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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 1
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BOSTON, MASSACHUSETTS 02114-2023

November 5, 2001

Mark Evans, 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: Revised Draft Feasibility Study for Soil and Groundwater at the Lower Subase, Naval Submarine Base - New London, Groton, CT

Dear Mr. Evans:

Thank you for the opportunity to review the *Revised Draft Feasibility Study for Soil and Groundwater at the Lower Subase, Naval Submarine Base - New London* dated September 2001. The Revised Feasibility Study (FS) embodies extensive revisions from the earlier draft, dated July 1999. EPA reviewed the document with particular attention to compliance with the NCP and to its accommodation of the comments on the previous draft. Detailed comments are provided in Attachment A.

As you know, EPA provided extensive comments on the previous draft on October 26, 1999. It is disappointing that virtually no progress has been made after two years have passed and we are still grappling with similar issues. Moreover, EPA also wrote the ARARs tables for the Navy and provided them in October 1999 so it is unclear why they were not included in the revised draft.

The Revised Draft FS generally embodies the revisions requested and/or discussed in Navy's Response to Comments from the U. S. Environmental Protection Agency on the Draft Feasibility Study for Soil and Ground Water, dated February 2000. Of particular note is major revision of the remedial alternatives considered. As per the Comments on the Draft version, the Revised Draft considers a broader range of technologies for the cleanup of contaminated soils, including considerably more aggressive alternatives. This enriches the options that might be considered for soils remediation.

A major change in the Revised Draft is evident in the treatment of groundwater remediation. In the previous draft, exceedances of groundwater quality criteria were discussed for Zones 1, 3, 4, and 7; a number of cleanup technologies for groundwater were screened; and several technologies were retained for further evaluation. Those retained were evaluated for application in Zone 4, which had exhibited elevated levels of TPH (up to 5400 micrograms per liter) and lead

(up to 2760 J micrograms per liter) in groundwater. In the Revised Draft, the summary of results from previous investigations (sec. 1.4) makes passing mention of groundwater contamination, and no groundwater cleanup technologies are considered (*e.g.*, Table 2-22). The text should be modified and/or expanded to develop the rationale behind this conclusion. This would help to set the stage for section 3, in which no mention is made of groundwater contamination, which represents a major departure from the earlier Draft. The discussion of the rationale behind dropping groundwater remediation at this point should include any arguments that might tend to mitigate concerns for various elevated detections reported in earlier investigations. For example, it is noted that lead was found in groundwater in Zone 4 in well NES011 at 2760 J micrograms per liter in March 1994, and was a cause for some concern. However, this was an unfiltered sample, and a filtered sample taken at the same time yielded only 10.9 J micrograms per liter lead. Subsequent sampling and analyses found a maximum of 14.4 J micrograms per liter lead in this well. Thus, there is a rather strong argument that the very high lead detection was associated with turbidity in the unfiltered sample. Wherever possible, this type of argument should be offered to support the decision to drop consideration of groundwater remediation in the FS.

We recommend the development of an additional decision tree for inclusion in Section 2. Figure 2-1 does not clearly illustrate the methodology for PRG derivation. The decision tree should clearly present the final PRG selection from the different ARAR driven and risk-based preliminary remediation goals (Connecticut Industrial Direct Exposure Criteria, risk-based PRGs, state-mobility criteria, and dilution adjusted mobility criteria). This decision tree should illustrate the process by which the PRG was selected for each COC in each hot spot area. The decision tree should be streamlined by exclusion of the residential criteria which have been eliminated from consideration previously.

In addition, the text of Section 2 should verbally describe the process for selection of the specific PRGs for specific COCs in each hot spot area. Examples should be provided using actual COCs. A recommended example to be provided is lead in Zone 4 (*i.e.*, please describe the process by which the final PRG was derived (in mg/kg for lead in Zone 4.)

Finally, to clarify the selection of PRGs between CIDEC values and the calculated risk-based PRGs, please include a summary column in Table 2-12 that identifies which of the potential PRGs was selected for each COC from the values presented in this table.

Development of a clean-up goal for lead should be based on a risk-based value. The 1,000 mg/kg value cited in Table 2-8 and 2-11 is not a currently recommended OSWER directive value. The most current screening level in effect for lead in soil at commercial/industrial (*i.e.*, non-residential) sites is 710 mg/kg (EPA, 2001). Screening levels are conservative levels below which there is little concern; however, they are not necessarily equivalent to cleanup levels or PRGs. It is stated in EPA (2001) that PRGs in the range of 710-1712 mg/kg would be obtained if default exposure assumptions for commercial/industrial workers were used in the adult blood lead model. The adult lead model should be used to develop a site specific risk-based PRG for lead.

