



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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1 CONGRESS STREET, SUITE 1100
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NAVSTA NEWPORT RI
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April 25, 2002

James Shafer, Remedial Project Manager
U.S. Department of the Navy
Naval Facilities Engineering Command
Northern Division
10 Industrial Highway
Code 1823, Mail Stop 82
Lester, PA 19113-2090

Re: Draft Final Feasibility Study for the Old Fire Fighting Training Area

Dear Mr. Shafer:

Thank you for the opportunity to review the *Draft Final Feasibility Study for the Old Fire Fighting Training Area, Naval Station Newport, Newport, Rhode Island* dated March 2002. Overall, I am concerned that many of EPA's concerns raised on the previous draft remain unaddressed. We should discuss how the FS inadequacies will affect the cleanup schedule for the site. Detailed comments are provided in Attachment A.

EPA is concerned with the inadequacy of the sediment alternatives evaluation. Two shortfalls are most notable. First, none of the alternatives fully protects current and future users because the risk from shellfish ingestion remains. Second, the FS fails to effectively evaluate the monitored natural recovery alternative because the amount of time required to reach PRGs is not estimated. As a result, several NCP criteria (*e.g.*, overall protection of human health and the environment; short-term effectiveness; and the long-term effectiveness and permanence) are not sufficiently evaluated such that a unbiased comparison among the alternatives can be made.

EPA is concerned with the Navy's April 23, 2002 proposal to fence and monitor the offshore area (*i.e.*, Sediment Alternative #2). The draft final FS rightly acknowledges that "...risks to marine biota would remain..." Any remedy selected for the site must be protective of both human health **and the environment**. It is therefore unclear how Sediment Alternative #2 can be selected under CERCLA.

Of the options presented in the Feasibility Study, Sediment Alternatives 4 and 5 would provide the most comprehensive removal of sediments exceeding ecological PRGs. The challenge presented by both of these options is how best to determine the extent of excavation to the north (seaward) and west of Station SD-410 based on the available data. If either of these options is selected, some focused sampling (possibly for chemical analysis only) would be needed to delineate the extent of excavation in these directions. For both alternatives, the

northern and western extent of proposed excavation depicted on Figures 5-2 and 5-4 is based on extrapolation from a single station, station SD-410. This extrapolation is determined only by the computer program used to generate the map and is not supported by any data in the northern or western directions. Given the high variability of sediment, it would be unwise to risk disruption of an eelgrass bed on the basis of one sample. There is a risk under Sediment Alternative 5 that the eelgrass bed could be effectively cut in two and destabilized if excavation extends too far into the bed. I recommend that the final extent of excavation in the eelgrass be determined by additional focused sampling, that could be conducted while plans move forward for remediation of better-defined areas of the site. Alternatively, Sediment Alternative 4 could be selected with the option to excavate further if monitoring reveals more extensive contamination.

The proposal under Sediment Alternative 5 to build a causeway for excavation in the eelgrass bed may present unnecessary risk to the eelgrass from construction-related disruptions, current alteration, and possible scouring. It is not clear from the FS whether any of the other possible excavation techniques could be used instead. Please discuss this further.

Long-term monitoring of beach sediment should be included for all sediment alternatives to assess migration of contaminated sediment to the beach from near-shore and offshore locations (and potential impacts from soil as well). Sediment migration should be expected from wave action, tides, and storms; and because most near-shore and offshore PRGs are more than one order of magnitude greater than the PRGs for the beach sediment.

Table 2-14 presents a PRG of 5.48 mg/kg for arsenic in nearshore and offshore marine sediments. However, Appendix D argues that remedial actions would be better based on the PAHs rather than the arsenic. This is because of the uncertainties in the risk assessment and the fact the calculated sediment PRG, which is based on shellfish consumption is 5.48 ppm, is less than the soil PRG of 6.2. From an analytical perspective, these PRG values are essentially the same. There is a disconnect between the information as presented in Appendix D and what is presented in Table 2-14. Please clarify whether there is a proposed human health based PRG for arsenic in nearshore and offshore marine sediments.

The Navy indicated in their response to EPA's comments that the uncertainties associated with excavation in the wet would be addressed in the revised FS and that a conceptual plan would be presented. This has not been done. Therefore, EPA reiterates its previous comment. Managing the excavation of sediment in the wet will be impacted by sloughing and sediment movement (suspension and redeposition). The volume of sediment that will need to be excavated to achieve the remediation goals will exceed the contaminant-impacted volume because of the sediment movement. Sediment movement will also make it difficult to establish and confirm a clean excavation. Horizontal and vertical over-excavation will be required to attempt to achieve a clean excavation. The FS must discuss these uncertainties and present a conceptual plan for dealing with them.

EPA is restating its request for a cost sensitivity analysis to address the potential impacts of several uncertainties associated with the proposed alternatives. Some of these uncertainties include:

- the actual volume of contaminated sediment requiring remediation
- the amount of over excavation required to achieve remedial goals
- the capability of the bridge to the mainland to withstand the truck traffic loadings
- the ability to conduct all operations within the site boundaries

While it is understood that the volumes presented for the first two bullets would be estimated, the analysis should present a range of potential volumes and an associated cost. For example, if the volume of contaminated sediment increases in the range of A% to B% based on additional sampling and analysis, the cost of Sediment Alternative 3 would increase by X% to Y%; etc. for other alternatives. For bullet number two, perhaps information from previous projects could be used by the Navy for guidance. Regarding the third bullet, EPA now suggests that an evaluation of the access roads and bridge(s) to Coasters Island be conducted as part of a pre-design investigation and a cost estimate for necessary improvements prepared. Because the cost and schedule impacts associated with any road or bridge improvements could be substantial, the need for this information is important. Regarding the fourth bullet, EPA is restating its request that the FS include estimates of the area required to conduct remedial operations, especially for on-site treatment, as this will require the most space.

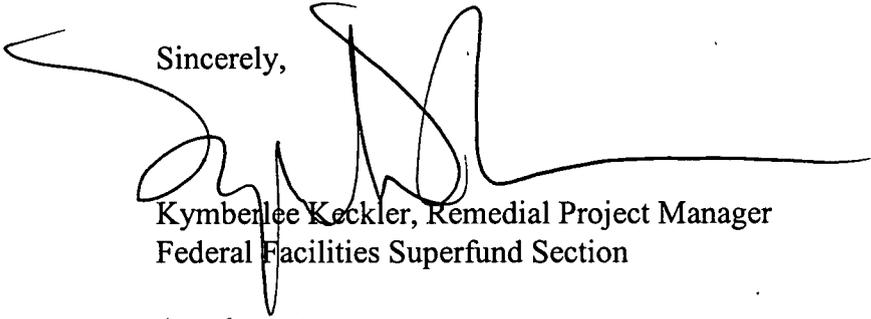
As stated in my letter to you dated March 18, 2002, EPA has recommended that cancer risks owing to exposure to dioxin be evaluated using two distinct oral cancer slope factors, *i.e.*, the current slope factor of 1.5×10^5 (mg/kg/day)⁻¹ from the EPA HEAST database and the newly derived slope factor of 1×10^6 (mg/kg/day)⁻¹ from the EPA Draft Dioxin Reassessment, which would result in two distinct estimates of cancer risk. Thus, in addition to what has been done for dioxin using the current cancer slope factor in the final draft FS, EPA recommends that an additional appendix or technical memorandum be provided to evaluate cancer risk from dioxin and calculate the risk-based PRGs for dioxin, using the proposed EPA's cancer slope factor. These PRGs can be presented along with the level of 1 ppb to be decided for cleanup level. This approach is recommended by EPA headquarters and is being applied consistently at other Superfund sites. This approach will assist in determining the protectiveness of the remedy.

