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U-007-401.2

POTENTIAL ARARS OPERABLE UNIT 5 ALTERNATIVES

10/09/90

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REPORT
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FEED MATERIALS PRODUCTION CENTER
FERNALD, OHIO
POTENTIAL ARARs
OPERABLE UNIT 5 ALTERNATIVES

Chemical Specific

Chemical, Location, or Action	Requirement	ARAR/TBC	Rationale for Implementation	Alternative Number
Radionuclide Emissions (Except Airborne Radon-222)	40 CFR 61, Subpart H Emissions of radionuclides to the ambient air from DOE facilities shall not exceed those amounts that would cause any member of the public to receive in any year an effective dose equivalent of 10 mrem per year.	Applicable	Radioactive materials within this operable unit could contribute to the dose to members of the public from the air pathway during the implementation of remedial actions (since NESHAPS applies to operating units).	All

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Chemical, Location, or Action	Requirement	ARAR/TBC	Rationale for Implementation	Alternative Number
Radioactive Materials in Ohio River and in Receiving Waters Outside the Mixing Zone	OAC 3745-1-32 Gross alpha particle activity (including radium-226, but excluding radon and uranium) shall not exceed 15 pCi/l and combined radium-226 and radium-228 shall not exceed 5 pCi/l in receiving waters of the Ohio River. The concentration of gross total beta particle activity shall not exceed 50 pCi/l; the concentration of total strontium-90 shall not exceed 8 pCi/l in receiving waters of the Ohio River.	Applicable	Radioactive materials in this operable unit could be released such that they could contribute to radioactivity in receiving waters of the Ohio River.	All

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Chemical, Location, or Action	Requirement	ARAR/TBC	Rationale for Implementation	Alternative Number
Prevention of Air Pollution Nuisance	OAC 3745-15-07 The emission or escape into open air from any source whatsoever in such a manner or in such amounts as to endanger the health, safety, or welfare of the public or to cause unreasonable injury or damage to property shall be declared a public nuisance and is prohibited.	Applicable	During the process of stabilization, removal, or treatment, some potential exists for emissions of radionuclides and toxic chemicals to the air, which could endanger individuals or damage property.	2, 3, 4, 5, 6, 7, 9

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Chemical, Location, or Action	Requirement	ARAR/TBC	Rationale for Implementation	Alternative Number
Control of Fugitive Dust	OAC 3745-17-08 Requires the minimization or elimination of visible emissions of fugitive dust generated during grading, loading, or construction operations, and other practices which emit fugitive dust.	Applicable	The implementation of remedial action alternatives will require the movement of dirt and other material likely to result in fugitive dust emissions.	2, 3, 4, 5, 6, 7, 9

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Chemical, Location, or Action	Requirement	ARAR/TBC	Rationale for Implementation	Alternative Number
Radiation Doses, Levels, and Concentrations in Restricted and Unrestricted Areas.	10 CFR 20.101-105 OAC 3701-38 Radiation doses, levels, and concentrations for restricted and unrestricted areas shall not exceed specified limits.	Relevant and Appropriate	Radioactive materials in this operable unit can contribute radiation doses, levels, and concentrations to individuals in restricted and unrestricted areas, which could exceed the specified limits.	All

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Chemical, Location, or Action	Requirement	ARAR/TBC	Rationale for Implementation	Alternative Number
National Ambient Air Quality Standard for Particulate Matter	40 CFR 50.7 OAC 3745-17 Particulate emissions from a major stationary source shall not exceed 60 $\mu g/m^3$ annually or 150 $\mu g/m^3$ per 24-hour period.	Relevant and Appropriate	During the process of materials handling or treatment some potential exists for particulate emissions to open air. (Probably not a major source; therefore, only relevant and appropriate.)	2, 3, 4, 5, 6, 7, 9

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Chemical, Location, or Action	Requirement	ARAR/TBC	Rationale for Implementation	Alternative Number
Inorganic Chemicals in Drinking Water	40 CFR 141.11 OAC 3745-81-11 The following maximum contaminant levels (MCLs) for inorganic chemicals are the maximum allowable level of a contaminant in water which is delivered to a free flowing outlet of the ultimate user of a public water system. • Arsenic 0.05 mg/l • Barium 1.00 mg/l • Cadmium 0.010 mg/l • Chromium 0.05 mg/l • Lead 0.05 mg/l • Mercury 0.002 mg/l • Nitrate 10.0 mg/l • Selenium 0.01 mg/l • Silver 0.05 mg/l	Relevant and Appropriate	The requirement is not applicable since no public water system (as defined in 40 CFR 141) is involved. It is relevant and appropriate to protecting drinking water sources from the same contaminants found in the operable unit. These contaminants may migrate or leach into the underlying aquifer as a consequence of remedial actions.	All

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Chemical, Location, or Action	Requirement	ARAR/TBC	Rationale for Implementation	Alternative Number
Organic Chemicals in Drinking Water	40 CFR 141.12 OAC 3745-81-12 The following MCLs for organic chemicals are the maximum allowable levels of a contaminant in water which is delivered to a free flowing outlet of the ultimate user of a public water system: • Chloroform 0.1 mg/l • Ethyl-benzene 0.7 mg/l* • Pentachlorophenol 0.2 mg/l* • PCBs 0.0005 mg/l* • Tetrachloroethylene 0.005 mg/l* • Toluene 2.0 mg/l* • Trichloroethylene 0.005 mg/l • 1,1,1-Trichloroethane 0.2 mg/l • Xylene 10.0 mg/l* * Proposed	Relevant and Appropriate	The requirement is not applicable since no public water system (as defined in 40 CFR 141) is involved. It is relevant and appropriate to protecting drinking water sources from the same contaminants found in the operable unit. These contaminants may migrate or leach into the underlying aquifer as a consequence of remedial actions.	All

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Chemical, Location, or Action	Requirement	ARAR/TBC	Rationale For Implementation	Alternative Number
Radionuclides in Drinking Water	40 CFR 141.15 OAC 3745-81-15 Maximum Contaminant Levels for radioactivity in community water systems are set as follows: • 5 pCi/l of combined radium-226 and radium-228 • 15 pCi/l of gross alpha particle activity (including radium-226, but excluding radon and uranium) 40 CFR 141.16 OAC 3745-81-16 The average annual concentration of beta particle and photon (i.e., gamma) radioactivity from man-made radionuclides in drinking water shall not produce an annual dose equivalent to the total body or any internal organ greater than 4 mrem. The concentration limit for strontium-90 is 8 pCi/l.	Relevant and Appropriate	Radioactive materials in this operable unit could be released such that the radioactive materials could contribute to radioactivity in community water systems.	All

