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LETTER AND U S EPA REGION I COMMENTS TO DRAFT FEASIBILITY STUDY FOR  
DECISION UNIT 4-1 SITE 12 TANK FARM 4 NS NEWPORT RI  
12/6/2011  
U S EPA REGION I



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, REGION I**

5 Post Office Square, Suite 100  
Boston, MA 02109-3912

December 6, 2011

Mr. Roberto Pagtalunan  
NAVFAC MIDLANT (Code OPNEEV)  
Environmental Restoration  
Building Z-144, Room 109  
9742 Maryland Avenue  
Norfolk, VA 23511-3095

Re: Draft Feasibility Study for Decision Unit 4-1 at Site 12, Tank Farm 4

Dear Mr. Pagtalunan:

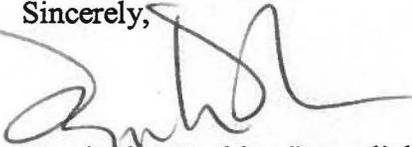
Thank you for the opportunity to review the *Draft Feasibility Study for Decision Unit 4-1 at Site 12, Tank Farm 4* dated October 2011 (FS). The FS presents the development and evaluation of remedial alternatives to mitigate unacceptable human risk associated with chemicals of concern in soil and groundwater at Decision Unit 4-1 at Site 12, Tank Farm 4. EPA reviewed the document for completeness, technical accuracy, and consistency with EPA's *Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA*. Detailed comments are provided in Attachment A. Comments on the Applicable or Relevant and Appropriate Requirements are provided as Attachment B.

To provide a more appropriate range of alternatives, include another soil alternative to provide treatment of the PAH-impacted soil because a preference for treatment alternatives is inherent in the National Contingency Plan and it could be more cost effective than excavation and off-site disposal. Low temperature thermal desorption and asphalt batching are both potentially viable treatment alternatives that should be further evaluated.

With respect to groundwater, the Navy asserts that the presence of contaminants of concern (COCs) in groundwater above preliminary remediation goals (PRGs) can be attributed to natural sources of inorganics and the geochemical conditions in the aquifer. However, because the monitoring wells are clustered around the former oil-water separators and the release areas, the Navy has not demonstrated that the groundwater contamination is ubiquitous. Therefore, EPA questions whether historical releases at Tank Farm 4 have altered the geochemistry in the DU 4-1 area such that the inorganic contaminants have been mobilized to the groundwater. Additional evaluation and discussion of this possibility is warranted before eliminating *in situ* treatment technologies that are capable of changing (or restoring) the geochemistry of the aquifer within DU 4-1. Treatment to restore the geochemistry of the subsurface should be retained for consideration pending the results of a pre-design investigation. Please include a map of the soil types found at Tank Farm 4, and specifically at DU 4-1.

I look forward to working with you and the Rhode Island Department of Environmental Management toward the cleanup of Tank farm 4. Please do not hesitate to contact me at (617) 918-1385 should you have any questions or wish to arrange a meeting.

Sincerely,



Kimberlee Keckler, Remedial Project Manager  
Federal Facilities Superfund Section

Attachments

cc: Gary Jablonski, RIDEM, Providence, RI  
Deb Moore, NETC, Newport, RI  
David Peterson, USEPA, Boston, MA  
Chau Vu, USEPA, Boston, MA  
Steven Parker, Tetra Tech-NUS, Wilmington, MA

## ATTACHMENT A

<u>Page</u>	<u>Comment</u>
p. ES-1, ¶1	Please also specify that Site 12 is Operable Unit 11
p. ES-2, bullet 6	Will the proposed "hot spot" soil removal remove all contaminated soil that exceeds unrestricted use risk levels?
p. ES-3	The Soil alternatives may not be sufficient if soil contamination outside of the "hot spot" excavation area are left in place above CERCLA unrestricted use risk levels. The Groundwater Alternatives are not protective, since neither include measures to achieve federal drinking water standards (unless it is clearly show that all Site groundwater contamination is below EPA-approved background levels).
p. 1-1, §1.0	In the first sentence, change Site 13 to Site 12. In the third sentence please change Decision Unit 5-1 to 4-1. Please check the remainder of the document for similar corrections related to Tank Farm 4 versus Tank Farm 5.
p. 1-1, ¶1	<p>In the second sentence, replace "by the U.S. Environmental Protection Agency (EPA)" with "in the Federal Facility Agreement (FFA) among the Navy, the U.S. Environmental Protection Agency (EPA) and the State of Rhode Island."</p> <p>Please clarify the third sentence. Was the entire site evaluated for the presence of CERCLA contaminants?</p>
p. 1-1, ¶2	In the last sentence, change "a Federal Facility Agreement (FFA)" to "FFA."
p. 1-2, ¶3	Add the following to the end of the last sentence: ", as part of the Implementability and Short-Term Effectiveness criterion.
p. 1-4, §1.4	Please correct the last sentence on the page because limited confirmation analyses were conducted during the 2004-2005 removal action.
p. 1-6, §1.4.1	<p>Regarding the discussion under 2004-2007:</p> <p>a) The Navy did not fully characterize the site and it was not their intent to do so.</p> <p>b) The discussion in the bullet does not do justice to the scope of the investigation or the scope of the removal action and needs to be expanded and better describe the size of the area backfilled without adequate confirmation sampling.</p>
p. 1-7, §1.4.2	Identify the authority that the "removal actions" were done under (i.e., CERCLA ).