As EPA previously commented on the draft of the FS, the Navy needs to address the groundwater risks at the Site. This should be done as a separate chapter since it appears that groundwater risks will remain even after the Navy has addressed soil contamination on the site. Groundwater controls need to be incorporated into the ROD for the remedy to be both protective of human health and to address ARARs.

Lastly, the FS should state that the "Naval Education Training Center (NETC) Superfund Site" is the name of the site as listed on the National Priorities List. EPA has not changed the name and therefore the Title page and other sections of this document should indicate that the Old Fire Fighting Training Area is part of the Naval Education Training Center (NETC) Superfund Site.

I look forward to working with you and the Rhode Island Department of Environmental Management toward the cleanup of the Old Fire Fighting Training Area. Please do not hesitate to contact me at (617) 918-1385 to arrange a meeting to discuss remedial options for the site.

Sincerely,



Kymberlee Keckler, Remedial Project Manager
Federal Facilities Superfund Section

Attachment

cc: Paul Kulpa, RIDEM, Providence, RI
Melissa Griffin, NETC, Newport, RI
David Peterson, USEPA, Boston, MA
Bart Hoskins, USEPA, Boston, MA
Chau Vu, USEPA, Boston, MA
Jennifer Stump, Gannet Fleming, Harrisburg, PA
Ken Finkelstein, NOAA, Boston, MA

ATTACHMENT A

<u>Page</u>	<u>Comment</u>
p. iv	The list of Appendices A and B need to be transposed to correlate with the actual sequence of Appendices in the Draft Final FS.
p. ES-1, ¶3	In the second sentence remove "total petroleum hydrocarbons." TPH is not governed by CERCLA
p. ES-2, ¶1	In the last sentence, even though groundwater ingestion is termed "unrealistic" the remedy must address potential groundwater use. Risks to human health from potential groundwater ingestion were significant.
p. ES-2, ¶2	Summarize the risks to construction workers from contact with contaminated groundwater.
p. ES-2, ¶3	It is not correct to state that intermediate risk areas may be considered acceptable from an ecological perspective. Some areas with intermediate risk levels may require remediation under CERCLA.
p. ES-3, ¶1	The contribution to ecological risk from groundwater intrusion has not been quantified (or even estimated) so it is therefore inappropriate to consider it "negligible." Please delete this sentence. Appendix A of the FS merely compares site groundwater, soil, and sediment data. Many factors - including atmospheric deposition, groundwater transport, and preferential flow pathways - contribute to the sediment contamination and should be fully discussed and possibly modeled. Alternatively, the FS could state that groundwater concentrations are expected to decrease when the source of contamination is removed.
p. ES-3, ¶2	Please estimate the area and volume of the contaminated groundwater that exceeds MCLs.
p. ES-3, ¶3	The FS should develop PRGs for groundwater since there are exceedances of MGLs. Remedial alternatives need to be developed that at least include monitoring and institutional controls.
p. ES-5, ¶¶3, 4, & 5	The correct name of the NCP criterion is "Reduction of toxicity, mobility, or volume <u>through treatment</u> ." (Emphasis added.) The FS must reveal that none of the alternatives involve treatment and therefore none meet this criterion.

- p. 1-6, §1.4.2 In the last paragraph on the page, please clarify in the second sentence that MW-6R is in bedrock and MW-11S is not. As written, the second sentence appears to contradict the third sentence.
- p. 1-10, §1.7 Please expand the discussion of the extent of groundwater contamination at the site.
- p. 1-11, §1.7 The last sentence in the first full paragraph on this page states the elevated arsenic concentrations are believed to be attributable to site and regional bedrock. This assumption is questionable given that arsenic concentrations as high as approximately 74 mg/kg have been detected buried in the soil and debris mounds at the site. Additional information from the background study or studies analyzing bedrock core samples from the site or regionally should be presented to support this assumption or the statement should be deleted. There may be other sources of arsenic contamination at the site.
- p. 1-12, ¶3 Remove this paragraph because TPH is not addressed by CERCLA. Alternatively, explain that the actions taken to address CERCLA hazardous substances will also address TPH, which is a State regulatory requirement applicable to the site. If this approach is taken, it must be made clear that the remedy is driven by pollutants other than TPH, but has the added benefit of cleaning up TPH too.
- p. 1-14, ¶3 Although groundwater ingestion is termed "unrealistic" in the last sentence, the remedy must address potential groundwater use and address the risks from groundwater exposure.
- p. 1-14, ¶4 Summarize the risks to construction workers from contact with contaminated groundwater.
- p. 1-15, ¶3 It is not correct to state that intermediate risk areas may be considered acceptable from an ecological perspective. Some areas with intermediate risk levels may require remediation under CERCLA.
- p. 1-15, ¶4 The federal and state-listed Loggerhead and Kemp's Ridley turtles were listed as occurring in Narragansett Bay.
- p. 2-3, §2.2.1 The reference to Appendix A in the text is incorrect; the Groundwater Risk Evaluation is presented in Appendix B. The same correction is required on page 2-5 under Groundwater.

p. 2-6, ¶3 Please delete the words "unrealistic" and "probable" from this paragraph. The residential risk calculated for the site is sufficient to warrant remediation (*e.g.*, monitoring and institutional controls) in the area of contamination.

p. 2-6, ¶4 Change Appendix "B" to Appendix "A."

The contribution to ecological risk from groundwater intrusion has not been quantified (or even estimated) so it is therefore inappropriate to conclude that a present or future risk does not exist. Appendix A of the FS merely compares site groundwater, soil, and sediment data. Many factors - including atmospheric deposition, groundwater transport, and preferential flow pathways - contribute to the sediment contamination and should be fully discussed and possibly modeled. Alternatively, the FS could state that groundwater concentrations are expected to decrease if the source of contamination is removed.

Remedial actions for groundwater should be evaluated in the FS in the same manner as proposed remedial actions for contaminated soil and sediment.

p. 2-7, ¶4 If the risk from contaminants was not quantified because that contaminant was below background, the contribution from background must be discussed either qualitatively or quantitatively.

p. 2-13, ¶5 The remedial action objectives should be clarified to explain that they address soil from the surface down to and including the vadose zone.