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Chemical, Location, or Action	Requirement	ARAR/TBC	Rationale for Implementation	Alternative Number
Residual Radioactive Material	40 CFR 192, Subparts A and C Control of residual radioactive material from inactive uranium processing sites shall be designed to: • Be effective for up to 1000 years, to the extent reasonably achievable, and in any case, for at least 200 years. • Provide reasonable assurance that releases of radon-222 from residual radioactive material to the atmosphere will not exceed an average release rate of 20 pCi/m^2-s or increase the annual average concentration of radon-222 in air at or above any location outside the disposal site by more than 0.5 pCi/l.	Relevant and Appropriate	Radioactive materials in this operable unit include residues from uranium processing. Requirements for design of controls should be consistent with design for control of other residual radioactive materials such as mill tailings.	All

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Chemical, Location, or Action	Requirement	ARAR/TBC	Rationale for Implementation	Alternative Number
Chemicals in Drinking Water (Solid Waste Disposal Facility)	40 CFR 257.3-4 A facility shall not contaminate an underground drinking water source beyond the solid waste boundary (outermost perimeter of the waste). The concentration of chemicals shall not exceed background levels or MCLs, whichever is higher.	Relevant and Appropriate	Wastes may migrate into the underlying aquifer and potentially contaminate drinking water systems as a consequence of remedial actions. The ARAR is relevant and appropriate since the operable unit may contain the listed chemicals.	All

Inorganic Chemicals	MCLs mg/l
Arsenic	0.05
Barium	1.00
Cadmium	0.01
Chromium	0.05
Lead	0.05
Mercury	0.002
Nitrate	10.0
Selenium	0.01
Silver	0.05

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Chemical, Location, or Action	Requirement	ARAR/TBC	Rationale for Implementation	Alternative Number
Chemicals in Drinking Water (Solid Waste Disposal Facility) (continued)	Organic Chemicals	mg/l		
	Endrin	0.0002		
	Lindane	0.004		
	Methoxychlor	0.1		
	Toxaphene	0.005		
	2, 4-D	0.1		
	2, 4, 5-TP Silvex	0.01		

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Chemical, Location, or Action	Requirement	ARAR/TBC	Rationale for Implementation	Alternative Number
Chemicals in Drinking Water (Hazardous Waste Disposal Facility)	40 CFR 264, Subpart F A facility shall not contaminate the uppermost aquifer underlying the waste management area beyond the point of compliance, which is a vertical surface located at the hydraulically downgradient limit of the waste management area that extends down into the uppermost aquifer underlying the regulated area. The concentration of chemicals shall not exceed background levels or MCLs, whichever is higher.	Relevant and Appropriate	Wastes may migrate into the underlying aquifer and potentially contaminate drinking water systems as a consequence of remedial actions. The ARAR is relevant and appropriate, since the operable unit may contain the listed chemicals.	All

Inorganic Chemicals	MCLs mg/l
Arsenic	0.05
Barium	1.00
Cadmium	0.01
Chromium	0.05
Lead	0.05
Mercury	0.002
Nitrate	10.0
Selenium	0.01
Silver	0.05

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Chemical, Location, or Action	Requirement	ARAR/TBC	Rationale for Implementation	Alternative Number
Chemicals in Drinking Water (Hazardous Waste Disposal Facility) (continued)	Organic Chemicals — mg/l Endrin — 0.0002 Lindane — 0.004 Methoxychlor — 0.1 Toxaphene — 0.005 2, 4-D — 0.1 2, 4, 5-TP Silvex — 0.01			

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Chemical, Location, or Action	Requirement	ARAR/TBC	Rationale for Implementation	Alternative Number
Chemicals in Drinking Water	40 CFR 141.50 - 141.51 Proposed Maximum Contaminant Level Goals (MCLGs) for potential chemicals of concern in community water systems are as follows: MCLGs (mg/l) Cadmium 0.005 Ethylbenzene 0.7 Mercury 0.002 Toluene 2.0	To be considered	Contents of the operable unit may migrate into the underlying aquifer and into drinking water systems as a consequence of remedial actions. Proposed MCLGs are to be considered together with MCLs in establishing acceptable levels of protectivenes for human health and the environment.	All

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Chemical, Location, or Action	Requirement	ARAR/TBC	Rationale for Implementation	Alternative Number
Radiation Dose Limit (All Pathways)	DOE Order 5400.5, Chapter II, Section 1.a The exposure of members of the public to radiation sources as a consequence of all routine DOE activities shall not cause, in a year, an effective dose equivalent greater than 100 mrem from all exposure pathways.	To be considered	Radiation sources within this operable unit could contribute to the total dose to members of the public from this DOE facility.	All

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Chemical, Location, or Action	Requirement	ARAR/TBC	Rationale for Implementation	Alternative Number
Radiation Dose Limit (Drinking Water Pathway)	DOE Order 5400.5, Chapter II, Section 1.d Provide a level of protection for persons consuming water from a public drinking water supply operated by the DOE so that persons consuming water from the supply shall not receive an effective dose equivalent greater than 4 mrem in a year. For multiple radionuclides, the sum of the effective dose equivalents from the radionuclides (excluding radium-226, radium-228, and radon) shall not exceed 4 mrem in a year from drinking water.	To be considered	Radioactive materials within this operable unit could contribute to the dose to members of the public from drinking water.	All

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Chemical Reference Dose Guidance Intended to be Protective of Human Health	U.S. EPA Health Effects Assessment Guidance - "Health Effects Assessment Summary Tables (HEAST)" and/or "Integrated Risk Information System" Beryllium 0.005 mg/kg/d Manganese 0.2 mg/kg/d Selenium 0.003 mg/kg/d Thallium 0.0007 mg/kg/d Vanadium 0.007 mg/kg/d Zinc 0.2 mg/kg/d	To be considered	40 CFR 300 requires that in the absense of an ARAR for a contaminant, guidance documents are to be considered when establishing concentrations of contaminants that are protective of human health and the environment.	All

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Chemical, Location, or Action	Requirement	ARAR/TBC	Rationale for Implementation	Alternative Number
Area Affecting Stream or River	U.S. Fish and Wildlife Coordination Act 16 U.S.C. 661 40 CFR 6.302 (a) Adverse impacts of activities associated with the destruction or loss of wetlands are to be avoided where practicable alternatives exist. 40 CFR 6.302 (g) After consultation with the U.S. Fish and Wildlife Service and appropriate State agency, actions necessary to protect fish and wildlife from impacts associated with modifying streams or areas affecting streams are to be implemented.	Applicable	Implementation of the alternatives involving sediment removal and single-layer capping will impact Paddys Run and adjacent wetlands areas. Such action should be coordinated with State and Federal wildlife agencies to ensure preservation of wetlands and aquatic biota and wildlife.	2, 3, 4, 5, 6, 7, 9

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Chemical, Location, or Action	Requirement	ARAR/TBC	Rationale for Implementation	Alternative Number
Protection of Wetlands	40 CFR 258.12 New solid waste landfill units must not be located in wetlands unless the State approves otherwise.	Relevant and Appropriate	These alternatives will involve the construction of a new on site solid waste landfill which may impact wetlands areas.	2, 3, 5, 7, 9