- p. 1-13, last ¶ If there is not an approved background study that meets EPA guidance standards, contaminants cannot be screened out based on background.
- p. 1-14, ¶¶2&3 Specify whether the “RSLs for tap water” are based on federal MCLGs, federal risk-based standards or more stringent state groundwater standards.
- p. 1-15, ¶2 Clarify whether lead exceeds State standards or federal screening levels.
- p. 1-15, ¶3 Although there were no exceedances of federal MCLs, were there any exceedances of federal MCLGs, federal risk-based standards, or more stringent state groundwater standards?
- p. 1-16, ¶5 Regarding the last sentence discussing future land use, please discuss whether development of a golf course on the former tank farms is still under consideration. Future use should be discussed here because risk assumptions may change if the site use changes.
- The third paragraph indicates that arsenic concentrations are below background for one soil type, but exceed background for another soil type. While there is uncertainty, consider addressing risks related to arsenic, or to provide supporting information to demonstrate the soil type at the site is consistent with the background soil type with the higher arsenic concentration.
- p. 1-18, ¶3 Please clarify the fifth sentence: “This uncertainty suggests risk management be applied before directing remedial actions to address this constituent” since risk management actions such as LUCs are remedial actions.
- p. 1-18 For the risk table, please add Lifelong Recreational Users to the third column since surface soil cancer risk for this receptor is  $2E-4$ , which exceeds EPA's target risk range.
- Please remove the Hypothetical Adult Residents from the third column for All Soil since the all soil cancer risk for this receptor is  $6E-5$ , which is within EPA's target risk range.
- p. 1-19 Please revise the second paragraph, since ILCRs for child residents using groundwater is  $7E-5$  and for adult residents is  $9E-5$ . These risk levels do not exceed EPA's target risk range. Only lifelong residents using groundwater have exceeding ILCR at  $2E-4$  because of arsenic.
- p. 1-20, ¶6 Regarding “2),” background for sediment should not be discussed unless there is an approved background study.
- p. 1-21, ¶6 The second paragraph states there are potential risks to soil invertebrates, so what is the basis for stating that there is no ecological risk?

- p. 2-4, ¶1 In the first sentence add at the end: “, as well as additional federal risk-based guidance standards.”
- Remove the last two sentences, the State Oil standards are not ARARs and the Air Quality Regulations are Action-specific standards.
- p. 2-4 ¶2 Groundwater must meet federal MCLs, MCLGs, federal risk-based standards, and more stringent State groundwater standards. In the last sentence change “MCLs” to “federal drinking water standards.”
- p. 2-6, bullet 2 The bullet discusses risks from use of groundwater as a “potable water source,” but the human health risk assessment text on page 1-18 uses the term “domestic use.” This implies that the groundwater poses a risk from other activities other than just drinking.
- p. 2-6, §2.2.2 Residential PRGs should be considered for areas where recreational scenario is expected.
- p. 2-7, ¶1 In the second sentence replace “GA/NA, or suitable for public or private drinking water use but not attainable” with “potable under federal drinking water standards.”
- p. 2-9, ¶1 In the last sentence, change “MCLs” to “federal drinking water standards.”
- p. 2-9, ¶2 Leachability needs to be based on drinking water standards. Remove the fourth sentence since it doesn’t pertain to either the leachability or direct contact criteria at the Site.
- p. 2-9, ¶4 Remove the entire paragraph, since the State’s groundwater classification is not an ARAR (need to cite to federal drinking water standards).
- p. 2-11, §2.2.4 EPA does not accept using the CTE to explain away risks from arsenic and manganese in soil. According to the NCP, the reasonable maximum estimates (RME) of exposure for both current and potential land use conditions are developed in the risk assessment with the RME developed for future use of the site providing the basis for the development of protective exposure levels. EPA believes it is important to include all reasonably expected exposures in its risk assessment and use the RME risk results for selecting protective remedies.
- p. 2-12, §2.2.4.2 a) Please clarify the second and third sentences because the conclusion in the third sentence is not obvious from the statement in the second sentence.

b) Regarding the discussion of cobalt, which states that no known source exists, it should be noted that cobalt is a common contaminant of No. 6 fuel oil that could be responsible for the concentrations detected in groundwater.

p. 2-12, §2.2.4.2 EPA's risk-based RSL for endrin in tap water is 11 ug/L, while the risk-based calculated PRG for endrin aldehyde, using toxicity value for endrin as surrogate, is 2.8 ug/L. Please revise the text to clarify that the comparison between risk-based RSL and risk-based calculated PRG are for different contaminants.