How will the Navy address potential contamination below the vadose zone? There could be risk to construction workers from exposure to deeper contaminated soil. If not addressed, controls are likely to be required for soils below the vadose zone.

p. 2-14, ¶1 Remove this paragraph and the bullet because TPH is not regulated under the CERCLA and therefore RAOs should not be developed for it in the FS. Alternatively, explain that the actions taken to address CERCLA hazardous substances will also address TPH, which is a State regulatory requirement applicable to the site. If this approach is taken, it must be made clear that the CERCLA remedy is driven by pollutants other than TPH, but has the added benefit of cleaning up TPH too.

p. 2-15, ¶4 Oysters were determined to be abundant in the beach sediment. Please delete "Shellfish were not present in this area."

p. 2-17, The last sentence in the partial paragraph at the top of the page discusses a 10%

- §2.2.3.2 adjustment factor, which is misleading. Please clarify that the adjustment made was a factor of 10, that is, the value calculated using the slope factor was multiplied by 10 to calculate the adjusted target concentration for arsenic.
- p. 2-18,
§2.2.3.2 The three references on this page to EPA documents are not contained in the References Section of this FS, but they are in the list of references in Appendix D. Please include the references in the Reference Section.
- p. 2-20,
§2.2.3.4 The discussion in the first paragraph is not correct. The FS identified different PRGs for the same contaminant depending on its location in the marine environment. Table 2-15 presents PRGs for beach sediment, near-shore sediment, and offshore sediment. This is reflected in the RAOs on page 2-21, which identify specific portions of the marine environment and their respective RAOs. Please correct the discussion in this paragraph to be consistent with the rest of the FS.
- p. 2-21,
§2.2.3.4 The first full paragraph discusses Table 2-16, stating that the only PRGs calculated for shellfish ingestion, exceedances were for arsenic. However, SD-410 has a PRG exceedance for benzo(a)pyrene. Please correct the text.
- p. 2-22,
§2.3.1 The third bullet contains an error. The volume should be 37,600 cubic yards.
- p. 2-23,
§2.3.2 The volume of contaminated sediment identified in the two bullets on this page may need to be revised following additional sampling to the east and west of the currently-defined areas of contamination. There is no reason to believe that the contamination ends abruptly at the points indicated in Figure 2-4. Assessment of these areas should be addressed in the pre-design investigations.
- p. 3-6,
§3.2.2.2 Change "Deed Restrictions" to "Land Use Restrictions." As discussed in EPA's letter dated June 15, 2001, please explain how land use restrictions can be enforced remain in effect as long as the land remains under the control of the Navy. As has been discussed at other sites, the Navy should describe how, if the land ever was sold, that the Navy would put the applicable land use restriction on any deeds that are created. The Navy must not eliminate restrictions from consideration if, based on the Navy's analysis, contaminated soil will be left anywhere on the site.
- p. 3-7,
§3.2.2.2 The first paragraph eliminates deed restrictions from further consideration. However, deed restrictions have been used in the soil alternatives to restrict the use of groundwater. Please edit the FS to clarify that deed restrictions have been retained to restrict groundwater use.

- p. 3-9, ¶1 In the second sentence insert "and federal and state regulators" after "the responsible agency."
- p. 3-15, ¶5 In the second sentence insert "and/or TSCA" after "RCRA."
- p. 3-30, ¶2 How is the "no swimming rule" enforced at the base and where is it recorded? During EPA's community interviews in December 1998, many interviewees revealed that people swam in the waters adjacent to the OFFTA. New kayak ramps are being installed by the Navy adjacent to the site. Could the prohibition be expanded to any use of the shoreline? This section should discuss how the government would address transferring any land use restrictions if the property were ever exsessed. This option should be retained because the existing land use controls need to be incorporated into the CERCLA remedy for the Site. As a matter of policy, any new remedy involving institutional controls must be reviewed by EPA headquarters.
- pp. 3-30 & 3-31 In the discussion of access restrictions, it is unclear why fencing was found to be an unacceptable option for the soil, but that it is acceptable for the sediment areas. All of the problems identified in the soil are even more problematic for the shoreline, particularly if the site were ever used for residential development or reopened as a park.
- p. 3-39 As was stated in EPA's letter dated June 15, 2001, the Navy needs to add a §3.4 Preliminary Screening of Technologies and Process Options for Groundwater. It is disconcerting that virtually no progress has been made on this in a year. On page 2-6 and Appendix B the Navy acknowledges that monitoring and institutional controls are warranted to address risks from contaminated groundwater on site. The FS must identify remedial alternatives (*e.g.*, such as monitoring and institutional controls) that will address risks from groundwater contamination. Groundwater controls need to be incorporated into the ROD for the remedy to be protective of human health and the environment and to address ARARs.
- p. 3-47, §3.3.2.7 This section discusses the possible use of floating silt curtains to protect eelgrass beds from suspended sediments during excavation. I recommend that such controls be used with any alternative that would significantly disturb sediments. An additional technology to consider is an anchored silt curtain such as the Gunderboom® system that may provide greater protection from siltation than a floating system. Eelgrass is highly sensitive to reduction in sunlight and every effort should be made to minimize suspended sediments from blanketing the eelgrass beds during construction.

p. 4-4, §4.2.2 If only approximately two feet of soil will be removed from the western portion of the site and only approximately four feet of soil from the central portion of the site, it is recommended that Soil Alternative 2 (and Soil Alternative 3) include the removal and replacement of active storm drains that traverse the site and the removal of inactive storm drains and any other piping, such as sanitary drains, that may allow infiltration of contamination from the site soils or otherwise serve as a conduit for site contamination to migrate off site. (I note that a portion of the central storm drain is constructed of vitrified clay. Misaligned joints and breakage are common problems for vitrified clay.)

Also, unless there is reliable documentation that all the former oil piping has been removed from its in-service locations, the soil alternatives should also include subsurface explorations to locate the oil piping and remove it, or confirm that it has been removed.

p. 4-4, §4.2.2 Have the access roads and particularly the bridge(s) to Coasters Island been assessed for their ability to handle excess truck traffic? The assessment should determine the suitability of the access to Coasters Island for the anticipated traffic required for the remediation and provide a cost estimate, if renovation of the access roads or bridge(s) is required to support the remediation. If renovation of the bridge(s) is required, it could cause delay and increase costs. This same comment applies to Soil Alternative 3 and the Sediment Alternatives 3, 4, and 5.

p. 4-8, ¶1 Change the first sentence to: "ARARs are determined by EPA in consultation with the Navy and RIDEM."

p. 4-14, §4.4.2 In the third full paragraph, staging for the treatment systems is discussed, but an estimate of the space required to conduct the treatment operations is not provided. Space will be required for placement of the treatment equipment, operation of the materials handling equipment, input and output stockpiles of soil, dewatering stockpiles, disposal stockpiles, treated soil stockpiles, decontamination areas, management trailers, and access to all these areas. It is not apparent whether the space required for these operations is available within the confines of the site. Please estimate the space required to conduct these operations. If space off site is required to implement the proposed alternatives, discuss this in the FS and identify a potential area.

p. 4-14, ¶2 Add a new second sentence: "If confirmatory sampling finds that hazardous waste is present, all soil contaminated with hazardous waste, including soil below the vadose zone, will be removed." In the first paragraph of page 4-19 the Navy notes that some of the material (approximately 10%) may qualify as hazardous waste. Sampling must be conducted to confirm that no hazardous

waste is left on site.

