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POTENTIAL APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS ENGINEERED WASTE MANAGEMENT FACILITY REVISION 4 MARCH 1992

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ENCLOSURE

POTENTIAL APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

ENGINEERED WASTE MANAGEMENT FACILITY

REVISION 4

Remedial Investigation/Feasibility Study

Fernald Environmental Management Project

March 1992

U.S. Department of Energy

Fernald Office

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FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
FERNALD, OHIO

POTENTIAL ARARs
ENGINEERED WASTE MANAGEMENT FACILITY

Chemical Specific

Chemical, Location, or Action	Requirement	On-Property Disposal ARAR/TBC	On-Property Storage ARAR/TBC	Rationale for Implementation
Operational Discharges (Air) 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	Applicable	Radioactive materials could contribute to the dose to members of the public from the air pathway during disposal or due to disturbance during long-term storage.
Operational Discharges (Air) Radon-222 Emissions	40 CFR 61, Subpart Q No source at a DOE facility shall emit more than 20 pCi/m^2-s of radon-222 as an average for the entire source during periods of storage and disposal.	Applicable	Applicable	The facility includes sources which contain radium-226 in sufficient concentrations to emit radon-222.
Operational Discharges (Water) Ohio Water Quality Standards	OAC 3745-1-07 (C) - Use Designations and Criteria All pollutants or combinations of pollutants shall not exceed (outside the mixing zone as defined in this rule) the established numerical acute aquatic criteria (AAC) or chronic aquatic criteria (CAC) for a particular parameter listed in Tables 7-1 through 7-15 of this rule (numerical and narrative criteria for Aquatic Life Habitat and Water Supply designations).	Applicable	Applicable	Paddys Run and the Great Miami River are designated as warm-water aquatic life habitats. On-site disposal or long-term storage of chemical contaminants could potentially contribute to contamination in these aquatic habitats.

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Chemical, Location, or Action	Requirement	On-Property Disposal ARAR/TBC	On-Property Storage ARAR/TBC	Rationale for Implementation
Operational Discharges (Water) Radioactive Materials in Ohio River and in Receiving Water 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	Applicable	Radioactive materials which remain onsite potentially could be released and contribute to radioactivity in receiving waters of the Ohio River.
Operational Discharges (Water) Inorganic Chemicals in Drinking Water	40 CFR 141.11, 40 CFR 141.62 OAC 3745-81-11 The maximum contaminant levels (MCLs) for inorganic chemicals are the maximum levels of a contaminant in water which is delivered to a free-flowing outlet of the ultimate user of a public water system. A list of potential MCLs are provided in Attachment 1.	Relevant and Appropriate	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 protect drinking water sources from the same contaminants stored or disposed of at the EWMF. This regulatory requirement is listed a an ARAR for the purpose of being utilized as an operations protection standard and to predict design-based performance criteria for the EWMF.

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Chemical Specific

Chemical, Location, or Action	Requirement	On-Property Disposal ARAR/TBC	On-Property Storage ARAR/TBC	Rationale for Implementation
Operational Discharges (Water) Organic Chemicals in Drinking Water	40 CFR 141.12, 40 CFR 141.61 OAC 3745-81-12 The MCLs for organic chemicals are the maximum levels of a contaminant in water which is delivered to a free-flowing outlet of the ultimate user of a public water system. A list of potential MCLs are provided in Attachment 1.	Relevant and Appropriate	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 protect drinking water sources from the same contaminants stored or disposed of at the EWMF. This regulatory requirement may be utilized for the groundwater monitoring program for a disposal facility and for the closure plans for either a storage facility or a disposal facility.

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Chemical, Location, or Action	Requirement	On-Property Disposal ARAR/TBC	On-Property Storage ARAR/TBC	Rationale for Implementation
Operational Discharges (Water) 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: (See Attachment 1) 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.	Relevant and Appropriate	Relevant and Appropriate	The requirement is not applicable since no public water source (as defined in 40 CFR 141) is involved. It is relevant and appropriate to protect drinking water sources from the same contaminants found in the EWMF. These contaminants may migrate from the EWMF into the underlying aquifer. This requirement will be of more concern for a disposal facility than for a storage facility. This regulatory requirement is listed a an ARAR for the purpose of being utilized as an operations protection standard and to predict design-based performance criteria for the EWMF.

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Chemical, Location, or Action	Requirement	On-Property Disposal ARAR/TBC	On-Property Storage ARAR/TBC	Rationale for Implementation
Operational Discharges (Water) Chemicals in Drinking Water	40 CFR 141.50 - 141.51 - National Primary Drinking Standards Maximum Contaminant Level Goals (MCLGs) for potential chemicals of concern in community water systems are to be developed. A list of chemicals that have been detected or inferred is provided in Attachment 1.	Relevant and Appropriate	Relevant and Appropriate	Proposed MCLGs are to be considered together with MCLs in establishing acceptable levels of protectiveness for human health and the environment. This regulatory requirement may be utilized as a protection standard for the disposal facility groundwater monitoring program and for the final closure plans for either a storage a disposal facility.
Operational Discharges 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	Relevant and Appropriate	During maintenance and operation of either a storage or a disposal facility, radioactive materials could contribute radiation doses, levels, and concentrations to individuals in restricted areas which could exceed the specified limits.

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Chemical, Location, or Action	Requirement	On-Property Disposal ARAR/TBC	On-Property Storage ARAR/TBC	Rationale for Implementation
Construction and Closure Design 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	Relevant and Appropriate	Radioactive materials in the EWMF will 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.

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Chemical, Location, or Action	Requirement	On-Property Disposal ARAR/TBC	On-Property Storage ARAR/TBC	Rationale for Implementation
Construction and Closure Design	40 CRF 191.15 and 191.16, Subpart B	TBC	TBC	Rationale for implementation of all or part of 40 CRF 191, Subpart B will depend on the results of discussions between DOE and U.S. EPA
Groundwater Protection Requirements	a) Disposal systems for spent nuclear fuel or high-level or transuranic radioactive wastes shall be designed to provide a reasonable expectation that, for 1,000 years after disposal, undisturbed performance of the disposal system shall not cause the radionuclide concentrations averaged over any year in water withdrawn from any portion of a special source of ground water to exceed: (1) 5 picocuries per liter of radium-226 and radium-228; (2) 15 picocuries per liter of alpha-emitting radionuclide (including radium-226 and radium-228 but excluding radon); or			

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Chemical, Location, or Action	Requirement	On-Property Disposal ARAR/TBC	On-Property Storage ARAR/TBC	Rationale for Implementation
Groundwater Protection Requirements (Continued)	3) The combined concentrations of radionuclides that emit either beta or gamma radiation that would produce an annual dose equivalent to the total body or any internal organ greater than 4 millirems per year if an individual consumed 2 liters per day of drinking water from such a source of ground water. b) If any of the average annual radionuclide concentrations existing in a special source of ground water before construction of the disposal system already exceed the limits in 191.16(a), the disposal system shall be designed to provide a reasonable expectation that, for 1,000 years after disposal, undisturbed performance of the disposal system shall not increase the existing average annual radionuclide concentrations in water withdrawn from that special source of groundwater by more than the limits established in 191.16(a).	TBC	TBC	Rationale for implementation for all or part of 40 CFR 191, Subpart B, will be dependent on the results of discussions between DOE and U.S. EPA.

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Chemical, Location, or Action	Requirement	On-Property Disposal ARAR/TBC	On-Property Storage ARAR/TBC	Rationale for Implementation
Individual Protection Requirements	The disposal system shall not cause the annual dose equivalent from the disposal system to any member of the public in the accessible environment to exceed 25 millirems to the whole body or 75 millirems to any critical organ. All potential pathways (associated with undisturbed performance) from the disposal system to people shall be considered.	TBC	TBC	Rationale for implementation for all or part of 40 CFR 191, Subpart B, will be dependent on the results of discussions between DOE and U.S. EPA.
Operational and Post-Closure Discharges 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. A list of potential MCLs is provided in Attachment 1.	Applicable	NA	If the EWMF disposal facility includes solid waste, the facility will be subject to this regulation. This regulation does not apply to disposal facilities for hazardous waste where solid waste is not also disposed of.