As stated above in the comment for §2.2.4, RME risks must be used to evaluate protective remedies for exposures to cobalt, iron, and manganese in groundwater.

p. 2-12, ¶3 State whether the arsenic level exceeds MCLGs or federal risk-based standards or more stringent state groundwater standards.

p. 2-12, ¶4 Remove the sixth sentence.

p. 2-13, §2.2.4.2 The first paragraph states "Iron in groundwater samples is likely due to turbidity and colloids." More correctly, the iron in groundwater is likely due to presence of soluble iron salts. These salts cause turbidity and there also may be some flocculation of iron and manganese salts in water samples that oxidize when they are brought to the surface in contact with the atmosphere. Please clarify.

p. 2-14, ¶2 Manganese risk in groundwater needs to meet federal Health Advisory standards. If there are exceedances of risk-based standards (and there is no approved background level above risk-based standards) then manganese needs to be addressed by the remedial alternatives.

p. 2-15, §2.3.1 Please add an RAO to prevent exposure to constructions workers to soil exceeding commercial /industrial risk standards (manganese).

p. 2-15, ¶2 Are there exceedances of RI leachability criteria for potable groundwater?

p. 2-15, ¶3 Please clarify what is meant by "limited recreational use." The RI Remediation Regulations differentiate between "Restricted" or "Unrestricted" and that determines whether residential or commercial/industrial standards need to be met.

p. 2-15, last bullet Consider adding an RAO be to prevent any groundwater use rather than "residential or other potable uses." For example, the RAO limit groundwater use for irrigation or industrial uses.

p. 2-16, §2.4.1 Because a representative range of alternatives is required for the FS, volumes should be calculated for all soils where PRGs are exceeded (for both residential and commercial/industrial levels, not just the "hot spot") and alternatives developed considering the extent of the contamination. The

volume of soils that exceed unrestricted use standards need to be presented. Please edit accordingly.

- p. 2-16, §2.4.1 The Navy needs to calculate the volume of groundwater that exceeds federal drinking water standards, federal risk-based standards, and more stringent state groundwater standards (unless an approved background study determines that all groundwater exceedances are below background levels).
- p. 3-5, §3.3 Table 3-1 lists the process options that were eliminated and Table 3-3 lists the process options that were retained for further evaluation. However, Section 3.3 mistakenly evaluates process options that were eliminated. Note also that groundwater monitoring is retained in Table 3-1 but not listed in Table 3-3, and in the text in Section 3.3.2 on page 3-9, it has been identified as not retained. It appears that the discussion presented in Section 3.3 properly belongs in the screening Section 3.2. Please edit Section 3.3 to delete the discussion of those options that were eliminated and edit the FS for consistency between the text and tables.
- p. 3-5, §3.3.1 The cost of statutorily required Five-Year Reviews need to be included in the discussion of the cost of the No Action Alternative.
- p. 3-6, 2<sup>nd</sup> ¶2 Add a new last sentence: "The LUC RD drafted by the Navy is approved by EPA and the State and is enforceable under the FFA.
- p. 3-6, 3<sup>rd</sup> ¶3 In the second sentence after "ROD," add "and the FFA."
- p. 3-6, 4<sup>th</sup> ¶4 In the fifth sentence, insert "the ROD and" before "the five-year."
- p. 3-9, 2<sup>nd</sup> ¶2 For any alternative that caps/covers contaminated soil in place groundwater monitoring is an ARAR requirement to assess the continued protectiveness of the remedy even if the contaminant being capped/covered isn't currently present in the groundwater.
- p. 3-9, 3<sup>rd</sup> ¶3 Replace "RIDEM regulations" with "identified ARAR standards."
- p. 3-12, last ¶ &  
p. 3-16 Table It is unclear from the text what will be done with non-PAH contaminated soils that exceed PRGs, but will not be contained or removed. Is a containment GRA required?
- p. 3-17, §3.4 Table 3-2 lists the process options that were eliminated and Table 3-4 lists the process options that were retained for further evaluation. However, Section 3.4 mistakenly evaluates process options that were eliminated. It appears that the discussion presented in Section 3.4 properly belongs in the screening Section 3.2. Please edit Section 3.4 to delete the discussion of those options that were eliminated and edit the FS for consistency between the text and tables. Please propose process options that will attain groundwater cleanup standards at the Site (a LUC- only GRA is not sufficient under EPA groundwater guidance standards).

- p. 3-17, §3.4.1 In the third bullet, even under a No Action alternative Five-Year Reviews need to be conducted, so the cost should be included.
- p. 3-18, bullet 1 In the last sentence replace “LUCs would need to remain in place” with “LUCs alone will not be effective. LUCs would need to be put in place until groundwater cleanup standards are met through other remedial measures.”
- p. 3-24, §3.5 The Soil alternatives presented may not be sufficient if soil contamination outside of the “hot spot” excavation area are left in place above CERCLA unrestricted use risk levels. The Groundwater Alternatives are not protective, since neither include measures to achieve federal drinking water standards (unless it is show that all Site groundwater contamination is below background levels).
- p. 4-1, §4.1.1 The cost of statutorily required Five-Year Reviews need to be included in the discussion of the cost of the No Action Alternative.
- p. 4-2, §4.1.2 Under this alternative would contamination above commercial/industrial risk levels also remain in place (manganese risk to construction workers)?
- p. 4-2, §4.1.3, ¶1 Hot spot removal does not address residential risk on a local lot-size level for those areas where the PRGs are exceeded. Therefore, LUCs will be required. Please edit the text here and elsewhere accordingly.
- p. 4-3, 2<sup>nd</sup> ¶2 It is unclear how soil can exceed PRGs, but all CERCLA risk will be addressed by the alternative.
- p. 4-3, §4.2.1 The discussion is inconsistent regarding the need for Five-Year Reviews. However, Section 4.1.1 states that Five-Year Reviews will not be performed for the No Action alternative (also on page 4-4, ¶5). Five-Year Reviews must be performed at sites that leave contamination in place at levels that prevent unrestricted use. Please edit the FS to acknowledge this and eliminate the inconsistency.
- p. 4.5, ¶3 The cost of Five-Year Reviews needs to be included for comparison to the other alternatives.
- p. 4.5, §4.2.2 Under this alternative how would contamination above commercial/industrial risk levels (manganese risk to construction workers) be addressed? It is unclear whether an LUC-only alternative is protective.
- p. 4-8, §4.2.3 Please reconcile the first sentence in the third paragraph with the second last sentence on page 4-7. This section needs to be revised because the “hot spot” alternative will leave contamination in place that exceeds commercial/industrial risk levels and unrestricted use levels outside of the “hot spot” area.
- p. 4-9, §4.3 It is not possible to fully compare the alternatives until the outstanding issues identified herein are addressed.