- p. 4-15,
§4.4.2 The installation of groundwater monitoring wells is discussed in the second full paragraph. Although the details of any groundwater or long-term monitoring program will be specified at a later date, four monitoring wells is not enough to adequately cover the site, and terminating groundwater monitoring after 18 months may be too soon. Please edit the FS to clarify that for the purposes of cost estimating, four monitoring wells and three rounds of groundwater monitoring have been assumed; however, the details of the groundwater monitoring program will be presented in a future document. The same comment applies to Soil Alternative 3.
- p. 4-15, ¶3 During the PDI, will the Navy determine whether there is still a risk posed by contaminated soils below the vadose zone? Will long-term monitoring will be required?
- p. 4-15, ¶4 This paragraph should be moved to a new Chapter that addresses groundwater and includes an analysis of alternatives that address risks from groundwater (including institutional controls and long term monitoring). Citing groundwater restrictions in one paragraph of the soil section is not sufficient. Under the current structure of this FS, if all of the contaminated soil were removed there would be no enforceable standard under the ROD for continued remedial action to address risks from groundwater contamination.
- p. 4-16, ¶2 In the first sentence insert "soil" after "long-term." Change the second sentence to: "There would be no restrictions because of contaminated soil that would limit future activities at the property as long as all soil risks are addressed. However, continued groundwater and sediment restrictions may need to be retained."
- p. 4-17,
§4.4.2 In the first paragraph, the FS states that there would be no potential to leach after soil removal. While the leaching potential would presumably be reduced following soil removal, there is still a potential to leach. Please edit the FS to either delete this paragraph or clarify that for the purposes of cost estimating, four monitoring wells and three rounds of groundwater monitoring have been assumed; however, the details of the groundwater monitoring program will be presented in a future document.
- p. 4-17,
§4.4.2 Under Implementability, are bench-scale or pilot-scale tests anticipated for either LTTS or soil washing technologies? Please clarify in the FS.

Also, please discuss the issue of access to Coasters Island for large construction equipment and large, heavy treatment equipment and the uncertainty, if it exists,

as to whether the preferred bridge, or any bridge, is capable of handling the traffic weight.

- p. 4-17, ¶5 Remove the first, third, and fourth sentences since no permits are required for on-site operations [Section 121(e)(1) of CERCLA].
- p. 4-18, ¶4 At the end of the last sentence add ", however, if hazardous waste is identified within the mounds, the debris will be tested and decontaminated according to applicable federal and state standards before it is disposed."
- p. 4-18, ¶5 Add a new third sentence: "If hazardous waste is identified before disposal, confirmatory sampling will be conducted in the area where the waste was removed to ensure that all soil contaminated with hazardous waste, including below the vadose zone, is removed."
- p. 4-19, ¶3 Please evaluate other more environmentally beneficial ways of restoring and stabilizing the shoreline than a ten-foot wide layer of rip rap.
- p. 4-19, ¶4 If there is still a risk posed by contaminated soils below the vadose zone, sediments, or groundwater, long-term monitoring will be required.
- p. 4-19, ¶5 This paragraph should be moved to a new Chapter 6 that addresses groundwater. There needs to be an analysis of alternatives that address the groundwater risk (including institutional controls and long term monitoring). Citing groundwater restrictions in one paragraph of the soil section is not sufficient. Under the current structure of this FS, if all of the contaminated soil were removed there would be no enforceable standard under the ROD for continued remedial action to address continued groundwater contamination.
- p. 4-20, ¶3 In the first sentence insert "soil" after "long-term." Change the second sentence to: "There would be no restrictions owing to contaminated soil that would limit future activities at the property as long as all soil risks are addressed. However, continued groundwater and sediment restrictions may need to be retained."
- p. 4-21, §4.4.3 Under Short-Term Effectiveness, please add impacts from truck traffic, such as increased traffic, noise, and air emissions from trucks. Supplement this discussion with an estimate of the number of truck round trips anticipated to complete the remediation.

Under Implementability, please discuss the issue of access to Coasters Island for large construction equipment and the uncertainty regarding the bridge's capacity for handling the traffic weight and volume of loaded dump trucks.

Under Cost, discuss the uncertainty, if it exists, as to whether renovations to the existing bridge(s) will be required to allow implementation of this alternative.

- p. 4-21, ¶2 Change the paragraph to: "Alternative 3 does not reduce mobility, toxicity, or volume of organic and inorganic contaminants through treatment. Some treatment of the soil could occur at an off-site TSDF, if required."
- p. 4-23, ¶1 Change the first full sentence to: "Neither alternative would require long-term monitoring as long as there is no remaining risk posed by contaminated soils below the vadose zone (such as to a construction workers) that would require long-term monitoring."
- p. 4-24, ¶1 Change the third sentence to: "Alternative 2 would reduce contaminant toxicity, mobility and volume through treatment, while Alternative 3 does not."
- p. 4-24, ¶3 In the second to last sentence remove "construction, air emissions, and."
- p. 5-4, ¶3 Change the first sentence to: "This alternative was developed to reduce contaminated sediment along the beach." Removal does not satisfy the NCP criteria for reduction of toxicity, mobility and volume through treatment.
- p. 5-4, §5.2.3 Long-term sediment monitoring should include monitoring of beach sediment to assess for migration of contaminated sediment to the beach from near-shore and offshore locations. Most near-shore and offshore PRGs are more than one order of magnitude greater than the PRGs for the beach sediment and therefore recontamination of the beach sediment is possible. This comment also pertains to Sediment Alternatives 4 and 5, as removal of near-shore sediment exceeding PRGs will not provide sufficient protection against recontamination of beach sediment.
- p. 5-4, ¶4 In the eighth bullet add "to the original grade."
- p. 5-6, §5.2.3 In the second paragraph, please include laboratory confirmation of samples. Confirmatory sampling cannot rely strictly on field test kit analyses as this sentence suggests. However, when excavating in the wet, the excavation cannot be left open while waiting for analytical results because the excavation would become contaminated by sediment migrating from surrounding contaminated areas. Therefore, the excavation should be sampled and backfilled immediately after excavation. If laboratory analyses indicate that contamination is not completely removed from an area, the area will have to be re-excavated and the procedure repeated. Alternatively, excavation could be conducted "in the dry" by using porta-dams and not need to be backfilled until laboratory confirmation

results are available. The same comment applies to the descriptions for Sediment Alternatives 4 and 5.