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Chemical, Location, or Action	Requirement	On-Property Disposal ARAR/TBC	On-Property Storage ARAR/TBC	Rationale for Implementation
Operational and Post-Closure Discharges 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. A list of potential MCLs is provided in Attachment 1.	Applicable	NA	This regulatory requirement is listed a an ARAR for the purpose of being utilized as an operations protection standard and to predict design-based performance criteria for the EWMF.
Operational Discharges 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	To be considered	Radiation sources within the EWMF could contribute to the total dose to members of the public via all pathways from this DOE facility. The guidance provision is listed as a TBC for the purpose of being utilized as an operations protection standard and to predict design-based performance criteria for the EWMF. This guidance provision is intended to supplement the relevant and appropriate requirement 10 CFR 61.41 for multiple sources at the DOE facility.

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Chemical, Location, or Action	Requirement	On-Property Disposal ARAR/TBC	On-Property Storage ARAR/TBC	Rationale for Implementation
Operational Discharges 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	To be considered	Radioactive materials within the EWMF could contribute to the public dose obtained from drinking water. This guidance provision is listed as a TBC for the purpose of being utilized as an operations protection standard and to predict design-based performance criteria for the EWMF.
Operational and Post-Closure Discharges Chemical Reference Dose and Slope Factor Guidance Intended to be Protective of Human Health	U.S. EPA provides guidance for using Reference Doses and Slope Factors for establishing concentrations of contaminants that are protective of human health. These values are obtained from the "Integrated Risk Information System" (IRIS) or the "Health Effects Assessment Summary Tables' (HEAST). A list of 10 potential Reference Doses and Slope factors are provided in Attachment I.	To be considered	To be considered	40 CFR 300 requires that when ARARs are not available or are not sufficiently protective because of the presence or multiple contaminants at a site or multiple pathways of exposure, guidance documents are to be considered when establishing concentrations of contaminants that are protective of human health and the environment. This guidance provision is listed as a TBC for the purpose of being utilized as an operations protection standard and to predict design-based performance criteria for the EWMF.

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Chemical Specific

Chemical, Location, or Action	Requirement	On-Property Disposal ARAR/TBC	On-Property Storage ARAR/TBC	Rationale for Implementation
Operational Discharges Particulate Ambient Air Quality Standards	OAC 3745-17-02 Establishes specific standards for total suspended particulates.	Relevant and appropriate	NA	To be applied for sites that will undergo excavation, demolition, cap installation, and clearing and grubbing.
Operational Discharges Air Quality Particulate Non-Degradation Policy	OAC 3745-17-05 Degradation of air quality in any area where air quality is better than required by 3745-17-02 is prohibited.	Applicable	Applicable	All activities are required to adhere to the policy since the FEMP is in an area where the present air quality is equal to or better than the ambient air quality standards specified in OAC 3745-17-02.

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Chemical, Location, or Action	Requirement	On-Property Disposal ARAR/TBC	On-Property Storage ARAR/TBC	Rationale for Implementation
Siting and Construction 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 the appropriate State agency, necessary actions to protect fish and wildlife from impacts associated with modifying streams or areas affecting streams are to be implemented.	Applicable	Applicable	On-site location and operation of either a storage or a disposal facility may 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.
Siting and Construction Location Standards for Solid Waste Disposal Facilities	40 CFR 257.3-1 Facilities in floodplain areas shall not restrict the flow of the base flood, reduce temporary water storage capacity of the floodplain, or result in a release of waste so as to pose a hazard to human health.	Applicable	Relevant and Appropriate	The floodplain area should be considered in the location of the EWMF.

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Location Specific

Chemical, Location, or Action	Requirement	On-Property Disposal ARAR/TBC	On-Property Storage ARAR/TBC	Rationale for Implementation
Siting	40 CRF 191.14(e), Subpart B Siting locations to be avoided (valuable or irreplaceable) with exceptions	TBC	NA	Rationale for implementation for all or part of 40 CFR 191, Subpart B, will be dependent on the results of discussions between DOE and U.S. EPA.
Siting Protection of Wetlands	40 CFR 258.12 New solid waste landfill units must not be located in wetlands unless the State approves otherwise.	Applicable	Relevant and Appropriate	The construction of a disposal facility or a storage facility for waste which includes solid waste may impact wetlands areas.
Siting Protection of Endangered Species	50 CFR 200, 204 ORC 1518 ORC 1513.25 OAC 1501:18-1-01 Federal agencies must not jeopardize the continued existence of any endangered or threatened species, or destroy or adversely modify critical habitat or such species.	Applicable	Applicable	The FEMP is located within the range of the Indiana bat, a federally listed endangered species, and the cave salamander, an Ohio state listed endangered species. Any potential impacts of the EWMF on these species must be evaluated.

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Chemical, Location, or Action	Requirement	On-Property Disposal ARAR/TBC	On-Property Storage ARAR/TBC	Rationale for Implementation
Siting 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, 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.	Applicable	Applicable	The criteria for the location and design of the EWMF will in part be based upon the presence of the 100-year floodplain.

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Chemical, Location, or Action	Requirement	On-Property Disposal ARAR/TBC	On-Property Storage ARAR/TBC	Rationale for Implementation
Siting	10 CFR 1022	Applicable	Applicable	Paddys Run is a floodplain area. Any potential impact of the EWMF on the floodplain must be evaluated.
Floodplain Management	40 CFR 6.302 (b) (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. DOE shall also determine the applicability of the floodplain management and wetlands protection requirements of 10 CFR 1022, Subpart B.	Applicable	Applicable	

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Chemical, Location, or Action	Requirement	On-Property Disposal ARAR/TBC	On-Property Storage ARAR/TBC	Rationale for Implementation
Siting Protection of Wetlands	40 CFR 6.302 (a) (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;	Applicable	Applicable	Construction and operation of either a disposal or storage facility may impact wetlands areas.

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Chemical, Location, or Action	Requirement	On-Property Disposal ARAR/TBC	On-Property Storage ARAR/TBC	Rationale for Implementation
Siting Protection of Wetlands	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.	Applicable	Applicable	

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Action Specific

Chemical, Location, or Action	Requirement	On-Property Disposal ARAR/TBC	On-Property Storage ARAR/TBC	Rationale for Implementation
Operational Procedures On-Site Solid Non-Hazardous Waste Management Facility	40 CFR 241.200-241.201 Develop a solid, nonhazardous 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 solid waste handling plan. An alternative method of disposal for excluded wastes must also be a part of the plan.	Applicable	Applicable	Handling of solid wastes will be part of the operation of the EWMF.

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Chemical, Location, or Action	Requirement	On-Property Disposal ARAR/TBC	On-Property Storage ARAR/TBC	Rationale for Implementation
Siting and Construction Solid, Non-Hazardous Waste Disposal Facility Design Considerations	40 CFR 241.202 ORC 6111.45 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).	Applicable	NA	In order for the EWMF disposal facility to be used for management of solid waste, the facility must be sited, designed, and operated in accordance with state and federal requirements for solid, non-hazardous waste disposal.