- p. 5-1, §5.0 This entire chapter needs to be revised to add a protective and ARAR compliant alternative that will meet groundwater cleanup standards.
- p. 5-1, §5.1.1 As previously noted Five-Year Reviews are included in No Action Alternatives.
- p. 5-2, §5.1.2
- a) Unless either it can be shown that MNR will achieve groundwater cleanup standards within a reasonable time period, in accordance to EPA guidance it is unclear why attenuation is discussed.
  - b) Regarding the third sentence in the second paragraph, a potential source of metals contamination in groundwater is a release of hydrocarbons that altered the geochemistry and mobilized the metals. Also, cobalt and manganese are common contaminants of No. 6 fuel oil. Please correct.
  - c) Regarding the first sentence in the third paragraph, monitoring is necessary to support the decision to terminate the LUCs (*i.e.*, not to continue the LUCs). Please correct the text accordingly here and elsewhere.
  - d) Please edit the third sentence in the third paragraph to acknowledge that, for the purposes of this FS, the wells monitored are assumed to be existing wells. However, the long-term monitoring plan will establish the monitoring requirements including the need for new wells.
  - e) In the third paragraph, the third and fifth sentences are inconsistent. Only seven wells were installed for the Data Gaps Assessment but the fifth sentence refers to fourteen wells. Please correct as appropriate.
- p. 5-4, §5.2.1 In the first full paragraph, please correct the Table references to 5-3, 5-4, and 5-5.
- p. 5-4, ¶5 As previously noted Five-Year Reviews are included in No Action Alternatives.
- p. 5-5, ¶1 The cost of statutorily required Five-Year Reviews need to be included in the cost of the No Action Alternative.
- p. 5-5, §5.2.2, The LUC-only alternative neither is protective nor meets ARARs because it does not achieve groundwater cleanup standards.
- p. 5-5, §5.2.2, ¶3 Please correct the Table references to 5-6, 5-7, and 5-8.
- p. 5-6, §5.2.2, ¶3 Please edit the first sentence to replace the phrase “is not expected to” with “would not.”
- p. 5-7, §5.3 It is not possible to fully compare the alternatives until the outstanding issues identified in the above comments are addressed.

Please change the discussion under Compliance with ARARs. Alternative 1

would not achieve chemical-specific ARARs and there are no location- or action-specific ARARs for GW1. Alternative 2 does not meet chemical-specific ARARs.

Table 2-1

See Attached B with edits to the Table text.

Add to federal standards:

Health Advisories (EPA Office of Drinking Water)	To be Considered	Health Advisories are estimates of risk from consumption of contaminated drinking water. They consider non-carcinogenic effects only. To be considered for contaminants in groundwater that may be used for drinking water where the standard is more conservative than either federal or state statutory or regulatory standards. The Health Advisory standard for manganese is 0.3 ppm.	Health advisories will be used to evaluate the non-carcinogenic risk resulting from exposure to certain compounds.
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Table 2-2

See Attachment B with edits to the Table text.

Add to federal standards:

Floodplain Management and Protection of Wetlands, 44 C.F.R. Part 9	Relevant and Appropriate	FEMA regulations that set forth the policy, procedure and responsibilities to implement and enforce Executive Order 11988, Floodplain Management, and Executive Order 11990, Protection of Wetlands.	Remedial alternatives conducted within the 500-year coastal storm floodplain or within federal jurisdictional wetlands and aquatic habitats will be implemented in compliance with these standards. The Navy will solicit public comment as part of the proposed plan on the measures taken through the remedial action to protect floodplain and wetland/aquatic habitat resources.
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Add additional State standards:

Coastal Resources Management Rhode Island General Laws (RIGL46-23-1 <i>et seq.</i> )	Applicable	Sets standards for management and protection of coastal resources.	The site is located within a coastal zone management area; therefore, applicable coastal zone management requirements need to be addressed.
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If the remedial activity will be within State jurisdictional wetlands or within a 50 foot buffer zone to the wetlands:

Rhode Island Freshwater Wetlands (RIGL 2-1-18 <i>et seq.</i> )	Applicable	Defines and establishes provisions for the protection of Rhode Island jurisdictional wetlands (including a 50 foot buffer zone to wetland resource areas). Actions required to prevent the undesirable drainage, excavation, filling, alteration, encroachment or any other form of disturbance or destruction to a wetland.	The site is located within a coastal zone management area; therefore, applicable coastal zone management requirements need to be addressed.
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Table 2-3

See Attachment B with edits to the Table text.