- p. 5-6, §5.2.4 The second sentence states that sediment in and adjacent to the eelgrass beds would remain in tact. This is not apparently true. This alternative proposes to remove contaminated sediment adjacent to the eelgrass beds near sample location OFF-3 and south of sample location SD-410. Please correct as appropriate.
- p. 5-7, §5.2.4 The last sentence in the first full paragraph refers to Alternative 3, but the correct reference is Alternative 4.
- p. 5-7, ¶2 In the tenth bullet add "to the original grade."
- p. 5-10, ¶1 In the tenth bullet add "to the original grade." In the thirteenth bullet change "years 1, 2, and 5" to "as required to assess whether ecological and human health risks are acceptable and ecological restoration is occurring. For cost estimating purposes, a review in years 1, 2, and 5 was assumed."
- p. 5-16, §5.4 Please edit the discussion under Cost to clarify that the present worth cost analysis is up to a 30-year performance period because not all alternatives proposed have a 30-year life.
- p. 5-22, §5.5.3 Under Overall Protection of Human Health and the Environment, please explain that Sediment Alternative 3 does not satisfy the RAO to protect against the ingestion of contaminated shellfish from the near-shore and offshore areas.
- p. 5-23, ¶2 Move the last two sentences to the third paragraph since they are location-specific standards.
- p. 5-23, ¶6 In the first sentence, if "natural attenuation" is to be mentioned there must be more analysis in the FS regarding how long "natural attenuation" will take to reduce contaminant levels to PRGs.
- p. 5-23, ¶7 Delete the last sentence.
- p. 5-26, ¶1 In the second sentence the discussion about "natural processes" appears to be the same as natural attenuation. There must be more analysis in this FS regarding how long "natural attenuation" will take to reduce contaminant levels to PRGs.
- p. 5-27, §5.5.4 Under Compliance with ARARs, please delete the third sentence and replace it with the following: "However, if ARARs cause more harm than the benefit

derived from implementing the ARARs, the ARARs may be waived."

- p. 5-27, ¶5 In the second sentence add at the end: "unless it is shown that monitored natural recovery will remediate the remaining contamination within a reasonable period."

Move the last two sentences to the next paragraph since they concern location-specific standards.

- p. 5-28, §5.5.4 Under Long-Term Effectiveness and Permanence, please add to the last sentence in the first paragraph "and the risk from ingestion of already contaminated shellfish would not be prevented." The same comment applies to Sediment Alternative 5.

- p. 5-28, ¶2 Any discussion of natural attenuation must be specific about how long it is expected to take to achieve PRGs. This analysis must also be considered under the short-term effectiveness criterion.

- p. 5-28, ¶3 Remove the second sentence.

- p. 5-30, §5.5.5 In the third paragraph, to reiterate, long-term monitoring of sediment will be required to monitor for migration of contaminated sediment from the offshore and near-shore areas to the beach sediment. Please edit the FS accordingly.

- p. 5-32, ¶6 Remove the last two sentences.

- p. 5-33, §5.5.5 In the last paragraph under Short-Term Effectiveness, please add "a small area of eelgrass beds would be destroyed" to differentiate this alternative from Alternative 4.

- p. 5-33, §5.5.5 *Sediment Alternative 5- Removal and Disposal Option B:* This section suggests the use of a temporary excavator causeway to be constructed in the nearshore zone in order to perform excavation in the vicinity of station SD-410. Construction of such a causeway may damage the eelgrass beds through alteration of currents and possible scouring around the structure. It is not clear from this section whether any other alternatives exist for excavating in this area. Please discuss.

- p. 5-35, §5.5.5 Under Cost, as proposed, this alternative has a life of five years not 30 years. Consequently, the appropriate discount rate is 2.8% (for a five-year project) rather than 3.9%. Please edit the text and costing accordingly. However, incorporation of long-term sediment monitoring into this alternative will alter

the life of the alternative and require a reconsideration of the appropriate discount rate.

p. 5-36, §5.6 In the second full paragraph, the discussion about the achievement of RAOs is not properly differentiated between the alternatives. Alternatives 3 and 4 would achieve partial success in protecting human health because beach sediment would be removed, but the risk from ingestion of contaminated shellfish would not be addressed at all for Alternative 3 and only partially for Alternative 4. Alternative 3 would not achieve environmental RAOs, whereas Alternative 4 would partially achieve environmental RAOs by removing the most contaminated near-shore sediment. Alternative 5 would be similar to Alternative 4 in achieving RAOs, with slightly better success in achieving human health and environmental RAOs by removing somewhat more contaminated near-shore sediment, but at the cost of destroying a small area of eelgrass beds. Please edit the text accordingly here and elsewhere in the FS where these issues are discussed.

p. 5-36, ¶5 The discussion of "natural processes" appears to be the same as natural attenuation. There must be more analysis in the FS regarding how long "natural attenuation" will take to reduce contaminant levels to PRGs.

p. 5-37, §5.6 Under Long-Term Effectiveness and Permanence, please edit the discussion to acknowledge that the long-term effectiveness of all the alternatives is unknown and questionable because of the possibility that contaminated sediment will migrate from near-shore and offshore areas to the beach sediment. This migration possibility is a concern because the PRGs for near-shore and offshore sediment are generally more than one order of magnitude greater than the PRGs for the beach sediment.

Other statements in this section that characterize effectiveness without consideration of the alternatives' failure to mitigate the risk associated with ingestion of contaminated shellfish should also be corrected.

p. 5-37, ¶5 Add to the end of the last sentence: ", once all of the habitat restoration requirements are met."

p. 5-37, ¶6 Change the paragraph to: "None of the alternatives provide any reduction of toxicity, mobility, or volume through treatment, since no treatment alternatives are proposed."

p. 5-38, §5.6 Under Short-Term Effectiveness, none of the alternatives will be effective in eliminating the risk from ingestion of contaminated shellfish. This risk will

remain for a substantial time period. Shellfish already contaminated above tissue PRG risk levels will remain contaminated. Shellfish will continue to ingest contamination at concentrations up to the sediment PRGs, potentially causing exceedance of the tissue PRG in other specimens. Please edit the discussion accordingly.

p. 5-39, §5.6 In the first sentence in the last paragraph, please delete the first reference to marine excavation/filling operations.

Table 1 Add a Table for "Summary of Receptor Risks and Hazards for Groundwater."

Table 2-1, Under Clean Water Act, please correct the reference "40 U.S.C. 1314" to "33
p. 1 U.S.C. 1314."

Consider adding the Lead Uptake Biokinetic Model as a TBC here and elsewhere in the FS where chemical-specific ARARs and TBCs are discussed.

Table 2-1, Hazardous Waste Regulations and Air Quality Regulations are considered
p. 2 action-specific ARARs. Please review and correct as appropriate.