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Chemical, Location, or Action	Requirement	On-Property Disposal ARAR/TBC	On-Property Storage ARAR/TBC	Rationale for Implementation
Siting and Construction Solid, Non-hazardous Waste Disposal Facility Design Considerations (continued)	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 of the Federal Water Pollution Control Act, as amended. 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 the Act, if the latter are more stringent.	Applicable	NA	

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Chemical, Location, or Action	Requirement	On-Property Disposal ARAR/TBC	On-Property Storage ARAR/TBC	Rationale for Implementation
Siting and Construction Solid, Non-Hazardous Waste Disposal Facility Design Considerations (continued)	OAC 3745-27-11 (G) Cover Material: The cover shall be applied in accordance with the closure requirements of OAC 3745-27-11 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. Pertinent provisions of the Occupational Safety and Health Act of 1970 (Pub. L. 91-596) and regulations promulgated thereunder shall apply.	Applicable	NA	

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Chemical, Location, or Action	Requirement	On-Property Disposal ARAR/TBC	On-Property Storage ARAR/TBC	Rationale for Implementation
Siting and Construction Solid, Non-Hazardous Waste Disposal Facility Design Considerations (continued)	OAC 3745-27-07 (B) A permit to install application for a sanitary landfill facility must meet the following requirements or receive a waiver from the USEPA and an exemption from the Ohio EPA: 3745-27-07 (B)(1)(2)(3) Is not located in a sand or gravel pit where the sand or gravel deposit has not been completely removed, a limestone quarry or a sandstone quarry, national or state park, or candidate for potential inclusion in the national park system.	Applicable	NA	
Siting and Construction Solid, Non-Hazardous Waste Disposal Facility Design Considerations (continued)	3745-27-07 (B)(4) Is not located within the surface and subsurface area surrounding a public water supply well through which contaminants may move toward and may reach the public water supply well within a period of 5 years.	Applicable	NA	

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Siting and Construction Solid, Non-Hazardous Waste Disposal Facility Design Considerations (continued)	GD 0202.105 Provides guidance for the calculation of the five-year time of travel and the criteria for compliance with 3745-27-07 (B)(4). 3745-27-07 (B)(5) Is not located above an aquifer declared by the federal government under the "Safe Drinking Water Act" to be a sole source aquifer prior to the date of receipt of the permit to install application by the Ohio EPA.	Applicable	NA	

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Chemical, Location, or Action	Requirement	On-Property Disposal ARAR/TBC	On-Property Storage ARAR/TBC	Rationale for Implementation
Siting and Construction Solid, Non-Hazardous Waste Disposal Facility Design Considerations (continued)	3745-27-07 (B)(6) The limits of solid waste placement are not located within 1000 feet of a nature preserve, a state wildlife area, state scenic river, a national wildlife refuge, a national scenic river, a special interest area or a research natural area in the Wayne national forest, a stream segment designated as either a state resource water, a cold-water habitat, or an exceptional warm-water habitat. 3745-27-07 (B)(7) The limits of solid waste placement and the leachate management system are not located within 200 feet of a fault that has displacement in Holocene time. 3745-27-07 (B)(8) The sanitary landfill facility is not located within an area of potential subsidence due to an underground mine.	Applicable	NA	

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Action Specific

Chemical, Location, or Action	Requirement	On-Property Disposal ARAR/TBC	On-Property Storage ARAR/TBC	Rationale for Implementation
Siting and Construction Solid, Non-Hazardous Waste Disposal Facility Design Considerations (continued)	3745-27-07 (B)(9) The sanitary landfill facility is not located above an unconsolidated aquifer capable of sustaining a yield of 100 gallons per minute for a 24-hour period to a water supply well located within 1000 feet of the limits of solid waste placement. 3745-27-07 (B)(10) The limits of solid waste placement and the leachate management system are not located in a regulatory floodplain. 3745-27-07 (B)(11) The limits of the solid waste placement are not located within 1000 feet of a water supply well or a developed spring. 3745-27-07 (B)(12) The limits of solid waste placement are not located within 300 feet of the sanitary landfill facility's property line.	Applicable	NA	

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Action Specific

Chemical, Location, or Action	Requirement	On-Property Disposal ARAR/TBC	On-Property Storage ARAR/TBC	Rationale for Implementation
Siting and Construction Solid, Non-Hazardous Waste Disposal Facility Design Considerations (continued)	3745-27-07 (B)(13) The limits of solid waste placement are not located within 1000 feet of a domicile, whose owner has not consented in writing to the location of the sanitary landfill facility. 3745-27-07 (B)(14) The limits of solid waste placement are not located within 200 feet of a stream, lake, or natural wetland, unless deemed acceptable to the director. 3745-27-07 (B)(15) The isolation distance between the uppermost aquifer system and the bottom of the recompacted soil liner of a sanitary landfill facility is not less than 15 feet of in situ or added geologic material deemed acceptable by the director.	Applicable	NA	

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Chemical, Location, or Action	Requirement	On-Property Disposal ARAR/TBC	On-Property Storage ARAR/TBC	Rationale for Implementation
Operational Procedures Operation of a Solid Waste Disposal Facility	OAC 3745-27-19 A-Q Specifies general operational requirements for solid waste landfills	Applicable	NA	Pertains to any newly created solid waste landfill or any expansion of an existing solid waste landfill onsite.
Operational Procedures 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	Applicable	Applicable	The EWMF facility will be used to store or dispose of listed or characteristic hazardous waste which must be stored or disposed of in accordance with RCRA.

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Action Specific

Chemical, Location, or Action	Requirement	On-Property Disposal ARAR/TBC	On-Property Storage ARAR/TBC	Rationale for Implementation
Operational Procedures Hazardous Waste Determinations (continued)	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	Applicable	
Operational Procedures Generators Who Treat, Store, or Dispose of Hazardous Waste	40 CFR 262.10 Any generator, as defined by 40 CFR 260.10, who treats, stores, or disposes of hazardous wastes must do the following: Determine in accordance with 40 CFR 262.11, whether or not the waste is hazardous; and 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	Applicable	The hazardous waste stored or disposed of at the EWMF is subject to the generator requirements.

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Action Specific

Chemical, Location, or Action	Requirement	On-Property Disposal ARAR/TBC	On-Property Storage ARAR/TBC	Rationale for Implementation
Operational Procedures 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 followup 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.	NA	Applicable	The manifest regulations are not applicable for permanent on-site disposal. Manifests will be required for shipments from the storage facility at the time of final disposal.

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Action Specific

Chemical, Location, or Action	Requirement	On-Property Disposal ARAR/TBC	On-Property Storage ARAR/TBC	Rationale for Implementation
Operational Procedures Treatment, Storage, or Disposal Facility Standards	40 CFR 264, Subpart B, General Standards Waste Analysis (40 CFR 264.13) OAC 3745-54-13 A: 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) OAC 3745-54-14 A,B,C: 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	Applicable	Soils and sediments excavated or dredged from the site and treatment sludges and residues generated on the site must be treated, stored (if more than 90 days), and disposed of in accordance with TSD Facility Standards for listed or characteristic hazardous wastes.

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Action Specific

Chemical, Location, or Action	Requirement	On-Property Disposal ARAR/TBC	On-Property Storage ARAR/TBC	Rationale for Implementation
Operational Procedures Treatment, Storage, or Disposal Facility Standards (continued)	Inspections (40 CFR 264.15 OAC 3745-54-15 A,C: 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 prevention, detection, or responding to environmental or human health hazards, promptly 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.	Applicable	Applicable	

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Chemical, Location, or Action	Requirement	On-Property Disposal ARAR/TBC	On-Property Storage ARAR/TBC	Rationale for Implementation
Operation and Construction Treatment, Storage, or Disposal Facility Preparedness and Prevention	40 CFR 264, Subpart C OAC 3745-54-30 through 3745-54-37 TSD operators must design, construct, maintain, and operate facilities to minimize the possibility of a fire, explosion, or any unplanned sudden or nonsudden release of hazardous waste to air, soil, or surface water which could threaten human health or the environment. 40 CFR 264.32 OAC 3745-54-32 All facilities must be quipped 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	Applicable	Both storage and disposal facilities used for the management of listed or characteristic hazardous wastes must be operated in accordance with the Preparedness and Prevention requirements of RCRA.