The Introductory Section for the Development of Remedial Alternatives for each Zone (Sections 4 through 10) should be clarified. It is uncertain how the contaminants listed in the introductory sections which were detected at levels exceeding the Dilution-Adjusted Pollutant Mobility Criteria and Connecticut Pollutant Mobility Criteria compare to Table 2-16. It appears that not all chemicals exceeding either criteria and listed in Table 2-16 are listed in the specific Development of Remedial Alternatives Section.

All mention of TPH in the document should be removed since CERCLA does not regulate petroleum. To the extent TPH was incorporated into any risk assessment it should be removed and the risk assessment revised. Regulation of TPH on the site is through state action (which may or may not be coordinated with remedial actions the Navy makes on the site under CERCLA).

There is no discussion of monitoring as part of the potential remedial actions. Anytime waste is left in place monitoring is required until it is shown to no longer be a risk. ARARs relating to monitoring should be included. Monitoring of the adjacent surface water/sediment in the Thames River should also be included. There also has to be a monitoring plan for the institutional controls, whereby there is, at a minimum, yearly inspection and certification that the controls are in place and that no violations have occurred.

Concerning use of the Connecticut Remediation Standard regulations as an ARAR. EPA has adopted the use of the numerical standards in the regulations as an ARAR. To the extent that the Navy proposes using any alternative standards that may be allowed under the regulations, it is EPA's position that under CERCLA EPA makes all interpretations of how a state standard will be implemented for a remedy. Therefore, EPA needs to review and approve any alternative standard proposed by the Navy before it is incorporated into the FS. Any proposed dilution-method PMC's or SWPC proposed by the Navy are not yet valid until EPA approval is obtained. Lacking such an approval, the Navy needs to meet the published PMC's and SWPC's in the state regulations.

In the Zones where hazardous waste (lead) has been identified, all such contamination must be addressed under the standards of RCRA/CT Haz. Waste Management Regs. This means that when removal is proposed, all the hazardous waste must be removed above and below the groundwater level (this may entail dewatering the excavation area and treating the removed groundwater before discharge into either the POTW or surface waters). No hazardous waste can be left in place (even small amounts) unless it is capped or otherwise addressed under the applicable hazardous waste standards. Land use controls are insufficient. Any remaining lead in the soil after the hazardous waste is removed that still exceeds the state remediation standards should be addressed under those regulatory requirements (which could include institutional controls to allow lead to remain above residential, but below industrial levels).

The Navy needs to include ARARs tables for each option which discussed exactly how the proposed alternative will satisfy the ARAR. Section 2 of the FS does not serve this purpose, in part because it does not list all of the ARARs and because it lumps all of the proposed remedial actions together. In its comments to the first draft of the FS EPA supplied the Navy with ARARs Tables for each alternative.

Throughout the document (except for the No Action alternatives) under the "**Evaluation - Overall Protection of Human Health and the Environment**" subsection, when the Navy makes the statement that "No ecological risks were identified onsite at Zone _" add a second sentence: "Monitoring of the site and the adjacent Thames River will allow the Navy to determine that no future ecological risk is posed by wastes left in place."

Throughout the document (except for the No Action alternatives) under the "**Evaluation - Compliance with ARARs**" subsection, in the last sentence insert "chemical-specific," before "location-specific."

Throughout the document (except for the No Action alternatives) under the "**Description - Institutional Controls**" subsection, add a new sentence: "There shall be at least a yearly inspection and certification of the compliance status of all land use controls."

I look forward to working with you and the Connecticut Department of Environmental Protection to remediate the Lower Submarine Base. Please do not hesitate to contact me at (617) 918-1385 should you have any questions or wish to arrange a meeting.

Sincerely,

Kymberlee Keckler, Remedial Project Manager
Federal Facilities Superfund Section

Attachment

cc: Mark Lewis, CTDEP, Hartford, CT
Dick Conant, NSBNL, Groton, CT
David Peterson, USEPA, Boston, MA
Jennifer Stump, Gannett Fleming, Harrisburg, PA