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Chemical, Location, or Action	Requirement	ARAR/TBC	Rationale for Implementation	Alternative Number
Location Standards for Hazardous Waste Treatment, Storage, or Disposal Facilities	40 CFR 264.18 OAC 3745-54-18 • Floodplain considerations- TSD facilities located in 100-year floodplains must be designed, constructed, operated and maintained to prevent washout of hazardous waste by a 100-year flood unless: - procedures are implemented to allow all waste to be removed safely before flooding to a permitted location not vulnerable to flooding, or - no adverse effects on human health or the environment will result if washout occurs considering the characteristics of the waste and potential impacts of a washout on surface waters, sediments and surface soils within the floodplain.	Relevant and Appropriate	The soils and sediments excavated or dredged from this operable unit and the residues and sludges derived from groundwater treatment may contain hazardous constituents which may be treated, stored or disposed of at a facility located within a 100-year floodplain.	2, 3, 4, 5, 6, 7, 9

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Chemical, Location, or Action	Requirement	ARAR/TBC	Rationale for Implementation	Alternative Number
Floodplain Management	Executive Order 11988 Federal agencies proposing actions to be located in a floodplain must first evaluate the potential adverse effects those actions may have on the natural and beneficial values served by the floodplain.	To be considered	Paddys Run and the FMPC storm sewer outfall ditch are located in a floodplain area. Implementation of the alternatives involving sediment removal, and single-layer capping may impact this area.	2, 3, 4, 5, 6, 7, 9

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Chemical, Location, or Action	Requirement	ARAR/TBC	Rationale for Implementation	Alternative Number
Protection of Wetlands	Executive Order 11990 Federal agencies are directed to avoid construction located in wetlands unless the agency head finds: (1) no practical alternative to such construction, and (2) the proposed action includes all practicable measures to minimize harm to wetlands which may result from such use. Federal agencies proposing actions that may adversely impact wetlands shall consider certain factors relevant to the proposal's effect on the survival and quality of the wetlands. These include: a) public health, safety, and welfare, including water supply, quality, recharge and discharge; pollution; flood and storm hazards; and sediment and erosion;	To be considered	Implementation of the alternative involving single-layer capping will impact Paddys Run and adjacent wetlands areas. Removal of sediments may also impact wetlands areas.	2, 3, 4, 5, 6, 7, 9

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Chemical, Location, or Action	Requirement	ARAR/TBC	Rationale for Implementation	Alternative Number
Protection of Wetlands (continued)	b) maintenance of natural systems, including conservation and long-term productivity of existing flora and fauna, species and habitat diversity and stability, hydrologic utility, fish, wildlife, timber, and food and fiber resources; and c) other uses of wetlands in the public interest, including recreational, scientific and cultural uses.			

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Chemical, Location, or Action	Requirement	ARAR/TBC	Rationale for Implementation	Alternative Number
Dredge & Fill	33 CFR 320.2(f) In evaluating dredge or fill operations, the U.S. Corps of Engineers will follow EPA guidelines and requirements found under 40 CFR 230 which state: No discharge of dredge or fill material is allowed if: • there is a practicable alternative with a lesser impact; • the discharge causes or contributes to violations of State Water Quality Standards; • the discharge violates applicable toxic effluent standards or prohibitions; • the discharge jeopardizes endangered or threatened species; • the discharge causes or contributes to significant degradation of waters of the U.S.	Applicable	Implementation of the alternatives involving dredging of sediments from Paddys Run and the FMPC storm outfall ditch will result in the discharge of sediments into those waters.	2, 3, 4, 5, 6, 7, 9

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Chemical, Location, or Action	Requirement	ARAR/TBC	Rationale for Implementation	Alternative Number
Discharge of Treatment System Effluent	40 CFR 122.41 OAC 3745-33-05 Monitoring Requirements Discharges must be monitored to assure compliance. Discharges will be monitored for: • the mass of each pollutant • the volume of each pollutant • frequency of discharge and other measurements as appropriate. 40 CFR 136.1 - 136.4 Approved test methods must be followed for waste constituents to be monitored. Detailed requirements for analytical procedures and quality controls are provided. Sample preservation procedures, container materials, and maximum allowable holding times are prescribed.	Applicable	Required of all direct discharges to waters of the U.S. in order to ensure effluent limitations, water quality standards, and toxic pollutant limitations are being met.	2, 3, 4, 5, 6, 7, 9

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Chemical, Location, or Action	Requirement	ARAR/TBC	Rationale for Implementation	Alternative Number
Discharge of Treatment System Effluent	40 CFR 122.44(a) Best Available Technology Use of best available technology (BAT) economically achievable is required to control toxic and nonconventional pollutants. Use of best conventional pollutant control technology (BCT) is required to control conventional pollutants. Technology-based limitations may be determined on a case-by-case basis. 40 CFR 122.44 OAC 3745-1-07 Water Quality Standards Applicable federally approved State water quality standards must be complied with. These standards may be in addition to or more stringent than other Federal effluent standards under the CWA. 40 CFR 122.44(c) Discharge limitations must be established at more stringent levels than technology-based standards for toxic pollutants.	Applicable	Applicable to direct discharges of wastewater to waters of the U.S. Treatment of wastewaters that will be discharged to waters of the U.S. will be required to meet all applicable effluent limitations, water quality standards and toxic pollutant discharge standards as determined by State and/or Federal agencies having discharge permitting authority.	2, 3, 4, 5, 6, 7, 9

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Chemical, Location, or Action	Requirement	ARAR/TBC	Rationale for Implementation	Alternative Number
On-site Solid Non-hazardous Waste Management Facilities	40 CFR 241.200-241.201 Develop a solid, non-hazardous waste handling plan to determine what waste shall be accepted and identify any special handling required. Also, determine specific wastes to be excluded and identify them in the plan. An alternative method of disposal for excluded wastes must also be a part of the solid waste handling plan.	Applicable	Solid, non-hazardous wastes generated as a result of remediation must be managed in accordance with Federal and State regulations.	2, 3, 4, 5, 6, 7, 9

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Chemical, Location, or Action	Requirement	ARAR/TBC	Rationale for Implementation	Alternative Number
Solid, Non-hazardous Waste Treatment and Disposal Facility Design Considerations	40 CFR 241.202 ORC 6111.45 OAC 3745-27 Site selection and utilization consistent with public health and welfare, and air and water quality standards and adaptable to appropriate land-use plans. A plan for the design shall be prepared by a professional engineer and approved by the responsible agency prior to authorization for construction. At a minimum, design shall consider hydrogeology, climate, socioeconomic impacts, land use, decomposition gases, leachate vector control, and aesthetics (pertinent details follow). 40 CFR 241.204 Water Quality The location, design, construction, and operation of the land disposal site shall conform to the most stringent of applicable water quality standards established in accordance with, or effective under, the provisions	Applicable	Treatment/disposal facilities for solid, non-hazardous waste must be planned and designed by the facility owner to meet state and federal requirements.	2, 3, 4, 5, 6, 7, 9

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Solid, Non-hazardous Waste Treatment and Disposal Facility Design Considerations (continued)	of the Federal Water Pollution Control Act, as amended or Ohio EPA if the latter are more stringent. 40 CFR 241.205 Air Quality The design, construction, and operation of the land disposal site shall conform to applicable ambient air quality standards and source control regulations established under the authority of the Clean Air Act, as amended, or Ohio EPA or local standards effective under that Act, if the latter are more stringent. 40 CFR 241.209 Cover Material Cover material shall be applied as necessary to minimize infiltration of precipitation and provide a pleasing appearance.			