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Chemical, Location, or Action	Requirement	On-Property Disposal ARAR/TBC	On-Property Storage ARAR/TBC	Rationale for Implementation
Operation and Construction Treatment, Storage, or Disposal Facility Preparedness and Prevention (continued)	40 CFR 264.33 OAC 3745-54-33 All fire and spill control and decontamination equipment must be tested and maintained as necessary to assure proper emergency operation. 40 CFR 264.34 OAC 3745-54-34 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 OAC 3745-54-35 Aisle space must be sufficient to allow unobstructed movement of personnel, fire and spill control, and decontamination equipment.	Applicable	Applicable	

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Chemical, Location, or Action	Requirement	On-Property Disposal ARAR/TBC	On-Property Storage ARAR/TBC	Rationale for Implementation
Operation and Construction Treatment, Storage, or Disposal Facility Preparedness and Prevention (continued)	40 CFR 264.37 OAC 3745-54-37 Operators must attempt to make arrangements, appropriate to the waste handled, for emergency response by local and state fire, police, and medical personnel.	Applicable	Applicable	

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Action Specific

Chemical, Location, or Action	Requirement	On-Property Disposal ARAR/TBC	On-Property Storage ARAR/TBC	Rationale for Implementation
Operation and Construction Treatment, Storage, or Disposal Facility Contingency Plan and Emergency Procedures	40 CFR 264, Subpart D OAC 3745-54-50 through 3745-54-56 Each facility operation 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 OAC 3745-54-52 Contingency plans should address procedures to implement a response to hazardous substance incidents, internal and external communications, arrangements with local emergency authorities, and emergency coordinator list, a facility emergency equipment list indicating equipment descriptions and locations, and a facility personnel evacuation plan.	Applicable	Applicable	A EWMF storage or disposal facility used for the management of listed or characteristic hazardous waste must be operated in accordance with the contingency plan requirements.

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Action Specific

Chemical, Location, or Action	Requirement	On-Property Disposal ARAR/TBC	On-Property Storage ARAR/TBC	Rationale for Implementation
Operation and Construction Treatment, Storage, or Disposal Facility Contingency Plan and Emergency Procedures (continued)	40 CFR 264.55 OAC 3745-54-55 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.	Applicable	Applicable	

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Action Specific

Chemical, Location, or Action	Requirement	On-Property Disposal ARAR/TBC	On-Property Storage ARAR/TBC	Rationale for Implementation
Treatment, Storage, or Disposal Facility Contingency Plan and Emergency Procedures (continued)	40 CFR 264.54 OAC 3745-54-54 The contingency plan must be amended if it fails in an emergency, the facility changes (in design, construction, maintenance, or operation), the list of emergency coordinators changes, or the list of emergency equipment changes. 40 CFR 264.56 OAC 3745-54-56 Specifies the procedures to be followed in the event of an emergency.	Applicable	Applicable	

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Chemical, Location, or Action	Requirement	On-Property Disposal ARAR/TBC	On-Property Storage ARAR/TBC	Rationale for Implementation
Operation Treatment, Storage, or Disposal Facility Operating Record	40 CFR 264, Subpart E 40 CFR 264.73 OAC 3745-54-73 Operating Records 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	Applicable	The EWMF must maintain an operating record in accordance with TSD facility standards for management of listed or characteristic hazardous waste.

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Chemical, Location, or Action	Requirement	On-Property Disposal ARAR/TBC	On-Property Storage ARAR/TBC	Rationale for Implementation
Operation	40 CFR 264.75-77	Applicable	Applicable	The EWMF must be operated in accordance with TSD facility standards.
Treatment, Storage, or Disposal Facility Reporting	Facilities must submit to the appropriate authorities the following reports: Annual report Reports of unmanifested wastes Reports of releases, fires, and explosions Groundwater monitoring data when contamination is discovered (within 7 days) Notice of facility closure.			

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Chemical, Location, or Action	Requirement	On-Property Disposal ARAR/TBC	On-Property Storage ARAR/TBC	Rationale for Implementation
Operation and construction 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	NA	A groundwater monitoring program is required as part of the operation and post-closure of a hazardous waste disposal facility. A storage facility is not required to have a groundwater monitoring program during operations.

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Action Specific

Chemical, Location, or Action	Requirement	On-Property Disposal ARAR/TBC	On-Property Storage ARAR/TBC	Rationale for Implementation
Operation and Construction 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 period. 40 CFR 264.92 OAC 3745-54-92 Compliance must be attained with the conditions specified in the permit to ensure that hazardous constituents do not exceed the promulgated limits. 40 CFR 264.93 OAC 3745-54-93 Requires that the permit specify the hazardous constituents to which the groundwater protection standard of 3745-54-92 applies.	Applicable	NA	

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Chemical, Location, or Action	Requirement	On-Property Disposal ARAR/TBC	On-Property Storage ARAR/TBC	Rationale for Implementation
Operation and Construction Treatment, Storage, or Disposal Facility Groundwater Monitoring and Response Requirements (continued)	40 CFR 264.95 - Point of Compliance OAC 3745-54-95 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. 40 CFR 264.96 OAC 3745-54-96 A compliance period during which the groundwater protection standards apply will be specified in the permit.	Applicable	NA	

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Chemical, Location, or Action	Requirement	On-Property Disposal ARAR/TBC	On-Property Storage ARAR/TBC	Rationale for Implementation
Operation and Construction Treatment, Storage, or Disposal Facility Groundwater Monitoring and Response Requirements (continued)	40 CFR 264.97 - Groundwater Monitoring OAC 3745-54-97 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 40 264.100 if a groundwater protection standard is exceeded or if the concentration limits established under 40 264.94 are exceeded between the compliance point and the downgradient facility property boundary. 40 CFR 264.98 OAC 3745-54-98 Requires the development of a detection monitoring program which at a minimum includes establishing:	Applicable	NA	

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Chemical, Location, or Action	Requirement	On-Property Disposal ARAR/TBC	On-Property Storage ARAR/TBC	Rationale for Implementation
Operation and Construction Treatment, Storage, or Disposal Facility Groundwater Monitoring and Response Requirements (continued)	Indicator parameters to be monitored after a consideration of the following: The types, quantities, and concentrations of constituents in wastes managed at the facility. The mobility, stability, and persistence of waste constituents or their reaction products in the unsaturated zone beneath the waste management area; The detectability of indicator parameters, waste constituents, and reaction products in groundwater; and The concentrations or values and coefficients of variation of proposed monitoring parameters of constituents in the groundwater background.	Applicable	NA	

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Chemical, Location, or Action	Requirement	On-Property Disposal ARAR/TBC	On-Property Storage ARAR/TBC	Rationale for Implementation
Operation and Construction Treatment, Storage, or Disposal Facility Groundwater Monitoring and Response Requirements (continued)	Install a groundwater monitoring system at the compliance point in accordance with 3745-54-95 and 3745-54-97. Establish a background value for each monitoring indicator parameter. Determine groundwater quality at least semiannually during the active life of a regulated unit including the closure period and the post-closure period. Determine the groundwater flow rate and direction in the uppermost aquifer at least annually. Groundwater sampling and analysis procedures and methods must meet the requirements of 3745-54-97 (D) and (E). Determine whether there is a statistically significant increase over background values for the indicator parameters. If a statistically significant increase is detected, notify the state and prepare a compliance monitoring program.	Applicable	NA	

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Chemical, Location, or Action	Requirement	On-Property Disposal ARAR/TBC	On-Property Storage ARAR/TBC	Rationale for Implementation
Operation and Construction Treatment, Storage, or Disposal Facility Groundwater Monitoring and Response Requirements (continued)	40 CFR 264.99 OAC 3745-54-99 Presents requirements of groundwater compliance monitoring program. 40 CFR 264.100 OAC 3745-55-01 Presents the requirements of a groundwater corrective action program that prevents hazardous constituents from exceeding their respective concentration limits at the compliance point by either removal or treatment of these hazardous constituents.	Applicable	NA	

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Chemical, Location, or Action	Requirement	On-Property Disposal ARAR/TBC	On-Property Storage ARAR/TBC	Rationale for Implementation
Closure and Post-Closure Closure with No Post-Closure Care	40 CFR 264.111 OAC 3745-55-11 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 3745-55-14 During the partial and final closure, all contaminated equipment, structures, and soils must be properly disposed of.	NA	Applicable	Closure of an EWMF disposal facility will require meeting the performance standard requirements.
Closure and Post-Closure Closure with Waste in Place	40 CFR 264.117 through 264.120 OAC 3745-55-17 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	NA	Closure of an EWMF disposal facility with hazardous waste in place will require maintenance throughout a post-closure period. The storage facility may be closed without post-closure monitoring if the performance standards are met.

