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EMAIL AND THE U S EPA REGION III COMMENTS ON THE REMOVAL SITE EVALUATION FOR AREA A SOILS AT NAWC WARMINSTER PA
07/29/1998
DEPARTMENT OF THE NAVY

131-3

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To Neal Teamerson	From Tim McEnter
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From: DAWN IOVEN
To: OSTRAUSKAS-DARIUS
Date: 5/22/98 12:07pm
Subject: NAWC - Warminster

Darius,

I reviewed the Removal Site Evaluation for Area A soils at NAWC - Warminster, and have the following comments to offer:

General Comments

Overall, I agree with the conclusions of the report pertaining to human health issues. With one possible exception (as discussed in the subsequent comment on Appendix E), appropriate CoPCs were selected in affected media for derivation of remediation goals. Further, clean-up levels were established in a manner consistent with EPA guidance and philosophy for the protection of public health.

At the December 1997 meeting between EPA and the Navy, very specific decisions were made regarding the delineation of sampling results at Sites 1, 2 and 3 for the purpose of assessing risks. However, based on the info presented in the report, I can not determine exactly which samples were used to calculate exposure point concentrations. Perhaps the Navy can verify that the terms agreed to at the December 1997 meeting followed.

Page ES-3

A brief presentation of site risks -- similar to that provided in Table 1-13 -- would be helpful. Such a summary would clarify the conclusions discussed in the Executive Summary.

Page ES-4

The volume of contaminated surface soil at Site 3 (based on PRGs) is estimated for an industrial land-use scenario. However, for Site 3, no unacceptable risks to industrial receptors were noted in the BLRA. Therefore, another explanation -- such as soil-to-gw transport -- should be provided for estimating this volume.

Tables 1-2 through 1-12

The term "representative concentration" should be defined for these tables. A footnote referring the reader to another report for an explanation really is not adequate. A simple definition in this regard would suffice: is the representative concentration an arithmetic mean, a geometric mean, a 95th % UCL, or a maximum?

Page 1-37

The following sentence appears in the first paragraph on page 1-37: "This adjustment reduces the risk levels associated with soil ingestion by fifty percent." Either an explanation for this occurrence should be provided on page 1-37 or, preferably, the sentence should be deleted.

Page 2-2

Lead should only be considered a CoPC if warranted, not because doing so is a conservative measure.

Page 2-3

Choosing CoPCs for protection of gw based on ecological considerations is a confusing concept. This implies that perhaps gw discharge to surface water is

a concern. However, the CoPCs listed for this category are volatile, and volatile chemicals tend not to be very toxic to aquatic organisms. A discussion relating CoPCs protective of gw to ecological concerns might help. Also, a clear statement regarding gw and human health considerations should be included in the text.

Page 2-5

According to the BLRA, subsurface soil at Site 1 is a human health concern. This should be indicated in the table.

Appendix E, Page 9

The discussion related to removal of lead hot spots in surface soil at Site 2 is very confusing. Were these areas of contamination actually removed, or are they being proposed for removal? In either case, this discussion should be clarified. Further, if removal has not occurred, lead should be identified as a CoPC in surface soil at Site 2, and appropriate remediation goals should be developed.

If you have any questions regarding these comments, please let me know. Thanks.

Dawn

CC: OKORN-BARBARA

EPA COMMENTS ON "DRAFT REMOVAL SITE EVALUATION FOR AREA A SOILS" AT THE NAVAL AIR WARFARE CENTER, WARMINSTER, PA

JUNE 16, 1998

EXECUTIVE SUMMARY

Revise as needed based on changes on the balance of the report.

1.0 PURPOSE OF REPORT

It is indicated that the report evaluates "remedial alternatives" for soils in Area A. However, the report appears to be evaluating "CERCLA removal" alternatives. Revise accordingly and identify whether the removal actions addressing Sites 1, 2 and/or 3 are "time-critical" or "non-time-critical".

