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LETTER AND U S EPA REGION 1 COMMENTS TO REVISED DRAFT FEASIBILITY STUDY
SITE 8 NS NEWPORT RI
9/8/2011
U S EPA REGION 1

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**
REGION 1
5 POST OFFICE SQUARE, SUITE 100
BOSTON, MASSACHUSETTS 02109-3912

September 8, 2011

Maritza L. Montegross
Remedial Project Manager
NAVFAC MIDLANT, Code OPNEEV
9742 Maryland Avenue, Bldg. Z-144
Norfolk, VA 23511-3095

Re: Revised Draft Feasibility Study
Site 08, NUSC Disposal Area RI/FS
NAVSTA Newport, Rhode Island
July 2011

Dear Ms. Montegross:

EPA has completed its review of the "Revised Draft Feasibility Study for Site 08, NUSC Disposal Area," dated July 2011, as prepared by Tetra Tech NUS, Inc., on behalf of Naval Station Newport, RI. The Revised Draft Feasibility Study (FS) summarizes the site history, offers remedial action objectives, and develops and evaluates remedial alternatives designed to remediate site soils, groundwater, and sediments. EPA evaluated the Revised Draft FS to determine if it was consistent with CERCLA, the NCP, EPA's "Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA" (October 1998), and other applicable EPA guidance and policies. In addition, EPA evaluated the Revised Draft FS for consistency, technical accuracy, and completeness.

EPA issued comments on this document on August 11, 2011. As indicated in the cover letter, those comments were partial comments. Enclosed please find additional EPA comments on the Revised Draft FS, primarily related to revisions that need to be made to the ARARs tables within the document. EPA requests that the Navy provide revised ARARs tables with its responses to these comments to ensure that we are in agreement on the ARARs prior to issuance of the Draft Final FS.

As also agreed to in our August 11, 2011 letter, EPA reviewed the Biohlor modeling details, relevant to Appendix D of the Revised Draft FS, which were provided by the Navy on August 9, 2011. The input data for the modeling is consistent with that summarized in Appendix D. However, as noted in EPA's August 11, 2011 comments on the Biochlor modeling, many of the input parameters used are not site-specific or are based on limited site data, are based on unsubstantiated estimates of treatment performance, and in some cases use values that favor natural attenuation as compared to model default values and literature values. The modeling would be more informative if sensitivity analyses were performed to address these issues. EPA will continue to

evaluate the results of the Biochlor modeling upon receipt of Navy's responses to our comments on the Revised Draft FS.

Please also note that all comments on the Revised Draft FS should be addressed, as appropriate, throughout the document (i.e., if revisions are required to address a comment, ensure that additional revisions are made throughout the document, where appropriate, so that the comment is consistently addressed in the Draft Final FS).

EPA again advises Navy to include adequate time on the agenda of the September 21, 2011 RPM meeting for comment resolution discussion. If you have any questions, please contact me at (617) 918-1754 or at lombardo.ginny@epa.gov.

Sincerely,

Ginny Lombardo
Remedial Project Manager

Attachment

cc: Pamela Crump, RI DEM
Deb Moore, NAVSTA Newport
James Ropp, TtNUS
Stephen Parker, TtNUS
Ken Munney, USF&W
Chau Vu, EPA
Bart Hoskins, EPA
David Peterson, EPA
Greg Kemp, Mabbett & Associates, Inc.

**EPA Additional Comments on**
**Revised Draft Feasibility Study for**
**Site 8 – NUSC Disposal Area**
**July 2011**

**General Comment:**

1. Throughout the FS, it is unclear where the Navy intends to allow "limited recreation" (page 2-9, Section 2.3.1). If limited recreation is to be allowed in any area where soil contamination is present, the LUCs need to identify the allowed recreational uses and where recreational use will not be permitted.

2. With respect to LUCs for groundwater, the FS should address whether groundwater uses beyond consumption need to be considered in the LUCs. EPA would expect that the groundwater LUCs would prevent all uses of groundwater (e.g., consumption, irrigation, etc.) or show that other uses do not pose an unacceptable risk. The FS should include a discussion of how groundwater LUCs may impact adjacent property owners and how that will be addressed in the LUC RD.

**Specific Comments:**

1. Page ES-2: Revise the RAOs to be consistent with the RAOs listed in Section 2.3.1.

2. Page 2-4, Section 2.1.4.1, Groundwater: In the first sentence change: "Federal MCLs and non-zero Maximum Contaminant Level Goals (MCLGs) for drinking water" to "Federal MCLs, non-zero Maximum Contaminant Level Goals (MCLGs), and federal risk-based standards for drinking water."

3. Page 2-4, Section 2.1.4.1, Groundwater: Replace the last sentence with: "As discussed in EPA groundwater remediation guidance, in State's without an EPA-approved CSGWPP, CERLCA groundwater remediation must meet federal MCLs and risk-based standards."

4. Page 2-4, Section 2.1.4.2: Remove the third sentence since floodplain standards would apply if the remedial action (even if not in a mapped floodplain) could cause downstream flooding (for instance through management of water levels at the dam) and the federal/state coastal zone for the base extends across the operable unit.

5. Page 3-16, Section 3.3.6, Onsite Landfilling, Implementability: Add at the end of the third sentence: "or the RI Remediation Regulations, depending on the characteristics of the waste and the regulatory status of the disposal area."

6. Page 3-42 – 3-43, Section 3.7.1, Reduction of Toxicity: Remove all references to recycling meeting this criterion.

7. Page 4-7, Section 4.2.1, Long Term Effectiveness: Add at the end of the last sentence: "(following federal TBC risk guidances) and exceeding RI Remediation Regulation criteria."

8. Page 4-9, Section 4.2.2, Compliance with ARARs: If PCB levels in the soil exceed 1 ppm, the Navy needs a separate EPA finding under TSCA that the proposed alternative will not pose an unreasonable risk of injury to health or the environment.

9. Page 6-8, Section 6.2.1, Compliance with ARARs: In the last sentence change: "from state and federal regulations" to "from federal regulations and risk-based standards derived from federal TBC guidances."

10. Page 6-10, Section 6.2.2 and Page 6-13, Section 6.2.3; Compliance with ARARs: The alternatives only meet ARARs if the remedial actions can meet EPA sediment remediation guidance standards and federal ecological risk-based standards for freshwater sediments. The Navy needs a separate EPA finding under TSCA that the proposed PCB cleanup standard is protective and the remediation process (including management and dewatering of excavated sediments containing PCBs) will not pose an unreasonable risk of injury to health or the environment. To satisfy federal and State wetland and floodplain standards, the alternative needs to included mitigation to replace alteration of wetland resources and lost flood storage capacity (or show that filling in the shoreline of the alteration of waterways and waterbodies will not increase the risk of downstream flooding). The alternative needs to identify mitigation measures that will be taken.

11. Page 6-15, Section 6.2.4, Compliance with ARARs: The Navy needs a separate EPA finding under TSCA that the proposed PCB cleanup standard for the stream and pond sediments is protective and that the remediation process (including management and dewatering of excavated sediments containing PCBs) will not pose an unreasonable risk of injury to health or the environment. To satisfy federal and State wetland standards the alternative needs to include mitigation to replace alternation of wetland/aquatic habitat resources. The alternative needs to identify mitigation measures that will be taken.

12. Table 2-1: Refer to EPA's November 22, 2010 comments on the August 2010 Draft FS, Comment 1. Revise Table 2-1 to address this ARARs comment. The "consideration" text proposed in the original comment can be revised, as appropriate, to reflect the Navy's remedial plan for restoring groundwater throughout the site (i.e., not using the waste management area designation). [The language in the "consideration" text for "National Primary Drinking Water Regulations", page 2 of 2, is acceptable.] The VI Guidance, noted as a TBC in the November 22, 2010 Comment 1, does not need to be included. In addition, remove the last line of the Table (Water Quality Regulations).

13. Table 2-2, Page 1: Although the "Floodplain Management" ARARs text is consistent with EPA's November 22, 2011 Comment 3, EPA requests that the "Floodplain Management" ARAR be replaced with the following to be consistent with more recent ARARs decision documents:

| | | | |
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| Floodplain Management and Protection of Wetlands, 44 C.F.R. 9 | Relevant and Appropriate | Remedial alternatives that may cause alteration within a 500-year floodplain/cause negative impacts to downstream floodplain or that will cause alteration of federal jurisdictional wetlands/aquatic habitats will be implemented in compliance with these relevant and appropriate FEMA standards (which promulgate requirements under Executive Order 11988 (Floodplain Management) and Executive Order 11990 (Protection of Wetlands)). Prohibits activities that adversely affect a federally-regulated wetland unless there is no practicable alternative and the proposed action includes all practicable measures to minimize harm to wetlands that may result from such use. Requires soliciting public comment on any disturbance of floodplains or federally-regulated wetlands. | The effects the remedial action, particularly in regard to the sediment and soil alternatives, on federal jurisdictional wetlands will be evaluated. All practicable means will be used to minimize harm to the wetlands. Wetlands disturbed by sediment remediation, monitoring, or other remedial activities will be mitigated in accordance with requirements. The site is upstream of coastal flood zone. Remedial actions that involve remedial activities that may affect downstream floodplain areas will include all practicable means to minimize harm to and preserve beneficial values of floodplains. The Navy will solicit public comment regarding proposed impacts to wetlands and floodplains in the Proposed Plan. The comments received will be addressed in the Responsiveness Summary in the ROD for this operable unit. |

In addition, add the Federal Coastal Zone Management ARAR noted in EPA's November 22, 2011 letter, Comment 3. If there are potential historic or archeological resources within the operable unit area (e.g., the dam or any structure more than 50 years old), add appropriate federal and state historic preservation ARARs.

14. Table 2-2: Refer to EPA's November 22, 2010 comments on the August 2010 Draft FS, Comment 4. Revise Table 2-2 to address the ARARs revisions outlined in this comment.

15. Table 2-3, Page 1: Although the "TSCA" ARARs text is consistent with EPA's November 22, 2010 Comment 6 proposed language, the "synopsis" and "consideration" text should be revised to the following for clarity. [Although PCBs are not a COC for soil, PCBs were found in soils above screening criteria.]

| | | | |
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| Toxic Substances Control Act (TSCA); PCB Remediation Waste, 40 C.F.R.761.61(c) | Applicable | This section of the TSCA regulations provides risk-based cleanup and disposal options for PCB remediation waste based on the risks posed by the *in-situ* concentrations at which the PCBs are found. Written approval for the proposed risk-based cleanup must be obtained from the Director, Office of Site Remediation and Restoration, U.S. Environmental Protection Agency (USEPA) Region 1. | All sediment and soil exceeding identified PCB cleanup levels will either be removed, dewatered (if required) and disposed of off-site or will be placed under a cover system that meets TSCA protectiveness standards. The dredging, transportation/dewatering, and management of PCB contaminated media will be performed in a manner to comply with TSCA, including air and surface water monitoring during remedial activities. The Navy will obtain a finding by the Director, Office of Site Remediation and Restoration, EPA Region 1, that the remedy's sediment and soil PCB cleanup levels, along with the dredging, dewatering, and management of the contaminated media will not pose an unreasonable risk to human health or the environment. |

16. Table 2-3: EPA's November 22, 2010 letter, Comment 6, included proposed revisions to Table 2-3. Some of the proposed revisions are addressed in the Revised Draft FS, Table 2-3. However, not all proposed revisions were made and some of the ARARs included in the August 2010 Draft FS version were deleted and need to be re-incorporated into Table 2-3. To address these inconsistencies, add these additional federal action-specific ARARs:

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| Safe Drinking Water Act (42 U.S.C. §300f et seq.); National primary drinking water regulations (40 C.F.R. 141, Subparts B and G) | Relevant and Appropriate | Establishes MCLs for common organic and inorganic contaminants applicable to public drinking water supplies. Used as relevant and appropriate standards for aquifers and surface water bodies that are potential drinking water sources. | Under federal standards, groundwater within the Site is considered a potential drinking water source; therefore, groundwater must achieve these standards. Groundwater use restrictions will be maintained until these standards are achieved. |
| Safe Drinking Water Act (42 U.S.C. §300f *et seq.*); National primary drinking water regulations (40 C.F.R. 141, Subpart F ) | Relevant and Appropriate for non-zero MCLGs only; MCLGs set as zero are To Be Considered. | 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. | Under federal standards, groundwater within the Site is considered a potential drinking water source; therefore, groundwater must achieve these standards. Groundwater use restrictions will be maintained until these standards are achieved. |
| Health Advisories (EPA Office of Drinking Water) | To Be Considered | Health Advisories are estimates of risk due to 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. The risk-based standard for manganese is 0.3 mg/L. | Groundwater within the Site must achieve this standard. Groundwater use restrictions will be maintained until the standard is achieved. |
| CWA National Recommended Water Quality Criteria (NRWQC), 40 CFR 122.44) | Relevant and Appropriate | Federal NRWQC are health-based and ecologically based criteria developed for carcinogenic and non-carcinogenic compounds. These standard may be used to develop cleanup standards for sediments | Water quality standards used to develop monitoring standards sediment and soil remedial alternatives at the Site. |
| Clean Water Act - National Pollutant Discharge Elimination System (NPDES), 40 CFR Parts 122 and 125 | Applicable | Establishes the specifications for discharging pollutants from any point source into the waters of the U.S. Includes stormwater standards for activities disturbing more than one acre. | Any water discharged to surface water bodies during remedial activities will comply with this regulation. Best management practices will be used to meet stormwater standards during the remedial action. |
| Toxic Pollutant Effluent Standards, 40 CFR 129 | Applicable | Regulates surface water discharges of specific toxic pollutants, namely aldrin, dieldrin, DDT, endrin, toxaphene, benzidine, and PCBs. | Any water discharged to surface water bodies will meet the standards identified in this regulation. |
| Clean Air Act, National Emission Standards for Hazardous Air Pollutants (NESHAPs), 42 U.S.C. 7411, 7412; 40 C.F.R. 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. | If remedial activities include thermal treatment these emissions standards will be met. In addition excavation, standards for particulate matter will be met during excavation and handling of contaminated sediments. Activities during construction will include measures to suppress dust. |

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| Generation of investigation derived waste USEPA OSWER Publication 9345.3-03 FS, January 1992 | To Be Considered | Management of Investigation-Derived Waste (IDW) must ensure protection of human health and the environment. | IDW will be managed in a manner to protect human health and the environment. |
| EPA Groundwater Protection Strategy (August 1984; NCP Preamble, Vol 55, No. 46, March 8, 1990, 40 CFR Part 300, p. 8733); Guidelines for Ground-Water Classification (November 1986) | To Be Considered | 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 and define three classes of groundwater. These documents defined Class I, II and III groundwaters. | Under federal standards, groundwater within the Site is considered a potential drinking water source; therefore, groundwater must achieve these standards. Groundwater use restrictions will be maintained until these standards are achieved. |
| Contaminated Sediment Remediation Guidance for Hazardous Waste Sites (EPA-540-R-05-012 OSWER 9355.0-85 December 2005) | To Be Considered | Guidance for making remedy decisions for contaminated sediment sites. | This guidance will be considered in addressing contaminated sediment alternatives involving Monitored Natural Recovery, Thin Layer Capping, Dredging, and/or Cover/Capping. The guidance also addresses dewatering, and disposal of the contaminated sediments. |
| Clean Water Act; General Pretreatment Regulations for Existing and New Sources of Pollution, 33 U.S.C. § 1251 et seq. 40 CFR. Part 403 | Applicable | Standards for direct discharge of waste water into a Publicly Owned Treatment Works (POTW). | These standards will apply if water from the remedial action such as from dewatering is discharged to a POTW. |
| Thermal Treatment, 40 C.F.R. Part 265, Subpart P | Relevant and Appropriate | Standards for air emissions and other operating standards for thermal treatment units. | These standards will apply for alternatives that include thermal treatment. |
| Management of Undesirable Plants on Federal Lands, 7 U.S.C. 2814 | Relevant and Appropriate | Requires federal agencies to establish integrated management systems to control or contain undesirable plant species on federal lands under the agency's jurisdiction. | Measures will be taken to control the establishment of *Phragmites*, purple loosestrife or other invasive plants within all remediated areas. An invasive species control plan will be developed as part of the long-term O&M for this site. |

In addition, add these State ARARs:

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| Clean Air Act - Emissions Detrimental to Persons or Property | RIGL 23-23 *et seq.*; CRIR 12-31-07 | Applicable | 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. | Monitoring of air emissions during remedial activities will be used to assess compliance with these standards if threshold levels are reached |
| 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 *et seq.* | Applicable | Prohibits installing drinking water wells in contaminated aquifers. Establishes standards for decommissioning monitoring wells (Rule 9.03). | Under these standards drinking water wells are prohibited within areas of contamination and monitoring wells used will be properly decommissioned when no longer needed. |

17. Table 2-3, State Solid Waste ARARs: All of the State Solid Waste Regulations cited in the OFFTA ROD should be cited in this FS, since both set standards for soil/pavement covers over contaminated soils (14 sections were cited in OFFTA, but only 6 in this FS). The "consideration" text for all of the State Solid Waste ARARs should match the language negotiated with the Navy that was used in the OFFTA ROD (Table A-3, "Action To Be Taken" text).