Based on the synopsis of the RI Oil Contaminated Soil Policy, it appears that it may not be appropriate to plan to dispose of petroleum-contaminated soil (and sediment?) at Central Landfill in RI. It is highly unlikely that only virgin petroleum was used for the fire training activities. Please review and edit the FS accordingly.

Table 2-1 Add a citation for the federal Safe Drinking Water Act as Relevant and
Appropriate. For Synopsis state: "The statute establishes MCLs for
contaminants in groundwater." For Consideration state: "MCLs will be used to
establish PRGs for groundwater."

For the RI Remediation Regulations - Consideration: Insert "and groundwater"
after "soil."

Move the RI Rules and Regulations for Hazardous Waste Management and the
RI Air Quality Regulations to Action-specific ARARS.

Remove the State Oil Contamination Policy - Petroleum is not addressed under
the jurisdiction of CERCLA.

Table 2-2 The Floodplain Management Executive Order requires the Navy to solicit comments regarding how the selected remedy meets the standard for being the least damaging practicable alternative.

For the Clean Water Act, Section 404, please also cite the Act in addition to the regulations. Under "Consideration" replace "dredging" with "discharge of dredged material" in the first and second sentences.

For the Fish and Wildlife Coordination Act, under both "Synopsis" and "Consideration" insert "endangered species or" before "fish and wildlife."

Table 2-3 For the Clean Water Act, Section 402, under Consideration, add: "Discharge of any contaminated groundwater during soil excavation in either a POTW or Narragansett Bay will meet applicable standards."

Add the Toxic Substances Control Act (TSCA) as Applicable regarding the identification, handling, and disposal of PCBs exceeding statutory standards.

Add the Safe Drinking Water Act (MCLs) as Relevant and Appropriate for establishing standards for monitoring groundwater to determine the extent of groundwater contamination.

Under the RI Hazardous Waste Management Act, Consideration - In both sentences after "excavation" add "and/or the generation of contaminated filters or treatment byproducts." Add new third and fourth sentences that state: "All excavated soil and sediment will be tested for hazardous characteristics before disposal. If soil or sediment is identified through this testing, confirmatory testing will be conducted in the area where the hazardous material was located to ensure that all soil or sediment exceeding hazardous waste standards is removed."

Under Water Pollution Control, Consideration - Add at the end "Remedial actions, including dredging and filling will not cause degradation of the Bay."

Table 2-4 The maximum detected Aroclor 1254 concentration identified in this table was not found in Table 2-11 or Figure 2-1. Please clarify where Aroclor 1254 exceeded the PRG.

Table 2-9 In the Basis for Selection column, the listings for PCBs and Dioxins should both be changed to To-Be-Considered as neither is an ARAR. Please also provide rationale for selection of these TBC values as PRGs.

- Table 2-15 There are apparently several errors in this table in the Maximum Detected column based on comparison of the values in this table to the data in Table 2-16. All the maximum detected beach sediment values in this table are significantly too small. Errors were also noted in the near-shore sediment maximum detected values, where the values for 2-methylnaphthalene and benzo(a)pyrene are too small. Also, the maximum detected concentration for benzo(a)pyrene exceeds the PRG, making benzo(a)pyrene a COC. Please review all the values in this table and make the appropriate corrections.
- Tables 2-x Add Tables for "Risk-based COPC Selection for Groundwater," "RIDEM-Based COPC Selection for Groundwater," "Selection of Groundwater COPCs Requiring Further Consideration," "Groundwater Preliminary Remediation Goals," "Selection of Groundwater COCs," and "Groundwater Concentrations Exceeding PRGs."
- Table 3-1, p. 1 Under deed restrictions, restrictions on the use of groundwater should be mentioned because those are the only restrictions implemented in this FS.
- Table 3-3 Add a "General Response Action" for "Monitored Natural Recovery" provided sufficient information about this alternative is developed (*i.e.*, length of time to achieve PRGs).
- Table 3-4 Under treatment, the reference to on-site appears to be incorrect. The FS text appears to suggest that any sediment treatment would be performed at a TSDF. Please correct.
- Tables 3-x Add Tables for "Identification and Preliminary Screening of Technologies and Process Options for Groundwater" and "Representative Process Options for Groundwater."
- Table 4-1 For Alternatives 2 and 3, remove the bullet for "Institutional Controls Limiting Use of Groundwater." This should be discussed in Table 6-1.
- Table 4-2 For Reduction of Toxicity...; Reduction in Toxicity, Mobility, or Volume; Alternative 3 - change "Mobility - reduced" to "None."
- Table 4-3 Remove the RI Oil Pollution Control Regulations - Petroleum is not regulated under the jurisdiction of CERCLA and is therefore not an ARAR.
- Table 4-6 Remove the RI Oil Pollution Control Regulations - Petroleum is not regulated under the jurisdiction of CERCLA and is therefore not an ARAR.

- Table 4-7 If removal and replacement of the stone rip rap on the shore includes working below the high tide line, then federal and state wetlands standards need to be cited along with the federal Rivers and Harbors Act.
- Table 4-8 For RCRA, Action to be Taken - Add "Any treatment filters or residues will be tested for hazardous characteristics and handled according to applicable standards."

For RI Hazardous Waste Management, Action to be Taken - Add "Any treatment filters or residues will be tested for hazardous characteristics and handled according to applicable standards."

Need to add the Toxic Substances Control Act (TSCA) as Applicable regarding the identification, handling, and disposal of PCBs exceeding statutory standards.
- Table 4-8, p. 3 Move RI Remediation Regulations for Groundwater to Tables 6-x.
- Table 4-9 Remove the RI Oil Pollution Control Regulations - Petroleum is not regulated under the jurisdiction of CERCLA and is therefore not an ARAR.
- Table 4-10 If removal and replacement of the stone rip rap on the shore includes working below the high tide line, then federal and state wetlands standards need to be cited along with the federal Rivers and Harbors Act.
- Table 4-10 Add the Toxic Substances Control Act (TSCA) as Applicable regarding the identification, handling, and disposal of PCBs exceeding statutory standards.

Move RI Remediation Regulations for Groundwater to Tables 6-x.
- Table 4-12, p. 2 For Reduction of Toxicity...; Alternative 4 - change to "None."
- Table 4-12, p. 4 For Administrative Requirements...; Alternative 2 - change to "Need to comply with all ARAR standards. No on-site permits required." For Alternative 3 - remove "construction." and add "Need to comply with all ARAR standards. No on-site permits required."
- Table 5-1 For Alternative 2, please elaborate on the long-term monitoring included for this alternative. It would also be appropriate to review the long-term monitoring descriptions for all the alternatives as the descriptions here do not appear to

correspond with the detailed description of monitoring provided in Appendix F, Cost Estimates. Please correct as appropriate.

Table 5-2 For Compliance with Chemical-specific ARARs, Alternatives 3 and 4 - Change to "No, unless it can be shown monitored natural recovery will occur within an acceptable time period."