One objective of all of the response alternatives appears to be meet all CERCLA remedial action requirements at these sites. This should be stated if this is the case.

While institutional controls are components of the two action alternatives identified in this report, these controls are not generally considered to be components of a CERCLA removal action. While it is appropriate to identify the need for and nature of such controls as a complement to the other identified actions, it should be noted that the institutional controls would be selected as a remedial action in a Final CERCLA Record of Decision for Area A soils to be issued in the future.

It should be noted that the report does not evaluate response alternatives for stream sediments and/or floodplain soils which have been impacted by past and/or present releases of contaminants from Site 1, 2 and 3, but does evaluate alternatives for mitigating any additional releases of contaminants from these sites to the subject sediments/soils.

Sections 1.3, 1.4 and 1.5 of this report repeat/summarize information already presented in a Draft Phase III RI Report issued by the Navy. EPA has provided comments on this report as they apply to Area A soils. These comments should be considered and appropriate sections of this report revised accordingly.

1.4 PHYSICAL CHARACTERISTICS

1.4.2 Soils

Site-specific detail should be provided where the information may affect the nature of response action alternatives. For example, it is worth emphasizing that Sites 2 and 3 are both locations where significant quantities of fill have been placed and/or soil has been disturbed. Aerial photos, field observations, and borings logs should be discussed in this regard. This information indicates that at both Site 2 and 3, original native soils which used to slope to a tributary of Little Neshaminy Creek have been covered by fill to create a level ground surface which has been historically used for parking of vehicles, miscellaneous storage, etc., and that a significantly steeper slope was created between the level area and the tributary. Current field observations indicate that a significant portion of the exposed "soils" on this slope are now fill materials. The quantity of fill is particularly significant in the case of Site 2, where a stream was "replaced" by a storm sewer and fill material. The approximate percent of this slope and variability in this percent along the relevant reach of the tributary should also be indicated.

1.4.5 Surface Water Hydrology and Classification

A figure should be provided to clearly indicate the location of the subject tributary relative to Sites 1, 2 and 3. At this time, none of the figures in the report clearly provide this location.

It is indicated in this section that while "...seep discharges are not addressed in this RSE...", "...it is expected that the discharges will cease once the groundwater extraction system is in operation, as the extraction well operation will lower the water table in Area A...." It is unclear why this information is included under this particular section. If pumping and treatment of groundwater is part of any of the potential response alternatives, this should be identified later in the report and evaluated with other response options. For example, the potential effects of such pumping on recharge of downgradient wetlands should be considered. In any case, as noted in comments

to follow (e.g., see comments on Section 1.8.2), the quality and extent of subsurface flow/groundwater discharging from overburden and shallow bedrock in Area A to the tributary is not adequately assessed at this time. In addition, there is no information presented to support the conclusion that these discharges can be controlled through pumping of the extraction well system to be implemented under OU-1.

It is indicated that "...should the seeps persist after the Area A extraction system is in full operation, the need for a remedial action at the seep locations will be evaluated and appropriate actions taken..." As noted earlier, it is assumed that the objective of the actions described in this report is to meet all CERCLA requirements, including remedial action requirements, and that further "cleanup" actions beyond those described in this report are not anticipated. By deferring an evaluation of the impact of "seeps" and/or response options to address these "seeps", the response actions evaluated in this report may not necessarily meet all remedial requirements for Sites 2 and 3.

While the report later includes erosion control measures in both of the response action alternatives, the report provides no information regarding where erosion has been observed and/or the extent of the erosion.

1.4.7 Ecology

While there is reference to ecological receptors throughout the report, at no point is the nature of these receptors identified. For example, this section contains only general information which is not specific to Area A. It is recommended this section be revised to identify the ecological receptors in this case, particularly those in the tributary.

1.5 NATURE AND EXTENT OF CONTAMINATION

These sections repeat/summarize information already presented in a Draft Phase III RI Report issued by the Navy. EPA has already provided comments on this RI report as they apply to Area A soils. These comments should be considered and this section revised accordingly. In addition, further sampling is planned to determine the nature and extent of contamination. Depending on the circumstances, the additional sampling results should be

considered in revised risk assessments or to design the response actions.