18. Table 2-3, Page 6: For the first line change the "consideration" text to: "These regulations would apply to the management of any contaminated media that, after testing, is determined to exceed hazardous waste thresholds."

19. Table 2-5: EPA's risk-based standard for manganese, as identified in EPA's Health Advisory, is 300 ug/L and should be used as the PRG/Performance Standard. EPA's November 22, 2010, Comment 12, requested this be addressed.

20. Tables 4-4 – 4-9, Tables 5-4 – 5-12, and Tables 6-4 – 6-12: Make revisions to the alternative specific ARARs tables to ensure that they are consistent with the revisions required to address comments on the Section 2 ARARs tables above and consistent with the ARARs tables in the OFFTA ROD, Appendix A. In addition, in many cases, the information provided in the "Action to be Taken to Attain the ARAR" column is inadequate throughout these ARARs table. Revise the tables to specify how each alternative will achieve the cited ARARs. For the location-specific ARARs Tables, if there are potential historic or archeological resources within the operable unit area (e.g., the dam or any structure more than 50 years old), add appropriate federal and state historic preservation ARARs.

21. Table 5-5, Table 5-8 and Table 5-11: There are location-specific ARARs relating to the installation and O&M of monitoring wells. These ARARs should be included in these tables.

**EPA Proposed Revisions to ARARs Tables for**
**Revised Draft**
**Feasibility Study for**
**Site 8 – NUSC Disposal Area**
**Naval Station Newport**
**July 2011**

**Table 4-4:**
Federal ARARs

| | | | | |
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| EPA Carcinogenicity Slope Factor | None | To Be Considered | Slope factors are developed by EPA from health effects assessments. Carcinogenic effects present the most up-to-date information on cancer risk potency. Potency factors are developed by EPA from Health Effects Assessments of evaluation by the Carcinogenic Assessment Group. | Risks due to carcinogens as assessed with slope factors will be addressed through remediation to industrial cleanup levels based on excavation of the top 2 feet of contaminated soil, backfilling with 2 feet of clean permeable cover material (except in areas where an existing pavement cover will be maintained), ex-situ treatment of PAH contaminated soil, off-site disposal of the remaining excavated soil, removal of anomalies, LUCs and *long-term monitoring of the remaining covered waste management area.* |
| EPA Risk Reference Dose (RfDs) | None | To Be Considered | RfDs are considered to be the levels unlikely to cause significant adverse health effects associated with a threshold mechanism of action in human exposure for a lifetime. | Hazards due to noncarcinogens with EPA RfDs will be addressed through remediation to industrial cleanup levels based on excavation of the top 2 feet of contaminated soil, backfilling with 2 feet of clean permeable cover material (except in areas where an existing pavement cover will be maintained), ex-situ treatment of PAH contaminated soil, off-site disposal of the remaining excavated soil, removal of anomalies, LUCs *and long-term monitoring of the remaining covered waste management area.* |
| Guidelines for Carcinogen Risk Assessment | EPA/630/P-03/001F (March 2005) | To Be Considered | Guidance for assessing cancer risk. | Hazards due to carcinogens assessed through this guidance will be addressed through remediation to industrial cleanup levels based on excavation of the top 2 feet of contaminated soil, backfilling with 2 feet of clean permeable cover material (except in areas where an existing pavement cover will be maintained), ex-situ treatment of PAH contaminated soil, off-site disposal of the remaining excavated soil, removal of anomalies, LUCs and *long-term monitoring of the remaining covered waste management area.* |
| 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. | Carcinogenic risks to children assessed through this guidance will be addressed through remediation to industrial cleanup levels based on excavation of the top 2 feet of contaminated soil, backfilling with 2 feet of clean permeable cover material (except in areas where an existing pavement cover will be maintained), ex-situ treatment of PAH contaminated soil, off-site disposal of the remaining excavated soil, removal of anomalies, LUCs and long-term monitoring of the remaining covered waste management area. |

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| Recommendations of the Technical Review Workgroup for Lead for an approach to Assessing Risks Associated with Adult Exposure to Lead In Soil | EPA-540-R-03-001 (January 2003) | To Be Considered | EPA Guidance for evaluating risks posed by lead in soil. | Risks from lead assessed under this guidance will be addressed through remediation to industrial cleanup levels based on excavation of the top 2 feet of contaminated soil, backfilling with 2 feet of clean permeable cover material (except in areas where an existing pavement cover will be maintained), ex-situ treatment of PAH contaminated soil, off-site disposal of the remaining excavated soil, removal of anomalies, LUCs and *long-term monitoring of the remaining covered waste management area.* |

## Modify the RI Remediation Regulation

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| Rules and Regulations for the Investigation and Remediation of Hazardous Material Releases (Short Title: Remediation Regulations) | Code of Rhode Island Rules (CRIR) 12-180-001; DEM-DSR-01-93, sections 8.01 and 8.02 | Applicable | These regulations set remediation standards for direct contact and leachability for contaminated soil at NPL sites when they are more stringent than federal standards. | [It is unclear whether this alternative that consists of remediation to industrial cleanup levels based on excavation of the top 2 feet of contaminated soil, backfilling with 2 feet of clean permeable cover material (except in areas where an existing pavement cover will be maintained), ex-situ treatment of PAH contaminated soil, off-site disposal of the remaining excavated soil, removal of anomalies, LUCs and *long-term monitoring of the remaining covered waste management area* meets the regulations' requirements for permitting limited recreational use or if leachability standards are met both in areas that will be excavated and installed with a permeable cover or in areas where pavement will be maintained as a cover.] |

**Table 4-5:**
Federal ARARs

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| Fish and Wildlife Coordination Act | 16 U.S.C.. §661 *et seq.* | Applicable | Requires Federal agencies involved in actions that will result in the control of structural modification of any stream or body of water for any purpose to take action to protect fish and wildlife resources that may be affected by the action. The Navy must coordinate with appropriate federal and state resource agencies to ascertain the means and measures necessary to mitigate, prevent, and compensate for project related losses of fish and wildlife resources and to enhance the resources. | Measures to mitigate or compensate adverse project related impacts to fish and wildlife resources will be taken, if determined necessary. The appropriate federal and state resource agencies will be consulted, in particular regarding remedial measures for contaminated soil that will impact streams, wetlands, and downstream waterbodies. |
| Floodplain Management and Protection of Wetlands | 44 C.F.R. 9 | Relevant and Appropriate | Remedial alternatives that may cause alteration within a 500-year floodplain/cause negative impacts to downstream floodplain or that will cause alteration of federal jurisdictional wetlands/aquatic habitats will be implemented in compliance with these relevant and appropriate FEMA standards (which promulgate requirements under Executive Order 11988 (Floodplain Management) and Executive Order 11990 (Protection of Wetlands)). Prohibits activities that adversely affect a federally-regulated wetland unless there is no practicable alternative and the proposed action includes all practicable measures to minimize harm to wetlands that may result from such use. Requires soliciting public comment on any disturbance of floodplains or federally-regulated wetlands. | During the remedial design stage the effects of soil remedial actions on federal jurisdictional wetlands will be evaluated. All practicable means will be used to minimize harm to the wetlands. Wetlands disturbed by soil remediation, will be mitigated in accordance with requirements. Remedial work adjacent to Site waterbodies/waterways has the potential to negatively alter downstream floodplain. Remedial actions will include all practicable means to minimize harm to and preserve beneficial values of downstream floodplains. Public comment regarding proposed impacts to wetlands and floodplains will be solicited in the Proposed Plan. The comments received will be addressed in the Responsiveness Summary for the ROD for this operable unit. |
| Clean Water Act, Section 404; Section 404(b)(1) Guidelines for Specification of Disposal Sites for Dredged or Fill Material | 33 U.S.C. § 1344; 40 C.F.R. Part 230, 231 and 33 C.F.R. Parts 320-323 | Applicable | Under this requirement, no activity that adversely affects a federal jurisdictional wetland shall be permitted if a practicable alternative with lesser effects is available. Controls discharges of dredged or fill material to protect aquatic ecosystems. Under these standards the Navy must solicit public comment through the | Soil remediation or other remedial actions that include dredging or filling in wetlands will be implemented to meet these requirements, including mitigation of altered wetland/aquatic resource, as required. The Navy has determined that this alternative **[is][is not]** the Least Damaging Practicable Alternative to protect wetland resources because it **[provides][does not provide]** the best balance of addressing contaminated soil within and |

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| | | | Proposed Plan on its finding that one of the alternatives is the Least Environmentally Damaging Practicable Alternative. | adjacent to wetlands and waterways with minimizing both temporary and permanent alteration of wetlands and aquatic habitats on site. |
| Endangered Species Act | 16 U.S.C. 1531 *et seq.*; 50 C.F.R. parts 200 and 402 | Applicable | Regulates activities affecting federally listed endangered or threatened species or their habitat. The federally-listed loggerhead turtle and Kemps-Ridley turtle occur in the water of Narragansett Bay. | Appropriate federal agencies will be consulted to ensure that remedial measure taken under this alternative will prevent site contamination from migrating downstream to the Bay. |
| Coastal Zone Management Act | 16 USC Parts 1451 *et. seq.* | Applicable | Requires that any actions must be conducted in a manner consistent with state-approved management programs. | The site is located within a coastal zone management area; therefore, applicable coastal zone management requirements need to be addressed. |

## State ARARs

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| Coastal Resources Management | RIGL 46-23-1 *et seq* | Applicable | Sets standards for management and protection of coastal resources. Sec. 100.4 addresses freshwater wetlands in the vicinity of the coast and extends jurisdiction to land with 50 feet of wetlands, riverbanks and floodplain. | The entire site is located in a coastal resource management area; therefore, applicable coastal resource management requirements need to be addressed, particularly those pertaining to protecting State-jurisdictional wetlands and waterbodies. |
| Rhode Island Endangered Species Act | RIGL 20-37-1 *et seq.* | Applicable | Regulates activities affecting State-listed endangered or threatened species or their habitat. The State-listed loggerhead turtle and Kemps-Ridley turtle occur in the water of Narragansett Bay. | Appropriate State agencies will be consulted to ensure that remedial measure taken under this alternative will prevent site contamination from migrating downstream to the Bay. |

**Table 4-6:**

Federal ARARs

| | | | | |
|---|---|---|---|---|
| Toxic Substances Control Act (TSCA); PCB Remediation Waste, | 40 C.F.R. 761.61(c) | Applicable | This section of the TSCA regulations provides risk-based cleanup and disposal options for PCB remediation waste based on the risks posed by the *in-situ* concentrations at which the PCBs are found. Written approval for the proposed risk-based cleanup must be obtained from the Director, Office of Site Remediation and Restoration, U.S. Environmental Protection Agency (USEPA) Region 1. | All soil exceeding identified PCB cleanup levels will be either be removed, dewatered (if required) and disposed of off-site or will be placed under a cover system that meets TSCA protectiveness standards. The excavation, transportation/dewatering, and management of PCB contaminated media will be performed in a manner to comply with TSCA, including air and surface water monitoring during remedial activities. The Navy will obtain a finding by the Director, Office of Site Remediation and Restoration, EPA Region 1, that the remedy's soil PCB cleanup levels, along with the excavation, dewatering, and management of the contaminated media will not pose an unreasonable risk to human health or the environment. |
| Safe Drinking Water Act; National primary drinking water regulations | 42 U.S.C. §300f *et seq.*; 40 C.F.R. 141, Subparts B and G | Relevant and Appropriate | Establishes MCLs for common organic and inorganic contaminants applicable to public drinking water supplies. Used as relevant and appropriate standards for aquifers and surface water bodies that are potential drinking water sources. | *Groundwater monitoring required for the waste management area for soil that will be established under this alternative will use these standards to ensure the protectiveness of the remedy.* |
| Safe Drinking Water Act; National primary drinking water regulations | 42 U.S.C. §300f *et seq.*; 40 C.F.R. 141, Subpart F | Relevant and Appropriate for non-zero MCLGs only; MCLGs set as zero are To Be Considered. | 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. | *Groundwater monitoring required for the waste management area for soil that will be established under this alternative will use these standards to ensure the protectiveness of the remedy.* |
| Health Advisories (EPA Office of Drinking Water) | | To Be Considered | Health Advisories are estimates of risk due to 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. The risk-based standard for manganese is 0.3 mg/L. | *Groundwater monitoring required for the waste management area for soil that will be established under this alternative will use these standards to ensure the protectiveness of the remedy.* |
| CWA National Recommended Water Quality Criteria (NRWQC) | 40 CFR 122.44) | Relevant and Appropriate | Federal NRWQC are health-based and ecologically based criteria developed for carcinogenic and non-carcinogenic compounds. These standards may be used to develop cleanup standards for sediments. | *Water quality standards used to develop monitoring standards both during the active remedial period and for long-term monitoring of the protectiveness of the waste management area that will be established under this alternative.* |

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| Clean Water Act - National Pollutant Discharge Elimination System (NPDES) | 40 CFR Parts 122 and 125 | Applicable | Establishes the specifications for discharging pollutants from any point source into the waters of the U.S. Includes stormwater standards for activities disturbing more than one acre. | Any water discharged to surface water bodies during remedial activities will comply with this regulation. Best management practices will be used to meet stormwater standards during the remedial action. |
| Toxic Pollutant Effluent Standards | 40 CFR 129 | Applicable | Regulates surface water discharges of specific toxic pollutants, namely aldrin, dieldrin, DDT, endrin, toxaphene, benzidine, and PCBs. | Any water discharged to surface water bodies as part of this alternative will meet the standards identified in this regulation. |
| Clean Air Act, National Emission Standards for Hazardous Air Pollutants (NESHAPs) | 42 U.S.C. 7411, 7412; 40 C.F.R. 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. | Ex-situ treatment under this Alternative will meet air emissions standards under these NESHAPs. In addition, excavation standards for particulate matter will be met during excavation and handling of contaminated soils. Activities during construction will include measures to suppress dust. |
| Generation of investigation derived waste | USEPA OSWER Publication 9345.3-03 FS, January 1992 | To Be Considered | Management of Investigation-Derived Waste (IDW) must ensure protection of human health and the environment. | IDW will be managed in a manner to protect human health and the environment. |
| Clean Water Act; General Pretreatment Regulations for Existing and New Sources of Pollution | 33 U.S.C. § 1251 et seq. 40 CFR. Part 403 | Applicable | Standards for direct discharge of waste water into a Publicly Owned Treatment Works (POTW). | These standards will apply if water from the remedial action such as from dewatering is discharged to a POTW. |
| Thermal Treatment, | 40 C.F.R. Part 265, Subpart P | Relevant and Appropriate | Standards for air emissions and other operating standards for thermal treatment units. | These standards will apply to the alternative's ex-situ thermal treatment. |
| Management of Undesirable Plants on Federal Lands | 7 U.S.C. 2814 | Relevant and Appropriate | Requires federal agencies to establish integrated management systems to control or contain undesirable plant species on federal lands under the agency's jurisdiction. | Measures will be taken to control the establishment of *Phragmites*, purple loosestrife or other invasive plants within all remediated areas. An invasive species control plan will be developed as part of the long-term O&M for this site. |

## State ARARs

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| Clean Air Act -Emissions Detrimental to Persons or Property | RIGL 23-23 *et seq.*; CRIR 12-31-07 | Applicable | 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. | Monitoring of air emissions during excavation/cover installation and ex-situ treatment will be used to assess compliance with these standards if threshold levels are reached. |

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| Clean Air Act –Air Toxics | RIGL 23-23 *et seq.*; 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. | Monitoring of air emissions during excavation/cover installation and ex-situ treatment will be used to assess compliance with these standards if threshold levels are reached. |

