations were not completed for this project.

**Draft Feasibility Study for Sites 3 & 10:**

**Comment: Executive Summary.** It would be helpful to provide a brief summary of the site risks in the Executive Summary to provide the reader with a framework to interpret the proposed remediation efforts.

**Response:** Agree. This will be added.

**Comment:** The discussion of the possible use of natural attenuation as a remediation alternative (page ES-5) requires further clarification. What site-specific characteristics are present that will support this as a remediation alternative? No documentation is presented.

**Resp nse:** Agree. A brief discussion of site conditions that promote (or inhibit) natural attenuation will be added.

**Comment:** Table 2-1. It is unclear why the Agency's draft guidance on assessing potential risks to adults from lead exposure was not also considered, especially considering the potential use of this area as an industrial facility.

**Resp nse:** The risks for occupational workers from exposures to lead in soil at Sites 3, and 10 were estimated using the Interim Approach to Assessing Risks Associated with Adult Exposures to Lead in Soil (EPA, 1996d). The model is based on a biokinetic slope factor that estimates fetal blood lead concentration in women exposed to lead contaminated soil. A simplified (linear) representation of lead biokinetics is used to predict quasi-steady state blood lead concentrations among adults who have relatively steady patterns of site exposures (exposure duration of at least 90 days and exposure frequencies greater than once per week). For an industrial site worker, the intake assumptions used in the model were the representative concentration for surface soil lead concentrations at the site, a 50 mg/day contaminated soil ingestion rate), and a 250 days/yr exposure frequency. The biokinetic model input parameters were a biokinetic slope factor (ug/dl adult blood lead per ug/day uptake) of 0.4, a constant of proportionality between fetal blood lead concentration at birth and maternal blood lead concentration of 0.9, a soil absorption factor of 0.12 (equal to the product of the relative bioavailability of 0.6 and a soluble lead absorption factor of 0.2), a background blood lead (typical concentration for women of child bearing age not exposed to the site) of 1.7 ug/dl, and a geometric standard deviation of 1.8 (representative of a relatively homogeneous population demographic).

The adult lead model was not widely used at the time the remedial investigation was performed and the report was written.

**Comment:** Page 2-19. No reference is provided for the proposed procedure of selecting a maximum background concentration over a risk-based concentration. The use of a maximum background concentration may significantly exceed the risk base concentration as was found with aluminum, arsenic cadmium and iron. It is unclear why the cancer risks from exposure to arsenic in groundwater were not considered.

**Response:** Maximum background was selected in the case of compounds which are not known or suspected carcinogens, to avoid unrealistic clean-up goals. In the case of Arsenic, the maximum concentration in groundwater (4.7 ug/L) was below the NJ GWQS (8 ug/L).

**Comment:** The discussion or Risk Based Concentrations needs clarification as to the basis for the development of these values. The only reference provided is a footnote to Table 2-8.

**Response:** Agree. A discussion of the derivation of these values will be added to the text.

**C mment:** Table 2-9. The suggested use of the maximum background concentration for aluminum would result in an exceedence of the PRG based on an HI = 0.1. Similarly, the maximum background concentration for iron would exceed the PRG based on an HI of 1 by a factor of 2. Before applying this approach the authors should consider other potential sources of iron and aluminum in the diet, the toxicity of the chemicals, and determine that these values are protective of public health.

**Response:** Currently no toxicity values for iron are published in IRIS or in HEAST. The oral reference dose used to evaluate exposures to iron was obtained from the current USEPA Region III RBC tables. This value is based on an allowable daily intake and not on an adverse effect level. In addition iron is considered an essential nutrient. Consequently, adverse health effects may not be representative of actual conditions for exposures to iron in NWS Earle Media at sites 3 and 10.