Information in Tables 1-2 through 1-12 has changed from that presented in similar tables in the Phase III Report. The changes, including changes in representative contaminant concentrations, are due to agreements reached by the Navy and EPA regarding sample populations to be used to estimate exposure point concentrations for each "site." The report should indicate which specific sample results were used to calculate representative/exposure point concentrations for each "site" and whether these concentrations are an arithmetic mean, a geometric mean, a 95th % UCL or a maximum.

1.6 BASELINE HUMAN HEALTH RISK ASSESSMENT

While Alternatives 2 and 3 (identified later in the report) both include institutional controls to prevent residential land use, presumably because neither alternative would be protective of unrestricted residential land use, this section does not discuss or reference the baseline risk assessment for residential use which supports this conclusion. At a minimum, this section should discuss the results of this assessment and refer to Appendix E for details.

p. 3-37 - Delete the sentence that reads, "This adjustment reduces the risk levels associated with soil ingestion by fifty percent." Instead, the revised risk assessment in Appendix E should explain how the risk assessment methodology used in this case differed from that used in the Draft Phase III RI report.

1.6.2 Area A - Site 2

Sub-section 1.6.2.2 notes that "model results indicate that lead exceeds the EPA guideline protective of blood-lead levels". However, it is not clear whether the exceedance is under residential and/or industrial land use. In addition, both the model results and the guideline should be identified.

1.7 ECOLOGICAL ASSESSMENT - AREA A

See comments on Section 1.4.7. Past reports should be referenced

to support statements regarding the nature of aquatic habitat in the tributary and contiguous wetlands.

While it is indicated that risks due to pesticides and PCBs in sediment were "...heavily mitigated by several factors...", these factors are not identified or discussed.

In addition, it is indicated that potential risks due to PAHs in sediment is moderate to high and that data suggests significant contaminant inputs from "base-related activities". It is unclear what is meant by "base-related activities" or what the significance of this statement is. A comparison of PAH concentrations at points upstream and downstream of Sites 2 and 3 should be made.

Generally, available data may not fully identify the nature and extent of active contaminant loading to the stream from Site 2, Site 3 and/or Outfall OF1 and/or the relative extent of contaminant loading from these three sources. However, per comments to follow on Section 1.8.2, available data suggests that active releases from Site 2 are producing copper, lead and zinc levels in the surface water which may present a threat to aquatic life. In addition, sampling of soil at the location of seep suggests that discharges from Site 3 may also present a threat to aquatic life (see Section 1.8.2). However, at this time, there is no biological data available to assess the actual effect of active contaminant loading from Site 2, Site 3 and /or Outfall OF1 on aquatic life.

1.8 RECOMMENDATION FOR REMOVAL EVALUATION

1.8.1 Recommendations Based on Human Health Concerns

This section should also indicate where lead concentrations in soil exceed acceptable levels.

1.8.2 Recommendations Based on Ecological Concerns

Both the Phase III RI and this report conclude that active contaminant loading to surface water and sediment in the tributary via subsurface flow and/or groundwater recharge is insignificant. However, there is no rationale provided for this conclusion in either report. For example, after noting that