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| Water Pollution Control - Pollution Discharge Elimination Systems | RIGL 42-16 *et seq.*; CRIR 12-190-003 | Applicable | Contains discharge limitations, monitoring requirements and best management practices. Substantive requirements under NPDES are written such that state and federal national recommended water quality criteria (NRWQC) are met. Permits are required for off-site discharges, RI Standards apply to POTWs. Includes storm water requirements for construction projects that disturb over one acre. | Discharge of any contaminated groundwater during soil excavation or during O&M of the remedy into surface waters or POTW will meet applicable standards. Stormwater standards for construction projects over one acre will also be met. |
| Water Pollution Control - Water Quality | RIGL 42-16 *et seq.*; CRIR 12-190-001 | Applicable | Establishes water use classification and water quality criteria for waters of the state. | Water quality standards used to develop monitoring standards both during the active remedial period and for *long-term monitoring of the protectiveness of the waste management area that will be established under this alternative.* |
| Pretreatment Regulations | RIGL 46-12, 4217.1, 42-45 | Applicable | Rhode Island standards for discharge to POTWs. | These standards will apply if water from the remedial action such as from dewatering is discharged to a POTW. |
| Rules and Regulations for Dredging and Management of Dredge Materials | DEM-OWR-DR-0203 | Applicable | Addresses dredging activities and disposal of dredge spoils. | Any dredging of wetland soils and backfilling with cover material that is required under this alternative must comply with the requirements of the regulations. |
| 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 et seq. | Applicable | Prohibits installing drinking water wells in contaminated aquifers. Establishes standards for decommissioning monitoring wells (Rule 9.03). | *Under these standards drinking water wells are prohibited within the waste management area that will be established under this alternative and monitoring wells used will be properly decommissioned when no longer needed.* |
| Rules and Regulations for Groundwater Quality – Appendix 1 | | Applicable | Identifies the standards and specification that must be followed for the installation or abandonment of monitoring wells. | *Under this alternative, wells installed for monitoring the waste management area will be installed and abandoned according to these standards.* |
| **The two lines citing the RI Hazardous Waste Regulations should be retained as drafted.** | | | | |

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| Rhode Island Solid Waste Regulations – Closure | DEM OWM-SW0401, 1.7.14(b) | Relevant and Appropriate | Regulation states that an approved closure plan must be implemented. | Under this alternative the site will be closed under a plan developed in accordance with the substantive requirements of this section of the regulations (to be incorporated into the remedial design (RD) and the Operations and Maintenance Plan (O&M) (including a monitoring plan). |
| Rhode Island Solid Waste Regulations – Dust Control | DEM OWM-SW0401, 1.7.10 | Relevant and Appropriate | Requires dust control. | Dust must be controlled at the site during cover construction and during maintenance activities. |
| Rhode Island Solid Waste Regulations – Health and Safety | DEM OWM-SW0401, 1.7.12 (a) | Relevant and Appropriate | Requires solid waste management facilities be designed and maintained to protect the health and safety of personnel at the facility and persons in close proximity. | Under this subsection health and safety of construction workers and persons in the proximity of the site would be maintained during construction and maintenance activities. |
| Rhode Island Solid Waste Regulations – Groundwater Monitoring and Closure | DEM OWM-SW0401, 1.8.01 (a) and 1.8.01 (b) | Relevant and Appropriate | Requires facilities to monitor groundwater and to meet closure requirements | The substantive requirements of this section of the regulations will be met by monitoring groundwater and meeting closure requirements. *Because contaminants will be left in place at the site, the site will be closed as a waste management unit, and undergo long term monitoring. The remedial design (RD), remedial action work plan (RAWP), operations and monitoring plan (O&M) (including the long term monitoring plan [LTMP]) developed for this cleanup will contain the specific monitoring and closure requirements for the waste management unit that will comply with the substantive requirements.* |
| Rhode Island Solid Waste Regulations – Sedimentation and Erosion Control | DEM OWM-SW0401, 2.1.04 | Relevant and Appropriate | Requires a "Sedimentation and Erosion Control Plan" be developed. | An erosion and sediment control plan will be developed for this site in accordance with the substantive requirements of this section. The RD and the RAWP, to be developed for this cleanup, will contain the specific erosion and sediment controls requirements for the remedial construction. |
| Rhode Island Solid Waste Regulations - Monitoring Wells | DEM OWM-SW0401, 2.1.08 (a) (8) | Relevant and Appropriate | Contains requirements for construction of monitoring wells to monitor a solid waste landfill. | The substantive requirements of this section of the regulations will be met for construction of new monitoring wells. |
| Rhode Island Solid Waste Regulations – Long-term Monitoring | DEM OWM-SW0401, 2.1.08 (c) | Relevant and Appropriate | Contains requirements for monitoring wells. | The substantive requirements of this section of the regulations will be met by maintaining monitoring wells for the purpose of monitoring groundwater conditions at the site. *Because this remedy leaves contamination in place*, it will be supported with a Long Term Monitoring Plan (LTMP) for groundwater. The LTMP will be directed by a work plan that will contain the specific monitoring requirements. |

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| Rhode Island Solid Waste Regulations – Cover Systems | DEM OWM-SW0401, 2.2.12 (d) (1) and 2.2.12 (d) (2) (ii)(iii) and (v). | Relevant and Appropriate | Contains requirements for construction and maintenance of the vegetative cover final cover system. | Remedies including cover systems will include appropriate vegetation requirements of a soil cover in compliance with these standards |
| Rhode Island Solid Waste Regulations – Cover Permeability | DEM OWM-SW0401, 2.3.04(e), (f) | Relevant and Appropriate | Outlines the requirements for the maintenance and permeability of cover material | The substantive requirements of this section of the regulations will be met by installing an asphalt cover that has been determined to provide an adequate barrier for specific areas to be used for industrial use, or a soil cover that has been determined to provide an adequate barrier for the remainder of the land *within the waste management area.* **[COVER PERMEABILITY REQUIREMENTS ARE DEPENDENT ON WHETHER SOIL EXCEEDING LEACHABILITY STANDARDS IS LEFT IN PLACE]** |
| Rhode Island Solid Waste Regulations – Compliance Boundaries | DEM OWM-SW0401, 2.3.05 | Relevant and Appropriate | Establishes requirement for compliance boundary for pollution of ground waters or surface waters. | *The substantive requirements of this section of the regulations will be met by the requirement that no contamination of groundwater be permitted outside the boundary of the waste management area. Because this remedy leaves contamination in place, groundwater and sediment monitoring will be conducted to assure that no contaminants are transported to the groundwater or surface water beyond the boundary of the waste management area.* |
| Rhode Island Solid Waste Regulations – Surface Water Drainage | DEM OWM-SW0401, 2.3.10 | Relevant and Appropriate | Contains requirements for surface water drainage. | The substantive requirements of this section of the regulations will be met through design of appropriate surface drainage considerations *for the WMA cover.* The cover system would be designed to prevent erosion, sedimentation, and standing water on the cover. Minimum slope requirements for solid waste landfills have been determined not relevant or appropriate for a soil cover which is not intended to reduce infiltration. **[THE SLOPE REQUIREMENTS ARE ONLY NOT RELEVANT IF THE COVER DOES NOT HAVE TO ADDRESS SOILS EXCEEDING LEACHABILITY STANDARDS]** |
| Rhode Island Solid Waste Regulations - Monitoring Wells | DEM OWM-SW0401, 2.3.11 | Relevant and Appropriate | Contains requirements for monitoring wells. | The substantive requirements of this section of the regulations will be met by having and maintaining monitoring wells for the purpose of monitoring groundwater conditions. *Because this remedy leaves contaminants in place,* it will be supported with a Long Term Monitoring Plan (LTMP) for groundwater. The LTMP will be directed by a work plan that will contain the specific monitoring well requirements. |

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| Rhode Island Solid Waste Regulations – Siting in and Adjacent to Wetlands and Floodplains | DEM OWM-SW0401, 2.3.14 | Relevant and Appropriate | Provides requirements for new solid waste landfill units and expansions that impact wetlands and coastal wetlands, coastal flood zones, etc. | This alternative will involve alteration of land within wetlands and flood zones. The substantive requirements of this section of the regulations will be met by protecting wetland and downstream floodplain resources during construction and maintenance of a soil cover over soil containing residual contamination. The RD, RAWP, and the LTMP will be developed and provide specific requirements, to meet the substantive requirements of this section |
| Rhode Island Solid Waste Regulations – Closure in "Unstable Areas" | DEM OWM-SW0401, 2.3.23 | Relevant and Appropriate | Provides requirements for closure of solid waste units in "unstable areas", interpreted to include wetland and floodplains. | *This alternative establishes a waste management area within and/or adjacent to "unstable areas." The substantive requirements of this section of the regulations will be met through the closure of the waste management area. This alternative meets the intent because the waste management area will be covered in a manner that prevents the release of contaminants during a 100 year flood event.* |

**Table 4-7:**
Federal ARARs

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| EPA Carcinogenicity Slope Factor | None | To Be Considered | Slope factors are developed by EPA from health effects assessments. Carcinogenic effects present the most up-to-date information on cancer risk potency. Potency factors are developed by EPA from Health Effects Assessments of evaluation by the Carcinogenic Assessment Group. | Risks due to carcinogens as assessed with slope factors will be addressed through remediation to industrial cleanup levels based on installing a cover over areas of contaminated soil (except in areas where an existing pavement cover will be maintained), removal of anomalies, LUCs and long-term monitoring of the *established waste management area.* |
| EPA Risk Reference Dose (RfDs) | None | To Be Considered | RfDs are considered to be the levels unlikely to cause significant adverse health effects associated with a threshold mechanism of action in human exposure for a lifetime. | Hazards due to noncarcinogens with EPA RfDs will be addressed through remediation to industrial cleanup levels based on installing a cover over areas of contaminated soil (except in areas where an existing pavement cover will be maintained), removal of anomalies, LUCs and long-term monitoring of the *established waste management area.* |
| Guidelines for Carcinogen Risk Assessment | EPA/630/P-03/001F (March 2005) | To Be Considered | Guidance for assessing cancer risk. | Hazards due to carcinogens assessed through this guidance will be addressed through remediation to industrial cleanup levels based on installing a cover over areas of contaminated soil (except in areas where an existing pavement cover will be maintained), removal of anomalies, LUCs and long-term monitoring of the *established waste management area.* |
| 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. | Carcinogenic risks to children assessed through this guidance will be addressed through remediation to industrial cleanup levels based on installing a cover over areas of contaminated soil (except in areas where an existing pavement cover will be maintained), removal of anomalies, LUCs and long-term monitoring of the *established waste management area.* |
| Recommendations of the Technical Review Workgroup for Lead for an approach to Assessing Risks Associated with Adult Exposure to Lead In Soil | EPA-540-R-03-001 (January 2003) | To Be Considered | EPA Guidance for evaluating risks posed by lead in soil. | Risks from lead assessed under this guidance will be addressed through remediation to industrial cleanup levels based on installing a cover over areas of contaminated soil (except in areas where an existing pavement cover will be maintained), removal of anomalies, LUCs and long-term monitoring of the *established waste management area.* |

State ARARs

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| Rules and Regulations for the Investigation and Remediation of Hazardous Material Releases (Short Title: Remediation Regulations) | Code of Rhode Island Rules (CRIR) 12-180-001; DEM-DSR-01-93, sections 8.01 and 8.02 | Applicable | These regulations set remediation standards for direct contact and leachability for contaminated soil at NPL sites when they are more stringent than federal standards. | [Detail how the remedial alternative will meet the ARAR.] |

**Table 4-8:**
Federal ARARs

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| Fish and Wildlife Coordination Act | 16 U.S.C.. §661 *et seq.* | Applicable | Requires Federal agencies involved in actions that will result in the control of structural modification of any stream or body of water for any purpose to take action to protect fish and wildlife resources that may be affected by the action. The Navy must coordinate with appropriate federal and state resource agencies to ascertain the means and measures necessary to mitigate, prevent, and compensate for project related losses of fish and wildlife resources and to enhance the resources. | Measures to mitigate or compensate adverse project related impacts to fish and wildlife resources will be taken, if determined necessary. The appropriate federal and state resource agencies will be consulted, in particular regarding remedial measures for contaminated soil that will impact streams, wetlands, and downstream waterbodies. |
| Floodplain Management and Protection of Wetlands | 44 C.F.R. 9 | Relevant and Appropriate | Remedial alternatives that may cause alteration within a 500-year floodplain/cause negative impacts to downstream floodplain or that will cause alteration of federal jurisdictional wetlands/aquatic habitats will be implemented in compliance with these relevant and appropriate FEMA standards (which promulgate requirements under Executive Order 11988 (Floodplain Management) and Executive Order 11990 (Protection of Wetlands)). Prohibits activities that adversely affect a federally-regulated wetland unless there is no practicable alternative and the proposed action includes all practicable measures to minimize harm to wetlands that may result from such use. Requires soliciting public comment on any disturbance of floodplains or federally-regulated wetlands. | During the remedial design stage, the effects of soil remedial actions on federal jurisdictional wetlands will be evaluated. All practicable means will be used to minimize harm to the wetlands. Wetlands disturbed by soil remediation, will be mitigated in accordance with requirements. Remedial work adjacent to Site waterbodies/waterways has the potential to negatively alter downstream floodplain. Remedial actions will include all practicable means to minimize harm to and preserve beneficial values of downstream floodplains. Public comment regarding proposed impacts to wetlands and floodplains will be solicited in the Proposed Plan. The comments received will be addressed in the Responsiveness Summary for the ROD for this operable unit. |
| Clean Water Act, Section 404; Section 404(b)(1) Guidelines for Specification of Disposal Sites for Dredged or Fill Material | 33 U.S.C. § 1344; 40 C.F.R. Part 230, 231 and 33 C.F.R. Parts 320-323 | Applicable | Under this requirement, no activity that adversely affects a federal jurisdictional wetland shall be permitted if a practicable alternative with lesser effects is available. Controls discharges of dredged or fill material to protect aquatic ecosystems. Under these standards the Navy must solicit public comment through the Proposed Plan on its finding that one of the alternatives is the Least Environmentally Damaging | Soil remediation or other remedial actions that include dredging or filling in wetlands will be implemented to meet these requirements, including mitigation of altered wetland/aquatic resource as required. The Navy has determined that this alternative **[is][is not]** the Least Damaging Practicable Alternative to protect wetland resources because it **[provides][does not provide]** the best balance of addressing contaminated soil within and adjacent to wetlands and waterways with minimizing both temporary and permanent |

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| | | | Practicable Alternative. | alteration of wetlands and aquatic habitats on site. |
| Endangered Species Act | 16 U.S.C. 1531 *et seq.*; 50 C.F.R. parts 200 and 402 | Applicable | Regulates activities affecting federally listed endangered or threatened species or their habitat. The federally-listed loggerhead turtle and Kemps-Ridley turtle occur in the water of Narragansett Bay. | Appropriate federal agencies will be consulted to ensure that remedial measure taken under this alternative will prevent site contamination from migrating downstream to the Bay. |
| Coastal Zone Management Act | 16 USC Parts 1451 *et. seq.* | Applicable | Requires that any actions must be conducted in a manner consistent with state-approved management programs. | The site is located within a coastal zone management area; therefore, applicable coastal zone management requirements need to be addressed. |

State ARARs

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| Coastal Resources Management | RIGL 46-23-1 *et seq* | Applicable | Sets standards for management and protection of coastal resources. Sec. 100.4 addresses freshwater wetlands in the vicinity of the coast and extends jurisdiction to land with 50 feet of wetlands, riverbanks and floodplain. | The entire site is located in a coastal resource management area; therefore, applicable coastal resource management requirements need to be addressed, particularly those pertaining to protecting State-jurisdictional wetlands and waterbodies. |
| Rhode Island Endangered Species Act | RIGL 20-37-1 *et seq.* | Applicable | Regulates activities affecting State-listed endangered or threatened species or their habitat. The State-listed loggerhead turtle and Kemps-Ridley turtle occur in the water of Narragansett Bay. | Appropriate State agencies will be consulted to ensure that remedial measure taken under this alternative will prevent site contamination from migrating downstream to the Bay. |