Add to federal standards:

CWA National Recommended Water Quality Criteria (NRWQC), 40 CFR 122.44)	Applicable	Federal NRWQC are health-based and ecologically based criteria developed for carcinogenic and non-carcinogenic compounds.	Water quality standards used to develop surface water quality monitoring standards for soil remedial alternatives at the Site.
Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action, and Underground Storage Tank Sites, OSWER Directive 9200.4-17P (April 21, 1999)	To be Considered	EPA guidance regarding the use of monitored natural attenuation for the cleanup of contaminated soil and groundwater. In particular, a reasonable time frame is defined as achieving cleanup standards though monitored attenuation would be comparable to what could be achieved through active restoration.	The monitored natural attenuation component of any groundwater alternative will only meet these standards if natural attenuation will attain all groundwater cleanup standards within a reasonable time frame.

<p>EPA Groundwater Protection Strategy (August 1984; NCP Preamble, Vol. 55, No. 46, March 8, 1990, 40 C.F.R. Part 300, p. 8733); Guidelines for Ground-Water Classification (November 1986)</p>	<p>To Be Considered</p>	<p>The Groundwater Protection Strategy provides a common reference for preserving clean groundwater and protecting the public health against the effects of past contamination. Guidelines for consistency in groundwater protection programs focus on the highest beneficial use of a groundwater aquifer.</p>	<p>Guidance standards will be met since groundwater alternatives will be required to achieve federal drinking water standards, federal risk-based standards, or more stringent state groundwater standards,</p>
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Add to State standards:

<p>Water Pollution Control – Pollutant Discharge Elimination System (PDES) Regulations of Rhode Island Pollutant Discharge Elimination System</p>	<p>Applicable</p>	<p>Contains applicable effluent monitoring requirements, and standards and special conditions for discharges.</p>	<p>Discharge of water from remedial activities (including dewatering soil) to surface waters will meet these standards.</p>
<p>Standards for Storm Water Management and Sediment Reduction Regulations of Rhode Island Pollutant Discharge Elimination System, Rules 15.01(g) and (i) and 31</p>	<p>Applicable</p>	<p>Identifies storm water management and sediment control requirements for remedial actions or corrective measures involving land-disturbance activities.</p>	<p>Storm water controls for areas of construction/maintenance will be implemented and maintained to meet these standards.</p>
<p>Drilling of Drinking Water Wells; Rules and Regulations Governing the Enforcement of Chapter 46-13.2 Relating to the Drilling of Drinking Water Wells (RIGL 46-13.2 <i>et seq.</i>)</p>	<p>Applicable</p>	<p>Prohibits installing drinking water wells in contaminated aquifers. Establishes standards for decommissioning monitoring wells (Rule 9.03).</p>	<p>Under these standards drinking water wells are prohibited within areas of contamination until groundwater cleanup standards are achieved and monitoring wells used will be properly decommissioned when no longer needed.</p>
<p>Well Standards State of Rhode Island Rules and Regulations for Groundwater Quality – Appendix I</p>	<p>Applicable</p>	<p>Identifies the standards and specification that must be followed for the installation or abandonment of monitoring wells.</p>	<p>Applies to the abandonment of existing monitoring wells.</p>

Table 2-4	Selecting the risk-based calculated PRG of 1.5 mg/kg for benzo(k)fluoranthene for both surface and subsurface soils would not meet ARAR since the RIDEM Direct Contact Criteria for this contaminant is 0.9 mg/kg. RIDEM DEC should be the selected PRG for this contaminant.
Tables 3-1, 3-2 & 3-3 Modify tables based on comments to the text of Section 3.0.	
Table 3-4	As noted in the comments on Section 3.0, additional GRAs need to be developed that can remediate groundwater contaminant levels to achieve federal drinking water, federal risk-based, and more stringent State groundwater standards.
Table 4-1	Modify table based on comments on Section 4.0.
Table 4-5	Modify table to add chemical-specific ARARs consistent with comments on Table 2-1.  As discussed in the text comments for Section 4.0, a LUC-only remedy may not meet protectiveness requirements under the RI Remediation Regulations.
Table 4-6	Add the location-specific ARARs identified in Table 2-2 – in particular is any remedial work is within federal or state jurisdictional wetlands/floodplain or within the 50 buffer to RI jurisdictional wetlands. Federal and State coastal zone standards need to be identified.
Table 4-7	Add federal and State Action-specific ARARs identified in Table 2-3 that pertain to the LUC only alternative (in particular monitoring standards).
Table 4-8	Modify table to add chemical-specific ARARs consistent with comments on Table 2-1.  As discussed in the comments on Section 4.0, a hot spot remedy that does not address PRG exceedances throughout the Site may not meet protectiveness requirements under the RI Remediation Regulations.
Table 4-9	Add the location-specific ARARs identified in Table 2-2 – in particular is any remedial work is within federal or state jurisdictional wetlands/floodplain or within the 50 buffer to RI jurisdictional wetlands. Federal and State coastal zone standards need to be identified.
Table 4-10	Add federal and State Action-specific ARARs identified in Table 2-3 that pertain to the Hot Spot alternative.
Table 4-11	As noted in the comments for page 4-9, §4.3, it is not possible to fully compare the alternatives until the outstanding issues identified in the above text comments are addressed.  One particular comment: Page 1 of 2: There is no reduction of toxicity, mobility, or volume through treatment for any of these alternatives.