water discharging through stormwater outfall OF1 is contributing elevated metal concentrations in the subject stream, the Draft Phase III RI report indicates that "...while known [illegible]ncial sources within Area A may also be contributing to this contamination by possibly leaching groundwater contaminants to the stream or by overland runoff, these transport mechanisms are not believed to be as significant..." However, sampling of surface water downgradient of Site 2 during the Phase III RI found over 101 ug/l of copper, exceeding the Ambient Water Quality Criteria for copper of 6.5 ug/l, while no copper was detected in water collected from outfall OF1. In addition, while 16.9 ug/l of lead was detected in water in outfall OF1, 28.5 ug/l of lead was detected downstream of Site 2, suggesting that Site 2 is contributing over 10 ug/l of the detected level. The AWQC for lead is 3.2 ug/l. Finally, 117 ug/l of zinc (AWQC=30 ug/l) was detected in surface water downstream of Site 2 (AWQC=30 ug/l), over three times that detected in OF1. Notably, surface water samples collected downstream of Site 2 five years earlier during the Phase I RI found very similar concentrations of these same metals - 106 ug/l copper, 17 ug/l lead and 99 ug/l. With regard to Site 3, a soil sample from a seep discharge point on the lower part of the slope (see "sediment" samples A25-SD/A26-SD) downgradient of the site contained 8490 mg/kg Zn, 15.9 mg/kg cadmium, 2.5 mg/kg mercury and other elevated metals. These same metals have been detected at elevated levels in soil at Site 3 (see next paragraph). This information suggests that subsurface contaminants at Site 3 may be intermittently discharging to surface water via "seeps", particularly during storm events. It is worth noting that test pits conducted at Site 3 during the Phase III RI encountered a significant pocket of "perched water" in overburden which may be one source of "seep" water. In addition, available data which indicates elevated levels of copper, lead, zinc and other metals in groundwater within overburden and shallow bedrock downgradient of Site 2 (see comments on Sec. 1.8.3) also has not been considered in evaluating the active impacts of Sites 2 and 3 on surface water and sediment.

In discussing the evaluation of potential erosion of contaminated soils at Site 1, it is stated that "Site 1 surface soil is a sufficient distance from the tributary to pose minimal effects to the sediment of the tributary". This distance should be

identified and a rationale provided for the conclusion that this is a "sufficient distance".

With regard to the potential erosion of soil from Sites 2 and 3, it is stated that "the potential for subsurface soil to migrate to the tributary is minimal". However, this conclusion does not appear to consider that subsurface soils on the slope at Site 2 contain highly elevated metals. In particular, a sample collected at 2' to 3' in depth on the slope contained 4190 mg/kg copper, 5640 mg/kg zinc and 978 mg/kg lead (see SB-02-48). In addition, at Site 3, up to 1600 mg/kg lead, 3760 mg/kg copper, 9.7 mg/kg mercury, 9100 mg/kg zinc, 67.1 mg/kg cadmium and 368 mg/kg silver have been detected in samples collected about 25' from the slope (see results for soil boring SB-03-08 and Test Pit #3). Significantly, no soil samples have been collected from the slope at Site 3. It is worth noting that all of the concentrations referenced in this paragraph are well above "sediment PRGs" developed later in the report. Overall, available data suggests that contaminated subsurface soils at certain locations may potentially migrate to surface water via erosion.

1.8.3 Recommendations Based on Soil Leaching Concerns

As noted earlier, ecological receptors are potentially threatened by the leaching of contaminants and subsequent discharge to surface water. To distinguish this environmental concern from the potential threat to human health due to leaching of contaminants to groundwater and subsequent human use of the groundwater, it suggested that this section read, "Recommendations Based on Protection of Groundwater for Human Use".

While it is indicated that "...previous investigations have found groundwater within Area A to be contaminated with VOCs that exceed MCLs...", MCLs have also have been exceeded for metals in Area A groundwater. For example, the Record of Decision for OU-1 found that "MCLs have been exceeded for...cadmium, manganese, arsenic, and barium in individual groundwater samples collected within Area A." In addition, since the issuance of the OU-1 ROD, installation and sampling of overburden and shallow wells in monitoring well cluster HN-15 downgradient of Sites 2 and 3 has found elevated levels of these and other metals, including beryllium, chromium, copper, lead, nickel, vanadium and zinc

(e.g., see sample results for July 1995). Since most of these metals have been found at elevated concentrations in soils at Sites 2 and/or 3, the potential for migration of metals from soils to groundwater should also be evaluated.

2.0 REMEDIAL ACTION OBJECTIVES

As noted earlier, the first bullet in this section should indicate that an objective of this action is to protect not just industrial receptors, but all human receptors.