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Solid, Non-hazardous Waste Treatment and Disposal Facility Design Considerations (continued)	40 CFR 241.211 Compaction Solid waste shall be compacted to the smallest practicable volume. Safety The land disposal site shall be designed, constructed, and operated in such a manner as to protect the health and safety of personnel associated with the operations.			

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Hazardous Waste Determinations	40 CFR 260, Appendix I Outlines the procedure to be followed under: • 40 CFR 261.2 to identify whether a particular material of concern is a "solid waste"; • 40 CFR 261.4 (a) to identify whether a particular exclusion applies to the material eliminating it from definition as a "solid waste"; • 40 CFR 261.3 to identify whether a particular solid waste may be classified as a hazardous waste under Subpart C or Subpart D of 40 CFR 261; and • 40 CFR 261.4 (b), 40 CFR 260.20, and 40 CFR 260.22 to determine if a material, otherwise classified as a "hazardous waste" under Subpart C or Subpart D, may be excluded from RCRA jurisdiction.	Applicable	Soils, sediments and treatment sludges and residues may contain listed or characteristic hazardous wastes which must be treated, stored and disposed of in accordance with RCRA.	2, 3, 4, 5, 6, 7, 9

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Empty Containers	40 CFR 261 Containers that have held hazardous wastes are "empty" and exempt from further RCRA regulations if: • no more than 2.5 cm (one inch) of residue remains on bottom or inner liner; • less than 3% by weight of total capacity remains (less than 110 gallon container); • less than .3% by weight of total capacity remains (greater than 110 gallon container). Containers that have held acutely hazardous ("p" listed) wastes are "empty" and exempt from further RCRA regulation if: • they or their inner liners have been triple rinsed with an adequate solvent and the inner liner has been removed from the container.	Applicable	Containers used to treat or store hazardous waste from this operable unit may contain hazardous waste residues which must be removed before the containers may be re-used or disposed of.	2, 3, 4, 5, 6, 7, 9

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Generators Who Treat, Store, or Dispose of Hazardous Waste On-Site	40 CFR 262.10 Any "generator", as defined by 40 CFR 260.10, who treats, stores, or disposes of hazardous wastes on-site must do the following: • determine, in accordance with 40 CFR 262.11, whether or not the waste is hazardous; • obtain a U.S. EPA identification number in accordance with 40 CFR 262.12 for the purposes of hazardous waste accumulation, recordkeeping, and additional reporting.	Applicable	Soils and sediments removed from this operable unit and treatment sludges and residues generated on-site are subject to the generator requirements for on-site treatment, storage or disposal if they contain listed or characteristic hazardous wastes.	2, 3, 4, 5, 6, 7, 9

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Generators Who Transport Hazardous Waste for Off-site Treatment, Storage or Disposal	40 CFR 262.20 Any generator who transports hazardous waste for off-site treatment, storage or disposal must originate and follow-up the manifest for off-site shipments. 40 CFR 262.30 Before transporting a hazardous waste the generator must package, label, mark and placard the shipment in accordance with U.S. DOT regulations.	Applicable	Soils and sediments removed from this operable unit and treatment sludges and residues generated on-site are subject to the requirements for generators who transport hazardous waste for off-site treatment, storage, or disposal if they are transported off-site for any of those purposes and if they contain listed or characteristic hazardous wastes.	3, 4, 6, 7

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Action Specific

Chemical, Location, or Action	Requirement	ARAR/TBC	Rationale for Implementation	Alternative Number
Waste Accumulation On-Site by Generator	40 CFR 262.34 Generators may accumulate hazardous waste on-site for 90 days or less (without meeting permitting standards for storage facilities) provided that they: • use appropriate U.S. DOT containers; • mark accumulation beginning date on tanks/containers; • label and mark tanks/containers in accordance with U.S. DOT requirements; • placard transport vehicle or offer appropriate placards to transporter; • follow interim status standards for less than 90 day storage including: - weekly container and storage areas inspections	Applicable	Soils and sediments and treatment sludges and residues from this operable unit, if they contain listed or characteristic hazardous constituents, are subject only to the 90-day generator accumulation requirements if the waste is stored on site for 90 days or less. If hazardous waste is stored for more than 90 days the full permitting standards for TSD facilities must be met.	3, 4, 6, 7

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Action Specific

Chemical, Location, or Action	Requirement	ARAR/TBC	Rationale for Implementation	Alternative Number
Waste Accumulation On-site by Generator (continued)	- maintenance of aisle space between containers wide enough for person to walk carrying emergency equipment - maintain enough space between containers to allow for visual inspection from top and one side of all containers - put in place appropriate emergency preparedness procedures and equipment - maintain spill response pillows or absorbent - conduct RCRA response training for personnel - put in place a written contingency plan - avoid storage of incompatible wastes in same containment area.			

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Action Specific

Chemical, Location, or Action	Requirement	ARAR/TBC	Rationale for Implementation	Alternative Number
Generator Recordkeeping and Reporting	40 CFR 262, Subpart D • Generators must keep copies for three years of the following documents: - Manifests - Biennial and exception reports - Test results, waste analyses or other determinations made in accordance with 40 CFR 262.11 • Generators must submit biennial reports by March 1, of each even numbered year. • Generators must submit exception reports within 35 days of shipment.	Applicable	Soils and sediments excavated or dredged from this operable unit and treatment sludges and residues generated from this operable unit are subject to the generator requirements if they contain listed or characteristic hazardous wastes.	2, 3, 4, 5, 6, 7, 9

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Action Specific

Chemical, Location, or Action	Requirement	ARAR/TBC	Rationale for Implementation	Alternative Number
Treatment, Storage, or Disposal Facility Standards	40 CFR 264, Subpart B, General Standards • Waste Analysis (40 CFR 264.13)- Operators of a facility must obtain a detailed chemical and physical analysis of a representative sample of each hazardous waste to be treated, stored, or disposed of at the facility prior to treatment, storage, or disposal. • Security (40 CFR 264.14)- Operators of a facility must prevent the unknowing or unauthorized entry of persons or livestock into the active portions of the facility, maintain a 24-hour surveillance system, or surround the facility with a controlled access barrier and maintain appropriate warning signs at facility approaches.	Applicable	Soils and sediments excavated or dredged from this operable unit and treatment sludges and residues generated from this operable unit must be treated, stored (if more than 90 days) and disposed of in accordance with TSD Facility Standards if they contain listed or characteristic hazardous wastes.	2, 3, 4, 5, 6, 7, 9

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Action Specific

Chemical, Location, or Action	Requirement	ARAR/TBC	Rationale for Implementation	Alternative Number
Treatment, Storage, or Disposal Facility Standards (continued)	• Inspections (40 CFR 264.15)- Operators of a facility must develop a schedule and regularly inspect monitoring equipment, safety and emergency equipment, security devices and operating and structural equipment that are important to preventing, detecting or responding to environmental or human health hazards, promptly or immediately or immediately remedy defects, and maintain an inspection log. • Training (40 CFR 264.16)- Operators must train personnel within 6 months of their assumption of duties at a facility in hazardous waste management procedures relevant to their positions including emergency response training.			