Currently no toxicity values for aluminum are published in IRIS or in HEAST. The source of the oral reference dose is not listed in the current USEPA Region III RBC tables. Considerable uncertainty exists regarding aluminum and adverse effects associated with aluminum exposure since aluminum is a common element in the environment and adverse effects associated with the Oral RfD are unknown. Consequently, adverse health effects may not be representative of actual conditions for exposures to aluminum in NWS Earle Media at sites 3 and 10.

**Comment:** Table 2-15. It is unclear why arsenic was not included in the contaminants of concern as the maximum value exceeds the NJ GWQS standard by a factor of 2.

**Response:** The maximum concentration of Arsenic in groundwater (4.7 ug/L) was below the NJ GWQS (8 ug/L).

**Comment:** Table 4-1. It is unclear how the magnitude of residual risks were quantified to support the conclusions presented under Alternatives 2 and 3. To make this statement, further clarification of the calculations would be needed.

**Response:** Agree. This section will be rewritten to clarify the evaluation of the residual site-related risk.

## General Comments Pertinent to Both Documents:

### ARARs

**C mment:** The documents identify a number of potential federal location-specific ARARs (i.e., related to wetlands, floodplains, endangered species, fish and wildlife coordination, and the historic and cultural resources) as being potentially applicable to actions at these sites, but do not provide sufficient information to determine how their requirements were incorporated into the alternatives analysis.

The revised FS should specifically address how these requirements were considered, factored in, or ruled out. In particular, statements in these FSs that the NHPA could be a potential ARAR only "if artifacts are discovered during active site remediation" are improper in light of the fact that cultural resources studies have already been prepared, but apparently not been consulted or followed up on.

In fact, on 2/28/94, we reviewed the Navy's base-wide Cultural Resources Assessment for Naval Weapons Station Earle (Ecology and Environment, Inc., December 1990) and recommended additional steps to ensure that remedial actions would comply with the requirements of the National Historic Preservation Act (NHPA) and related laws.

At that time, we indicated that:

1. The report can be considered a Stage 1A cultural resources survey of the facility which has been augmented with additional field inspection. The additional field inspection confirms the patterns of sensitivity which are suggested by the documentary studies. As a result of both documentary and field studies, the report noted the general overall sensitivity of the facility for the discovery of both historic and prehistoric resources. In particular, a number of structures associated with significant activities at the facility still retained sufficient integrity to be potentially eligible for nomination to the National Register of Historic Places. In addition, the field inspection identified specific locations of prehistoric sites, suggesting the potential for discovering many more such sites if a systemic survey were to be carried out.

2. The remedial investigation/feasibility study process indicates the existence of a wide variety of potentially contaminated sites which could be subject to remedial action. To ensure that the Navy's remedial actions are carried out in compliance with the requirements of the National Historic Preservation Act, we recommended that <u>each</u> site be evaluated with respect to the areas of cultural resources sensitivity which are outlined in the cultural resources assessment, and that appropriate field testing at the Stage 1B cultural resources survey level be carried out; and,

3. Identification of any significant resources is preferable at the early stages of the remedial action planning process, and cultural resource survey work is most effective when carried out concurrently with ongoing RI/F S investigations and studies because plans can often easily allow for planned avoidance and/or subsequent mitigation through the remedial action itself. Therefore, we recommended that the Stage 1B cultural resources surveys be incorporated into the ongoing RI/FS process wherever they are needed.

Thus, the final FSs should utilize the results of the already completed cultural resources analyses to determine whether the NHPA is actually a potential ARAR at these sites. If so, appropriate additional stage 1B studies still need to be completed to ensure compliance with the NHPA.

**Resp nse:** Agree. The documents cited will be reviewed and the FSs for OU-5 and OU-6 will be revised as appropriate. However, the conclusion made in the FSs is appropriate. All three sites are in areas which were significantly impacted by construction and excavation activities in the 1940's. While no vidence exists of any prehistoric sites in these areas, the possibility exists that artifacts could be uncovered during remediation activities. At that point, additional investigation would be warranted. No significant structures are located on any of these sites.