2.1.1 Human Health COCs

It is indicated that "...lead will be conservatively added as a COC for both media..." Per the risk assessment in Appendix E, lead is a COC because it is warranted per CERCLA risk assessment guidance, not because it is a conservative measure.

2.1.3 Soil to Groundwater COCs

See comments on Section 1.8.3 regarding the need to consider metals.

While this section identifies COCs relating to groundwater for human use, the subheading under this section reads "Ecological COCs Protective of Groundwater".

2.3 PRELIMINARY REMEDIATION GOALS

In the first group of bullets in this section, it is unclear what is meant by "...protecting the environment from detrimental impacts of site-related contamination". Please clarify.

The matrix in this section should be checked for Site 1 under "Human Health / Subsurface Soil".

See previous comments in response to the statement that Area A soils are not releasing metals to groundwater at levels of concern. While it is indicated that elevated levels of metals in wells HN-15X and HN-15S are "...located offsite in a discrete area of higher overall metals levels...", it worth noting that there is only monitoring well cluster in this area and that it is downgradient of Sites 2/3.

2.3.2 Surface Soil PRGs for the Protection of Sediments

It is indicated that "...ecological COCS found in the surface soil only were retained and that "...the possibility that sufficient surface soil would be excavated to the surface to pose a risk to sediment contamination was viewed as unlikely and overly conservative." As noted earlier, at a minimum, subsurface soils on the slope at Site 2 are known to have contaminant levels which exceed "sediment PRGs". These subsurface soils may be more likely to erode to surface water than surface soils in level areas above the slope.

While available data for the quality of soil on the slope is very limited, the development of "sediment PRGs" does not appear to have adequately considered the potential for these soils to be contaminated (see comments on Section 1.8.2) and migrate to surface water via erosion.

It is unclear why Table 2-3 includes no PRGs for antimony in surface soil at Site 2.

2.3.3 Soil PRGs Protective of Groundwater

Table 2-4 - It is unclear why two PRG values are provided in the table and what these values represent. Preferably, only set of PRGs should be provided, i.e., those appearing in Table 2-5. In addition, the table should include numbers to correspond to the footnotes below.

It should be indicated why a dilution attenuation factor of 20 was assumed in this case.

2.3.4 Controlling Soil PRGs

While the description of the alternatives later in the report identifies actions to address subsurface soils at Sites 2 and 3 which exceed PRGs for protection of groundwater, Table 2-5 does indicate that any such soils exist.

2.4 VOLUME OF CONTAMINATED MEDIA

Based on the information presented in this report and the Draft Phase III RI Report, the nature and extent of contamination at

"Site 1" does not appear characterized to the extent necessary to reasonably estimate the location and depth of soils exceeding cleanup levels. This uncertainty is reflected by differences between the "area of unacceptable contamination" identified in Figure 4-31 of the Draft Phase III RI Report (see Attachment 1) and the "area of excavation" identified in Figure C-1 of the RSE (see Attachment 2). In the former case, it was apparently concluded that any "multicolored silty clays" observed during the Phase III RI (see Attachment 3) were likely to contain contamination above soil cleanup levels (which had not yet been established at the time). In the latter case, certain observed "multicolored silty clays" were not targeted for excavation, apparently based a comparison of available RI soil sampling data to soil cleanup levels identified in the RSE.