Therefore, all should be rated as "None" for all four line items in this category. Please correct.

- Table 5-1            Modify table based on comments on Section 5.0.
- Table 5-2            As noted previously, it is not possible to fully compare the alternatives until the outstanding issues identified herein are addressed (e.g., none of the alternatives presented meet NCP criteria).
- Table 5-3            The table needs to include all of the federal drinking water standards (MCLGs), federal risk-based standards (health advisories) and more stringent State groundwater standards (RI groundwater remediation standards) identified in Table 2-1. The No Action alternative does not meet any of these standards.
- Table 5-6            The table needs to include all of the federal drinking water standards (MCLGs), federal risk-based standards (health advisories) and more stringent State groundwater standards (RI groundwater remediation standards) identified in Table 2-1.
- The "Action to be Taken" text for the Safe Drinking Water Act and RI Remediation Regulations states that drinking water standards will be met over time, but the text states that MNR cannot achieve groundwater cleanup standards. If true, the LUC-only alternative is neither protective nor meets ARARs.
- Table 5-7            Add the location-specific ARARs identified in the comments to Table 2-2 (in particular installation, sampling and O&M of monitoring wells in or adjacent to wetlands/floodplain, as well as federal and State coastal zone standards).
- Table 5-8            Add federal and State Action-specific ARARs identified in Table 2-3 that pertain to the LUC-only alternative (pertaining to monitoring and the establishment of LUCs).
- p. R-5                Please change the citation for Regional Screening Levels (RSLs) from May 2010 to June 2011 to reference the latest RSLs.
- Appendix A1        Please delete references to Tank Farm 5 from this appendix.
- Appendix A2        a) Please add a note to Table 5-1 to indicate what the blue shading refers to and/or what threshold applies.
- b) Tables that refer only to Tank Farm 5 should be deleted from this appendix.
- Appendix A3        a) Figure 3 indicates the oil-water separator (OWS) and associated contaminated soil was removed in 2002. The removal action at Tank Farms 4 and 5 was conducted in 2004-2005 and the OWS was removed at that time. Please correct.

b) Figure 3 should also show human exposure to subsurface soil.

Appendix B1

a) p. 4 The last sentence in Section 2.2 states that background soil concentrations were based on a combination of all four soil types. This protocol may not accurately portray the actual soil background concentration at areas with exceedances of PRGs. This FS only addresses DU 4-1. At areas where PRGs are exceeded, please identify the major soil type at those locations and adjust the background concentration and excess risk calculation accordingly.

b) Delete Tables 6-38, 9, and 12 which are for Tank Farm 5 and renumber the remaining tables.

Appendix B1

Tables 4, 5, 6, 7 These tables should include the toxicity data that were used to calculate PRGs for iron and cobalt, as well as arsenic and manganese.

Appendix C

SO3, page 1 of 4

Please identify the line items under Line Item 1 more specifically and make them consistent with SO2 (LUC RD and LTMP costs should be the same). Please clarify what permits are required that require 300 hours of effort given that permits are not required for onsite CERCLA actions.

**ATTACHMENT B**

**TABLE 2-1**  
**POTENTIAL CHEMICAL-SPECIFIC ARARs AND TBCs**  
**FEASIBILITY STUDY**  
**TANK FARM 4, DU4-1**  
**NAVSTA NEWPORT, NEWPORT, RHODE ISLAND**  
**PAGE 1 OF 2**

Authority	Requirement	Status	Requirement Synopsis	Consideration
Federal Regulatory Requirements	Safe Drinking Water Act (42 U.S.C. §300f et seq.); National primary drinking water regulations (40 C.F.R. Part 141, Subpart B and G)	Applicable	Establishes maximum contaminant levels (MCLs) for common organic and inorganic contaminants applicable to public drinking water supplies. Used as relevant and appropriate cleanup standards for aquifers and surface water bodies that are potential drinking water sources.	MCLs were used in development of PRGs, based on unlikely use of the groundwater for a drinking water supply.
	Safe Drinking Water Act (42 U.S.C. §300f et seq.); National primary drinking water regulations (40 C.F.R. 141, Subpart F)	<del>To Be Considered.</del>	Establishes maximum contaminant level goals (MCLGs) for public water supplies. MCLGs are health goals for drinking water sources. These unenforceable health goals are available for a number of organic and inorganic compounds.	MCLs were considered in development of PRGs, based on unlikely use of the groundwater for a drinking water supply.
	EPA Human Health Assessment Cancer Slope Factors (CSFs).	To Be Considered	These are guidance values used to evaluate the potential carcinogenic hazard caused by exposure to contaminants.	CSFs are used to compute the individual incremental cancer risk resulting from exposure to carcinogenic contaminants in site media.
	OSWER Directive 9200.4-26, <u>Approaches for Addressing Dioxins in Soil at CERCLA and RCRA Sites</u> (Apr. 13, 1998)	To Be Considered	This Directive provides guidance in establishing cleanup levels for dioxins. A 1 µg/kg (ppb) concentration of dioxins (as 2,3,7,8-TCDD TE) has been established for surficial soils involving residential exposure scenarios. A cleanup range of 5 to 20 µg/kg of dioxin (as 2,3,7,8-TCDD TE) has been established for commercial and industrial exposure scenarios.	This OSWER policy aids in the establishment of dioxin PRGs for soil and sediment to be used in the remedial action.
	Reference Dose (RfD)	To Be Considered	Guidance used to compute human health hazard resulting from exposure to non-carcinogens in site media.	Were used to calculate potential non-carcinogenic hazards caused by exposure to contaminants.
	Guidelines for Carcinogen Risk Assessment EPA/630/P-03/001F (March 2005)	To Be Considered	Guidance for assessing cancer risk.	Were used to calculate potential carcinogenic risks caused by exposure to contaminants.