ATTACHMENT A

Page	Comment
p. 1-1, §1.1.1	In the third sentence change: ", state, and local" to "and state."
p. 1-1, §1.1.1	In the fifth sentence insert "and the U.S. Environmental Protection Agency (EPA) Region 1" after "the Navy" and after "concurrence of the" remove "U.S. Environmental Protection Agency (EPA) Region 1 and."
p. 1-4, ¶1	In the last sentence remove ", the Hazardous and Solid Waste Amendment of 1984," and remove "other" before "applicable state laws."
p. 1-27, §1.4	Remove all discussion of TPH as a constituent of concern throughout this section and the entire document, since petroleum is not covered under CERCLA (and therefore is not covered by this FS).
p. 1-33, ¶1	In the last sentence, the Navy needs to include a citation to the "reported background concentration ranges" and explain why a chromium level that exceeds the PMC should not be remediated. Is it the Navy's position that the chromium found at Zone 1 is not from Navy activities?
p. 1-33, §1.5.2	In the last line of the second paragraph: the Navy needs to include a citation to the "reported background concentration ranges" and explain why chromium and arsenic levels that exceed the PMC should not be remediated. Is it the Navy's position that the chromium and arsenic found at Zone 2 is not from Navy activities?
p. 1-34, ¶2	In the last sentence: the Navy needs to include a citation to the "reported background concentration ranges" and explain why chromium and antimony levels that exceed the PMC should not be remediated. Is it the Navy's position that the chromium and antimony found at Zone 3 is not from Navy activities?
p. 1-35, ¶2	In the last sentence: the Navy needs to include a citation to the "reported background concentration ranges" and explain why chromium and arsenic levels that exceed the PMC should not be remediated. Is it the Navy's position that the chromium and arsenic found at Zone 6 is not from Navy activities?
p. 1-36, §1.6	The Baseline Human Health Risk Assessment should be based only on federal risk standards, not state risk standards. Remove references to the CT cumulative risk target of 10^{-5}.

p. 1-43, ¶5	In this paragraph there needs to be more discussion why a low-moderate ecological risk was screened out.
p. 1-46, ¶3	Additional testing should be done on the existing sediments at Piers 15 and 17 to determine whether they are newly contaminated.
Table 1-4	Please correct the numbers for Hazard Index for Total Risk from Soil and Cumulative Risk for all three receptors. These numbers do not match the numbers presented in Table 4-19 of the Remedial Investigation report (October 1998). The correct hazard index numbers are lower than those presented in Table 1-4.
Table 1-5	Please correct the Incremental Cancer Risk for Total Risk from Soil and Cumulative Risk for full-time employee. The risk number as presented in the Remedial Investigation report is 6.8E-06.
Table 1-11	Please correct the Hazard Indices for Total Risk from Soil for three receptors in Zone 1 and the Incremental Cancer Risk for Total Risk from Soil for full-time employee in Zone 2 as mentioned in Tables 1-4 and 1-5.
p. 2-1, §2.1	In the first bullet change ", state, and local" to "and state."
p. 2-1, §2.2	In the third paragraph, change the second sentence from "and state environmental laws, facility siting laws" to "environmental and more stringent state environmental and facility siting laws".
p. 2-3, ¶2	Remove the third bullet since it is not an ARAR and is covered by §2.2.3.
p. 2-4, §2.2.5	This section description should be clear that not all ARARs are being discussed in this section and that specific ARARs for each alternative proposed will be listed (in tables) in chapters 4-10.
pp. 2-4 & 5	The section discussing the CTDEP Remediation Standards for Soil and Ground Water should clarify that only the published values in the tables are ARARs. In the 2nd paragraph of page 2-5 revise the last two sentences since EPA's jurisdiction under CERCLA gives the Agency the authority to determine whether the site-specific dilution factors under 22a-133k-2(c)(2)(D) and 22a-133k-2(c)(2)(E)(ii) are applicable.
p. 2-5, ¶2	The Navy needs to meet the GWPA for surface-water protection of the Thames River (22a-133k-3(b). The Navy cannot use the alternative surface-water protection criteria under subsection (b)(3)(b) without the prior approval of EPA (which under CERCLA has the authority to approve

state alternative criterion). Under any alternative that leaves waste in place, these standards need to be ARARs for monitoring (as an action-specific ARAR).

p. 2-5, ¶3

If groundwater is left above residential levels the GWPC are ARARs and are the legal basis for any ELURs (action-specific). In addition, see the previous note for the second paragragh regarding the standards being an ARAR for monitoring.

p. 2-5, §2.2.5.2

In the first paragraph, the third paragraph is only accurate if there is no intertidal zone along the shore that may be altered by any remedial action. Any work on the shore (such as to bulkheads) needs to meet state and federal wetlands ARARs.

p. 2-5, §2.2.5.2

Additional bullets can be added regarding federal executive orders pertaining to work in wetlands and floodplains (see previous ARARs tables provided by EPA). There also may be RCRA floodplain requirements for any hazardous waste facilities in the floodplain (dewatering piles).

p. 2-7, ¶4

Under the description of the CT Endangered Species Act change the second sentence to: "Other than the Atlantic Sturgeon, the 1997 Integrated Natural Resources....

In the third sentence insert "or any other action that could affect the Thames River," after "involving excavation".

p. 2-7, ¶5

In the title of the fifth paragraph remove "**Water Quality Criteria**".