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Action Specific

Chemical, Location, or Action	Requirement	ARAR/TBC	Rationale for Implementation	Alternative Number
Treatment, Storage, or Disposal Facility Preparedness and Prevention	40 CFR 264, Subpart C TSD operators must design, construct, maintain and operate facilities to minimize the possibility of a fire, explosion or any unplanned sudden or non-sudden release of hazardous waste to air, soil, or surface water which could threaten human health or the environment. 40 CFR 264.32 All facilities must be equipped with an internal communication or alarm system, a telephone, or a two-way radio for calling outside emergency assistance, fire control, spill control, and decontamination equipment and water at an adequate volume and pressure to supply water hose streams, foam producing equipment, automatic sprinklers or water spray systems.	Applicable	Soils and sediments excavated or dredged from this operable unit and treatment sludges and residues generated from this operable unit must be treated, stored (if more than 90 days), and disposed of in accordance with TSD Facility Standards if they contain listed or characteristic hazardous wastes.	2, 3, 4, 5, 6, 7, 9

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Action Specific

Chemical, Location, or Action	Requirement	ARAR/TBC	Rationale for Implementation	Alternative Number
Treatment, Storage, or Disposal Facility Preparedness and Prevention (continued)	40 CFR 264.33 All fire and spill- control and decontamination equipment must be tested and maintained as necessary to assure proper emergency operation. 40 CFR 264.34 All personnel must have immediate access to emergency communication or alarm systems whenever hazardous waste is being handled at the facility. 40 CFR 264.35 Aisle space must be sufficient to allow unobstructed movement of personnel, fire and spill control, and decontamination equipment. 40 CFR 264.37 Operators must attempt to make arrangements, appropriate to the waste handled, for emergency response by local and state fire, police and medical personnel.			

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Action Specific

Chemical, Location, or Action	Requirement	ARAR/TBC	Rationale for Implementation	Alternative Number
Treatment, Storage, or Disposal Facility Contingency Plan and Emergency Procedures	40 CFR 264, Subpart D Each facility operator must have a contingency plan designed to minimize hazards to human health or the environment due to fires, explosions, or any unplanned releases of hazardous waste constituents to the air, soil, or surface/groundwater. 40 CFR 264.52 Contingency plans should address procedures to implement a response to hazardous substance incidents, internal and external communications, arrangements with local emergency authorities, an emergency coordinator list, a facility emergency equipment list indicating equipment descriptions and locations and a facility personnel evacuation plan.	Applicable	Soils and sediments excavated or dredged from this operable unit and treatment sludges and residues generated from this operable unit must be treated, stored (if more than 90 days), and disposed of in accordance with TSD Facility Standards if they contain listed or characteristic hazardous wastes.	2, 3, 4, 5, 6, 7, 9

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Action Specific

Chemical, Location, or Action	Requirement	ARAR/TBC	Rationale for Implementation	Alternative Number
Treatment, Storage, or Disposal Facility Contingency Plan and Emergency Procedures (continued)	40 CFR 264.55 Each facility must have an emergency coordinator who has responsibility for coordinating all emergency response measures, is on the premises or on call at all times, is thoroughly familiar with all aspects of the contingency plan, facility operations, location and characteristics of waste handled, location of pertinent records, and facility layout, and who has the authority to commit the resources necessary to implement the contingency plan.			

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Action Specific

Chemical, Location, or Action	Requirement	ARAR/TBC	Rationale for Implementation	Alternative Number
Treatment, Storage, or Disposal Facility Operating Record	40 CFR 264, Subpart E 40 CFR 264.73- Operating Record requirements Operators must maintain a written operating record at the facility which contains the following: • description and quantity of each hazardous waste received; • method(s) and date(s) of treatment as required by Appendix I; • location of each hazardous waste received and quantity at each location (including a location map for disposal facility); • inspection and monitoring records; and • other records and reports as specified.	Applicable	Records on hazardous wastes from this operable unit which are treated, stored and disposed of must be maintained in accordance with TSD facility standards.	2, 3, 4, 5, 6, 7, 9

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Action Specific

Chemical, Location, or Action	Requirement	ARAR/TBC	Rationale for Implementation	Alternative Number
Treatment, Storage, or Disposal Facility Reporting	40 CFR 264.75-77 Facilities must submit to the appropriate authorities the following reports: - Biennial reports - Reports of unmainifested wastes - Reports of releases, fires, and explosions - Groundwater monitoring data when contamination is discovered (within 7 days) - Notice of facility closure.	Applicable	Soils and sediments excavated or dredged from this operable unit and treatment sludges and residues generated from this operable unit must be treated, stored (if more than 90 days), and disposed of in accordance with TSD Facility Standards if they contain listed or characteristic hazardous wastes.	2, 3, 4, 5, 6, 7, 9

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Action Specific

Chemical, Location, or Action	Requirement	ARAR/TBC	Rationale for Implementation	Alternative Number
Treatment, Storage, or Disposal Facility Groundwater Monitoring and Response Requirements	40 CFR 264, Subpart F 40 CFR 264.90 - Applicability Owners or operators of TSD facilities must operate a groundwater monitoring program unless the facility: - is an engineered structure - does not receive or contain liquid wastes or waste containing free liquids - is designed to exclude run on and run off - has inner and outer containment layers enclosing the waste - has leak detection built into each layer - operator will provide for continual operation and maintenance of the leak detection systems during the active life, closure and post closure of the facility.	Applicable	Requirement is applicable to those alternatives where wastes are removed and being placed in new, replacement or expanded hazardous waste disposal facilities to insure hazardous substances are not leaching out to the soil or groundwater.	2, 3, 4, 5, 6, 7, 9

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Action Specific

Chemical, Location, or Action	Requirement	ARAR/TBC	Rationale for Implementation	Alternative Number
Treatment, Storage, or Disposal Facility Groundwater Monitoring and Response Requirements (continued)	- will not allow hazardous constituents to migrate beyond the containment layer prior to the end of the post closure period - there is no potential for migration of liquid from the unit to the uppermost aquifer prior to the end of the post closure care period. 40 CFR 264.95 - Point of Compliance The point of compliance is the vertical surface located at the hydraulically downgradient limit of the waste management area that extends down into the uppermost aquifer.			