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Chemical, Location, or Action	Requirement	On-Property Disposal ARAR/TBC	On-Property Storage ARAR/TBC	Rationale for Implementation
Operation 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 OAC 3745-55-72 Compatible with the hazardous waste contained; and 40 CFR 264.173 OAC 3745-55-73 Closed during storage (except to add or remove waste). 40 CFR 264.174 OAC 3745-55-74 Inspect container storage areas weekly for deterioration.	NA	Applicable	An EWMF disposal facility does not have to meet the container storage requirements. A storage unit will require maintenance in accordance with the RCRA container storage requirements.

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Action Specific

Chemical, Location, or Action	Requirement	On-Property Disposal ARAR/TBC	On-Property Storage ARAR/TBC	Rationale for Implementation
Operation Container Storage (continued)	40 CFR 264.175 OAC 3745-55-75 Place containers on a sloped, crack-free base, and protect from contact with accumulated liquid. Provide a 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 OAC 3745-55-77 Keep incompatible materials separate. Separate incompatible materials stored near each other by a dike or other barrier. 40 CFR 264.178 OAC 3745-55-78 At closure, remove all hazardous waste and residues from the containment system, and decontaminate or remove.	NA	Applicable	

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Chemical, Location, or Action	Requirement	On-Property Disposal ARAR/TBC	On-Property Storage ARAR/TBC	Rationale for Implementation
Construction Hazardous Waste Disposal Facilities	40 CFR 264.301 OAC 3745-57-03 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 runoff control system capable of handling the peak discharge of a 25-year storm. Control wind dispersion of particulates. 40 CFR 264.303 OAC 3745-57-05 Requires inspection of landfills during construction or installation and operation.	Applicable	NA	An EWMF disposal facility must be constructed in accordance with minimum technology requirements to prevent hazardous substances from being leached into surrounding soil and groundwater.

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Action Specific

Chemical, Location, or Action	Requirement	On-Property Disposal ARAR/TBC	On-Property Storage ARAR/TBC	Rationale for Implementation
Closure and Post-Closure Capping	40 CFR 264.310 (a) OAC 3745-57-10 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	NA	Disposal 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.

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Action Specific

Chemical, Location, or Action	Requirement	On-Property Disposal ARAR/TBC	On-Property Storage ARAR/TBC	Rationale for Implementation
Closure and Post-Closure	40 CFR 264.310 (b) OAC 3745-57-10	Applicable	NA	
Capping (continued)	Prevent run-on and runoff from damaging the cover.			
	Protect and maintain surveyed benchmarks used to locate waste cells.			
	Maintain the integrity and effectiveness of the final cover, including making repairs to the cap as necessary to correct the effects of settling, subsidence, erosion, or other events; monitoring of leachate; and groundwater monitoring.			

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Action Specific

Chemical, Location, or Action	Requirement	On-Property Disposal ARAR/TBC	On-Property Storage ARAR/TBC	Rationale for Implementation
Closure and Post-Closure	40 CFR 264.315 OAC 3745-57-15	Applicable	NA	
Capping (continued)	Unless they are very small, containers must either be at least 90 percent full when placed in the landfill or must be crushed/shredded prior to their placement in the landfill. OAC 3745-57-17 Ohio EPA may inspect the landfill during construction. 40 CFR 264.317 OAC 3745-57-18 Prohibits the placement of hazardous wastes F020, F021, F022, F023, F026, and F027 in landfills.			

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Action Specific

Chemical, Location, or Action	Requirement	On-Property Disposal ARAR/TBC	On-Property Storage ARAR/TBC	Rationale for Implementation
Operation Land Disposal Restrictions	40 CFR 268 OAC 3745-59 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 "Nation Capacity Extension" as specified under 40 CFR 268.30-33 and the receiving unit meets the RCRA Section 3004 (O) minimum technology requirements, including double liner, leachate collection system, and groundwater monitoring.	Applicable	NA	An EWMF disposal facility can only except restricted RCRA waste which have met the required treatment standard or have qualified for a waiver or variance form the treatment requirements.

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Chemical, Location, or Action	Requirement	On-Property Disposal ARAR/TBC	On-Property Storage ARAR/TBC	Rationale for Implementation
Operation Land Disposal Restrictions (continued)	A treatability variance has been set for the waste in accordance with 40 CFR 268.44, OAC 3745-59-44. 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, OAC 3745-59-42. A no-migration petition has been approved in accordance with 40 CFR 268.6, OAC 3745-59-6. 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.	Applicable	NA	

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Action Specific

Chemical, Location, or Action	Requirement	On-Property Disposal ARAR/TBC	On-Property Storage ARAR/TBC	Rationale for Implementation
Operation Land Disposal Restrictions on Storage of Restricted Waste	40 CFR 268.50 OAC 3745-59-50 The storage of hazardous waste restricted from land disposal under RCRA Section 3004 and 40 CFR 268, Subpart C, OAC 3745-59-30 through 3745-59-33, 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, OAC 3745-52-34, including the 90-day storage limitation. TSD facility operations storing waste under this provision must also: Clearly mark each container to identify the contents and the beginning date for accumulation of the waste.	NA	Applicable	Restricted hazardous waste may be stored or accumulated prior to treatment or disposal if the land disposal accumulation requirements are met.

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Action Specific

Chemical, Location, or Action	Requirement	On-Property Disposal ARAR/TBC	On-Property Storage ARAR/TBC	Rationale for Implementation
Operation 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, OAC 3745-54-73. TSD facility operators may store waste under this provision for up to one year.	NA	Applicable	
Construction 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 that emit fugitive dust.	Relevant and Appropriate	Relevant and Appropriate	The construction of the EWMF will require the movement of dirt and other material likely to result in fugitive dust emissions. Requirement is not applicable because the area is not listed in Appendix A of the OAC.

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Action Specific

Chemical, Location, or Action	Requirement	On-Property Disposal ARAR/TBC	On-Property Storage ARAR/TBC	Rationale for Implementation
Siting, Construction, and Operation 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 sitting, 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 that contribute to the goal of permanent isolation of wastes. Disposal in such a manner 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	NA	Materials to be placed within the EWMF are similar to uranium mill tailings and thus have similar health and environmental risks.

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Action Specific

Chemical, Location, or Action	Requirement	On-Property Disposal ARAR/TBC	On-Property Storage ARAR/TBC	Rationale for Implementation
Siting, Construction, and Operation 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. Long-term site surveillance with an annual inspection by the government agency retaining ultimate custody of the site.	Relevant and Appropriate	NA	

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Chemical, Location, or Action	Requirement	On-Property Disposal ARAR/TBC	On-Property Storage ARAR/TBC	Rationale for Implementation
Siting, Construction, and Operation Land Disposal Onsite	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 is within the limits established in the following performance objectives: 10 CFR 61.41 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 that 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	NA	The EWMF disposal facility should meet the performance objectives of facilities for similar radioactive materials from NRC-licensed facilities.

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Action Specific

Chemical, Location, or Action	Requirement	On-Property Disposal ARAR/TBC	On-Property Storage ARAR/TBC	Rationale for Implementation
Siting, Construction, and Post Closure	40 CRF 191.13 Subpart B Containment Requirements	TBC	NA	Rationale for implementation for all or part of 40 CFR 191, Subpart B, will be dependent on the results of discussions between DOE and U.S. EPA.
Land Disposal Onsite	40 CRF 191.14 Assurance Requirement			
	a) Institutional Control	TBC	TBC	
	b) Monitoring	TBC	TBC	
	c) Permanent Markers	TBC	NA	
	d) Material Composition of isolation barriers	TBC	NA	
	e) Site locations to be avoided with exceptions	TBC	NA	
	f) Retrievability of waste for reasonable period of time after disposal	TBC	TBC	
	40 CFR 191.15	TBC	TBC	
	Disposal systems for spent nuclear fuel or high-level or transuranic radioactive wastes shall be designed to provide a reasonable expectation that, for 1,000 years after disposal, undisturbed performance of the disposal system shall not cause the annual dose equivalent from the disposal system to any member of the public in the accessible environment to exceed 25 millirems to the whole body or 75 millirems to any critical			

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Action Specific

Chemical, Location, or Action	Requirement	On-Property Disposal ARAR/TBC	On-Property Storage ARAR/TBC	Rationale for Implementation
Land Disposal Onsite (Continued)	organ. All potential pathways (associated with undisturbed performance) from the disposal system to people shall be considered. 40 CFR 191, Appendix B Guidance for Implementation of Subpart B	TBC	TBC	
Siting, Construction, and Operation Land Disposal Onsite (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 is required.	Relevant and Appropriate	NA	

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Chemical, Location, or Action	Requirement	On-Property Disposal ARAR/TBC	On-Property Storage ARAR/TBC	Rationale for Implementation
Siting, Construction, and Operation Land Disposal Onsite	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. Waste characteristics requirements.	Relevant and Appropriate	NA	Facilities that are to be used for on-site land disposal of radioactive materials should meet the performance objectives of land disposal facilities for similar radioactive materials from NRC licensees.