Generally, given the relatively limited RI soil data for Site 1, including those areas where the Phase III RI observed or projected the presence of the multicolored silty clays, there is significant uncertainty regarding the location of soils which exceed soil cleanup levels. This is particularly apparent in the case of two soil zones. In the first case, the RSE projects that the area of soils between Test Pit Nos. 3 and 4 (see Zone 1 in Attachment 4) will require no excavation. This projection appears to be based almost solely on sample results for soil boring SB-01-09 (see Attachment 3). However, while cadmium and antimony are primary contaminants of concern, it appears no TAL metal analysis was performed on the soil sample collected from SB-01-09. (On the other hand, the presence of 4.2 mg/kg of Aroclor-1254 and the multicolored silty clays at this location indicates a potential for unacceptable contamination in this zone.) In the second case (see Zone 2 in Attachment 4), while the multicolored silty clays were observed throughout the length of Test Pit No. 2 at a depth of 3.5 to 5 feet and from 2.5 to 7.5 feet in Delineation Boring D-6, the report projects no excavation in this area. This projection appears based on the analytical results for one sample location in Test Pit No.2. Clearly, the analytical results for this one location may not be representative of contaminant concentrations in the multicolored silty clay in this area.

Based on the above, additional samples should be collected within Zones 1 and 2 to determine whether and/or which soils in these areas exceed cleanup levels and require excavation. Because the

quantity of soil requiring excavation in Site 1 could potentially double based on the additional sampling results, consideration should be given to conducting this sampling prior to the mobilization of the response action contractor.

With regard to Sites 2 and 3, the volume of the soil exceeding PRGs may change pending resolution of EPA comments and/or the results of any additional investigation/sampling.

Based on available information, an additional surface soil (0-2') sample location exceeding PRGs was SB-02-31 at Site 2, which was collected at 0.5' to 1.0' and contained 694 mg/kg lead, 317 mg/kg antimony and 24900 mg/kg zinc.

3.2 General Response Actions

In addition to sampling and analysis of wells and sediment, monitoring may also potnetially include collection and evaluation of other biological stream data to monitor the effects of the selected response action.

3.3. Identification and Screening of Technologies and Process Options for Soils and Sediment

The contemplated response actions address soil only, i.e., not sediment.

p.3-7 - The subject list should also include "sediment and biological monitoring".

4.0 DEVELOPMENT AND SCREENING OF ALTERNATIVES

The description of Alternative 3 under the bullets should also include "Offsite Treatment and/or Disposal".

4.2 DEVELOPMENT OF ALTERNATIVES FOR AREA A SOILS

The previous section identified a "Single Layer Cap/Multilayer Cap" as a "process option" in this case which could include or consist of an asphalt (or concrete) cap. However, this option is not included under any of the alternatives. Considering the past use and current use of Area A as a parking areas and the potential for such use in the future, this option should be

further considered, particularly for level areas where infiltration may present a threat to groundwater quality or to the quality of surface water/sediment (see comments on Section 1.8.2). Another process option worth considering, pending resolution of EPA comments on Section 1.8.2, is a more extensive clay cap. However, in evaluating the feasibility of any "impermeable" cap, the potential effects on water recharge of downgradient wetlands should be considered.

Generally, action alternatives should include biological monitoring to evaluate the health of biological communities before and after response actions.

4.2.2 Alternative 2: Excavation; Offsite Treatment and/or Disposal; Erosion Control; Institutional Controls

While this alternative and Alternative 3 both include "Erosion control", this general response action was not identified/ screened in Section 3. In addition, the objective of the placement of the filter fabric and the stone on the slope under this alternative is unclear. In particular, while it stated that the stone will "deter erosion", is the objective to prevent erosion of soils which exceed "sediment PRGs" or to generally prevent the soil erosion? If only the latter, the erosion controls should not be considered part of a CERCLA response action.

It is indicated that a component of the remedy would be "...institutional controls, including deed restrictions..." What other institutional controls would be implemented? In addition, while it is indicated that the controls would "...maintain the site for industrial use only and prevent exposure by residential pathways...", it is unclear what specific activities would be restricted. It should be indicated that residential land use would be not be permitted. In addition, the specific restrictions on industrial use should be identified. If there are no restrictions on construction or excavation, this should be stated.

4.2.3 Alternative 3: Excavation; Consolidation; Native Soil Cover; Erosion Control; Institutional Controls

It is unclear what "consolidation" will occur under this

alternative.