At the end of the second sentence add: ", including restoration, if required."

p. 2-7, ¶6

In the second sentence change "may be regulated by permit through the U.S. Army Corps of Engineers under this Act" to "the substantive environmental protection standards under the Act will be met."

p. 2-8, ¶1

In the third sentence insert "U.S." before "Fish and Wildlife", change "or" to "and the", change "alteration of the water" to "alteration of regulated areas", and remove "offsite".

Remove the fourth sentence (consultation is required for onsite actions).

p. 2-8, §2.2.5.3 There needs to be a discussion of monitoring ARARs (including the CT Remediation Standards and Section 304 of the Clean Water Act -from ARARs tables previously provided to the Navy in earlier EPA comments):

Clean Water Act, Section 304	33 U.S.C. 1314; 40 CFR 122.44	Relevant and Appropriate	Guidelines establish Ambient Water Quality Criteria (AWQC) for the protection of human health and/or the aquatic organisms.	Standards will be used to evaluate monitoring results to determine if further remedial action is required to protect resources.

The Navy should include a bullet on federal water quality regulations if any water from dewatering soil below the groundwater or if groundwater removed during the excavation of soil below the groundwater needs to be treated before discharge into either a POTW or surface waters.

p. 2-9, ¶2 Remove the third and sixth bullets (because off-site requirements aren't ARARs and LDR is not proposed). Bullets should be added if capping is proposed and for the prohibition on leaving wastes in place).

Note again that the section of the regulations for facilities in a floodplain should be included as an location-specific ARAR.

p. 2-11, ¶5 The last sentence should be changed if federal/state regulators identify ecological risks that need to be addressed (such as potential ecological risks to the Thames River that would require monitoring).

p. 2-12, ¶5 Remove this paragraph since under a CERCLA action only federal risk assessment standards are to be used. However there should be a new section "**2.3.2 Connecticut Remediation Standards Regulatory Levels**" which discusses the PRGs that are derived from state soil and groundwater remediation standards. The subsequent sections should be renumbered accordingly.

pp. 2-13 & 2-14 Was lead calculated as part of the cumulative risk?

p. 2-13, ¶3 For the risk results of zone 3, please check for consistency between text and table 2-4. The text mentioned that calculated cancer risks for zone 3 exceeded the 10^{-6} cumulative risk goal for construction workers. This contradicts the information in Table 2-4.

p. 2-13, ¶3 Remove the second sentence since CT risk assessment standards are not used for evaluating a CERCLA remedy.

p. 2-14, §2.3.2.2, ¶1

The first sentence in this paragraph appears to be incorrect. The first sentence indicates that human health risk-based PRGs were derived for each COC identified in soil for each receptor in each zone. The third paragraph correctly indicates that risk-based PRGs were derived for all COCs that had cancer risk estimates exceeding 10^{-6} or HIs exceeding 1.0 for soil. Risk-based PRGs were developed only for COCs that had cancer risk estimates exceeding 10^{-6} or HIs exceeding 1.0 for soil.

This paragraph is not consistent with Table 2-4, which identifies the COCs in soil exceeding 10^{-6} cancer risk or hazard index of 1.0. Please correct the text to match the table. The text and the table should identify any single COC in soil that has incremental cancer risk exceeding 1×10^{-6} and hazard index exceeding 1. These COCs are presented in Table 2-4 with their respective calculated cancer risks and hazard indices and the Preliminary Remedial Goals (PRGs) are calculated and presented in Tables 2-5 through 2-11 for Zones 1 through 7. The text in this paragraph does not fully present all of these COCs as in Table 2-4 and must be corrected.

p. 2-14, ¶2

Put a space between the first and second paragraphs. In the third sentence insert "risk" before "guidelines."

p. 2-14, ¶2

Please change the fifth sentence to "If the Adult Lead Model predicted blood lead levels exceeding 10 μg/dL for more than 5% of developing fetuses born to construction or full-time female workers exposed to lead, lead was....."

p. 2-14, ¶3

Even though there were exceedances of hazardous waste standards for lead in Zone 2 there was determined to be no risk?