TABLE 2-1

**POTENTIAL CHEMICAL-SPECIFIC ARARs AND TBCs  
FEASIBILITY STUDY  
TANK FARM 4, DU4-1  
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND  
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Authority	Requirement	Status	Requirement Synopsis	Consideration
Federal Regulatory Requirements (continued)	Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens EPA/630/R-03/003F (March 2005)	To Be Considered	Guidance of assessing cancer risks to children.	Were used to calculate potential carcinogenic risks to children caused by exposure to contaminants.
State Regulatory Requirements	Rules and Regulations for the Investigation and Remediation of Hazardous Material Releases CRIR 12-180-001, Section 8; DEM-DSR-01-93, as amended August 1996, 2004	Applicable	These regulations set remediation standards for contaminated media. These standards are applicable to a CERCLA remedy when they are more stringent than federal standards. Establishes criteria for groundwater and both direct contact and leachability of contaminants in soil.	The Remediation Regulations are used in the establishment of PRGs for soil for direct contact and leachability to be used in the remedial action.
	Remediation Regulations DEM-DSR-01-93 Section 8.03, A to D.	To Be Considered	Sets levels for monitoring of contaminated groundwater when more stringent than federal standards.	Standards were considered in development of GW PRGs based on possible future use of the groundwater as a water supply.
	State of Rhode Island Oil Contaminated Soil Policy, Division of Air and Hazardous Materials September 1991	Applicable	This policy statement applies to soil that has been contaminated with petroleum products but does not meet the definition of a hazardous waste. Material contaminated with virgin petroleum products may be processed in state, but material contaminated with unknown or waste petroleum products must be disposed of out of state.	Soil contaminated with petroleum products may be removed from the site and would be subject to this policy statement.
	Rhode Island Air Quality Regulations, RIGL 23-23 et seq.; CRIR 12-31-22	Applicable	Prohibits the emission of contaminants at rates that would result in ground level concentrations greater than acceptable ambient levels or levels as set in the regulations.	Alternatives may involve treatment of soil. Treatment activities will be carried out in a manner that will comply with the air quality regulations.

**TABLE 2-2  
POTENTIAL LOCATION-SPECIFIC ARARs AND TBCs  
FEASIBILITY STUDY  
TANK FARM 4, DU4-1  
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND**

AUTHORITY	REQUIREMENT	STATUS	REQUIREMENT SYNOPSIS	CONSIDERATION
Federal Regulatory Requirements	Floodplain Management (40 CFR 6.302(b) Appendix A)	Applicable	This regulation codifies standards established under Executive Order 11988. This alternative includes work to be performed in or near a 100-year floodplain. This ARAR standard requires action to avoid the long- and short-term impacts associated with the occupancy and modifications related to floodplain development, wherever there is a reasonable practicable alternative. Promotes the preservation and restoration of floodplains so that their natural and beneficial value can be realized.	The expected impacts to floodplain resources of each alternative will be evaluated and considered during the preferred alternative selection process. Adverse impacts will be mitigated where feasible as required.
	Clean Water Act - Section 404(b)(1) Guidelines for specification of disposal sites for dredged or fill material (40 CFR Part 230)	Applicable	Under this requirement, no activity that adversely affects a wetland shall be permitted if a practicable alternative with lesser effects is available. If activity takes place, impacts must be minimized to the maximum extent. Controls discharges of dredged or fill material to protect aquatic ecosystems.	Alternatives may involve excavation of wetland sediments. Filling or alteration of wetlands will only occur where there is no other practicable alternative and any adverse impacts to aquatic ecosystems will be mitigated.
	Fish and Wildlife Coordination Act (16 U.S.C. 661), Fish and Wildlife protection (40 CFR Section 6.302(g))	Applicable	This regulation requires that any federal agency proposing to modify a body of water must consult with the U.S. Fish and Wildlife Service (USFWS), National Marine Fisheries Service, and other related state agencies. That federal agency must consult with the appropriate government entity and also take action to prevent, mitigate, or compensate for project-related losses of endangered species, fish and wildlife resources.	Alternatives may modify potential endangered species, fish and wildlife habitats. All appropriate state and federal agencies, such as the USFWS, will be consulted to ensure that losses of these resources will be prevented, mitigated, or compensated.
	Protection of Wetlands 40 CFR Part 6.302(a); Appendix A	Applicable	This regulation codifies standards established under Executive Order 11990. Under this requirement, no activity that adversely affects a wetland shall be permitted if a practicable alternative with lesser effects is available. If activity takes place, impacts must be minimized to the maximum extent.	Alternatives may involve excavation of wetland sediments. Filling or alteration of wetlands will only occur where there is no other practicable alternative and any adverse impacts to aquatic ecosystems will be mitigated.