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Action Specific

Chemical, Location, or Action	Requirement	On-Property Disposal ARAR/TBC	On-Property Storage ARAR/TBC	Rationale for Implementation
Siting, Construction, and Operation Land Disposal Onsite	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. Low-level radioactive wastes must be sufficiently characterized as to: Physical & chemical characteristics, Total volume (container), Total weight (container), Major radionuclides, and Concentrations to permit proper segregation, treatment, storage, and disposal. Prior to disposal, low-level waste shall be treated as appropriate: To meet performance objectives, To reduce volume, improve stability, and reduce potential for water infiltration.	To be considered	To be considered	Radioactive materials to be managed at the EWMF include materials classified as low-level waste and are to be managed in accordance with DOE requirements for low-level waste.

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Chemical, Location, or Action	Requirement	On-Property Disposal ARAR/TBC	On-Property Storage ARAR/TBC	Rationale for Implementation
Land Disposal On-Site (continued)	Waste treatment facilities shall: Meet NEPA documentation requirements. Be managed with proper operating, maintenance, and recordkeeping procedures; personnel training; monitoring and emergency response procedures. Low-level waste treatment facilities must be properly constructed, maintained, and operated. Prior to acceptance for disposal, low-level waste must: Contain as little noncorrosive free liquid as possible including less than 1% by volume in the disposal container, or 5% of the volume in stabilized form.	To be considered	To be considered	

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Chemical, Location, or Action	Requirement	On-Property Disposal ARAR/TBC	On-Property Storage ARAR/TBC	Rationale for Implementation
Land Disposal Onsite (continued)	Not be packaged in cardboard or fiberboard boxes unless they meet DOT requirements, and they must have minimum void space. Not be capable of detonation or explosion, decomposition, or reaction; explosive reaction with water; or generation of toxic gases or fumes. Not be pyrophoric. Not be flammable. Disposal facility operators are to: (a) Develop and implement operating procedures that: (1) Protect the environment and the health and safety of the public and facility personnel. (2) Secure the facility. (3) Minimize meed for long term control. (4) Meet closure/post-closure requirements.	To be considered	To be considered	

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Chemical, Location, or Action	Requirement	On-Property Disposal ARAR/TBC	On-Property Storage ARAR/TBC	Rationale for Implementation
Land Disposal On-Site (continued)	(b) Establish permanent markers for excavations and monitoring wells. (c) Establish procedures and include training, emergency response and unusual occurrence reports. (d) Minimize voids between containers. (e) Insure that active waste disposal operations will not affect filled disposal units. An environmental monitoring program in accordance with DOE Orders 5400.5 and 5400.xy and designed to measure effluent releases, radionuclide migration, subsidence, and changes in disposal site parameters (trends). The media to be monitored may include, but are not limited to soil-surface and subsurface, air, water-surface and subsurface, and water-saturated and unsaturated zones.	To be considered	To be considered	

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Action Specific

Chemical, Location, or Action	Requirement	On-Property Disposal ARAR/TBC	On-Property Storage ARAR/TBC	Rationale for Implementation
Siting Disposal Site Selection	DOE Order 5820.2A, Chapter III, 3, i., (7) Specifies the requirements for selecting a low-level waste disposal site at a DOE facility. These general requirements include: Development of disposal site selection criteria (based on planned waste confinement technology). Evaluation of the site in accordance with the NEPA process. Verification that hydrogeologic characteristics of the site will protect the groundwater resource.	To be considered	NA	Site selection for an EWMF disposal facility must comply with the requirements of a low-level waste facility at a DOE facility.
Siting Disposal Site Selection (continued)	Consideration of potential for natural hazards such as floods, erosion, tornadoes, and earthquakes. Evaluation of the impact of the site on current and projected populations on land use resource development plans and nearby public facilities.	To be considered	NA	

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Chemical, Location, or Action	Requirement	On-Property Disposal ARAR/TBC	On-Property Storage ARAR/TBC	Rationale for Implementation
Operation 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	To be considered	Some radioactive materials to be managed at the EWMF 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.

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Chemical, Location, or Action	Requirement	On-Property Disposal ARAR/TBC	On-Property Storage ARAR/TBC	Rationale for Implementation
Operation 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. 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 using site specific data where available.	To be considered	To be considered	Radioactive materials to be disposed or stored at the EWMF could deliver an effective radiation dose exceeding 100 mrem per year if released onto soil.

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Action Specific

Chemical, Location, or Action	Requirement	On-Property Disposal ARAR/TBC	On-Property Storage ARAR/TBC	Rationale for Implementation
Operation Residual Radioactive Material in Soil (continued)	Procedures for derivations of residual radioactivity are given in " A Manual for Implementing Residual Radioactive Material Guidelines" (DOE/CH-8901). Determination of "hot spots" and "hot spot" cleanup limits 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.	To be considered	To be considered	

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Chemical, Location, or Action	Requirement	On-Property Disposal ARAR/TBC	On-Property Storage ARAR/TBC	Rationale for Implementation
Construction Disposal Cell Design for 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	NA	Materials on the site have similar chemical and radiological properties as do uranium mill tailings. This document provides information for disposal cell design for mill tailings sites and materials with similar chemical and radiological properties as uranium mill tailings not currently found in promulgated regulations.

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Chemical, Location, or Action	Requirement	On-Property Disposal ARAR/TBC	On-Property Storage ARAR/TBC	Rationale for Implementation
Construction Disposal Cell Design for 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.	To be considered	NA	
Operation Hazardous Waste Storage or Disposal Facility	ORC 3734.02(F) Prohibits storage, treatment, or disposal of hazardous waste except at permitted facilities.	Applicable	Applicable	The EWMF must meet the requirements for a permitted facility.
Construction Design Hazardous Waste Facility Environmental Impact	ORC 3734.05(D)(6)(c) A hazardous waste facility installation and operation permit shall not be approved unless it proves that the facility represents the minimum adverse environmental impact, based on the state of available technology, the nature and economics of various alternatives, and other pertinent considerations.	Applicable	Applicable	Operation of the EWMF must meet the requirements of a permitted facility.

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Chemical, Location, or Action	Requirement	On-Property Disposal ARAR/TBC	On-Property Storage ARAR/TBC	Rationale for Implementation
Construction and Operation Hazardous Waste Facility Minimum Risk	ORC 3734.05(D)(6)(d) A hazardous waste facility installation and operations permit shall not be approved unless it proves that the facility represents minimum risk of all of the following: Contamination of ground and surface waters. Fires or explosions from treatment, storage, or disposal methods. Accident during transportation. Impact on public health and safety. Air pollution. Soil contamination.	Applicable	Applicable	The EWMF will require an operating permit.