§2.3.2.3

Human Health Risk-Based Soil Cleanup Goals: Potential cleanup values were selected based upon the Connecticut Industrial/Commercial Direct Exposure Criteria (ICDEC), Connecticut Residential Direct Exposure Criteria (RDEC) and risk-based PRGs corresponding to a cancer risk of 10^{-5} or hazard index of 1. Although the 10^{-5} risk value is used in the FS because it falls within EPA's "acceptable" risk range of 10^{-4} to 10^{-6}, EPA recommends presenting all State's ARARs (*i.e.*, ICDEC and RDEC) and all risk-based PRGs for 10^{-4}, 10^{-5}, 10^{-6} risks as potential soil cleanup values. The decision of which value to be used as the final cleanup number can be made during risk management, taking into consideration other factors such as reliability of institutional controls, technical feasibility, and community acceptance. Each zone could have different cleanup numbers instead of using a fixed 10^{-5} risk value as a soil cleanup goal for all the seven zones.

p. 2-15, ¶2

Please check the PRGs for lead in Tables 2-8 and 2-11 and insert lead PRGs into Table 2-7 for Zone 3. Provide the basis for the 1000 mg/kg PRG for lead in commercial/industrial area (for construction worker and full-time employee exposure). Tables 2-8 and 2-11 indicate that the proposed PRGs for lead are 400 mg/kg for residential and 1000 mg/kg for the construction worker and full-time employee. According to OSWER Directive #9200.4-27P (August 1998) and the Frequently Asked Questions (FAQs) on the Adult Lead Model Guidance Document (August 2001), EPA recommends 400 mg/kg and 710 mg/kg of lead in soil as screening levels for residential and commercial/industrial areas, respectively.

The Directive recommends using the Integrated Exposure Uptake Biokinetic (IEUBK) Model for lead in children to set site-specific residential PRGs since the model is the best tool currently available for predicting the potential blood lead levels of children exposed to lead in the environment. The screening level of 400 mg/kg for residential area was calculated with the IEUBK model and can be used as lead PRG for this site as in the tables. However, the FS provided no basis for calculating and using 1000 mg/kg as lead PRG for commercial/industrial area. The FAQs suggest a range of 710-1712 mg/kg as PRGs for commercial/industrial workers using the Adult Blood Lead model with all the default exposure assumptions. Thus, a range of 710-1712 mg/kg should be used as lead PRGs for commercial/industrial workers instead of 1000 mg/kg.

p. 2-15, §2.3.2.3

All references to state risk assessment standards should be removed from this section. Use of the State Remediation Standard for developing PRG is not based on risk, but on the fact that the numeric standards in the tables under the regulations have been adopted as ARARs for the remedial action. Therefore, discussions of State Remediation Standard PRGs should be moved to the new section 2.3.2 (see comment for page 2-12, ¶5).

p. 2-16, § 2.3.4

This section should be included in the new section "**2.3.2 Connecticut Remediation Standards Regulatory Levels**". See general comment #3 regarding the Navy's inability to use any site specific dilution factor without EPA's prior approval. If EPA does not approve of the Navy's proposed dilution faction then the pollutant mobility standards listed in the section's tables should be used to establish the PMC.

p. 2-20, §2.3.5

This section should be included in the new section "**2.3.2 Connecticut Remediation Standards Regulatory Levels**." See general comment #3 regarding the Navy's inability to use any alternative SWPC without EPA's prior approval.

p. 2-25, ¶4	Add at the end of the second sentence: ", depending on which is more stringent."
p. 2-26, §2.4.1	The section will need to be revised if EPA does not adopt the Navy's proposed alternative dilution factors or alternative SWPC's. Also note general note #1 that TPH is not a constituent of concern under CERCLA.
p. 2-27, ¶1	In the last sentence insert at the end: ", depending on which is more stringent, and contingent on monitoring and institutional controls being enacted."
p. 2-28, ¶1	In the last sentence insert at the end: ", depending on which is more stringent, and contingent on monitoring and institutional controls being enacted."
p. 2-28, ¶6	In the last sentence insert at the end: ", depending on which is more stringent, and contingent on monitoring and institutional controls being enacted."
p. 2-29, ¶7	In the last sentence insert at the end: ", depending on which is more stringent, and contingent on monitoring and institutional controls being enacted."
p. 2-35, ¶2	Add a new bullet for "Monitoring."
Figures 2-3 to 2-9	Remove references to TPH and to alternate PMC if not approved by EPA.
Tables 2-1 to 2-3	Revise based on previous ARARs tables provided by EPA. In particular ARARs pertaining to work in wetlands and floodplains, and monitoring need to be added.
Tables 2-13 - 2-17	These Tables to be removed if EPA doesn't accept the Navy's proposed dilution factors.
Table 2-19	Note that the Navy's proposed dilution-based criteria does not apply to determining whether a lead sample exceeds hazardous waste thresholds under RCRA/CT Hazardous Waste standards.
Tables 2-19 to 2-21	These Tables to be removed if EPA doesn't accept the Navy's proposed alternative SWPC.
Table 2-22	Monitoring should be moved to the "General Response Action" column. The Remedial Tech. Types and Process Option column should state: "Monitoring on site and in the adjacent Thames River. The third column should state: "To assess the success of proposed remedial measures and to determine ongoing risk to human health and the environment from wastes left in place."