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Action Specific

Chemical, Location, or Action	Requirement	ARAR/TBC	Rationale for Implementation	Alternative Number
Treatment, Storage or Disposal Facility Groundwater Monitoring and Response Requirements (continued)	40 CFR 264.97 - Groundwater Monitoring Owners and operators of new hazardous waste disposal facilities must conduct a groundwater monitoring program in accordance with 40 CFR 264.97. This must include, if necessary, a detection monitoring program under 40 CFR 264.99 and a corrective action program under 40 CFR 264.100 if a groundwater protection standard is exceeded or if the concentration limits established under 40 CFR 264.94 are exceeded between the compliance point and the downgradient facility property boundary.	Applicable		

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Action Specific

Chemical, Location, or Action	Requirement	ARAR/TBC	Rationale for Implementation	Alternative Number
Closure with No Post-closure Care	40 CFR 264.111 OAC 3745-66-11 General performance standard requires elimination of need for further maintenance and control; elimination of post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated run-off, or hazardous waste decomposition products. 40 CFR 264.114 OAC 3745-66-14 During the partial and final closure, all contaminated equipment, structures and soils must be properly disposed.	Applicable	The alternatives call for removal and disposal in locations other than within the operable unit. Requirement is for disposal of remaining residues after removal. The area from which the wastes were removed must meet health-based levels in order to preclude the requirement for post-closure care and monitoring.	4, 5

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Action Specific

Chemical, Location, or Action	Requirement	ARAR/TBC	Rationale for Implementation	Alternative Number
Closure with Waste in Place (See Capping for Additional Associated Requirements)	40 CFR 264.117 - 264.120 OAC 3745-66-17 through 20 Post-closure care must begin after completion of closure and continue for 30 years. During this period, the owner or operator must comply with all post-closure requirements, including maintenance of cover, leachate monitoring and groundwater monitoring.	Applicable	Waste remaining in place after closure requires post-closure care and monitoring to insure elimination of escape of hazardous constituents, leachate, and contaminated run-off.	2, 3, 5, 7, 9

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Action Specific

Chemical, Location, or Action	Requirement	ARAR/TBC	Rationale for Implementation	Alternative Number
Container Storage	Containers of RCRA hazardous waste must be: 40 CFR 264.171 OAC 3745-55-70 through -78 • Maintained in good condition; 40 CFR 264.172 • Compatible with hazardous waste to be stored; and 40 CFR 264.173 • Closed during storage (except to add or remove waste). 40 CFR 264.174 Inspect container storage areas daily for deterioration.	Applicable	These requirements are applicable to alternatives utilizing containers for temporary storage or storage before disposal.	3, 5, 6, 7, 9

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Action Specific

Chemical, Location, or Action	Requirement	ARAR/TBC	Rationale for Implementation	Alternative Number
Container Storage (continued)	40 CFR 264.175 Place containers on a sloped, crack-free base, and protect from contact with accumulated liquid. Provide containment system with a capacity of 10 percent of the volume of containers of free liquids. Remove spilled or leaked waste in a timely manner to prevent overflow of the containment system. 40 CFR 264.177 Keep incompatible materials separate. Separate incompatible materials stored near each other by a dike or other barrier. 40 CFR 264.178 At closure, remove all hazardous waste and residues from the containment system, and decontaminate or remove all containers, liners.			

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Action Specific

Chemical, Location, or Action,	Requirement	ARAR/TBC	Rationale for Implementation	Alternative Number
Treatment (in a Unit)	40 CFR 264, Subpart J (Tanks) Design and operating standards for tank unit within which hazardous waste is stored or treated.	Applicable	Design criteria and operating standards for tank treatment units is applicable for alternatives utilizing treatment or storage in a tank prior to disposal.	2, 3, 5, 6, 7, 9
	40 CFR 264, Subpart K (Surface Impoundments) Design and operating standards for surface impoundments used to treat or store hazardous waste.		Design and operating standards for surface impoundments is applicable for alternatives utilizing treatment or storage in a surface impoundment prior to disposal.	
	40 CFR 264, Subpart L (Waste Piles) Design and operating standards for waste piles used to store hazardous waste.		Design and operating standards for waste piles is applicable for alternatives utilizing storage in a waste pile prior to treatment or disposal.	

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Action Specific

Chemical, Location, or Action	Requirement	ARAR/TBC	Rationale for Implementation	Alternative Number
Construction of Hazardous Waste Disposal Facilities	40 CFR 264.301 Minimum Technology Requirements Install two liners or more, including a top liner that prevents waste migration into the liner, and a bottom liner that prevents waste migration through the liner. Install leachate collection system above and between liners. Construct run-on and run-off control system capable of handling the peak discharge of a 25-year storm. Control wind dispersion of particulates.	Applicable	Requirement is applicable to those alternatives where wastes are removed and being placed in a new, replacement or expanded hazardous waste disposal facility to prevent hazardous substances from being leached into surrounding soil and groundwater.	2, 3, 5, 6, 7, 9

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Action Specific

Chemical, Location, or Action	Requirement	ARAR/TBC	Rationale for Implementation	Alternative Number
Capping (See also Closure with Waste in Place for Additional Associated Requirements)	40 CFR 264.310(a) OAC 3745-66-11 Placement of a cap over waste (e.g., closing a landfill, or closing a waste pile as a landfill, or similar action) requires a cover designed and constructed to: • Provide long-term minimization of migration of liquids through capped area; • Function with minimum maintenance; • Promote drainage and minimize erosion or abrasion of the cover; • Accommodate settling and subsidence so that the cover's integrity is maintained; and • Have a permeability less than or equal to the permeability of any bottom liner system or natural subsoils present.	Applicable	Disposal in place or in a landfill will require a cap to prevent migration of waste constituents due to leaching. The requirement is applicable if the wastes contain hazardous constituents, pollutants or contaminants.	2, 3, 5, 7, 9

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Action Specific

Chemical, Location, or Action	Requirement	ARAR/TBC	Rationale for Implementation	Alternative Number
Capping (See also Closure with Waste in Place for Additional Associated Requirements) (continued)	40 CFR 264.310 (b) OAC 3745-66-11 • Prevent run-on and run-off from damaging cover. • Protect and maintain surveyed benchmarks used to locate waste cells (landfills, waste piles). • Maintain the integrity and effectiveness of the final cover, including making repairs to the cap as necesary to correct the effects of settling, subsidence, erosion, or other events, monitoring of leachate and groundwater monitoring required in 40 CFR 264, Subpart F.			