Much of the information presented in this table is incomplete or not accurate. Please refer to other comments provided in this document regarding the protectiveness of the alternatives, descriptions of achievement of RAOs for each alternative, and short-term impacts of alternatives. For example, it is not clear that the sediment pre-design information was fully incorporated into this table. Since the sediment in the majority of the eelgrass beds do not exceed PRGs, it is not clear why the table indicates that Alternatives 3 and 4 would not reduce environmental risks in the eelgrass beds. Also, none of the alternatives fully protects current and future users because the risk from shellfish ingestion remains (at least in the short term) for each alternative. Also, Alternative 3 does nothing to reduce environmental risk at near-shore areas. Also, all alternatives require long-term management because of the likelihood of contaminated sediment migration to the beach. Also, there are risks to the community for all alternatives. At a minimum these risks include truck traffic, noise pollution, and air emissions from vehicles. There are additional risks to workers, such as working in or near deep water, and hypothermia, made more acute by the wet environment. Please review this table closely as there are other similar corrections that should be made.

Table 5-3 Remove the RI Oil Pollution Control Regulations - Petroleum is not regulated under the jurisdiction of CERCLA and is therefore not an ARAR.

Table 5-6 Remove the RI Oil Pollution Control Regulations - Petroleum is not regulated under the jurisdiction of CERCLA and is therefore not an ARAR.

Table 5-9 For the Clean Water Act, Section 304 and state Water Pollution Control; Action to be Taken - Change last sentence to: "This alternative fails to meet the standard, unless it can be shown that the sediment left in place will reach PRGs within an acceptable time frame from natural recovery processes."

Remove the RI Oil Pollution Control Regulations - Petroleum is not regulated under the jurisdiction of CERCLA and is therefore not an ARAR.

Table 5-11, ¶3 For Hazardous Waste Management Standards; Action to be Taken - Change "soils" to "sediments."

Table 5-12 Split Tables for Alternatives 4 and 5.

For Alternative 4; Clean Water Act and state Water Pollution Control; Action to be Taken - Action to be Taken - Change last sentence to: "This alternative fails to meet the standard, unless it can be shown that the sediment left in place will reach PRGs within an acceptable time frame from natural recovery processes."

Remove the RI Oil Pollution Control Regulations - Petroleum is not regulated under the jurisdiction of CERCLA and is therefore not an ARAR.

Table 5-14, For Hazardous Waste Management Standards; Action to be Taken - Change p. 3 "soils" to "sediments."

Table 5-15 Some comments made for Table 5-2 also apply to this table. Please correct.

Under "Community Protection", Alternatives 3, 4, and 5 are not the same as Alternative 1. Please correct.

Table 5-15, For Chemical-Specific, Alternatives 3 and 4 - Add: "This alternative fails to meet the standard, unless it can be shown that the sediment left in place will reach PRGs within a reasonable time frame by natural processes."

Table 5-x For Chemical-specific Table for Alternative 5; Action to be Taken - use the text in the revised Table 5-12.

Remove the RI Oil Pollution Control Regulations - Petroleum is not regulated under the jurisdiction of CERCLA and is therefore not an ARAR.

Tables 6-x Please add tables for Groundwater including "Summary of Alternatives," "Summary of Detailed Analysis of Alternatives for Groundwater Remediation," ARARs Tables, and "Summary of Comparative Analysis of Groundwater Alternatives."

The Chemical-specific ARARs need to include the federal Cancer Slope Factors, Risk Reference Doses, and the Safe Drinking Water Act, Maximum Contaminant Levels (MCLs), 40 C.F.R. Part 141, Relevant and Appropriate. For state standards need to include the RI Remediation Standards for Groundwater.

Location and Action-specific ARARs are dependant on what alternatives are evaluated. For installation and operation of monitoring wells the Navy needs to

include the federal Coastal Zone Management Act and Floodplain Executive Order as Location-specific. Also state Coastal Resources Management standards are Location-specific. If any wells will be installed below the high-tide line, then federal and state wetlands standards will apply. For Action-specific ARARs for monitoring would include federal Safe Drinking Water Act (MCLs)/To be used as standards for groundwater monitoring and for determining the extent of contamination. In addition, state Remediation Standards for Groundwater should be cited. The Navy should also include the RI Hazardous Waste Management standards for any generation of hazardous waste from monitoring samples.

For Institutional Controls there would not be any Location-specific ARARs (unless groundwater wells or any surface structures are installed in the floodplain or in a coastal resource area). The RI Remediation Standards can be cited for requiring the recording of Environmental Land Use Restrictions.

Any active on-site treatment alternative would generate additional Action-specific ARARs.

Figure 2-1 The title of this figure does not appear to be correct. Please correct as appropriate.

TP1 and TP-04 are both shaded in green in this figure indicating that a subsurface soil sample exceeds PRGs. However, both TP1 and TP-04 are listed in Table 2-11 as surface soil samples. Also, the data box for TP1 lists the depth as 2-2 feet, but Table 2-11 lists it as 1-2 feet. Please correct as appropriate.

The data label for MW-7S is incomplete. Please correct.

Figures 2-4 Beach sediment samples SD-417 and SD-442, which both exceeded PRGs, are missing from this figure. Please add them.

Sample location OFF-5E had exceedances of PRGs and should be shaded pink. Please correct.

Sample location OFF-6 had an exceedance of a PRG and should be shaded light blue. Please correct.

SD-410 had an exceedance of the shellfish ingestion PRG and consequently poses a human health risk as well as an ecological risk. Please indicate this in the figure.

It appears that beach sediment east and west of the shaded area has not been investigated sufficiently to determine whether PRGs have been exceeded in these areas. The scope of any pre-design investigation should include sampling and analysis for samples collected east and west of the beach sediment currently identified as contaminated.

Please add the outfall pipe located between OFF-2 and OFF-3.

Please indicate, possibly with a note, the relative location of OFF-18 to locations SD-468 and SD-469.

The same comments apply to Figures 5-1, 5-2, and 5-4.

Figures 5-2 & 5-4 Please show the shoreward side of the causeway on the figures. Depending on how the causeway is constructed and what it is used for, the ramp will have to extend approximately 30 to 60 feet shoreward from the low tide line.

Appendix B, §5.6.1 Please note that from Figure 5-1 and Table 5-7, 72.7% of children exposed to groundwater and surface soil is estimated to have blood lead level *below* 10 $\mu\text{g}/\text{dL}$, meaning 27.3% of this group of children would have blood lead level above 10 $\mu\text{g}/\text{dL}$.

Appendix B, §5.6.2 Please note that 83.8% of children exposed to groundwater and subsurface soil is estimated to have blood lead level *below* 10 $\mu\text{g}/\text{dL}$, leaving 16.2% of the children to be estimated with blood lead level above 10 $\mu\text{g}/\text{dL}$.

Appendix B, §7.5 Please correct the errors regarding the percentage of children at risk for having blood lead levels above 10 $\mu\text{g}/\text{dL}$.