Remove "monitored natural attenuation" from the "Biological Treatment heading in the *In situ* Treatment row and make it a separate General Response Action (natural attenuation in not treatment).

p. 3-1, §3.1 — Add a section on Monitoring.

p. 3-5, §3.1.4.1 — Make natural attenuation its own section since it in not an *In Situ* Treatment Action.

Table 3-1 — Add a row for Monitoring. Move Monitored Natural Attenuation from the *In Situ* Treatment row to it own General Response Action row.

Table 2-7 — Please include lead as a COC for Zone 3 as indicated in the text in Section 2.3.2.1.

Table 2-8 — Please change the lead PRG to 710-1712 mg/kg for the full-time worker and construction worker.

Table 2-11 — Please change lead PRG to 710-1712 mg/kg for the full-time worker and construction worker.

Table 2-12 — Please present industrial and residential PRGs associated with 10^{-4} and 10^{-6} risks in addition to PRGs associated with 10^{-5} risk.

Please verify that the industrial risk-based PRG calculated for the noncarcinogen mercury is correctly calculated. Upon close inspection, it appears that the reference dose was incorrectly treated as a cancer slope factor in the PRG calculation. The appropriate risk-based PRG should approach the concentration of the ICDEC value, 610 mg/kg. The following equation should have been applied to the PRG calculation:

$$PRGnc = \frac{THI \times BW \times AT \times 365\,days / year}{EF \times ED \times \left\{\left[1 / RFDo \times CF \times IRsoil\right]\right\}}$$

Where: THI = Target Hazard Index (unitless) (default of 1)
RfDo = Oral Chronic Reference Dose (mg/kg-day)

Figure 2-3 — The "tag" for boring TB2-1RI denotes arsenic by "AS," rather than As. The use of all capital letters results in possible confusion with the abbreviations adopted for organic compounds. Please check this and other figures for consistency with standard usage.

p. 4-1, §4.1, ¶1	The list of soil COCs that had exceedances of the 10^{-5} Risk-Based PRGs should not include mercury. Mercury is a noncarcinogen and therefore, did not have a 10^{-5} Risk-Based PRG developed.
p. 4-1, ¶2	Remove the third bullet. Remove the fourth bullet if EPA does not approve the proposed alternative dilution factor.
pp. 4-1 & 4-2	For the bullets for Alternatives 2-5 insert "Monitoring," before "and Institutional."
p. 4-5, §4.3.2	Insert "**Monitoring,**" before "**and Institutional**".
p. 4-5, §4.3.2.1	Insert a bullet for "Monitoring onsite and in the adjacent Thames River".
p. 4-7, ¶3	Add at the end of the 1st sentence add: ", after testing for hazardous constituents is negative. If hazardous constituents are identified disposal will be at an offsite, licensed hazardous waste TSDF."
p. 4-7, ¶4	Add a section discussing monitoring onsite and in the adjacent Thames River to assess ongoing risks posed by waste left in place after the selective excavation.
p. 4-8, §4.3.2.2	Need to discuss monitoring under each criterion.
p. 4-8, ¶4	Add at the end of the first sentence: "as long as no hazardous waste is left in place." In the last sentence add "chemical-specific," before "location-specific."
p. 4-8, ¶6	Replace the paragraph with: "This alternative does not reduce the toxicity, mobility, and volume of contamination onsite through treatment."
p. 4-9, ¶6	The proposed cost estimate must include the cost of long-term monitoring.
p. 4-10, §4.3.3	Insert "**Monitoring,**" before "**and Institutional**."
p. 4-10, §4.3.3.1	Insert a bullet for "Monitoring onsite and in the adjacent Thames River".
p. 4-10, ¶3	In the first sentence remove ", dilution-adjusted PMC" if it has not been approved by EPA.

p. 4-11, ¶4	Add at the end of the 1st sentence add: ", after testing for hazardous constituents is negative. If hazardous constituents are identified disposal will be at an offsite, licensed hazardous waste TSDF."
pp. 4-11 & 4-12	In the second sentence of the "Capping" paragraph change "state and federal regulators" to "applicable state and federal standards."
p. 4-12, ¶2	Add a section discussing monitoring onsite and in the adjacent Thames River to assess ongoing risks posed by waste left in place after the selective excavation.
p. 4-12, §4.3.3.2	Need to discuss monitoring under each criterion.
p. 4-13, ¶3	Add at the end of the first sentence: "as long as no hazardous waste is left in place." In the second sentence remove "risk-based 10^{-5}" and remove "and dilution-adjusted PMC" if not approved by EPA. In the third sentence at the end add: "to meet applicable state remediation standards for any contamination that is left in place that does not exceed hazardous waste standards. In the fourth sentence change "Institutional" to "Monitoring and institutional". In the last sentence add "chemical-specific," before "location-specific".
p. 4-13, ¶5	Replace the paragraph with: "This alternative does not reduce the toxicity, mobility, and volume of contamination onsite through treatment."
p. 4-14, ¶3	Add at the end of the first sentence "or hazardous waste TSDF, if required."
p. 4-14, ¶5	The proposed cost estimate must include the cost of long-term monitoring.
p. 4-14, §4.3.4	Insert "**Monitoring,**" before "**and Institutional**."
p. 4-14, §4.3.4.1	In the first bullet remove "/dilution-adjusted PMC" if it has not been approved by EPA. Insert a bullet for "Monitoring onsite and in the adjacent Thames River."
p. 4-15, ¶4	In the first sentence remove ", dilution-adjusted PMC" if it has not been approved by EPA.