**Table 4-9:**
Federal ARARs

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| Toxic Substances Control Act (TSCA); PCB Remediation Waste, | 40 C.F.R. 761.61(c) | Applicable | This section of the TSCA regulations provides risk-based cleanup and disposal options for PCB remediation waste based on the risks posed by the *in-situ* concentrations at which the PCBs are found. Written approval for the proposed risk-based cleanup must be obtained from the Director, Office of Site Remediation and Restoration, U.S. Environmental Protection Agency (USEPA) Region 1. | All soil exceeding identified PCB cleanup levels will be placed under a cover system that meets TSCA protectiveness standards. The management of PCB contaminated media will be performed in a manner to comply with TSCA, including air and surface water monitoring during remedial activities. The Navy will obtain a finding by the Director, Office of Site Remediation and Restoration, EPA Region 1, that the remedy's soil PCB PRG, along with the covering of the contaminated media, will not pose an unreasonable risk to human health or the environment. |
| Safe Drinking Water Act; National primary drinking water regulations | 42 U.S.C. §300f *et seq.*; 40 C.F.R. 141, Subparts B and G | Relevant and Appropriate | Establishes MCLs for common organic and inorganic contaminants applicable to public drinking water supplies. Used as relevant and appropriate standards for aquifers and surface water bodies that are potential drinking water sources. | *Groundwater monitoring required for the waste management area for soil that will be established under this alternative will use these standards to ensure the protectiveness of the remedy.* |
| Safe Drinking Water Act; National primary drinking water regulations | 42 U.S.C. §300f *et seq.*; 40 C.F.R. 141, Subpart F | Relevant and Appropriate for non-zero MCLGs only; MCLGs set as zero are To Be Considered. | 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. | *Groundwater monitoring required for the waste management area for soil that will be established under this alternative will use these standards to ensure the protectiveness of the remedy.* |
| Health Advisories (EPA Office of Drinking Water) | | To Be Considered | Health Advisories are estimates of risk due to 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. The risk-based standard for manganese is 0.3 mg/L. | *Groundwater monitoring required for the waste management area for soil that will be established under this alternative will use these standards to ensure the protectiveness of the remedy.* |
| CWA National Recommended Water Quality Criteria (NRWQC) | 40 CFR 122.44) | Relevant and Appropriate | Federal NRWQC are health-based and ecologically based criteria developed for carcinogenic and non-carcinogenic compounds. These standard may be used to develop cleanup standards for sediments | Water quality standards used to develop monitoring standards both during the active remedial period and for long-term monitoring of the protectiveness of *the waste management area that will be established under this alternative.* |

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| Clean Water Act - National Pollutant Discharge Elimination System (NPDES) | 40 CFR Parts 122 and 125 | Applicable | Establishes the specifications for discharging pollutants from any point source into the waters of the U.S. Includes stormwater standards for activities disturbing more than one acre. | Any water discharged to surface water bodies during remedial activities will comply with this regulation. Best management practices will be used to meet stormwater standards during the remedial action. |
| Toxic Pollutant Effluent Standards | 40 CFR 129 | Applicable | Regulates surface water discharges of specific toxic pollutants, namely aldrin, dieldrin, DDT, endrin, toxaphene, benzidine, and PCBs. | Any water discharged to surface water bodies as part of this alternative will meet the standards identified in this regulation. |
| Clean Air Act, National Emission Standards for Hazardous Air Pollutants (NESHAPs) | 42 U.S.C. 7411, 7412; 40 C.F.R. 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. | Activities during construction and O&M of the cover will include measures to suppress dust that may contain contaminants. |
| Generation of investigation derived waste | USEPA OSWER Publication 9345.3-03 FS, January 1992 | To Be Considered | Management of Investigation-Derived Waste (IDW) must ensure protection of human health and the environment. | IDW will be managed in a manner to protect human health and the environment. |
| Clean Water Act; General Pretreatment Regulations for Existing and New Sources of Pollution | 33 U.S.C. § 1251 et seq. 40 CFR. Part 403 | Applicable | Standards for direct discharge of waste water into a Publicly Owned Treatment Works (POTW). | These standards will apply if water from the remedial action such as from dewatering is discharged to a POTW. |
| Management of Undesirable Plants on Federal Lands | 7 U.S.C. 2814 | Relevant and Appropriate | Requires federal agencies to establish integrated management systems to control or contain undesirable plant species on federal lands under the agency's jurisdiction. | Measures will be taken to control the establishment of *Phragmites*, purple loosestrife or other invasive plants within all remediated areas. An invasive species control plan will be developed as part of the long-term O&M for this site. |

## State ARARs

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| Clean Air Act -Emissions Detrimental to Persons or Property | RIGL 23-23 *et seq.*; CRIR 12-31-07 | Applicable | 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. | Monitoring of air emissions during cover installation and O&M will be used to assess compliance with these standards if threshold levels are reached. |

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| Clean Air Act –Air Toxics | RIGL 23-23 *et seq.*; 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. | Monitoring of air emissions during cover installation and O&M will be used to assess compliance with these standards if threshold levels are reached. |
| Water Pollution Control - Pollution Discharge Elimination Systems | RIGL 42-16 *et seq.*; CRIR 12-190-003 | Applicable | Contains discharge limitations, monitoring requirements and best management practices. Substantive requirements under NPDES are written such that state and federal national recommended water quality criteria (NRWQC) are met. Permits are required for off-site discharges, RI Standards apply to POTWs. Includes storm water requirements for construction projects that disturb over one acre. | Discharge of any contaminated groundwater during cover installation or during O&M of the remedy into surface waters or a POTW will meet applicable standards. Stormwater standards for construction projects over one acre will also be met. |
| Water Pollution Control - Water Quality | RIGL 42-16 *et seq.*; CRIR 12-190-001 | Applicable | Establishes water use classification and water quality criteria for waters of the state. | Water quality standards used to develop monitoring standards both during the active remedial period and for long-term monitoring of the protectiveness of the *waste management area that will be established under this alternative.* |
| Pretreatment Regulations | RIGL 46-12, 4217.1, 42-45 | Applicable | Rhode Island standards for discharge to POTWs. | These standards will apply if water from the remedial action such as from dewatering is discharged to a POTW. |
| Rules and Regulations for Dredging and Management of Dredge Materials | DEM-OWR-DR-0203 | Applicable | Addresses dredging activities and disposal of dredge spoils. | Any dredging of wetland soils and backfilling with cover material that is required while implementing the alternative must comply with the requirements of the regulations. |
| 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 et seq. | Applicable | Prohibits installing drinking water wells in contaminated aquifers. Establishes standards for decommissioning monitoring wells (Rule 9.03). | *Under these standards drinking water wells are prohibited within the waste management area that will be established under this alternative and monitoring wells used will be properly decommissioned when no longer needed.* |
| Rules and Regulations for Groundwater Quality – Appendix I | | Applicable | Identifies the standards and specification that must be followed for the installation or abandonment of monitoring wells. | Under this alternative, wells installed *for monitoring the waste management area* will be installed and abandoned according to these standards. |
| **The two lines citing the RI Hazardous Waste Regulations should be retained as drafted.** | | | | |

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|---|---|---|---|---|
| Rhode Island Solid Waste Regulations – Closure | DEM OWM-SW0401, 1.7.14(b) | Relevant and Appropriate | Regulation states that an approved closure plan must be implemented. | Under this alternative the site will be closed under a plan developed in accordance with the substantive requirements of this section of the regulations (to be incorporated into the remedial design (RD) and the Operations and Maintenance Plan (O&M) (including a monitoring plan). |
| Rhode Island Solid Waste Regulations – Dust Control | DEM OWM-SW0401, 1.7.10 | Relevant and Appropriate | Requires dust control. | Dust must be controlled at the site during cover construction and during maintenance activities. |
| Rhode Island Solid Waste Regulations – Health and Safety | DEM OWM-SW0401, 1.7.12 (a) | Relevant and Appropriate | Requires solid waste management facilities be designed and maintained to protect the health and safety of personnel at the facility and persons in close proximity. | Under this subsection health and safety of construction workers and persons in the proximity of the site would be maintained during construction and maintenance activities. |
| Rhode Island Solid Waste Regulations – Groundwater Monitoring and Closure | DEM OWM-SW0401, 1.8.01 (a) and 1.8.01 (b) | Relevant and Appropriate | Requires facilities to monitor groundwater and to meet closure requirements | The substantive requirements of this section of the regulations will be met by monitoring groundwater and meeting closure requirements. *Because contaminants will be left in place at the site, the site will be closed as a waste management unit, and undergo long term monitoring. The remedial design (RD), remedial action work plan (RAWP), operations and monitoring plan (O&M) (including the long term monitoring plan [LTMP]) developed for this cleanup will contain the specific monitoring and closure requirements for the waste management unit that will comply with the substantive requirements.* |
| Rhode Island Solid Waste Regulations – Sedimentation and Erosion Control | DEM OWM-SW0401, 2.1.04 | Relevant and Appropriate | Requires a "Sedimentation and Erosion Control Plan" be developed. | An erosion and sediment control plan will be developed for this site in accordance with the substantive requirements of this section. The RD and the RAWP, to be developed for this cleanup, will contain the specific erosion and sediment controls requirements for the remedial construction. |
| Rhode Island Solid Waste Regulations - Monitoring Wells | DEM OWM-SW0401, 2.1.08 (a) (8) | Relevant and Appropriate | Contains requirements for construction of monitoring wells to monitor a solid waste landfill. | The substantive requirements of this section of the regulations will be met for construction of new monitoring wells. |
| Rhode Island Solid Waste Regulations – Long-term Monitoring | DEM OWM-SW0401, 2.1.08 (c) | Relevant and Appropriate | Contains requirements for monitoring wells. | The substantive requirements of this section of the regulations will be met by maintaining monitoring wells for the purpose of monitoring groundwater conditions at the site. *Because this remedy leaves contamination in place,* it will be supported with a Long Term Monitoring Plan (LTMP) for groundwater. The LTMP will be directed by a work plan that will contain the specific monitoring requirements. |

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| Rhode Island Solid Waste Regulations – Cover Systems | DEM OWM-SW0401, 2.2.12 (d) (1) and 2.2.12 (d) (2) (ii)(iii) and (v). | Relevant and Appropriate | Contains requirements for construction and maintenance of the vegetative cover final cover system. | Remedies including cover systems will include appropriate vegetation requirements of a soil cover in compliance with these standards. |
| Rhode Island Solid Waste Regulations – Cover Permeability | DEM OWM-SW0401, 2.3.04(e), (f) | Relevant and Appropriate | Outlines the requirements for the maintenance and permeability of cover material. | The substantive requirements of this section of the regulations will be met by installing an asphalt cover that has been determined to provide an adequate barrier for specific areas to be used for industrial use, or a soil cover that has been determined to provide an adequate barrier for the remainder of the land within the waste management area. **[COVER PERMEABILITY REQUIREMENTS ARE DEPENDENT ON WHETHER SOIL EXCEEDING LEACHABILITY STANDARDS IS LEFT IN PLACE]** |
| Rhode Island Solid Waste Regulations – Compliance Boundaries | DEM OWM-SW0401, 2.3.05 | Relevant and Appropriate | Establishes requirement for compliance boundary for pollution of ground waters or surface waters. | *The substantive requirements of this section of the regulations will be met by the requirement that no contamination of groundwater be permitted outside the boundary of the waste management area. Because this remedy leaves contamination in place, groundwater, surface water, and sediment monitoring will be conducted to assure that no contaminants are transported to the groundwater or surface water beyond the boundary of the waste management area.* |
| Rhode Island Solid Waste Regulations – Surface Water Drainage | DEM OWM-SW0401, 2.3.10 | Relevant and Appropriate | Contains requirements for surface water drainage. | *The substantive requirements of this section of the regulations will be met through design of appropriate surface drainage considerations for the WMA cover.* The cover system would be designed to prevent erosion, sedimentation, and standing water on the cover. Minimum slope requirements for solid waste landfills have been determined not relevant or appropriate for a soil cover which is not intended to reduce infiltration. **[THE SLOPE REQUIREMENTS ARE ONLY NOT RELEVANT IF THE COVER DOES NOT HAVE TO ADDRESS SOILS EXCEEDING LEACHABILITY STANDARDS]** |
| Rhode Island Solid Waste Regulations - Monitoring Wells | DEM OWM-SW0401, 2.3.11 | Relevant and Appropriate | Contains requirements for monitoring wells. | The substantive requirements of this section of the regulations will be met by having and maintaining monitoring wells for the purpose of monitoring groundwater conditions. *Because this remedy leaves contaminants in place,* it will be supported with a Long Term Monitoring Plan (LTMP) for groundwater. The LTMP will be directed by a work plan that will contain the specific monitoring well requirements. |

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| Rhode Island Solid Waste Regulations – Siting in and Adjacent to Wetlands and Floodplains | DEM OWM-SW0401, 2.3.14 | Relevant and Appropriate | Provides requirements for new solid waste landfill units and expansions that impact wetlands and coastal wetlands, coastal flood zones, etc. | This alternative will involve alteration of land within wetlands and flood zones. The substantive requirements of this section of the regulations will be met by protecting wetland and downstream floodplain resources during construction and maintenance of a soil cover over soil containing residual contamination. The RD, RAWP, and the LTMP will be developed and provide specific requirements, to meet the substantive requirements of this section. |
| Rhode Island Solid Waste Regulations – Closure in "Unstable Areas" | DEM OWM-SW0401, 2.3.23 | Relevant and Appropriate | Provides requirements for closure of solid waste units in "unstable areas", interpreted to include wetland and floodplains. | *This alternative establishes a waste management area within and/or adjacent to "unstable areas." The substantive requirements of this section of the regulations will be met through the closure of the waste management area. This alternative meets the intent because the waste management area will be covered in a manner that prevents the release of contaminants during a 100 year flood event.* |

**Table 5-4:**
Federal ARARs

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| Safe Drinking Water Act; National primary drinking water regulations | 42 U.S.C. §300f *et seq.*; 40 C.F.R. 141, Subparts B and G | Relevant and Appropriate | Establishes MCLs for common organic and inorganic contaminants applicable to public drinking water supplies. Used as relevant and appropriate standards for aquifers and surface water bodies that are potential drinking water sources. | *[It is unclear whether groundwater outside of the compliance boundary for any waste management area established for the soil or sediment components of the remedy will achieve these standards through MNA alone.] LUCs within the compliance boundary will prevent use of contaminated groundwater that exceeds these standards.* |
| Safe Drinking Water Act; National primary drinking water regulations | 42 U.S.C. §300f *et seq.*; 40 C.F.R. 141, Subpart F | Relevant and Appropriate for non-zero MCLGs only; MCLGs set as zero are To Be Considered. | 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. | *[It is unclear whether groundwater outside of the compliance boundary for any waste management area established for the soil or sediment components of the remedy will achieve these standards through MNA alone.] LUCs within the compliance boundary will prevent use of contaminated groundwater that exceeds these standards.* |
| Health Advisories (EPA Office of Drinking Water) | | To Be Considered | Health Advisories are estimates of risk due to 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. The risk-based standard for manganese is 0.3 mg/L. | *[It is unclear whether groundwater outside of the compliance boundary for any waste management area established for the soil or sediment components of the remedy will achieve these standards (particularly for manganese) through MNA alone.] LUCs within the compliance boundary will prevent use of contaminated groundwater that exceeds these standards.* |
| EPA Carcinogenicity Slope Factor | | To Be Considered | Slope factors are developed by EPA from health effects assessments. Carcinogenic effects present the most up-to-date information on cancer risk potency. Potency factors are developed by EPA from Health Effects Assessments of evaluation by the Carcinogenic Assessment Group. | *[It is unclear whether risks due to carcinogens as assessed with slope factors will be addressed for groundwater outside of the waste management area compliance boundary by MNA alone.] LUCs within the compliance boundary will prevent use of contaminated groundwater that exceeds these standards.* |
| EPA Risk Reference Dose (RfDs) | | To Be Considered | RfDs are considered to be the levels unlikely to cause significant adverse health effects associated with a threshold mechanism of action in human exposure for a lifetime. | *[It is unclear whether hazards due to noncarcinogens with EPA RfDs will be addressed for groundwater outside of the waste management area compliance boundary by MNA alone.] LUCs within the compliance boundary will prevent use of contaminated groundwater that exceeds these standards.* |
| Guidelines for Carcinogen Risk Assessment | EPA/630/P-03/001F (March 2005) | To Be Considered | Guidance for assessing cancer risk. | *[It is unclear whether hazards due to carcinogens assessed through this guidance will be addressed for groundwater outside of the waste management area compliance boundary by MNA alone.] LUCs within the compliance boundary will prevent use of contaminated groundwater that exceeds these standards.* |

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| 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. | *[It is unclear whether carcinogenic risks to children assessed through this guidance will be addressed for groundwater outside of the waste management area compliance boundary by MNA alone.] LUCs within the compliance boundary will prevent use of contaminated groundwater that exceeds these standards.* |

Modify the RI Remediation Regulation citation:

| | | | | |
|---|---|---|---|---|
| Rules and Regulations for the Investigation and Remediation of Hazardous Material Releases (Short Title: Remediation Regulations) | Code of Rhode Island Rules (CRIR) 12-180-001; DEM-DSR-01-93, sections 8.01 and 8.03 | Applicable | These regulations set remediation standards for groundwater at NPL sites when they are more stringent than federal standards. | *[It is unclear whether groundwater outside of the compliance boundary for any waste management area established for the soil or sediment components of the remedy will achieve these standards through MNA alone.] LUCs within the compliance boundary will prevent use of contaminated groundwater that exceeds these standards.* |

Remove the line for the RI Water Quality Regulations (not chemical-specific standards).