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Chemical, Location, or Action	Requirement	On-Property Disposal ARAR/TBC	On-Property Storage ARAR/TBC	Rationale for Implementation
Siting and Construction Construction Within a Conservancy District	ORC 6101.19 Board of Directors of a conservancy district may make and enforce rules and regulations pertaining to channels, ditches, pipes, sewers, etc. This statute pertains to any site that may affect a construction within a conservancy district.	To be considered	To be considered	The design of the EWMF will have to meet any criteria set by the conservancy district if the site is within a conservancy district.
Operational Discharges (Air) Air Pollution Nuisances	OAC 3745-15-07 A Defines air pollution nuisance as the emission or escape into the air from any source(s) of smoke, ashes, dust, dirt, grime, acids, fumes, gases, vapors, odors, and combinations thereof that endanger the health, safety, or welfare of the public or cause personal injury or property damage. Such nuisances are prohibited.	Applicable	Applicable	During the construction and operation of the EWMF, air emissions must be controlled to avoid danger to individuals or damage to property.
Operation Authorized, Limited and Prohibited Solid Waste Disposal	OAC 3745-27-05 A,B,C Establishes allowable methods of solid waste disposal and prohibits management by open burning and open dumping.	Applicable	NA	The EWMF may be used for the disposal of solid waste.

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Chemical, Location, or Action	Requirement	On-Property Disposal ARAR/TBC	On-Property Storage ARAR/TBC	Rationale for Implementation
Operation Petitions to Exclude a Listed Waste at a Facility	OAC 3745-50-221 A,B Allows for petitions to exclude hazardous wastes form a particular facility from the lists in Rules 3745-51-30 to 3745-51-31 of the OAC. Also states that Ohio EPA will recognize U.S. EPA's decision to grant or deny such petitions on the federal level.	Applicable	Applicable	The EWMF may be used to manage listed waste.
Permitting Requirements for All Hazardous Waste Facilities	OAC 3745-50-44 Establishes the substantive hazardous waste permit requirements necessary for Ohio EPA to determine facility compliance. Includes information such as facility description, waste characteristics, equipment descriptions, contingency plan, facility location, topographic map, etc.	Applicable	Applicable	Pertains to any site that will have treatment, storage, or disposal of hazardous waste occurring onsite.

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Chemical, Location, or Action	Requirement	On-Property Disposal ARAR/TBC	On-Property Storage ARAR/TBC	Rationale for Implementation
Permitting Requirements for All Hazardous Waste Land Disposal Facilities	OAC 3745-50-44 B Establishes the substantive hazardous waste land disposal permit requirements necessary for the Ohio EPA to determine adequate protection of the groundwater. This information includes groundwater monitoring data, information on interconnected aquifers, plans and reports on groundwater monitoring program, etc.	Applicable	NA	Establishes the permit application requirements for a disposal facility.
Permitting Requirements for Hazardous Waste Storage in Containers	OAC 3745-50-44 C1 Establishes the substantive hazardous waste permit requirements necessary for Ohio EPA to determine adequacy of container storage. This information includes a description of the containment system, detailed drawings, etc.	NA	Applicable	Establishes the permit application requirements for a storage facility.
Permitting Requirements, Environmental Performance Standards	OAC 3745-50-44 C7 Establishes substantive hazardous waste permit requirements necessary for Ohio EPA to determine adequacy of waste piles used to treat or store hazardous waste. Includes information such as waste characteristics, detailed design plans and reports, control of run-on and runoff, closure information, etc.	Applicable	NA	Pertains to a site at that hazardous wastes will be or have been stored, treated, or disposed of in landfills.

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Chemical, Location, or Action	Requirement	On-Property Disposal ARAR/TBC	On-Property Storage ARAR/TBC	Rationale for Implementation
Permitting General Permit Requirements	OAC 3745-50-58 A,E,H-J Establishes general permit conditions applied to all hazardous waste facilities in Ohio. Includes conditions such as operation and maintenance, site access, monitoring, etc.	Applicable	Applicable	Pertains to any treatment, storage, or disposal facility.
Operation Residues of Hazardous Waste in Empty Containers	OAC 3745-51-07 A,B Exempts the residues of hazardous wastes from empty containers from the hazardous waste regulations and provides specific definitions for these residues.	NA	Applicable	Pertains to the disposal of empty containers used to store hazardous waste.
Construction Ohio Water Well Standards	OAC 3745-9-10 Abandonment of Test Holes and Wells Upon completion of testing, a test hole or well shall be completely filled with either grout or such material as will prevent contaminants from entering groundwater.	Applicable	Applicable	Test borings and wells may be installed and/or closed as part of siting of the EWMF.
Operation Control of Asbestos Emissions	40 CFR 61.150 OAC 3745-20-06 Defines the standards for active asbestos waste disposal sites.	Relevant and Appropriate	Relevant and Appropriate	Waste materials to be handled at the EWMF may contain asbestos. For these asbestos-bearing wastes, handling operations should be controlled to minimize asbestos emissions.

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Action Specific

Chemical, Location, or Action	Requirement	On-Property Disposal ARAR/TBC	On-Property Storage ARAR/TBC	Rationale for Implementation
Operational Discharge (Water) 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: o The mass of each pollutant. o The volume of each pollutant. o Frequency of discharge and other measurements as appropriate. 40 CFR 136.1 through 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.	Relevant and Appropriate	Relevant and Appropriate	These requirements are listed as ARARs in the event that management practices employed for contaminated runoff waters and leachate include the discharge of these wastewaters into the waters of the State. Any point-source discharges from the facility must be monitored and treated if necessary.

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Action Specific

Chemical, Location, or Action	Requirement	On-Property Disposal ARAR/TBC	On-Property Storage ARAR/TBC	Rationale for Implementation
Operational Discharge (Water) Discharge of Treatment System Effluent (continued)	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 OAC 3745-33-04 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.	Relevant and Appropriate	Relevant and Appropriate	

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Chemical, Location, or Action	Requirement	On-Property Disposal ARAR/TBC	On-Property Storage ARAR/TBC	Rationale for Implementation
Operational Discharge (Water) Discharge of Treatment System Effluent (continued)	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 OAC 3745-33-04 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.	Relevant and Appropriate	Relevant and Appropriate	

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Action Specific

Chemical, Location, or Action	Requirement	On-Property Disposal ARAR/TBC	On-Property Storage ARAR/TBC	Rationale for Implementation
Operational Discharge (Water) Discharge of Treatment System Effluent (continued)	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 predication 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	Relevant and Appropriate	

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Chemical, Location, or Action	Requirement	On-Property Disposal ARAR/TBC	On-Property Storage ARAR/TBC	Rationale for Implementation
Siting Construction and Demolition Debris Disposal	ORC 3714.03 A construction or demolition debris disposal facility may not be located 3714.03 (A) within the boundaries of the one-hundred-year flood plain; or 3714.03 (B) within the boundaries of a sole source aquifer. 3714.04 An exemption may be granted for a facility unlikely to affect the public health or safety or the environment adversely, or to create a fire hazard from any provision of this chapter or a rule adopted or order issued under it, other than division (B) of section 3714.03 or division (E) of section 3714.13.	Applicable	Applicable	The EWMF may not be used for the disposal of construction or demolition debris if the facility is located on a sole source aquifer. No exemption to this rule is permitted.