p. 4-15, ¶5	In the second sentence remove "or dilution-based PMCs" if not approved by EPA. In the third and fourth sentences remove "risk-based 10^{-5}."
p. 4-16, ¶2	Add at the end of the first sentence add: ", after testing for hazardous constituents is negative. If hazardous constituents are identified disposal will be at an offsite, licensed hazardous waste TSDF."
p. 4-17, ¶4	In the second sentence change "Lower Subase" to "the entire base".
p. 4-17, ¶5	In the second sentence of the "Capping" paragraph change "state and federal regulators" to "applicable state and federal standards".
p. 4-18, ¶1	Add a section discussing monitoring onsite and in the adjacent Thames River to assess ongoing risks posed by waste left in place after the selective excavation.
p. 4-18, ¶1	In the last sentence after "Zone 1," add "would be monitored at least yearly,"
p. 4-18, §4.3.4.2	Need to discuss monitoring under each criterion.
p. 4-18, ¶3	Add at the end of the first sentence: "as long as no hazardous waste is left in place." In the second sentence remove "/dilution-adjusted PMC" if not approved by EPA. In the third sentence remove"risk-based 10^{-5}".
p. 4-18, ¶4	In the fifth sentence change "institutional" to "monitoring and institutional".
p. 4-19, ¶3	Add at the end of the first sentence: "as long as no hazardous waste is left in place." In the last sentence add "chemical-specific," before "location-specific".
p. 4-19, ¶5	Remove the second sentence regarding TPH. Remove the last two sentences since capping and institutional controls are not treatment.
p. 4-20, ¶6	The proposed cost estimate must include the cost of long-term monitoring.

p. 4-21, §4.3.5	Insert "**Monitoring,**" before "**and Institutional.**" Make all of the applicable changes requested for alternatives 2-4.
p. 4-28, ¶3	Remove the second sentence. In the third sentence change: "However, each of the alternatives includes" to "Alternatives 2 - 5 include monitoring and" and insert "current and" before "potential future".
p. 4-28, §4.4.2	In the first sentence insert "chemical-specific ARARs regarding" after "does not address." In the second sentence insert "monitoring and" after "conjunction with." In the third sentence insert "chemical-specific," before "location-specific."
p. 4-28, ¶5	In the fourth sentence change "Institutional" to "Monitoring and institutional".
p. 4-29, ¶3	Insert a new paragraph discussing monitoring.
p. 4-29, ¶5	Replace this paragraph with "Alternatives 2 and 3 do not meet this criteria since they do not include any treatment in their remedial action.
p. 4-30, ¶2	Insert a new paragraph discussing monitoring.
p. 4-30, ¶7	Insert a new paragraph discussing monitoring.
p. 4-30, §4.4.7	Include costs of long-term monitoring.
Table 4-1	Include monitoring in the Descriptions sections for Alternatives 2-5.
Table 4-2	Include a line for monitoring that would be checked for Alternatives 2-5. Add alternative-specific ARARs tables of Alternative 1-5. These were previously supplied by EPA in it comments to the first draft FS.
Table 4-2	The footnote to this table (and similar tables for each Zone) indicates that a check mark shows the "Zones in which specific remedial actions are retained." However, the check marks actually show the elements comprising each alternative considered for the particular Zone under discussion. Please check footnote.
p. 5.1, §5	It is unclear from the Navy's discussion whether the presence of lead in Zone 2 which exceeds federal/state hazardous waste standards also poses a risk

(based on federal risk standards) to human health or the environment. If there is no exceedance of federal risk standards then there is no action required under CERCLA (although the Navy would still need to comply with state remediation requirements, potentially under a separate state action). If there is no federal risk this section of the FS should be eliminated (the following comments regarding this chapter assume a federal risk is present).