**Table 5-5 and Table 5-8 and Table 5-11:**
Federal ARARs

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| Fish and Wildlife Coordination Act | 16 U.S.C.. §661 *et seq.* | Applicable | Requires Federal agencies involved in actions that will result in the control of structural modification of any stream or body of water for any purpose to take action to protect fish and wildlife resources that may be affected by the action. The Navy must coordinate with appropriate federal and state resource agencies to ascertain the means and measures necessary to mitigate, prevent, and compensate for project related losses of fish and wildlife resources and to enhance the resources. | Measures to mitigate or compensate adverse project related impacts to fish and wildlife resources will be taken, if determined necessary. The appropriate federal and state resource agencies will be consulted; in particular regarding remedial measures install or maintain monitoring wells that could impact streams, wetlands, and downstream waterbodies. |
| Floodplain Management and Protection of Wetlands | 44 C.F.R. 9 | Relevant and Appropriate | Remedial alternatives that may cause alteration within a 500-year floodplain/cause negative impacts to downstream floodplain or that will cause alteration of federal jurisdictional wetlands/aquatic habitats will be implemented in compliance with these relevant and appropriate FEMA standards (which promulgate requirements under Executive Order 11988 (Floodplain Management) and Executive Order 11990 (Protection of Wetlands)). Prohibits activities that adversely affect a federally-regulated wetland unless there is no practicable alternative and the proposed action includes all practicable measures to minimize harm to wetlands that may result from such use. Requires soliciting public comment on any disturbance of floodplains or federally-regulated wetlands. | During the remedial design stage the effects of installing and maintaining monitoring wells on federal jurisdictional wetlands will be evaluated. All practicable means will be used to minimize harm to the wetlands. Wetlands disturbed by well installation and maintenance will be mitigated in accordance with requirements. Remedial actions will include all practicable means to minimize harm to and preserve beneficial values of downstream floodplains. Public comment regarding proposed impacts to wetlands and floodplains will be solicited in the Proposed Plan. The comments received will be addressed in the Responsiveness Summary for the ROD for this operable unit. |

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| Clean Water Act, Section 404; Section 404(b)(1) Guidelines for Specification of Disposal Sites for Dredged or Fill Material | 33 U.S.C. § 1344; 40 C.F.R. Part 230, 231 and 33 C.F.R. Parts 320-323 | Applicable | Under this requirement, no activity that adversely affects a federal jurisdictional wetland shall be permitted if a practicable alternative with lesser effects is available. Controls discharges of dredged or fill material to protect aquatic ecosystems. Under these standards the Navy must solicit public comment through the Proposed Plan on its finding that one of the alternatives is the Least Environmentally Damaging Practicable Alternative. | Installation or maintenance of monitoring wells that include dredging or filling in wetlands will be implemented to meet these requirements, including mitigation of altered wetland/aquatic resource as required. |
| Coastal Zone Management Act | 16 USC Parts 1451 *et. seq.* | Applicable | Requires that any actions must be conducted in a manner consistent with state-approved management programs. | The site is located within a coastal zone management area; therefore, applicable coastal zone management requirements need to be addressed. |

State ARARs

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| Coastal Resources Management | RIGL 46-23-1 *et seq* | Applicable | Sets standards for management and protection of coastal resources. Sec. 100.4 addresses freshwater wetlands in the vicinity of the coast and extends jurisdiction to land with 50 feet of wetlands, riverbanks and floodplain. | The entire site is located in a coastal resource management area; therefore, applicable coastal resource management requirements need to be addressed, particularly those pertaining to protecting State-jurisdictional wetlands and waterbodies that may be affected by monitoring well installation and maintenance. |

**Table 5-6:**
Federal ARARs

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| Safe Drinking Water Act; National primary drinking water regulations | 42 U.S.C. §300f *et seq.*; 40 C.F.R. 141, Subparts B and G | Relevant and Appropriate | Establishes MCLs for common organic and inorganic contaminants applicable to public drinking water supplies. Used as relevant and appropriate standards for aquifers and surface water bodies that are potential drinking water sources. | *Groundwater within the compliance boundary for any waste management area established for the soil or sediment components of the remedy will be monitored using the standards to ensure contaminated groundwater does not migrate beyond the compliance boundary. Exceedances of these standards within the compliance boundary will be address by LUCs.* |
| Safe Drinking Water Act; National primary drinking water regulations | 42 U.S.C. §300f *et seq.*; 40 C.F.R. 141, Subpart F | Relevant and Appropriate for non-zero MCLGs only; MCLGs set as zero are To Be Considered. | 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. | *Groundwater within the compliance boundary for any waste management area established for the soil or sediment components of the remedy will be monitored using the standards to ensure contaminated groundwater does not migrate beyond the compliance boundary. Exceedances of these standards within the compliance boundary will be address by LUCs.* |
| Health Advisories (EPA Office of Drinking Water) | | To Be Considered | Health Advisories are estimates of risk due to 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. The risk-based standard for manganese is 0.3 mg/L. | *Groundwater within the compliance boundary for any waste management area established for the soil or sediment components of the remedy will be monitored using the standards to ensure contaminated groundwater does not migrate beyond the compliance boundary. Exceedances of these standards (particularly for manganese) within the compliance boundary will be address by LUCs.* |
| 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 for achieving cleanup standard though monitored attenuation would be comparable to that which could be achieved through active restoration. | *[It is from the information presented in this FS as to whether this MNA only alternative can attain federal drinking water and risk standards within a reasonable time frame outside of the compliance boundary for the waste management area.]* |
| Generation of investigation derived waste | USEPA OSWER Publication 9345.3-03 FS, January 1992 | To Be Considered | Management of Investigation-Derived Waste (IDW) must ensure protection of human health and the environment. | IDW will be managed in a manner to protect human health and the environment. |

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| EPA Groundwater Protection Strategy (August 1984); NCP Preamble; Guidelines for Ground-Water Classification (November 1986) | Federal Register Vol 55, No. 46, March 8, 1990, p. 8733; | To Be Considered | 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 and define three classes of groundwater. These documents defined Class I, II and III groundwaters. | *Groundwater outside of the compliance boundary for the waste management area established at the Site needs to attain federal drinking water and risk-based standards. Groundwater monitoring using these standards will be used to make sure groundwater exceeding these standards does not migrate beyond the compliance boundary. Exceedances of these standards within the compliance boundary is a basis for establishing prohibitions on the use of groundwater within the compliance boundary. An additional buffer zone beyond the compliance boundary to prevent groundwater wells from being installed that would draw contaminated groundwater beyond the compliance boundary may also be established, if required.* |

State ARARs (the two listed state hazardous waste regulation citations to be retained)

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| 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 *et seq.* | Applicable | Prohibits installing drinking water wells in contaminated aquifers. Establishes standards for decommissioning monitoring wells (Rule 9.03). | Under these standards drinking water wells are prohibited within areas of contamination and monitoring wells used will be properly decommissioned when no longer needed. |
| Rules and Regulations for Groundwater Quality – Appendix 1 | | Applicable | Identifies the standards and specification that must be followed for the installation or abandonment of monitoring wells. | Wells installed for monitoring will be installed and abandoned according to these standards. |

**Table 5-7**:
Federal ARARs

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| Safe Drinking Water Act; National primary drinking water regulations | 42 U.S.C. §300f *et seq.*; 40 C.F.R. 141, Subparts B and G | Relevant and Appropriate | Establishes MCLs for common organic and inorganic contaminants applicable to public drinking water supplies. Used as relevant and appropriate standards for aquifers and surface water bodies that are potential drinking water sources. | *Groundwater outside of the compliance boundary for any waste management area established for the soil or sediment components of the remedy will achieve these standards through bioremediation and MNA. LUCs within the compliance boundary will prevent use of contaminated groundwater that exceeds these standards.* |
| Safe Drinking Water Act; National primary drinking water regulations | 42 U.S.C. §300f *et seq.*; 40 C.F.R. 141, Subpart F | Relevant and Appropriate for non-zero MCLGs only; MCLGs set as zero are To Be Considered. | 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. | *Groundwater outside of the compliance boundary for any waste management area established for the soil or sediment components of the remedy will achieve these standards through bioremediation and MNA. LUCs within the compliance boundary will prevent use of contaminated groundwater that exceeds these standards.* |
| Health Advisories (EPA Office of Drinking Water) | | To Be Considered | Health Advisories are estimates of risk due to 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. The risk-based standard for manganese is 0.3 mg/L. | *Groundwater outside of the compliance boundary for any waste management area established for the soil or sediment components of the remedy will achieve these standards (particularly for manganese) through bioremediation and MNA. LUCs within the compliance boundary will prevent use of contaminated groundwater that exceeds these standards.* |
| EPA Carcinogenicity Slope Factor | | To Be Considered | Slope factors are developed by EPA from health effects assessments. Carcinogenic effects present the most up-to-date information on cancer risk potency. Potency factors are developed by EPA from Health Effects Assessments of evaluation by the Carcinogenic Assessment Group. | *Carcinogens as assessed with slope factors will be addressed for groundwater outside of the waste management area compliance boundary by bioremediation and MNA. LUCs within the compliance boundary will prevent use of contaminated groundwater that exceeds these standards.* |
| EPA Risk Reference Dose (RfDs) | | To Be Considered | RfDs are considered to be the levels unlikely to cause significant adverse health effects associated with a threshold mechanism of action in human exposure for a lifetime. | *Hazards due to noncarcinogens with EPA RfDs will be addressed for groundwater outside of the waste management area compliance boundary by bioremediation and MNA. LUCs within the compliance boundary will prevent use of contaminated groundwater that exceeds these standards.* |
| Guidelines for Carcinogen Risk Assessment | EPA/630/P-03/001F (March 2005) | To Be Considered | Guidance for assessing cancer risk. | *Hazards due to carcinogens assessed through this guidance will be addressed for groundwater outside of the waste management area compliance boundary by bioremediation and MNA. LUCs within the compliance boundary will prevent use of contaminated groundwater that exceeds these standards.* |

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| 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. | *Carcinogenic risks to children assessed through this guidance will be addressed for groundwater outside of the waste management area compliance boundary by bioremediation and MNA. LUCs within the compliance boundary will prevent use of contaminated groundwater that exceeds these standards.* |

Modify the RI Remediation Regulation citation:

| | | | | |
|---|---|---|---|---|
| Rules and Regulations for the Investigation and Remediation of Hazardous Material Releases (Short Title: Remediation Regulations) | Code of Rhode Island Rules (CRIR) 12-180-001; DEM-DSR-01-93, sections 8.01 and 8.03 | Applicable | These regulations set remediation standards for groundwater at NPL sites when they are more stringent than federal standards. | *Groundwater outside of the compliance boundary for any waste management area established for the soil or sediment components of the remedy will achieve these standards through bioremediation and MNA. LUCs within the compliance boundary will prevent use of contaminated groundwater that exceeds these standards.* |

Remove the line for the RI Water Quality Regulations (not chemical-specific standards).

**Table 5-9:**
Federal ARARs (keep the federal underground injection control citation)

| | | | | |
|---|---|---|---|---|
| Safe Drinking Water Act; National primary drinking water regulations | 42 U.S.C. §300f *et seq.*; 40 C.F.R. 141, Subparts B and G | Relevant and Appropriate | Establishes MCLs for common organic and inorganic contaminants applicable to public drinking water supplies. Used as relevant and appropriate standards for aquifers and surface water bodies that are potential drinking water sources. | *Groundwater within the compliance boundary for any waste management area established for the soil or sediment components of the remedy will be monitored using the standards to ensure contaminated groundwater does not migrate beyond the compliance boundary. Exceedances of these standards within the compliance boundary will be address by LUCs.* |
| Safe Drinking Water Act; National primary drinking water regulations | 42 U.S.C. §300f *et seq.*; 40 C.F.R. 141, Subpart F | Relevant and Appropriate for non-zero MCLGs only; MCLGs set as zero are To Be Considered. | 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. | *Groundwater within the compliance boundary for any waste management area established for the soil or sediment components of the remedy will be monitored using the standards to ensure contaminated groundwater does not migrate beyond the compliance boundary. Exceedances of these standards within the compliance boundary will be address by LUCs.* |
| Health Advisories (EPA Office of Drinking Water) | | To Be Considered | Health Advisories are estimates of risk due to 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. The risk-based standard for manganese is 0.3 mg/L. | *Groundwater within the compliance boundary for any waste management area established for the soil or sediment components of the remedy will be monitored using the standards to ensure contaminated groundwater does not migrate beyond the compliance boundary. Exceedances of these standards (particularly for manganese) within the compliance boundary will be address by LUCs.* |
| 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 for achieving cleanup standard though monitored attenuation would be comparable to that which could be achieved through active restoration. | *Bioremediation and MNA can attain federal drinking water and risk standards as defined by this guidance within a reasonable time frame outside of the compliance boundary for the waste management area.* |
| Generation of investigation derived waste | USEPA OSWER Publication 9345.3-03 FS, January 1992 | To Be Considered | Management of Investigation-Derived Waste (IDW) must ensure protection of human health and the environment. | IDW will be managed in a manner to protect human health and the environment. |
| EPA Groundwater Protection Strategy (August 1984); NCP Preamble; Guidelines for Ground-Water Classification (November 1986) | Federal Register Vol 55, No. 46, March 8, 1990, p. 8733; | To Be Considered | 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 | *Groundwater outside of the compliance boundary for the waste management area established at the Site needs to attain federal drinking water and risk-based standards. Groundwater monitoring using these standards will be used to make sure groundwater exceeding these standards does not migrate beyond the compliance boundary. Exceedances of these standards* |

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| | | | use of a groundwater aquifer and define three classes of groundwater. These documents defined Class I, II and III groundwaters. | *within the compliance boundary is a basis for establishing prohibitions on the use of groundwater within the compliance boundary. An additional buffer zone beyond the compliance boundary to prevent groundwater wells from being installed that would draw contaminated groundwater beyond the compliance boundary may also be established, if required.* |

State ARARs (the two listed state hazardous waste regulation and the state underground injection citations should be retained)

| | | | | |
|---|---|---|---|---|
| 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 *et seq.* | Applicable | Prohibits installing drinking water wells in contaminated aquifers. Establishes standards for decommissioning monitoring wells (Rule 9.03). | Under these standards drinking water wells are prohibited within areas of contamination and monitoring wells used will be properly decommissioned when no longer needed. |
| Rules and Regulations for Groundwater Quality – Appendix 1 | | Applicable | Identifies the standards and specification that must be followed for the installation or abandonment of monitoring wells. | Wells installed for monitoring and in-situ treatment will be installed and abandoned according to these standards. |

**Table 5-10:**
Federal ARARs

| | | | | |
|---|---|---|---|---|
| Safe Drinking Water Act; National primary drinking water regulations | 42 U.S.C. §300f *et seq.*; 40 C.F.R. 141, Subparts B and G | Relevant and Appropriate | Establishes MCLs for common organic and inorganic contaminants applicable to public drinking water supplies. Used as relevant and appropriate standards for aquifers and surface water bodies that are potential drinking water sources. | *Groundwater outside of the compliance boundary for any waste management area established for the soil or sediment components of the remedy will achieve these standards through chemical oxidation and MNA. LUCs within the compliance boundary will prevent use of contaminated groundwater that exceeds these standards.* |
| Safe Drinking Water Act; National primary drinking water regulations | 42 U.S.C. §300f *et seq.*; 40 C.F.R. 141, Subpart F | Relevant and Appropriate for non-zero MCLGs only; MCLGs set as zero are To Be Considered. | 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. | *Groundwater outside of the compliance boundary for any waste management area established for the soil or sediment components of the remedy will achieve these standards through chemical oxidation and MNA. LUCs within the compliance boundary will prevent use of contaminated groundwater that exceeds these standards.* |
| Health Advisories (EPA Office of Drinking Water) | | To Be Considered | Health Advisories are estimates of risk due to 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. The risk-based standard for manganese is 0.3 mg/L. | *Groundwater outside of the compliance boundary for any waste management area established for the soil or sediment components of the remedy will achieve these standards (particularly for manganese) through chemical oxidation and MNA. LUCs within the compliance boundary will prevent use of contaminated groundwater that exceeds these standards.* |
| EPA Carcinogenicity Slope Factor | | To Be Considered | Slope factors are developed by EPA from health effects assessments. Carcinogenic effects present the most up-to-date information on cancer risk potency. Potency factors are developed by EPA from Health Effects Assessments of evaluation by the Carcinogenic Assessment Group. | *Carcinogens as assessed with slope factors will be addressed for groundwater outside of the waste management area compliance boundary by chemical oxidation and MNA. LUCs within the compliance boundary will prevent use of contaminated groundwater that exceeds these standards.* |
| EPA Risk Reference Dose (RfDs) | | To Be Considered | RfDs are considered to be the levels unlikely to cause significant adverse health effects associated with a threshold mechanism of action in human exposure for a lifetime. | *Hazards due to noncarcinogens with EPA RfDs will be addressed for groundwater outside of the waste management area compliance boundary by chemical oxidation and MNA. LUCs within the compliance boundary will prevent use of contaminated groundwater that exceeds these standards.* |
| Guidelines for Carcinogen Risk Assessment | EPA/630/P-03/001F (March 2005) | To Be Considered | Guidance for assessing cancer risk. | *Hazards due to carcinogens assessed through this guidance will be addressed for groundwater outside of the waste management area compliance boundary by chemical oxidation and MNA. LUCs within the compliance boundary will prevent use of contaminated groundwater that exceeds these standards.* |

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|---|---|---|---|---|
| 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. | *Carcinogenic risks to children assessed through this guidance will be addressed for groundwater outside of the waste management area compliance boundary by chemical oxidation and MNA. LUCs within the compliance boundary will prevent use of contaminated groundwater that exceeds these standards.* |

Modify the RI Remediation Regulation citation:

| | | | | |
|---|---|---|---|---|
| Rules and Regulations for the Investigation and Remediation of Hazardous Material Releases (Short Title: Remediation Regulations) | Code of Rhode Island Rules (CRIR) 12-180-001; DEM-DSR-01-93, sections 8.01 and 8.03 | Applicable | These regulations set remediation standards for groundwater at NPL sites when they are more stringent than federal standards. | *Groundwater outside of the compliance boundary for any waste management area established for the soil or sediment components of the remedy will achieve these standards through chemical oxidation and MNA. LUCs within the compliance boundary will prevent use of contaminated groundwater that exceeds these standards.* |

Remove the line for the RI Water Quality Regulations (not chemical-specific standards).