It is indicated that subsurface soils exceeding PRGs for the protection of groundwater would be capped with 2 feet of clay, while the approximate area of the caps is indicated in figures C-2 and C-3 in Appendix C. However, given the uncertainty regarding the areal extent and depth of the soils of concern and the nature of subsurface/groundwater flow in the subject areas, it unclear how the location and area of a limited clay cover would be determined.

While it is proposed that a "native soil cover" be placed over Sites 1, 2 and 3, it unclear which areas would be covered.

The location of the filter fabric and stone proposed for erosion control should be indicated. Again, the objectives of this measure under this alternative should be identified. Is the objective to prevent erosion of newly placed native soil cover and clay caps and/or to prevent erosion of any contaminated soils on the slope?

Again, the specific nature and objectives of the institutional controls should be identified. In particular, how would the controls differ from those under Alternative 2? For example, would excavation and/or construction be prohibited in certain areas in this case? In addition, since these controls would include "active restrictions" such as fencing or signs to restrict access, this should be stated in this section.

5.0 DETAILED DESCRIPTION AND ANALYSIS OF ALTERNATIVES

5.3.2 Alternative 2

In the first paragraph, the description of this alternative should include excavation of subsurface soil from Site 2 as well.

5.3.2.1 Detailed Description

Ii is indicated that "...because Site 1 surface soils are not a media of concern, this media would be stockpiled near Site 1 for use as backfill..." However, the risk assessment found that elevated levels of iron in this soil would present an unacceptable risk under residential use. In this case, it is

recommended that this soil be used as backfill only at depths of greater than 2 feet.

5.3.2.2 Detailed Analysis

Long-term Effectiveness and Permanence

It is indicated that "...in the event that small quantities of soil exceeding PRGs would remain onsite, natural attenuation factors would minimize risks to human health and the environment." As there is no basis provided for this statement, it should be deleted.

Short-Term Effectiveness

Generally, the option of replacing the current, natural vegetative cover which has developed on the stream slope with the proposed stream bank stabilization measures should be more fully assessed. Is erosion anticipated to be a problem throughout the entire projected 600 feet or are the problem areas likely to be localized? If so, the extent of this measure could be limited to minimize permanent removal of existing vegetation.

Implementability

As noted, because contaminants in soils within Area A are "scattered", removal of all soil above PRGs may result in significantly more excavation than that projected in this report and will require the implementation of a relatively complex "verification" sampling plan to ensure removal of such soils to the extent practicable. In addition, due to the "scattered", relatively random nature of contaminant deposition over the relatively large area of Area A and/or the extensive placement of fill material in this area, some soil above PRGs may remain undetected after "verification" sampling is completed. As a result, the deed entered into for transfer of the property containing Sites 1, 2 and 3 should notify the owner that while all soil known to exceed PRGs has been removed, the possibility that such soils may remain undetected and in place after excavation work cannot be ruled out, particularly in areas which have been extensively filled and/or disturbed. The deed notification should also indicate where soils within Area A are known to contain petroleum products.

It is unclear how the proposed stream bank stabilization measures would be implemented where the slope currently has trees in place. Given the trees stabilize the slope at this time, the cost/benefit of removing the trees should be evaluated.

5.3.3 Alternative 3: Excavation; Capping; Native Soil Cover; Erosion Control; Institutional Controls

5.3.3.1 Detailed Description

Component 1: Excavation of Soils

Section 4.2.3 in the Risk Assessment in Appendix E suggests that a surface soil "hot spot" at Site 2 containing up to 80,000 mg/kg lead will be removed. However, this alternative does not include removal of this soil "hot spot". Confirm that the subject soil would remain in place under this alternative or revise accordingly. Based on the highly elevated levels of lead in this case, it is recommended that this "hot spot" be removed rather than covered under this alternative.

Component 5: Institutional Controls

It is indicated that these controls would include "...designating Sites 1, 2 and 3 as an restricted or limited use area." It is unclear why this would be necessary in the case of Site 1, where all soils know to exceed PRGs would be excavated. As noted earlier, a deed notification regarding the potential for additional waste disposal in this area should be adequate and no actual restrictions or limits on industrial use of this area should be necessary.