p. 5-1, §5 — Throughout this entire chapter the Navy needs to include citations to and descriptions of monitoring (see comments throughout chapter 4). This includes monitoring of any waste left in place, monitoring of alternative involving capping to assess the successful functioning of the cap, monitoring of the adjacent Thames River (to show that there is no future ecological risk to the river), and establishing a monitoring and certification program to document (at least yearly) compliance with institutional controls. The specific comments regarding monitoring issues are not repeated again but should be incorporated throughout this chapter. This includes the titling of the alternatives throughout the text and the tables, discussing monitoring throughout the alternatives analysis (such as implementability and ARARs), and including the cost of monitoring in all cost analysis.

p. 5-1, §5.1 — Throughout this section the discussion of use of the "dilution-adjusted state PMC" should only be included if EPA accepts use of it. Otherwise, the Navy needs to meet the standard PMC published in the CT remediation regulations.

p. 5-3, §5.3 — Throughout the individual evaluation of the remedial alternatives it should be clarified that for all alternatives except Alternative 1 (No Action). That all hazardous waste will be removed from the site (to whatever depth it is found, including below the water table). Hazardous waste can only be left in place (even in areas of limited accessibility) if it is treated or capped in compliance with the standards of the CT Hazardous Waste Management Regulations. Since no such action is proposed under any of the alternatives, none of the alternative would be compliant with ARARs unless all of the hazardous waste is removed.

p. 5-6, ¶1 — The last three sentences need to be revised so that the handling of any hazardous waste is compliant with applicable Hazardous Waste Management standards including: that any water from dewatering contaminated soil below the watertable (hazardous waste) and groundwater dewatered from the hole is treated in compliance with Clean Water Act and hazardous waste management standards; that a containment system be designed (including placement outside of the 100-year floodplain) would meet haz. waste standards; and that the cost of such a system for hazardous material management and dewatering be

	incorporated in the specific costs for all the alternatives (except 1 - No Action) for Zone 2.
p. 5-8, ¶2	Replace the paragraph with "This Alternative does not reduce the toxicity, mobility, and volume of contaminants through treatment."
p. 5-8, ¶4	Add a new second sentence "Workers will need to be qualified and equipped to work with hazardous waste."
p. 5-9, ¶3	In the second sentence insert "outside of the 100-year flood plain" after "Zone 2."
p. 5-13, ¶2	Remove the first two sentences and the last sentence (removal and institutional controls are not treatment).
p. 5-16, ¶3	In the second sentence change "Lower Subase" to "the base."
p. 5-19, ¶4	Remove the second sentence.
p. 5-19, ¶5	Change the first sentence to: "Alternatives 2, 3, and 4 would comply with ARARS as long as all hazardous waste is removed from the site, whereas Alternative 1 would not comply with chemical-specific ARARs because it would not address the lead above PRGs."
p. 5-20, ¶6	Change the paragraph to: "Alternative 2 does not reduce the toxicity, mobility, and volume of contaminants through treatment."
p. 5-21, ¶2	Change "the institutional" to "Monitoring and institutional" and change "in each alternative for" to "for Alternatives 2, 3, and 4 in."
p. 5-21, ¶5	In the second sentence insert "outside of the 100-year flood plain" after "suitable area."
p. 5-21, §5.4.7	This section must include the costs for removal all of the hazardous waste and for monitoring.
Tables 5-1 & 5-2	Include lines for monitoring for each table.
	Add alternative-specific ARARs tables of Alternative 1-4. These were previously supplied by EPA in it comments to the first draft FS.
p. 6-1, §6	Incorporate all the applicable text changes cited for Chapter 4 in Chapter 6 since characteristic hazardous waste was not identified in Zone 3. If

	hazardous waste is present incorporate the applicable text changes from Chapter 5.
p. 7-1, §7	Incorporate all the applicable text changes cited for Chapter 5 in Chapter 7 since characteristic hazardous waste was identified in Zone 4.
p. 8-1, §8	Remove this chapter since there is no federal risk identified for Zone 5. The area may still require remediation under state standards, but not under CERCLA.
p. 9-1, §9	Remove this chapter since there is no federal risk identified for Zone 6. The area may still require remediation under state standards, but not under CERCLA.
p. 10-1, §10	Incorporate all the applicable text changes cited for Chapter 4 in Chapter 10 assuming characteristic hazardous waste is not identified in Zone 7. If hazardous waste is present incorporate the applicable text changes from Chapter 5 (the text, including §10.3.2.1, discusses taking the excavated material to a RCRA-hazardous waste facility which would imply hazardous waste is present).
p. 11-1, §11	Incorporate all of the changes in chapters 3-10 into this chapter. In particular, incorporate monitoring requirements, removing all reference to remediating TPH, the presence of hazardous waste in Zones 2 and 4, and the elimination of Zones 5 and 6 from this document due to the lack of a federal risk.

REFERENCES

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