**Table 5-12**

Federal ARARs (keep the federal underground injection control citation)

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| Safe Drinking Water Act; National primary drinking water regulations | 42 U.S.C. §300f *et seq.*; 40 C.F.R. 141, Subparts B and G | Relevant and Appropriate | Establishes MCLs for common organic and inorganic contaminants applicable to public drinking water supplies. Used as relevant and appropriate standards for aquifers and surface water bodies that are potential drinking water sources. | *Groundwater within the compliance boundary for any waste management area established for the soil or sediment components of the remedy will be monitored using the standards to ensure contaminated groundwater does not migrate beyond the compliance boundary. Exceedances of these standards within the compliance boundary will be address by LUCs.* |
| Safe Drinking Water Act; National primary drinking water regulations | 42 U.S.C. §300f *et seq.*; 40 C.F.R. 141, Subpart F | Relevant and Appropriate for non-zero MCLGs only; MCLGs set as zero are To Be Considered. | 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. | *Groundwater within the compliance boundary for any waste management area established for the soil or sediment components of the remedy will be monitored using the standards to ensure contaminated groundwater does not migrate beyond the compliance boundary. Exceedances of these standards within the compliance boundary will be address by LUCs.* |
| Health Advisories (EPA Office of Drinking Water) | | To Be Considered | Health Advisories are estimates of risk due to 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. The risk-based standard for manganese is 0.3 mg/L. | *Groundwater within the compliance boundary for any waste management area established for the soil or sediment components of the remedy will be monitored using the standards to ensure contaminated groundwater does not migrate beyond the compliance boundary. Exceedances of these standards (particularly for manganese) within the compliance boundary will be address by LUCs.* |
| 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 for achieving cleanup standard though monitored attenuation would be comparable to that which could be achieved through active restoration. | *Chemical oxidation and MNA can attain federal drinking water and risk standards as defined by this guidance within a reasonable time frame outside of the compliance boundary for the waste management area.* |
| Generation of investigation derived waste | USEPA OSWER Publication 9345.3-03 FS, January 1992 | To Be Considered | Management of Investigation-Derived Waste (IDW) must ensure protection of human health and the environment. | IDW will be managed in a manner to protect human health and the environment. |
| EPA Groundwater Protection Strategy (August 1984); NCP Preamble; Guidelines for Ground-Water Classification (November 1986) | Federal Register Vol 55, No. 46, March 8, 1990, p. 8733; | To Be Considered | 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 | *Groundwater outside of the compliance boundary for the waste management area established at the Site needs to attain federal drinking water and risk-based standards. Groundwater monitoring using these standards will be used to make sure groundwater exceeding these standards does not migrate beyond the compliance boundary. Exceedances of these standards* |

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| | | | use of a groundwater aquifer and define three classes of groundwater. These documents defined Class I, II and III groundwaters. | *within the compliance boundary is a basis for establishing prohibitions on the use of groundwater within the compliance boundary. An additional buffer zone beyond the compliance boundary to prevent groundwater wells from being installed that would draw contaminated groundwater beyond the compliance boundary may also be established, if required.* |

State ARARs (the two listed state hazardous waste regulation and the state underground injection citations should be retained)

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| 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 *et seq.* | Applicable | Prohibits installing drinking water wells in contaminated aquifers. Establishes standards for decommissioning monitoring wells (Rule 9.03). | Under these standards drinking water wells are prohibited within areas of contamination and monitoring wells used will be properly decommissioned when no longer needed. |
| Rules and Regulations for Groundwater Quality – Appendix 1 | | Applicable | Identifies the standards and specification that must be followed for the installation or abandonment of monitoring wells. | Wells installed for monitoring and in-situ treatment will be installed and abandoned according to these standards. |

**Table 6-4**
Federal ARARs

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| EPA Risk Reference Dose (RfDs) | | To Be Considered | RfDs are considered to be the levels unlikely to cause significant adverse health effects associated with a threshold mechanism of action in human exposure for a lifetime. | Although to date, no sediments exceeding these risk-based human health standards have been identified, sampling of the sediments during the sediment excavation and during the ENR of the remaining sediments will ensure that no contaminants are present exceeding these standards. |
| EPA Carcinogenicity Slope Factor | | To Be Considered | Slope factors are developed by EPA from health effects assessments. Carcinogenic effects present the most up-to-date information on cancer risk potency. Potency factors are developed by EPA from Health Effects Assessments of evaluation by the Carcinogenic Assessment Group. | Although to date, no sediments exceeding these risk-based human health standards have been identified, sampling of the sediments during the sediment excavation and during the ENR of the remaining sediments will ensure that no contaminants are present exceeding these standards. |
| Guidelines for Carcinogen Risk Assessment | EPA/630/P-03/001F (March 2005) | To Be Considered | Guidance for assessing cancer risk. | Although to date, no sediments exceeding these risk-based human health standards have been identified, sampling of the sediments during the sediment excavation and during the ENR of the remaining sediments will ensure that no contaminants are present exceeding these standards. |
| 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. | Although to date, no sediments exceeding these risk-based human health standards have been identified, sampling of the sediments during the sediment excavation and during the ENR of the remaining sediments will ensure that no contaminants are present exceeding these standards. |
| U.S. DOE, Office of Environmental Management, Secondary Chronic Values (SCVs) (Jones et al., 1997) | | To Be Considered | The SCVs are toxicological benchmarks for screening contaminants of potential concern for effects on sediment-associated biota. | [It is unclear whether ecological risks at the Site identified using this guidance will be addressed by limited excavation and ENR.] |
| U.S. EPA Sediment Quality Criterion (SQC) and Sediment Quality Benchmarks (SQBs) (USEPA, 1996) | | To Be Considered | SQCs and SQBs were established to provide screening toxicity thresholds. | [It is unclear whether ecological risks at the Site identified using this guidance will be addressed by limited excavation and ENR.] |
| NOAA Screening Quick Reference Tables, Threshold Effects Level (TEL) (Buchman, 1999) | | To Be Considered | TELs represent the concentration below which adverse effects are expected to occur only rarely. | [It is unclear whether ecological risks at the Site identified using this guidance will be addressed by limited excavation and ENR.] |
| Ontario Ministry of Environment and Energy (OMEE) Lowest Effect Levels (LELs) for Freshwater Sediments (Persaud et al., 1993) | | To Be Considered | The LEL value is the concentration at which the majority of the sediment-dwelling organisms are not affected. | [It is unclear whether ecological risks at the Site identified using this guidance will be addressed by limited excavation and ENR.] |

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| Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems. Probable Effects Concentrations (PECs) (MacDonald et al., 2000) | | To Be Considered | The PEC value is the concentration above which the adverse effects on sediment-dwelling organisms are likely to occur. | [It is unclear whether ecological risks at the Site identified using this guidance will be addressed by limited excavation and ENR.] |
| CWA National Recommended Water Quality Criteria (NRWQC) | 40 CFR 122.44 | Relevant and Appropriate | Federal NRWQC are health-based and ecologically based criteria developed for carcinogenic and non-carcinogenic compounds. These standard may be used to develop cleanup standards for sediments | [It is unclear whether sediment cleanup standards at the Site can be achieved by limited excavation and ENR.] |

Remove the State Water Quality citation.

**Table 6-5:**
Federal ARARs

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| Fish and Wildlife Coordination Act | 16 U.S.C.. §661 *et seq.* | Applicable | Requires Federal agencies involved in actions that will result in the control of structural modification of any stream or body of water for any purpose to take action to protect fish and wildlife resources that may be affected by the action. The Navy must coordinate with appropriate federal and state resource agencies to ascertain the means and measures necessary to mitigate, prevent, and compensate for project related losses of fish and wildlife resources and to enhance the resources. | Measures to mitigate or compensate adverse project related impacts to fish and wildlife resources will be taken, if determined necessary. The appropriate federal and state resource agencies will be consulted, in particular regarding remedial measures for contaminated sediment that will impact streams, wetlands, and downstream waterbodies. |
| Floodplain Management and Protection of Wetlands | 44 C.F.R. 9 | Relevant and Appropriate | Remedial alternatives that may cause alteration within a 500-year floodplain/cause negative impacts to downstream floodplain or that will cause alteration of federal jurisdictional wetlands/aquatic habitats will be implemented in compliance with these relevant and appropriate FEMA standards (which promulgate requirements under Executive Order 11988 (Floodplain Management) and Executive Order 11990 (Protection of Wetlands)). Prohibits activities that adversely affect a federally-regulated wetland unless there is no practicable alternative and the proposed action includes all practicable measures to minimize harm to wetlands that may result from such use. Requires soliciting public comment on any disturbance of floodplains or federally-regulated wetlands. | During the remedial design stage the effects of sediment remedial actions on federal jurisdictional wetlands will be evaluated. All practicable means will be used to minimize harm to the wetlands. Wetlands disturbed by sediment remediation, will be mitigated in accordance with requirements. Remedial work within Site waterbodies/waterways (as well as long-term maintenance of the NUSC Pond dam) has the potential to negatively alter downstream floodplain. Remedial actions will include all practicable means to minimize harm to and preserve beneficial values of downstream floodplains. Public comment regarding proposed impacts to wetlands and floodplains will be solicited in the Proposed Plan. The comments received will be addressed in the Responsiveness Summary for the ROD for this operable unit. |
| Clean Water Act, Section 404; Section 404(b)(1) Guidelines for Specification of Disposal Sites for Dredged or Fill Material | 33 U.S.C. § 1344; 40 C.F.R. Part 230, 231 and 33 C.F.R. Parts 320-323 | Applicable | Under this requirement, no activity that adversely affects a federal jurisdictional wetland shall be permitted if a practicable alternative with lesser effects is available. Controls discharges of dredged or fill material to protect aquatic ecosystems. Under these standards the Navy must solicit public comment through the Proposed Plan on its finding that one of the alternatives is the Least Environmentally Damaging Practicable Alternative. | Sediment remediation or other remedial actions that include dredging or filling in wetlands will be implemented to meet these requirements, including mitigation of altered wetland/aquatic resource as required. The Navy has determined that this alternative **[is][is not]** the Least Damaging Practicable Alternative to protect wetland resources because it **[provides][does not provide]** the best balance of addressing contaminated sediment within and adjacent to wetlands and waterways with minimizing both temporary and permanent alteration of wetlands and |

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| | | | | aquatic habitats on site. |
| Endangered Species Act | 16 U.S.C. 1531 *et seq.*; 50 C.F.R. parts 200 and 402 | Applicable | Regulates activities affecting federally listed endangered or threatened species or their habitat. The federally-listed loggerhead turtle and Kemps-Ridley turtle occur in the water of Narragansett Bay. | Appropriate federal agencies will be consulted to ensure that remedial measure taken under this alternative will prevent site contamination from migrating downstream to the Bay. |
| Coastal Zone Management Act | 16 USC Parts 1451 *et. seq.* | Applicable | Requires that any actions must be conducted in a manner consistent with state-approved management programs. | The site is located within a coastal zone management area; therefore, applicable coastal zone management requirements need to be addressed. |

State ARARs

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| Coastal Resources Management | RIGL 46-23-1 *et seq* | Applicable | Sets standards for management and protection of coastal resources. Sec. 100.4 addresses freshwater wetlands in the vicinity of the coast and extends jurisdiction to land with 50 feet of wetlands, riverbanks and floodplain. | The entire site is located in a coastal resource management area; therefore, applicable coastal resource management requirements need to be addressed, particularly those pertaining to protecting State-jurisdictional wetlands and waterbodies. |
| Rhode Island Endangered Species Act | RIGL 20-37-1 *et seq.* | Applicable | Regulates activities affecting State-listed endangered or threatened species or their habitat. The State-listed loggerhead turtle and Kemps-Ridley turtle occur in the water of Narragansett Bay. | Appropriate State agencies will be consulted to ensure that remedial measure taken under this alternative will prevent site contamination from migrating downstream to the Bay. |
| Inspection of Dams and Reservoirs; Rules and Regulations for Dam Safety | RIGL 46-19 | Applicable | Sets standards for inspecting and maintaining dams in the State. | LUCs and O&M of the NUSC Pond dam is required as part of the remedial action to prevent contaminated sediment that is being managed in place under this alternative from migrating downstream of the dam. |

**Table 6-6:**
Federal ARARs

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| Contaminated Sediment Remediation Guidance for Hazardous Waste Sites | EPA-540-R-05-012 OSWER 9355.0-85 (December 2005) | To Be Considered | Guidance for making remedy decisions for contaminated sediment sites. Some of the relevant sections of the guidance address Remedial Investigations (Ch. 2), FS Considerations (including LUCs)(Ch. 3), MNR (Ch. 4), Capping (Ch. 5), Dredging and Excavation (Ch. 6), and Long-Term Monitoring (Ch. 8). | [It is unclear whether the ENR component of this alternative meets guidance standards for addressing contaminated sediments in the wetlands/wasterway that will not be excavated.] The alternative also needs to meet guidance standards during dredging/excavation, dewatering, and disposal of the contaminated sediments. |
| Toxic Substances Control Act (TSCA); PCB Remediation Waste, | 40 C.F.R. 761.61(c) | Applicable | This section of the TSCA regulations provides risk-based cleanup and disposal options for PCB remediation waste based on the risks posed by the *in-situ* concentrations at which the PCBs are found. Written approval for the proposed risk-based cleanup must be obtained from the Director, Office of Site Remediation and Restoration, U.S. Environmental Protection Agency (USEPA) Region 1. | All sediment exceeding identified PCB cleanup levels will be either be removed, dewatered (if required) and disposed of off-site or will be placed under the ENR cover system. [It is unclear whether the ENR cover meets TSCA protectiveness standards (depending on PCB concentrations exposed after the proposed excavation).] The excavation, transportation/ dewatering, and management of PCB contaminated media must comply with TSCA, including air and surface water monitoring during remedial activities. The Navy will obtain a finding by the Director, Office of Site Remediation and Restoration, EPA Region 1, that the remedy's sediment PCB cleanup levels, along with the excavation, dewatering, and ENR system for the PCB-contaminated sediment will not pose an unreasonable risk to human health or the environment. |
| CWA National Recommended Water Quality Criteria (NRWQC) | 40 CFR 122.44) | Relevant and Appropriate | Federal NRWQC are health-based and ecologically based criteria developed for carcinogenic and non-carcinogenic compounds. These standards may be used to develop cleanup standards for sediments. | Water quality standards used to develop monitoring standards both during the active dredging/excavation and cover placement and for long-term monitoring of the protectiveness of the waste management area that will be established under this alternative. |
| Clean Water Act - National Pollutant Discharge Elimination System (NPDES) | 40 CFR Parts 122 and 125 | Applicable | Establishes the specifications for discharging pollutants from any point source into the waters of the U.S. Includes stormwater standards for activities disturbing more than one acre. | Any water discharged to surface water bodies during remedial activities will comply with this regulation. Best management practices will be used to meet stormwater standards during the remedial action. |
| Toxic Pollutant Effluent Standards | 40 CFR 129 | Applicable | Regulates surface water discharges of specific toxic pollutants, namely aldrin, dieldrin, DDT, endrin, toxaphene, benzidine, and PCBs. | Any water discharged to surface water bodies as part of this alternative will meet the standards identified in this regulation. |