**TABLE 2-3  
 POTENTIAL ACTION-SPECIFIC ARARs AND TBCs  
 FEASIBILITY STUDY  
 TANK FARM 4, DU4-1  
 NAVSTA NEWPORT, NEWPORT, RHODE ISLAND  
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Authority	Requirement	Status	Requirement Synopsis	Consideration
Federal Regulatory Requirements	Clean Water Act, (33 U.S.C. § 1251 <del>et seq.</del> ); National Pollution Discharge Elimination System (NPDES) (40 C.F.R. §§ 122-125, 131)	Applicable	Contains discharge limitations, monitoring requirements, and best management practices. Substantive requirements under NPDES are written such that state and National Recommended Water Quality Criteria (NRWQC): are met. <del>Permits are required for off-site discharges</del>	Alternatives may involve excavation activities and O & M near freshwater wetland areas that will be managed so as to not discharge contaminants into adjacent waters. Discharge of any contaminated groundwater during soil excavation will meet applicable standards. <del>Standards also to be used to develop monitoring criteria for surface waters.</del>
	Clean Air Act (CAA), National Emission Standards for Hazardous Air Pollutants (NESHAPS 42 USC 7411, 7412; 40 CFR Part 61	Applicable	NESHAPS are a set of emission standards for specific chemicals, including naphthalene, arsenic, cadmium, chromium, lead, mercury, nickel, PCBs, DDE, and hexachlorobenzene. Certain activities are regulated including site remediation.	Alternatives may involve excavation and handling of soil and sediment. Monitoring and mitigation of air emissions may be necessary to ensure compliance with these standards if threshold levels are reached. Operation and maintenance activities will be carried out in a manner that will minimize potential air releases.
State Regulatory Requirements	Hazardous Waste Management Act (RI General Laws 23-19.1-6, 23-19.1-7, and 23-19.1-10); Section 5, Generators	Applicable	These regulations apply to all generators of hazardous waste. They include requirements for identification, storage, shipment and labeling of waste.	Alternatives may involve the generation of hazardous waste via excavation, and /or generation of contaminated byproducts. Excavation and generation such material and related activities will comply with this regulation. All excavated soil will be tested for hazardous characteristics prior to disposal. If soil <del>or sediment</del> is identified through this testing, follow up will be conducted to assure hazardous materials are removed from the site.
	Water Pollution (RI General Laws 46-12), Environmental Management (RI General Laws 42-17.1, Water Quality Regulations (R.I. Code R. 112-88.97-1), Rule #18	Applicable	Regulations designed to protect state surface water resources. Establishes water use classification and water quality criteria for waters of the state.	Alternatives will include provisions for the protection of freshwater wetlands where construction activities may occur. Remedial actions including excavation and filling will be conducted to minimize degradation.

**TABLE 2-3**  
**POTENTIAL ACTION-SPECIFIC ARARs AND TBCs**  
**FEASIBILITY STUDY**  
**TANK FARM 4, DU4-1**  
**NAVSTA NEWPORT, NEWPORT, RHODE ISLAND**  
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Authority	Requirement	Status	Requirement Synopsis	Consideration
State Regulatory Requirements (Cont'd)	Clean Air Act (RIGL 23-23 <i>et seq.</i> ) - Emissions Detrimental to Persons or Property RIGL 23-23 <i>et seq.</i> ; (CRIR 12-31-07)	Relevant and Appropriate	Prohibits emissions of contaminants which may be injurious to humans, plant or animal life or cause damage to property or which reasonably interferes with the enjoyment of life and property	Alternatives may involve removal, processing, and temporary storage of debris, soil, and sediments involving the release of contaminants.
	Clean Air Act (RIGL 23-23 <i>et seq.</i> ) - Air Toxics  RIGL 23-23 <i>et seq.</i> ; (CRIR 12-31-22)	Applicable	Prohibits the emission of specified contaminants at rates which would result in ground level concentrations greater than acceptable ambient levels or acceptable ambient levels as set in the regulations	Alternatives may involve removal, processing, and temporary storage of debris, soil, and sediments involving the release of contaminants.
	Clean Air Act (RIGL 23-23 <i>et seq.</i> ) - Fugitive Dust Control RIGL 23-23 <i>et seq.</i> ; (CRIR 12-31-05)	Applicable	Requires that reasonable precaution be taken to prevent particulate matter from becoming airborne.	Alternatives with removal, processing, and temporary storage of debris, soil, and sediments might generate fugitive dust. Testing and controls may be necessary to ensure compliance.
	Clean Air Act (RIGL 23-23); Visible Emissions (CRIR 12-31-01)	Applicable	No air contaminant emissions are allowed for more than 3 minutes in any one hour which are greater than or equal to 20% opacity.	Air emissions from remedial actions will meet these emission levels