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ATTACHMENT 1

RADIONUCLIDES AND HAZARDOUS CHEMCIALS POTENTIALLY PRESENT IN DRINKING WATER AS AN IMPACT OF THE ENGINEERED WASTE MANAGEMENT FACILITY[a]

	Drinking Water Standards		Drinking Water Health Advisories		Toxicity Factors	
Radionuclides & Chemicals	MCLG[b] (mg/L)	MCL[c] (mg/L) [pCi/L]	Lifetime (Adult) (mg/L)	mg/L at 10^{-4} Cancer Risk [pCi/L]	RfD[d] (mg/kg-day)	SF[e] (mg/kg-day)-1 [(pCi)$^{-1}$]
Radionuclides						
Ac-227	-	-	-	-	-	[3.5 E-10]
Cs-137	-	-	-	-	-	[2.8 E-11]
Np-237	-	-	-	-	-	[2.7 E-10]
Pa-231	-	-	-	-	-	[1.9 E-10]
Pb-210	-	-	-	-	-	[6.5 E-10]
Pu-238	-	-	-	-	-	[2.8 E-10]
Pu-239/240 (assume non-oxide)	-	-	-	-	-	[3.1 E-10]
Ra-224	-	-	-	-	-	[4.8 E-11]
Ra-226	Zero	[20]	-	[22]	-	[1.2 E-10]
Ra-228	Zero	[20]	-	[26]	-	[1.0 E-10]
Rn-220	Zero	[300]	-	[150]	-	[f]
Rn-222	Zero	[300]	-	[150]	-	[f]
Sr-90	-	-	-	-	-	[3.3 E-11]
Tc-99	-	-	-	-	-	[1.3 E-12]
Th-228	-	-	-	-	-	[1.5 E-11]
Th-230	-	-	-	-	-	[2.4 E-11]
Th-232	-	-	-	-	-	[2.2 E-11]
U-234	Zero	0.020	-	[170]	-	[1.4 E-10]
U-235/236	Zero	0.020	-	[170]	-	[1.3 E-10][g]
U-238	Zero	0.020	-	[170]	-	[1.3 E-10]

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Inorganics						
Aluminum	-	-	-	-	-	-
Antimony	0.003	0.01/005[h]	0.003	-	0.0004	-
Arsenic	-	0.05	-	0.003	0.0003	-
Barium	2	2	2	-	0.07	-
Beryllium	Zero	0.001	-	0.0008	0.005	4.3
Cadmium	0.005	0.005	0.005	-	0.0005	-
Calcium	NA[i]	NA	NA	NA	NA	NA
Chromium (assume CrVI)	0.1	0.1	0.1	-	0.005	NA
Cobalt	NA	NA	NA	NA	NA	NA
Copper	1.3	TT[j]	-	-	-	-
Iron	NA	NA	NA	NA	NA	NA
Lead	Zero	TT[j]	-	-	-	-
Magnesium	NA	NA	NA	NA	NA	NA
Manganese	-	-	-	-	0.1	-
Mercury	0.002	0.002	0.002	-	0.0003[k]	-
Molybdenum	-	-	0.05	-	0.004[k]	-
Nickel	0.1	0.1	0.1	-	0.2	-
Potassium	NA	NA	NA	NA	NA	NA
Selenium	0.05	0.05	-	-	0.005	-
Silver	-	-	0.1	-	-	-
Sodium	-	-	-	-	-	-
Thallium	0.0005	0.002/0.001[h]	0.0004	-	0.00007[k]	-
Vanadium	-	-	0.02	-	0.007[k]	-
Zinc	-	-	2	-	0.02[k]	-

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Organics						
1,1-Dichloroethane	-	-	-	-	0.1	-
1,1-Dichloroethene	0.007	0.007	0.007	0.006	0.009	0.6
1,1,1-Trichloroethane	0.2	0.2	0.2	-	0.09[k]	-
1,1,2-Trichloro-1,2,2-trifluoroethane	-	-	-	-	-	-
1,1,2,2-Tetrachloroethane	-	-	-	-	-	-
2-Butanone (Methyl ethyl ketone)	-	-	0.2	-	0.05[k]	-
2-Methylnaphthalene	NA	NA	NA	NA	NA	NA
2-Methylphenol	-	-	-	-	0.05	-
2-Propanol	NA	NA	NA	NA	NA	NA
2,4-Dimethlyphenol	-	-	-	-	0.02	-
4-Methyl-2-pentanone	NA	NA	NA	NA	NA	NA
4-Methylphenol	NA	NA	NA	NA	NA	NA
Acenaphthene	-	-	-	-	0.06	-
Acetone	-	-	-	-	0.1	-
Anthracene	-	-	-	-	0.03[k]	-
Benzene	Zero	0.005	-	0.1	-	0.029
Benzo(a)anthracene	Zero	0.0001	-	-	-	-
Benzo(a)pyrene	Zero	0.0002	-	-	-	11.5[k]
Benzo(b)fluoranthene	Zero	0.0002	-	-	-	-
Benzo(g,h,i)perylene	-	-	-	-	-	-
Benzo(k)fluoranthene	Zero	0.0002	-	-	-	-
Benzoic Acid	-	-	-	-	4	-
Beta-BHC	-	-	-	0.002	-	1.8
Bis(2-ethylhexyl) phthalate	-	-	-	0.3	0.02	0.014
Butyl Benzyl phthalate	Zero	0.1	-	-	0.2	-
Carbon disulfide	-	-	-	-	0.1	-

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Chlordane	Zero	0.002	-	0.003	0.00006	1.3
Chlorobenzene	-	-	-	-	0.02	-
Chloroform	-	0.1	-	0.6	0.01[k]	0.0061[k]
Chrysene	Zero	0.0002	-	-	-	-
cis-1,2-Dichloroethene	0.07	0.7	0.7	-	0.01[k]	-
Cyanide	0.2	0.2	0.2	-	0.02	-
DDT	-	-	-	0.01	0.0005	0.34
Di-butyl phthalate	-	-	-	-	0.1	-
Di-n-octyl phthalate	NA	NA	NA	NA	NA	NA
Dibenzo(a,h)anthracene	Zero	0.0003	-	-	-	-
Dibenzofuran	-	-	-	-	0.01[k]	-
Ethyl parathion	NA	NA	NA	NA	NA	-
Ethyl benzene	0.7	0.7	0.7	-	0.1	-
Fluoranthene	-	-	-	-	0.04	-
Fluorene	-	-	-	-	0.04	-
Indeno(1,2,3-cd)pyrene	Zero	0.0004	-	-	-	-
Methyl parathion	-	-	0.002	-	0.00025	-
Methylene chloride (dichloromethane)	Zero	0.005	-	0.5	0.06	0.0075
N-nitrosodiphenylamine	-	-	-	0.7	-	0.0049
Naphthalene	-	-	0.02	-	0.004[k]	-
Polychlorinated biphenyls (PCBs)	Zero	0.0005	-	0.0005	-	7.7
Pentachlorophenol	Zero	0.001	-	0.03	0.03	0.12
Phenanthrene	-	-	-	-	-	-
Phenol	-	-	4	-	0.6	-
Pyrene	-	-	-	-	0.03	-
Tetrachloroethane (1,1,1,2)	-	-	0.07	0.2	0.03	0.2
Tetrachloroethene	Zero	0.005	-	0.07	0.01	0.051[k]
Toluene	1	1	1	-	0.2	-

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Total xylenes	10	10	10	-	2	-
Trichloroethene	Zero	0.005	-	0.3	-	-
Vinyl chloride	Zero	0.002	-	0.0015	-	1.9

a) The chemicals in this list are based on Table 4-4 from the Risk Assessment Work Plan Addendum (February 1992). The potential ARARs consist of the Drinking Water Maximum Contaminant Level Goals (MCLGs). The TBCs include the Drinking Water Health Advisories and the toxicity factors.

b) MCLG: Proposed or Final Maximum Contaminant Level Goals.

c) MCL: Proposed or Final Maximum Contaminant Level. Values that appear in brackets represent units of pCi/L.

d) RfD: Reference Dose. Values were obtained from the Integrated Risk Information System; January 1992.

e) SF: Slope Factor. Values were obtained from the Integrated Risk Information System; January 1992. Values that appear in brackets represent units of (pCi)$^{-1}$.

f) FR 56 (138) pg. 33076, 40CFR141 Prologue gives a unit risk value of 6.6×10^{-7} per pCi/L for Radon risks from all water pathways.

g) Includes risks from short-lived daughter products.

h) Proposed MCL. The U.S. EPA is considering a range of values before promulgating the final MCL.

i) NA: Not available. The chemical was not listed in the cited references.

j) TT = Treatment technique requirements. The Agency proposed a two-part approach to address the two sources of lead and copper in drinking water; source water contamination and corrosion by-products. EPA proposed an MCL for lead in distributed water of 0.005 mg/L and an MCL for copper in distributed water of 1.3 mg/L with compliance measured at the entry points to the distribution system. The treatment technique requirements was proposed to control lead and copper entering water as corrosion by-products. The requirement is triggered by these "no-action" levels. (FR56(110) pg. 26471).

k) Values were obtained from the "Health Effects Assessment Summary Tables, FY-1991" (EPA 1991).