Appendix D The tables referenced in this appendix were not included in the appendix and do not appear to relate to other tables provided in the FS. Please include the referenced tables for Appendix D.

Appendix D In the second paragraph under Shellfish Ingestion on page D-12, the drainage pipe near SD-410 is discussed. It should be noted that another possible cause for contamination in this area could be infiltration or channeling of contamination from subsurface soil into or along the drainage pipe.

Appendix E, p. E-6, Table E-4 The tables on this page provide the estimated sediment areas and volumes associated with various sediment sampling locations. What is not provided in this appendix is an explanation of how the areas are extrapolated from the sample point data. It is difficult to evaluate the need to excavate within the

eelgrass bed based on the single sample SD-410, because it is not known whether this sample was taken in a highly localized hot spot or a large area of contamination. Please explain the method used to extrapolate an area of contamination based on sample SD-410.

Appendix F Soil Alternative #2: For Line Items 6.5 and 6.6 on page 2 of the spreadsheet, it is not apparent how the number of samples was calculated. The values appear to be inconsistent with the volume per sample and the total volume sampled. Please review and correct as appropriate. This comment also applies to Soil Alternative 3.

For Line Items 6.7 and 6.8, the number of confirmation samples needs to be increased. A multi-sample composite should be collected every 2,500 square feet and analyzed for SVOCs, metals, pesticides/PCBs, dioxins, TPH, TCLP, and ignitability, as a minimum. Since RIDEM requires that all vadose zone soil achieve the PRGs, additional samples will need to be collected at depth to the water table to verify compliance. The details of the sampling plan can be presented in subsequent documents; however, for cost estimating purposes, assume that a composite subsurface sample will be collected every 2,500 SF for each two-foot depth interval. Please edit the FS accordingly. This comment also applies to Soil Alternative 3.

For Line Item 8.2, the conversion factor from cubic yards to tons used was 1.25; however, for Line Item 9.1, the conversion factor used was 1.5 (fill cost \$7/ton per page 2 of 3 on the calculation sheet). Please review cubic yards to tons conversions throughout the spreadsheet for consistency and correct as appropriate. This comment also applies to Soil Alternative 3.

For Line Items 8.2 and 8.5, it is assumed that these costs include all the handling required to get soil from stockpiles to treatment, back to stockpiles and back to the subsequent treatment, and back to stockpiles again. Otherwise, a significant cost component is missing from this cost estimate. Please review and correct as appropriate.

If soil washing will produce a residual volume of contaminated fines, as is usually the case, then an additional disposal volume should be added to this spreadsheet. Please review and correct as appropriate.

For Line Items 8.11 and 8.12, the number of samples proposed is not enough considering that this soil will be reused at the site. A multi-sample composite should be collected every 150 cubic yards and analyzed for SVOCs, metals,

pesticides/PCBs, dioxins, TPH, TCLP, and ignitability, as a minimum. Please edit the FS accordingly.

For Line Item 8.14, the cost appears too low. Please check it.

For Line Item 9.2, the note "no compaction" should be deleted; compaction will be required and the volume used assumes compaction will be done. Please correct. This comment also applies to Soil Alternative 3.

Appendix F For Soil Alternative #2, in the Subcontract column on page 3 of the spreadsheet, the first subtotal line has an incorrect value. It appears that the first line of the spreadsheet is missing from the subtotal. Please review this and other subtotals and correct as appropriate. This comment also applies to Soil Alternative 3 except please refer to page 2.

For Soil Alternative #2, in the Present Worth Analysis, as presented, Soil Alternative 2 has a five-year project life. The discount rate that should be used for a project with a five-year life is 2.8% not 3.9%, according to the February 2002 OMB Circular No. A-94, Appendix C. Please adjust the calculation accordingly. This comment also applies to Soil Alternative 3.

Appendix F On page 1 of the Calculation Sheet for Sediment Alternative #3, the meaning of the Capital Cost Assumption 3 is not clear. Does this refer to means to prevent equipment from getting stuck in the sand? Please clarify. This comment also applies to Sediment Alternatives 4 and 5.

Capital Cost Assumption 4: This assumption suggests that sediment will be excavated in the wet so that the work will be impacted by waves and the changing tide. It is assumed that these conditions exist since they have been discussed in the FS. At near low tide conditions, the boom will be flapping back and forth with the waves and back-surge. The back-surge will pull sediment under the boom, unless it is continuously anchored around its perimeter, or over the boom. If this method has been used successfully at other sites, please provide a more detailed explanation as to how a boom would be installed in these conditions to be effective against erosion. It would appear that porta-dams would be a much more reliable technology to facilitate excavation and prevent erosion and sediment migration, although it would be at a cost. Please discuss in the FS the cost impacts of using porta-dams rather than a silt boom to conduct the beach excavation. This comment also applies to Sediment Alternatives 4 and 5.

Capital Cost Assumption 5: In the third bullet, I assume that the bridge will not

require improvements. If there is no current basis for that assumption, it would be appropriate to include an assessment of the bridge and access roads in the scope of work for the pre-design investigations. If improvements are required for the bridge to support the weight and volume of traffic required to conduct this (and other) alternative(s), the costs could be significant and the work could delay implementation of the remedy. Please edit the FS accordingly to discuss this. This comment also applies to Sediment Alternatives 4 and 5, but the referenced text is found in assumption 7.

Appendix F Capital Cost Assumption 5: On page 1 of the Calculation Sheet for Sediment Alternative #4, there appear to be errors in the calculations related to the causeway. First, with a 20-foot wide top and a 1:1 side slope, the base width will be 44 feet with a 12-foot height, not 42 feet. Second, the volume cannot be calculated without assuming a length. If the length is assumed to be 20 feet at the top, the shape would be the frustum of a pyramid. With the dimensions cited, the volume of the causeway would be 476 cubic yards. However, it is unlikely that a 1:1 side slope would allow access to the top of the causeway, so that a ramp with a shallower slope would be required. This would require even more crushed stone to construct. Consequently, the cost of the causeway has been significantly under-calculated, perhaps by a factor of three or more. Also, please verify that a 1:1 slope will be adequate to support the anticipated live load. If a shallower slope is required to support the load, that will impact the cost of the causeway and the reach required by the excavator (which is already approximately 30 feet). Please review the calculations and the assumptions for the size of the causeway, and correct the cost calculations. This comment also applies to Sediment Alternative 5.

Appendix F Capital Cost Assumption 7: In the sixth bullet on page 2 of the Calculation Sheet for Sediment Alternative #4, the area value is missing from the first sentence. Please correct. This comment also applies to Sediment Alternative 5.

Appendix F As presented, Sediment Alternative 5 has a five-year project life. The discount rate that should be used in the Present Worth Analysis for a project with a five-year life is 2.8% according to the February 2002 OMB Circular No. A-94, Appendix C. Please adjust the calculation accordingly.