Details should be provided regarding the objective and location of the fencing.

While it is indicated that the fencing would require repair, this does not appear to have been considered in evaluating O&M costs for this alternative. In addition, other O&M activities under this alternative over the long-term are likely to be necessary. For example, capping and stream bank stabilization should require some maintenance over the long-term.

At this time, the report identifies a five-year review as the only component of O & M under this or any other remedy. However, it is expected that fencing and other components of this alternative should be inspected on a more frequent (annual?) basis.

Overall, O&M cost should be revised as needed based on the considerations above, as well comments on Appendix E (see below).

It is indicated that "...any future construction activity in Area A would be conducted in compliance with health and safety requirements..." Are subject activities associated with Site 1, Site 2 and/or Site 3? In the case of the area of Sites 2 and 3, this would appear to be in conflict with the statement that "...deed restrictions would be applied to the area to prohibit...invasive construction activities..."

It is unclear why fencing would be required around Site 1, where soils above PRGs would be excavated, while no fencing is called for at Sites 2 and 3, where soils above PRGs would be capped.

While the report earlier suggests that "post-response action monitoring" of sediment would be conducted to ensure the remedy is protective, there is no mention of this in this section.

5.3.3.2 Detailed Analysis

Cost

Again, it should be confirmed that additional O&M costs would not be incurred.

APPENDIX B

Generally, it is not clear that the modeling has adequately considered the potential erosion of soils on the slope next to the stream.

Table B-1, page B-8, Criteria Protective of Ecological Receptors
Within the Ecological Criteria column on the right side of the table, Acetone, 9.1, should be cited reference "(7)", not reference "(1)" as shown. Also, naphthalene should have a

criteria of 390, not 0.39 as shown.

References for Efroymson et al. should be cited to a 1997 document which replaces the 1996 document shown. This comment applies to the text at the bottom of page B-7 as well.

The reference listed are unclear. Reference (4) should read "Cited From Efroymson et al. (1997), Chronic Value (SCV)." The complete description for the acronym "MOE" should be spelled out (if it is not supposed to "OME"). References listed on this table should be cited completely in a references section of this document.

Section B.3.2.1, page B-8 The following comments concern the surface water model physical input parameters:

Erosion factor (K) The text states that the erosion factor assumed Area A soils were a sandy clay loam. However, the RI stated that Area A soils were mostly silt. According to Table III-3 (USEPA, 1985), the range of K values should increase to 0.60 from 0.42).

Contaminated Area
According to the text, the size of the contaminated area was based on known soil sample results. However, per comments on the Phase III RI and this report, available sample data suggests that the area of contamination may be greater than that assumed. The modeled contaminated area and other values should be adjusted as needed after receipt of planned, additional sampling results and considering previous comments.

APPENDIX C

Clear headings should be provided for the tables which have been included.

APPENDIX D

As noted earlier, with the exception of a five year review for Alternative 3, there are no O&M costs projected for the alternatives. At a minimum, O&M costs would appear to be incurred for repair of fencing and covered areas (caused by burrowing animals, storm events, etc.), revegetation of grass

areas, general maintenance of the streambank stabilization, periodic inspections and monitoring. These O&M costs should be estimated as annualized costs over a 30 year time period.

APPENDIX E

Summary tables for Estimated Carcinogenic and Noncarcinogenic Risks are missing for Site 2 Subsurface Soils, Site 3 Surface Soils and Site 3 Subsurface Soils.

While the discussion related to the removal of lead "hot spots" implies the "hot spot" has been removed, this is not the case. Please clarify. In addition, in scoping out the risk assessment work, EPA and the Navy agreed that short-term risk to construction workers need not be assessed if soils which present a potential unacceptable risk over a short-term of exposure are removed. As a result, if not removed, the potential health risks posed by this "hot spot" to construction workers should be assessed.