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| Clean Air Act, National Emission Standards for Hazardous Air Pollutants (NESHAPs) | 42 U.S.C. 7411, 7412; 40 C.F.R. 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. | Standards for controlling particulate matter will be met during dredging/excavation and handling of contaminated sediments. Activities during sediment handling will include measures to suppress dust. |
| Generation of investigation derived waste | USEPA OSWER Publication 9345.3-03 FS, January 1992 | To Be Considered | Management of Investigation-Derived Waste (IDW) must ensure protection of human health and the environment. | IDW will be managed in a manner to protect human health and the environment. |
| Clean Water Act; General Pretreatment Regulations for Existing and New Sources of Pollution | 33 U.S.C. § 1251 et seq. 40 CFR. Part 403 | Applicable | Standards for direct discharge of waste water into a Publicly Owned Treatment Works (POTW). | These standards will apply if water from the remedial action such as from dewatering is discharged to a POTW. |
| Management of Undesirable Plants on Federal Lands | 7 U.S.C. 2814 | Relevant and Appropriate | Requires federal agencies to establish integrated management systems to control or contain undesirable plant species on federal lands under the agency's jurisdiction. | Measures will be taken to control the establishment of *Phragmites*, purple loosestrife or other invasive plants within all remediated areas. An invasive species control plan will be developed as part of the long-term O&M for this site. |

## State ARARs

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| Clean Air Act -Emissions Detrimental to Persons or Property | RIGL 23-23 *et seq.*; CRIR 12-31-07 | Applicable | 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. | Monitoring of air emissions during excavation/dredging and cover installation will be used to assess compliance with these standards if threshold levels are reached. |
| Clean Air Act –Air Toxics | RIGL 23-23 *et seq.*; 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. | Monitoring of air emissions during excavation/dredging and cover installation will be used to assess compliance with these standards if threshold levels are reached. |
| Water Pollution Control - Pollution Discharge Elimination Systems | RIGL 42-16 *et seq.*; CRIR 12-190-003 | Applicable | Contains discharge limitations, monitoring requirements and best management practices. Substantive requirements under NPDES are written such that state and federal national recommended water quality criteria (NRWQC) are met. Permits are required for off-site discharges, RI Standards apply to POTWs. Includes storm water | Discharge of any water from remedial activities during sediment excavation/dredging into surface waters or POTW will meet applicable standards. Stormwater standards for construction projects over one acre will also be met. |

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| | | | requirements for construction projects that disturb over one acre. | |
| Water Pollution Control - Water Quality | RIGL 42-16 *et seq.*; CRIR 12-190-001 | Applicable | Establishes water use classification and water quality criteria for waters of the state. | Water quality standards used to develop monitoring standards both during the active remedial period and for long-term monitoring of the protectiveness of the waste management area that will be established under this alternative. |
| Pretreatment Regulations | RIGL 46-12, 4217.1, 42-45 | Applicable | Rhode Island standards for discharge to POTWs. | These standards will apply if water from the remedial action such as from dewatering is discharged to a POTW. |
| **The two lines citing the RI Hazardous Waste Regulations should be retained as drafted.** | | | | |
| Rules and Regulations for Dredging and Management of Dredge Materials | DEM-OWR-DR-0203 | Applicable | Addresses dredging activities and disposal of dredge spoils. | Any dredging/excavation of sediment and backfilling with cover material that is required implementing the alternative must comply with the requirements of the regulations. |

**Table 6-7:**
Federal ARARs

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| EPA Risk Reference Dose (RfDs) | | To Be Considered | RfDs are considered to be the levels unlikely to cause significant adverse health effects associated with a threshold mechanism of action in human exposure for a lifetime. | Although to date, no sediments exceeding these risk-based human health standards have been identified, sampling of the sediments during the sediment excavation and during the capping of the remaining sediments will ensure that no contaminants are present exceeding these standards. |
| EPA Carcinogenicity Slope Factor | | To Be Considered | Slope factors are developed by EPA from health effects assessments. Carcinogenic effects present the most up-to-date information on cancer risk potency. Potency factors are developed by EPA from Health Effects Assessments of evaluation by the Carcinogenic Assessment Group. | Although to date, no sediments exceeding these risk-based human health standards have been identified, sampling of the sediments during the sediment excavation and during the capping of the remaining sediments will ensure that no contaminants are present exceeding these standards. |
| Guidelines for Carcinogen Risk Assessment | EPA/630/P-03/001F (March 2005) | To Be Considered | Guidance for assessing cancer risk. | Although to date, no sediments exceeding these risk-based human health standards have been identified, sampling of the sediments during the sediment excavation and during the capping of the remaining sediments will ensure that no contaminants are present exceeding these standards. |
| 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. | Although to date, no sediments exceeding these risk-based human health standards have been identified, sampling of the sediments during the sediment excavation and during the capping of the remaining sediments will ensure that no contaminants are present exceeding these standards. |
| U.S. DOE, Office of Environmental Management, Secondary Chronic Values (SCVs) (Jones et al., 1997) | | To Be Considered | The SCVs are toxicological benchmarks for screening contaminants of potential concern for effects on sediment-associated biota. | Ecological risks at the Site identified using this guidance will be addressed by limited removal and capping, along with LUCs and Long-term Monitoring to ensure the protectiveness of the cap. |
| U.S. EPA Sediment Quality Criterion (SQC) and Sediment Quality Benchmarks (SQBs) (USEPA, 1996) | | To Be Considered | SQCs and SQBs were established to provide screening toxicity thresholds. | Ecological risks at the Site identified using this guidance will be addressed by limited removal and capping, along with LUCs and Long-term Monitoring to ensure the protectiveness of the cap. |
| NOAA Screening Quick Reference Tables, Threshold Effects Level (TEL) (Buchman, 1999) | | To Be Considered | TELs represent the concentration below which adverse effects are expected to occur only rarely. | Ecological risks at the Site identified using this guidance will be addressed by limited removal and capping, along with LUCs and Long-term Monitoring to ensure the protectiveness of the cap. |

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| Ontario Ministry of Environment and Energy (OMEE) Lowest Effect Levels (LELs) for Freshwater Sediments (Persaud et al., 1993) | | To Be Considered | The LEL value is the concentration at which the majority of the sediment-dwelling organisms are not affected. | Ecological risks at the Site identified using this guidance will be addressed by limited removal and capping, along with LUCs and Long-term Monitoring to ensure the protectiveness of the cap. |
| Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems. Probable Effects Concentrations (PECs) (MacDonald et al., 2000) | | To Be Considered | The PEC value is the concentration above which the adverse effects on sediment-dwelling organisms are likely to occur. | Ecological risks at the Site identified using this guidance will be addressed by limited removal and capping, along with LUCs and Long-term Monitoring to ensure the protectiveness of the cap. |
| CWA National Recommended Water Quality Criteria (NRWQC) | 40 CFR 122.44 | Relevant and Appropriate | Federal NRWQC are health-based and ecologically based criteria developed for carcinogenic and non-carcinogenic compounds. These standard may be used to develop cleanup standards for sediments | The sediment cleanup standards developed using the NRWQC for the Site will be achieved through limited removal and capping, along with LUCs and Long-term Monitoring to ensure the protectiveness of the cap. |

Remove the State Water Quality citation.

**Table 6-8**
Federal ARARs

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| Fish and Wildlife Coordination Act | 16 U.S.C.. §661 *et seq.* | Applicable | Requires Federal agencies involved in actions that will result in the control of structural modification of any stream or body of water for any purpose to take action to protect fish and wildlife resources that may be affected by the action. The Navy must coordinate with appropriate federal and state resource agencies to ascertain the means and measures necessary to mitigate, prevent, and compensate for project related losses of fish and wildlife resources and to enhance the resources. | Measures to mitigate or compensate adverse project related impacts to fish and wildlife resources will be taken, if determined necessary. The appropriate federal and state resource agencies will be consulted, in particular regarding remedial measures for contaminated sediment that will impact streams, wetlands, and downstream waterbodies. |
| Floodplain Management and Protection of Wetlands | 44 C.F.R. 9 | Relevant and Appropriate | Remedial alternatives that may cause alteration within a 500-year floodplain/cause negative impacts to downstream floodplain or that will cause alteration of federal jurisdictional wetlands/aquatic habitats will be implemented in compliance with these relevant and appropriate FEMA standards (which promulgate requirements under Executive Order 11988 (Floodplain Management) and Executive Order 11990 (Protection of Wetlands)). Prohibits activities that adversely affect a federally-regulated wetland unless there is no practicable alternative and the proposed action includes all practicable measures to minimize harm to wetlands that may result from such use. Requires soliciting public comment on any disturbance of floodplains or federally-regulated wetlands. | During the remedial design stage the effects of sediment remedial actions on federal jurisdictional wetlands will be evaluated. All practicable means will be used to minimize harm to the wetlands. Wetlands disturbed by sediment remediation, will be mitigated in accordance with requirements. Remedial work within Site waterbodies/waterways (as well as long-term maintenance of the NUSC Pond dam) has the potential to negatively alter downstream floodplain. Remedial actions will include all practicable means to minimize harm to and preserve beneficial values of downstream floodplains. Public comment regarding proposed impacts to wetlands and floodplains will be solicited in the Proposed Plan. The comments received will be addressed in the Responsiveness Summary for the ROD for this operable unit. |
| Clean Water Act, Section 404; Section 404(b)(1) Guidelines for Specification of Disposal Sites for Dredged or Fill Material | 33 U.S.C. § 1344; 40 C.F.R. Part 230, 231 and 33 C.F.R. Parts 320-323 | Applicable | Under this requirement, no activity that adversely affects a federal jurisdictional wetland shall be permitted if a practicable alternative with lesser effects is available. Controls discharges of dredged or fill material to protect aquatic ecosystems. Under these standards the Navy must solicit public comment through the Proposed Plan on its finding that one of the alternatives is the Least Environmentally Damaging Practicable Alternative. | Sediment remediation or other remedial actions that include dredging or filling in wetlands will be implemented to meet these requirements, including mitigation of altered wetland/aquatic resource as required. Raising the Pond bottom with the cap may have significant impacts by converting aquatic habitats to upland/wetland and altering in-water aquatic habitats requiring replacement wetlands/aquatic habitats to be created elsewhere. The Navy has determined that this alternative **[is][is not]** the Least Damaging Practicable Alternative to protect wetland resources because it |

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| | | | | **[provides][does not provide]** the best balance of addressing contaminated sediment within and adjacent to wetlands and waterways with minimizing both temporary and permanent alteration of wetlands and aquatic habitats on site. |
| Endangered Species Act | 16 U.S.C. 1531 *et seq.*; 50 C.F.R. parts 200 and 402 | Applicable | Regulates activities affecting federally listed endangered or threatened species or their habitat. The federally-listed loggerhead turtle and Kemps-Ridley turtle occur in the water of Narragansett Bay. | Appropriate federal agencies will be consulted to ensure that remedial measure taken under this alternative will prevent site contamination from migrating downstream to the Bay. |
| Coastal Zone Management Act | 16 USC Parts 1451 *et. seq.* | Applicable | Requires that any actions must be conducted in a manner consistent with state-approved management programs. | The site is located within a coastal zone management area; therefore, applicable coastal zone management requirements need to be addressed. |

State ARARs:

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| Coastal Resources Management | RIGL 46-23-1 *et seq* | Applicable | Sets standards for management and protection of coastal resources. Sec. 100.4 addresses freshwater wetlands in the vicinity of the coast and extends jurisdiction to land with 50 feet of wetlands, riverbanks and floodplain. | The entire site is located in a coastal resource management area; therefore, applicable coastal resource management requirements need to be addressed, particularly those pertaining to protecting State-jurisdictional wetlands and waterbodies. |
| Inspection of Dams and Reservoirs; Rules and Regulations for Dam Safety | RIGL 46-19 | Applicable | Sets standards for inspecting and maintaining dams in the State. | O&M of the NUSC Pond dam, along with LUCs, is required as part of the remedial action to prevent contaminated sediment that is being managed in place under this alternative from migrating downstream of the dam. |
| Rhode Island Endangered Species Act | RIGL 20-37-1 *et seq.* | Applicable | Regulates activities affecting State-listed endangered or threatened species or their habitat. The State-listed loggerhead turtle and Kemps-Ridley turtle occur in the water of Narragansett Bay. | Appropriate State agencies will be consulted to ensure that remedial measure taken under this alternative will prevent site contamination from migrating downstream to the Bay. |

**Table 6-9**

Federal ARARs

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| Contaminated Sediment Remediation Guidance for Hazardous Waste Sites | EPA-540-R-05-012 OSWER 9355.0-85 (December 2005) | To Be Considered | Guidance for making remedy decisions for contaminated sediment sites. Some of the relevant sections of the guidance address Remedial Investigations (Ch. 2), FS Considerations (including LUCs)(Ch. 3), Capping (Ch. 5), Dredging and Excavation (Ch. 6), and Long-Term Monitoring (Ch. 8). | Limited removal and capping under this alternative meets guidance standards for addressing contaminated sediments in the wetlands/waterway (as long as habitat restoration requirements can be met). |
| Toxic Substances Control Act (TSCA); PCB Remediation Waste, | 40 C.F.R. 761.61(c) | Applicable | This section of the TSCA regulations provides risk-based cleanup and disposal options for PCB remediation waste based on the risks posed by the *in-situ* concentrations at which the PCBs are found. Written approval for the proposed risk-based cleanup must be obtained from the Director, Office of Site Remediation and Restoration, U.S. Environmental Protection Agency (USEPA) Region 1. | All sediment exceeding identified PCB cleanup levels will be either be removed, dewatered (if required) and disposed of off-site or will be placed under the cap. The excavation, transportation/ dewatering, and management of PCB contaminated media must comply with TSCA, including air and surface water monitoring during remedial activities. The Navy will obtain a finding by the Director, Office of Site Remediation and Restoration, EPA Region 1, that the remedy's sediment PCB cleanup levels, along with the excavation, dewatering, and capping for the PCB-contaminated sediment will not pose an unreasonable risk to human health or the environment. |
| CWA National Recommended Water Quality Criteria (NRWQC) | 40 CFR 122.44) | Relevant and Appropriate | Federal NRWQC are health-based and ecologically based criteria developed for carcinogenic and non-carcinogenic compounds. These standard may be used to develop cleanup standards for sediments | The sediment cleanup standards developed using the NRWQC for the Site will be achieved through removal and covering, along with LUCs and Long-term Monitoring to ensure the protectiveness of the remedy. |
| Clean Water Act - National Pollutant Discharge Elimination System (NPDES) | 40 CFR Parts 122 and 125 | Applicable | Establishes the specifications for discharging pollutants from any point source into the waters of the U.S. Includes stormwater standards for activities disturbing more than one acre. | Any water discharged to surface water bodies during remedial activities will comply with this regulation. Best management practices will be used to meet stormwater standards during the remedial action. |
| Toxic Pollutant Effluent Standards | 40 CFR 129 | Applicable | Regulates surface water discharges of specific toxic pollutants, namely aldrin, dieldrin, DDT, endrin, toxaphene, benzidine, and PCBs. | Any water discharged to surface water bodies as part of this alternative will meet the standards identified in this regulation. |
| Clean Air Act, National Emission Standards for Hazardous Air Pollutants (NESHAPs) | 42 U.S.C. 7411, 7412; 40 C.F.R. 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. | Standards for controlling particulate matter will be met during dredging/excavation and handling of contaminated sediments. Activities during sediment handling will include measures to suppress dust. |

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| Generation of investigation derived waste | USEPA OSWER Publication 9345.3-03 FS, January 1992 | To Be Considered | Management of Investigation-Derived Waste (IDW) must ensure protection of human health and the environment. | IDW will be managed in a manner to protect human health and the environment. |
| Clean Water Act; General Pretreatment Regulations for Existing and New Sources of Pollution | 33 U.S.C. § 1251 et seq. 40 CFR. Part 403 | Applicable | Standards for direct discharge of waste water into a Publicly Owned Treatment Works (POTW). | These standards will apply if water from the remedial action such as from dewatering is discharged to a POTW. |
| Management of Undesirable Plants on Federal Lands | 7 U.S.C. 2814 | Relevant and Appropriate | Requires federal agencies to establish integrated management systems to control or contain undesirable plant species on federal lands under the agency's jurisdiction. | Measures will be taken to control the establishment of *Phragmites*, purple loosestrife or other invasive plants within all remediated areas. An invasive species control plan will be developed as part of the long-term O&M for this site. |