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Action Specific

Chemical, Location, or Action	Requirement	ARAR/TBC	Rationale for Implementation	Alternative Number
Land Disposal Restrictions	40 CFR 268 Generally prohibits the placement of restricted RCRA hazardous wastes in land-based units such as landfills, surface impoundments, waste piles and land treatment facilities, unless: • they have been treated in accordance with technology-based or treatment-based standards specified under 40 CFR 268.40-43; • they remain hazardous but treatment has been waived under a "National Capacity Extension" as specified under 40 CFR 268.30-33 and the receiving unit meets the RCRA Sec. 3004 (O) minimum technology requirements including double liner, leachate collection system and groundwater monitoring;	Applicable	If restricted RCRA wastes are generated or removed from the operable unit they may only be placed in a land disposal unit after they have been treated in accordance with the land disposal treatment requirements or have qualified for a waiver or variance from the treatment requirements.	2, 3, 5, 6, 7, 9

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Action Specific

Chemical, Location, or Action	Requirement	ARAR/TBC	Rationale for Implementation	Alternative Number
Land Disposal Restrictions (continued)	• a treatability variance has been set for the waste accordance with 40 CFR 268.44; • an equivalent treatment method petition has been approved where the site manager can demonstrate that another technology can achieve an equivalent measure of performance in accordance with 40 CFR 268.42; • a no-migration petition has been approved in accordance with 40 CFR 268.6; • the site manager can have the waste delisted by demonstrating that the waste does not meet any of the criteria under which the waste was listed and other factors (including additional constituents) would not cause the waste to be hazardous.			

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Action Specific

Chemical, Location, or Action	Requirement	ARAR/TBC	Rationale for Implementation	Alternative Number
Land Disposal Restrictions on Storage of Restricted Waste	40 CFR 268.50 The storage of hazardous waste restricted from land disposal under RCRA Section 3004 and 40 CFR 268, Subpart C is prohibited unless: • Wastes are stored in tanks or containers by a generator or the on-site operator of a TSD facility solely for the purpose of accumulation of such quantities as to facilitate proper treatment or disposal. • Generators storing waste under this provision must also comply with 40 CFR 262.34 including the 90-day storage limitation. • TSD facility operators storing waste under this provision must also: - clearly mark each container to identify the contents and the beginning date for accumulation of the waste;	Applicable	Restricted hazardous waste generated or removed from the operable unit may be stored or accumulated prior to treatment, packaging, and disposal if the land disposal accumulation requirements are met.	2, 3, 4, 5, 6, 7, 9

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Action Specific

Chemical, Location, or Action	Requirement	ARAR/TBC	Rationale for Implementation	Alternative Number
Land Disposal Restrictions on Storage of Restricted Waste (continued)	- clearly mark each tank with a description of contents, quantity of contents, and beginning accumulation date, or record such information in the facility operating record - comply with operating record requirements under 40 CFR 264.73 • TSD facility operators may store wastes under this provision for up to one year.			

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Action Specific

Chemical, Location, or Action	Requirement	ARAR/TBC	Rationale for Implementation	Alternative Number
Wastewater Treatment	OAC 3745-31 New wastewater treatment facilities and/or industrial processes which produce process wastewater must meet substantive permitting requirements.	Applicable	The FMPC now has a central wastewater treatment facility. Implementation of remedial alternatives may result in new process waste streams which may be incompatible with the existing wastewater treatment facility and which may require the construction and operation of a separate facility to treat those wastes prior to discharge.	2, 3, 4, 5, 6, 7, 9

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Action Specific

Chemical, Location, or Action	Requirement	ARAR/TBC	Rationale for Implementation	Alternative Number
Criteria Relating to the Disposition of Uranium Tailings or Wastes	10 CFR 40, Appendix A Establishes technical and long-term surveillance criteria relating to the siting, operation, decontamination, decommissioning, and reclamation of mills and tailings or waste systems and sites at which such mills and systems are located. These criteria include: • Selection of sites with features which contribute to the goal of permanent isolation of wastes; • Disposal in a manner such that no active maintenance is required to preserve conditions of the site; • Minimization of the number of disposal sites; • Minimization of water and wind erosion potential;	Relevant and Appropriate	Contaminated soils and sediments excavated or dredged from this operable unit and sludges and residues resulting from groundwater treatment within this operable unit are similar to uranium mill tailings and thus present similar health and environmental risks.	2, 3, 5, 6, 7, 9

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Action Specific

Chemical, Location, or Action	Requirement	ARAR/TBC	Rationale for Implementation	Alternative Number
Criteria Relating to the Disposition of Uranium Tailings or Wastes (continued)	• General design considerations for above-ground disposal facilities including caps; • Compliance with basic groundwater protection standards imposed by 40 CFR 192, Subparts D and E; • Conduct a preoperational monitoring program to provide complete baseline data on the site and its environs; • Establish a groundwater monitoring program to detect leakage of hazardous constituents and to establish the needed groundwater protection standards; and • Long-term site surveillance with an annual inspection by the government agency retaining ultimate custody of the site.			

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Action Specific

Chemical, Location, or Action	Requirement	ARAR/TBC	Rationale for Implementation	Alternative Number
Land Disposal On-Site	10 CFR 61, Subpart C Land disposal facilities must be sited, designed, operated, closed, and controlled after closure so that reasonable assurance exists that exposure to humans are within the limits established in the following performance objectives: • Annual dose equivalent limit of 25 mrem (whole body), 75 mrem (thyroid) and 25 mrem (any other organ) for any member of the public due to radioactive materials which may be released from the land disposal facility. • Protection of any inadvertent intruder into the disposal site at any time after active institutional controls over the disposal site are removed.	Relevant and Appropriate	Facilities which are to be used for on-site land disposal of radioactive materials contained within this operable unit should meet the performance objectives of facilities for similar radioactive materials from NRC-licensed facilities.	2, 3, 5, 6, 7, 9

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Action Specific

Chemical, Location, or Action	Requirement	ARAR/TBC	Rationale for Implementation	Alternative Number
Land Disposal On-Site (continued)	• Operations at the disposal facility must be conducted in accordance with 10 CFR 20. • Long-term stability and elimination of the need (to the extent practicable) for ongoing active maintenance of the disposal site following closure so that only surveillance, monitoring, or minor custodial care are required.			