## State ARARs

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| Clean Air Act -Emissions Detrimental to Persons or Property | RIGL 23-23 *et seq.*; CRIR 12-31-07 | Applicable | 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. | Monitoring of air emissions during excavation/dredging and cap installation will be used to assess compliance with these standards if threshold levels are reached. |
| Clean Air Act –Air Toxics | RIGL 23-23 *et seq.*; 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. | Monitoring of air emissions during excavation/dredging and cap installation will be used to assess compliance with these standards if threshold levels are reached. |
| Water Pollution Control - Pollution Discharge Elimination Systems | RIGL 42-16 *et seq.*; CRIR 12-190-003 | Applicable | Contains discharge limitations, monitoring requirements and best management practices. Substantive requirements under NPDES are written such that state and federal national recommended water quality criteria (NRWQC) are met. Permits are required for off-site discharges, RI Standards apply to POTWs. Includes storm water requirements for construction projects that disturb over one acre. | Discharge of any water from remedial activities during sediment excavation/dredging into surface waters or POTW will meet applicable standards. Stormwater standards for construction projects over one acre will also be met. |
| Water Pollution Control - Water Quality | RIGL 42-16 *et seq.*; CRIR 12-190-001 | Applicable | Establishes water use classification and water quality criteria for waters of the state. | Water quality standards used to develop monitoring standards both during the active remedial period and for long-term monitoring of the protectiveness of the waste management area that will be established under this alternative. |
| Pretreatment Regulations | RIGL 46-12, 4217.1, 42-45 | Applicable | Rhode Island standards for discharge to POTWs. | These standards will apply if water from the remedial action such as from dewatering is discharged to a |

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| | | | | POTW. |
| **The two lines citing the RI Hazardous Waste Regulations should be retained as drafted.** | | | | |
| Rules and Regulations for Dredging and Management of Dredge Materials | DEM-OWR-DR-0203 | Applicable | Addresses dredging activities and disposal of dredge spoils. | Any dredging/excavation of sediment and backfilling with cap material that is required implementing the alternative must comply with the requirements of the regulations. |

**Table 6-10:**
Federal ARARs

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| EPA Risk Reference Dose (RfDs) | | To Be Considered | RfDs are considered to be the levels unlikely to cause significant adverse health effects associated with a threshold mechanism of action in human exposure for a lifetime. | Although to date, no sediments exceeding these risk-based human health standards have been identified, sampling of the sediments during the sediment excavation will ensure that no contaminants are present exceeding these standards. |
| EPA Carcinogenicity Slope Factor | | To Be Considered | Slope factors are developed by EPA from health effects assessments. Carcinogenic effects present the most up-to-date information on cancer risk potency. Potency factors are developed by EPA from Health Effects Assessments of evaluation by the Carcinogenic Assessment Group. | Although to date, no sediments exceeding these risk-based human health standards have been identified, sampling of the sediments during the sediment excavation will ensure that no contaminants are present exceeding these standards. |
| Guidelines for Carcinogen Risk Assessment | EPA/630/P-03/001F (March 2005) | To Be Considered | Guidance for assessing cancer risk. | Although to date, no sediments exceeding these risk-based human health standards have been identified, sampling of the sediments during the sediment excavation will ensure that no contaminants are present exceeding these standards. |
| 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. | Although to date, no sediments exceeding these risk-based human health standards have been identified, sampling of the sediments during the sediment excavation will ensure that no contaminants are present exceeding these standards. |
| U.S. DOE, Office of Environmental Management, Secondary Chronic Values (SCVs) (Jones et al., 1997) | | To Be Considered | The SCVs are toxicological benchmarks for screening contaminants of potential concern for effects on sediment-associated biota. | Ecological risks at the Site identified using this guidance will be addressed by removing all sediment exceeding identified risk levels. |
| U.S. EPA Sediment Quality Criterion (SQC) and Sediment Quality Benchmarks (SQBs) (USEPA, 1996) | | To Be Considered | SQCs and SQBs were established to provide screening toxicity thresholds. | Ecological risks at the Site identified using this guidance will be addressed by removing all sediment exceeding identified risk levels. |
| NOAA Screening Quick Reference Tables, Threshold Effects Level (TEL) (Buchman, 1999) | | To Be Considered | TELs represent the concentration below which adverse effects are expected to occur only rarely. | Ecological risks at the Site identified using this guidance will be addressed by removing all sediment exceeding identified risk levels. |
| Ontario Ministry of Environment and Energy (OMEE) Lowest Effect Levels (LELs) for Freshwater Sediments (Persaud et al., 1993) | | To Be Considered | The LEL value is the concentration at which the majority of the sediment-dwelling organisms are not affected. | Ecological risks at the Site identified using this guidance will be addressed by removing all sediment exceeding identified risk levels. |

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| Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems. Probable Effects Concentrations (PECs) (MacDonald et al., 2000) | | To Be Considered | The PEC value is the concentration above which the adverse effects on sediment-dwelling organisms are likely to occur. | Ecological risks at the Site identified using this guidance will be addressed by removing all sediment exceeding identified risk levels. |
| CWA National Recommended Water Quality Criteria (NRWQC) | 40 CFR 122.44 | Relevant and Appropriate | Federal NRWQC are health-based and ecologically based criteria developed for carcinogenic and non-carcinogenic compounds. These standard may be used to develop cleanup standards for sediments | The sediment cleanup standards developed using the NRWQC for the Site will be achieved through removal of all sediment exceeding the standards. |

Remove the State Water Quality citation.

**Table 6-11:**
Federal ARARs

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| Fish and Wildlife Coordination Act | 16 U.S.C.. §661 *et seq.* | Applicable | Requires Federal agencies involved in actions that will result in the control of structural modification of any stream or body of water for any purpose to take action to protect fish and wildlife resources that may be affected by the action. The Navy must coordinate with appropriate federal and state resource agencies to ascertain the means and measures necessary to mitigate, prevent, and compensate for project related losses of fish and wildlife resources and to enhance the resources. | Measures to mitigate or compensate adverse project related impacts to fish and wildlife resources will be taken, if determined necessary. The appropriate federal and state resource agencies will be consulted, in particular regarding remedial measures for contaminated sediment that will impact streams, wetlands, and downstream waterbodies. |
| Floodplain Management and Protection of Wetlands | 44 C.F.R. 9 | Relevant and Appropriate | Remedial alternatives that may cause alteration within a 500-year floodplain/cause negative impacts to downstream floodplain or that will cause alteration of federal jurisdictional wetlands/aquatic habitats will be implemented in compliance with these relevant and appropriate FEMA standards (which promulgate requirements under Executive Order 11988 (Floodplain Management) and Executive Order 11990 (Protection of Wetlands)). Prohibits activities that adversely affect a federally-regulated wetland unless there is no practicable alternative and the proposed action includes all practicable measures to minimize harm to wetlands that may result from such use. Requires soliciting public comment on any disturbance of floodplains or federally-regulated wetlands. | During the remedial design stage the effects of sediment remedial actions on federal jurisdictional wetlands will be evaluated. All practicable means will be used to minimize harm to the wetlands. Wetlands disturbed by sediment remediation, will be mitigated in accordance with requirements. Remedial work within Site waterbodies/waterways has the potential to negatively alter downstream floodplain. Remedial actions will include all practicable means to minimize harm to and preserve beneficial values of downstream floodplains. Public comment regarding proposed impacts to wetlands and floodplains will be solicited in the Proposed Plan. The comments received will be addressed in the Responsiveness Summary for the ROD for this operable unit. |
| Clean Water Act, Section 404; Section 404(b)(1) Guidelines for Specification of Disposal Sites for Dredged or Fill Material | 33 U.S.C. § 1344; 40 C.F.R. Part 230, 231 and 33 C.F.R. Parts 320-323 | Applicable | Under this requirement, no activity that adversely affects a federal jurisdictional wetland shall be permitted if a practicable alternative with lesser effects is available. Controls discharges of dredged or fill material to protect aquatic ecosystems. Under these standards the Navy must solicit public comment through the Proposed Plan on its finding that one of the alternatives is the Least Environmentally Damaging | Sediment remediation or other remedial actions that include dredging in wetlands/waterways will be implemented to meet these requirements, including mitigation of altered wetland/aquatic resource as required. The Navy has determined that this alternative **[is][is not]** the Least Damaging Practicable Alternative to protect wetland resources because it **[provides][does not provide]** the best balance of addressing contaminated sediment within and adjacent to wetlands and waterways with minimizing both temporary and |

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| | | | Practicable Alternative. | permanent alteration of wetlands and aquatic habitats on site. |
| Endangered Species Act | 16 U.S.C. 1531 *et seq.*; 50 C.F.R. parts 200 and 402 | Applicable | Regulates activities affecting federally listed endangered or threatened species or their habitat. The federally-listed loggerhead turtle and Kemps-Ridley turtle occur in the water of Narragansett Bay. | Appropriate federal agencies will be consulted to ensure that remedial measure taken under this alternative will prevent site contamination from migrating downstream to the Bay. |
| Coastal Zone Management Act | 16 USC Parts 1451 *et. seq.* | Applicable | Requires that any actions must be conducted in a manner consistent with state-approved management programs. | The site is located within a coastal zone management area; therefore, applicable coastal zone management requirements need to be addressed. |

State ARARs:

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| Coastal Resources Management | RIGL 46-23-1 *et seq* | Applicable | Sets standards for management and protection of coastal resources. Sec. 100.4 addresses freshwater wetlands in the vicinity of the coast and extends jurisdiction to land with 50 feet of wetlands, riverbanks and floodplain. | The entire site is located in a coastal resource management area; therefore, applicable coastal resource management requirements need to be addressed, particularly those pertaining to protecting State-jurisdictional wetlands and waterbodies. |
| Inspection of Dams and Reservoirs; Rules and Regulations for Dam Safety | RIGL 46-19 | Applicable | Sets standards for inspecting and maintaining dams in the State. | The Navy needs to ensure that the dam stability is not compromised during dredging/excavation of the contaminated sediment. |
| Rhode Island Endangered Species Act | RIGL 20-37-1 *et seq.* | Applicable | Regulates activities affecting State-listed endangered or threatened species or their habitat. The State-listed loggerhead turtle and Kemps-Ridley turtle occur in the water of Narragansett Bay. | Appropriate State agencies will be consulted to ensure that remedial measure taken under this alternative will prevent site contamination from migrating downstream to the Bay. |

**Table 6-12:**
Federal ARARs

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| Contaminated Sediment Remediation Guidance for Hazardous Waste Sites | EPA-540-R-05-012 OSWER 9355.0-85 (December 2005) | To Be Considered | Guidance for making remedy decisions for contaminated sediment sites. Some of the relevant sections of the guidance address Remedial Investigations (Ch. 2), FS Considerations (Ch. 3), and Dredging and Excavation (Ch. 6). | Removal of all contaminated sediment, along with dewatering and off-site disposal under this alternative meets guidance standards for addressing contaminated sediments in the wetlands/waterway (as long as habitat restoration requirements can be met). |
| Toxic Substances Control Act (TSCA); PCB Remediation Waste, | 40 C.F.R. 761.61(c) | Applicable | This section of the TSCA regulations provides risk-based cleanup and disposal options for PCB remediation waste based on the risks posed by the *in-situ* concentrations at which the PCBs are found. Written approval for the proposed risk-based cleanup must be obtained from the Director, Office of Site Remediation and Restoration, U.S. Environmental Protection Agency (USEPA) Region 1. | All sediment exceeding identified PCB cleanup levels will be removed, dewatered (if required) and disposed of off-site. The excavation, transportation/ dewatering, and management of PCB contaminated media must comply with TSCA, including air and surface water monitoring during remedial activities. The Navy will obtain a finding by the Director, Office of Site Remediation and Restoration, EPA Region 1, that the remedy's sediment PCB cleanup levels, along with the excavation, dewatering, and management for the PCB-contaminated sediment will not pose an unreasonable risk to human health or the environment. |
| CWA National Recommended Water Quality Criteria (NRWQC) | 40 CFR 122.44) | Relevant and Appropriate | Federal NRWQC are health-based and ecologically based criteria developed for carcinogenic and non-carcinogenic compounds. These standard may be used to develop cleanup standards for sediments | The sediment cleanup standards developed using the NRWQC for the Site will be achieved through removal of all sediment exceeding the standards. |
| Clean Water Act - National Pollutant Discharge Elimination System (NPDES) | 40 CFR Parts 122 and 125 | Applicable | Establishes the specifications for discharging pollutants from any point source into the waters of the U.S. Includes stormwater standards for activities disturbing more than one acre. | Any water discharged to surface water bodies during remedial activities will comply with this regulation. Best management practices will be used to meet stormwater standards during the remedial action. |
| Toxic Pollutant Effluent Standards | 40 CFR 129 | Applicable | Regulates surface water discharges of specific toxic pollutants, namely aldrin, dieldrin, DDT, endrin, toxaphene, benzidine, and PCBs. | Any water discharged to surface water bodies as part of this alternative will meet the standards identified in this regulation. |
| Clean Air Act, National Emission Standards for Hazardous Air Pollutants (NESHAPs) | 42 U.S.C. 7411, 7412; 40 C.F.R. 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. | Standards for controlling particulate matter will be met during dredging/excavation and handling of contaminated sediments. Activities during sediment handling will include measures to suppress dust. |

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| Generation of investigation derived waste | USEPA OSWER Publication 9345.3-03 FS, January 1992 | To Be Considered | Management of Investigation-Derived Waste (IDW) must ensure protection of human health and the environment. | IDW will be managed in a manner to protect human health and the environment. |
| Clean Water Act; General Pretreatment Regulations for Existing and New Sources of Pollution | 33 U.S.C. § 1251 et seq. 40 CFR. Part 403 | Applicable | Standards for direct discharge of waste water into a Publicly Owned Treatment Works (POTW). | These standards will apply if water from the remedial action such as from dewatering is discharged to a POTW. |
| Management of Undesirable Plants on Federal Lands | 7 U.S.C. 2814 | Relevant and Appropriate | Requires federal agencies to establish integrated management systems to control or contain undesirable plant species on federal lands under the agency's jurisdiction. | Measures will be taken to control the establishment of *Phragmites*, purple loosestrife or other invasive plants within all remediated areas. An invasive species control plan will be developed as part of the long-term O&M for this site. |

## State ARARs

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| Clean Air Act -Emissions Detrimental to Persons or Property | RIGL 23-23 *et seq.*; CRIR 12-31-07 | Applicable | 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. | Monitoring of air emissions during excavation/dredging and dewatering will be used to assess compliance with these standards if threshold levels are reached. |
| Clean Air Act –Air Toxics | RIGL 23-23 *et seq.*; 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. | Monitoring of air emissions during excavation/dredging and dewatering will be used to assess compliance with these standards if threshold levels are reached. |
| Water Pollution Control - Pollution Discharge Elimination Systems | RIGL 42-16 *et seq.*; CRIR 12-190-003 | Applicable | Contains discharge limitations, monitoring requirements and best management practices. Substantive requirements under NPDES are written such that state and federal national recommended water quality criteria (NRWQC) are met. Permits are required for off-site discharges, RI Standards apply to POTWs. Includes storm water requirements for construction projects that disturb over one acre. | Discharge of any water from remedial activities during sediment excavation/dredging into surface waters or POTW will meet applicable standards. Stormwater standards for construction projects over one acre will also be met. |
| Water Pollution Control - Water Quality | RIGL 42-16 *et seq.*; CRIR 12-190-001 | Applicable | Establishes water use classification and water quality criteria for waters of the state. | Water quality standards will be used to develop monitoring standards during the sediment excavation/dredging and dewatering. |
| Pretreatment Regulations | RIGL 46-12, 4217.1, 42-45 | Applicable | Rhode Island standards for discharge to POTWs. | These standards will apply if water from the remedial action such as from dewatering is discharged to a POTW. |

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| **The two lines citing the RI Hazardous Waste Regulations should be retained as drafted.** | | | | |
| Rules and Regulations for Dredging and Management of Dredge Materials | DEM-OWR-DR-0203 | Applicable | Addresses dredging activities and disposal of dredge spoils. | Any dredging/excavation of sediment and dewatering will comply with the requirements of the regulations. |