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Action Specific

Chemical, Location, or Action	Requirement	ARAR/TBC	Rationale for Implementation	Alternative Number
Land Disposal On-Site	10 CFR 61, Subpart D Technical requirements for land disposal facilities for radioactive waste must be satisfied. These include: • Disposal site suitability requirements for land disposal; • Design criteria for a land disposal site; • Operation and closure criteria; • Environmental monitoring requirements; • Waste classification requirements; and • Waste characteristics requirements.	Relevant and Appropriate	Facilities which are to be used for on-site land disposal of radioactive materials contained within this operable unit should meet the performance objectives of facilities for similar radioactive materials from NRC-licensed facilities.	2, 3, 5, 6, 7, 9

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Action Specific

Chemical, Location, or Action	Requirement	ARAR/TBC	Rationale for Implementation	Alternative Number
Discharge of Treatment System Effluent	40 CFR 125.100 Best Management Practices Develop and implement a Best Management Practices (BMP) program to prevent the release of toxic or hazardous constituents to waters of the U.S. 40 CFR 125.104 The BMP program must: • Establish specific procedures for the control of toxic and hazardous pollutant spills and runoff. • Include a prediction of direction, rate of flow, and total quantity of toxic and hazardous pollutants where experience indicates a reasonable potential for equipment failure.	Relevant and Appropriate	All of the proposed alternatives have the potential for releases and runoff from this operable unit. The requirement is not applicable because BMP under the NPDES permit program applies only to ancillary facilities from manufacturing units that may have releases of toxic or hazardous waste. The BMP program is relevant and appropriate to prevent releases from spills or runoff during the implementation of remedial actions.	2, 3, 4, 5, 6, 7, 9

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Action Specific

Chemical, Location, or Action	Requirement	ARAR/TBC	Rationale for Implementation	Alternative Number
Cleanup of Land and Buildings Contaminated with Residual Radioactive Materials	40 CFR 192, Subparts B and C Remedial actions shall be conducted at any site, or other real property or improvement thereon containing residual radioactive materials from inactive uranium processing sites so as to provide reasonable assurance that: • Radium-226 concentrations in land averaged over any area of 100 m^2 shall not exceed the background level by more than 5 pCi/g averaged over the first 15 cm of soil below the surface and 15 pCi/g averaged over 15 cm thick layers of soil more than 15 cm below the surface. • Annual average radon decay product concentrations (including background) in any occupied or habitable building shall not exceed 0.02 WL, or in any case it shall not exceed 0.03 WL. • Gamma radiation level in any occupied or habitable building shall not exceed background level by more than 20 μR/hr.	Relevant and Appropriate	Soils and sediments in this operable unit were contaminated as a result of uranium processing operations at this facility. Requirements for remedial actions should be consistent with design at other uranium processing facilities.	2, 3, 4, 5, 6, 7, 9

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Action Specific

Chemical, Location, or Action	Requirement	ARAR/TBC	Rationale for Implementation	Alternative Number
Discharge of Treatment System Effluent	DOE Order 5400.xy Treatment system shall be designed to allow operators to detect and quantify unplanned releases of radionuclides, consistent with the potential for off property impact.	To be considered	Required at all DOE-controlled facilities where radionuclides might be released during unplanned events.	2, 3, 4, 5, 6, 7, 9

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Action Specific

Chemical, Location, or Action	Requirement	ARAR/TBC	Rationale for Implementation	Alternative Number
Residual Radioactive Material in Soil	DOE Order 5400.5, Chapter IV Concentrations of residual radioactivity in soil in areas for unrestricted use shall not exceed background concentrations averaged over an area of 100 m^2 by the following: • Generic guidelines for radium-226, radium-228, thorium-230, and thorium-232: a) 5 pCi/g, averaged over the first 15 cm of soil below the surface; and b) 15 pCi/g, averaged over 15-cm-thick layers of soil more than 15 cm below the surface. • For other radionuclides, the residual concentration of the radionuclides in soil shall be derived from the basic dose limit (100 mrem effective dose equivalent per year) by means of an environmental pathway analysis	To be considered	Radioactive soils in this operable unit could deliver an effective radiation dose exceeding 100 mrem per year in unrestricted areas.	2, 3, 4, 5, 6, 7, 9

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Chemical, Location, or Action	Requirement	ARAR/TBC	Rationale for Implementation	Alternative Number
Residual Radioactive Material in Soil (continued)	using site specific data where available. Procedures for derivations of residual radioactivity are given in "A Manual for Implementing Residual Radioactive Material Guidelines" (DOE/CH-8901). • Criteria for "hot spots" are contained in DOE Order 5400.5, Chapter IV and DOE/CH-8901. • Explicit formulas for calculating residual concentration guidelines for mixtures are given in DOE/CH-8901. • An exception to the above is that residual radioactive materials above the guidelines shall be managed in accordance with Chapter II of this Order, and the requirements of Section 6 of Chapter IV.			

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Action Specific

Chemical, Location, or Action	Requirement	ARAR/TBC	Rationale for Implementation	Alternative Number
Land Disposal On-Site	DOE Order 5820.2A, Chapter III DOE solid low-level wastes shall be managed in accordance with DOE Order 5820.2A, Chapter III and the additional requirements cited therein.	To be considered	Radioactive materials within this operable unit include materials classified as low-level waste and are to be managed in accordance with DOE requirements for low-level waste.	2, 3, 5, 6, 7, 9

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Action Specific

Chemical, Location, or Action	Requirement	ARAR/TBC	Rationale for Implementation	Alternative Number
Land Disposal On-Site	DOE Order 5820.2A, Chapter IV DOE waste containing byproduct material shall be stored, stabilized in-place, and/or disposed of consistent with the requirements of the residual radioactive material guidelines contained in 40 CFR 192.	To be considered	Radioactive materials within this operable unit include materials which meet the definition of byproduct material (DOE Order 5820.2A, Attachment 1, page 1, paragraph 3) and therefore are to be managed in accordance with DOE requirements for waste containing byproduct materials.	2, 3, 5, 6, 7, 9

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Action Specific

Chemical, Location, or Action	Requirement	ARAR/TBC	Rationale for Implementation	Alternative Number
Residual Radioactive Material as Surface Contamination	U.S. NRC Regulatory Guide 1.86 Surface contamination guidelines for release of equipment and building components for unrestricted use, and if buildings are demolished, for contamination in the ground, shall not be exceeded.	To be considered	Radioactive materials in this operable unit could cause surface contamination levels to exceed the levels specified in the guidelines.	All

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Action Specific

Chemical, Location, or Action	Requirement	ARAR/TBC	Rationale for Implementation	Alternative Number
Remediation of Sites Having Radioactive Wastes from Uranium Processing	DOE Plan for Implementing EPA Standards for UMTRA Sites (UMTRA-DOE/AL-163)(January 1984)- Presents direction for implementing EPA standards on uranium mill tailings remedial action sites. DOE Technical Approach Document-Revision II (UMTRA-DOE/AL-050425.0002)(December 1987)- Presents the technical approach for remediation of uranium mill tailings remedial action sites. DOE Remedial Action Planning and Disposal Cell Design (UMTRA-DOE/AL 400503)(January 1989)- Presents direction for complying with the proposed 40 CFR 192 for planning and disposal cell design for uranium mill tailings remedial action sites.	To be considered	Materials within this operable unit have similar chemical and radiological properties as uranium mill tailings. Directions for remediation of mill tailings sites contained within these documents can provide guidance not found in promulgated regulations.	2, 3, 4, 5, 6, 7, 9

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Action Specific

Chemical, Location, or Action	Requirement	ARAR/TBC	Rationale for Implementation	Alternative Number
Remediation of Sites Having Radioactive Wastes from Uranium Processing (continued)	DOE Project Surveillance and Maintenance Plan (UMTRA-DOE/AL 350124)- Presents direction for surveillance and maintenance of uranium mill tailings remedial action sites.			