

FLUOR GLOBAL SERVICES

Technical Specifications For Soil and Disposal Facility Project Area 3A/4A Excavation

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FOR INFORMATION ONLY

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PREPARED BY:

[Signature] 08/20/01

CHECKED BY:

[Signature] 8/20/01

APPROVED BY:

[Signature] 8/20/01
For *[Signature]*

U.S. DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

Fluor Fernald
P.O. Box 538704
Cincinnati, OH 45253-8704

U.S. DEPARTMENT OF ENERGY

FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

Project No. 20800
Soil and Disposal Facility
Area 3A/4A Excavation
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SECTION 02150
TRAFFIC CONTROL

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PART 1 GENERAL

1.1 SCOPE

- A. This Section includes the traffic control requirements for the excavation areas, Special Materials Transfer Area (SMTA), Stockpile 7 (SP7) and movement between the following: On-Site Disposal Facility (OSDF), OSDF Material Transfer Areas (OMTA), Bulk Material Transfer Area (BMTA), OSDF borrow area, Solid Waste Landfill (SWL), and designated project operational limits. (Requirements for traffic control within the OSDF and OSDF borrow area are contained in the IMPP and the OSDF Borrow Area Management and Restoration Work Plan.)

1.2 RELATED SECTIONS AND DOCUMENTS

- A. Section 02200 - Earthwork
- B. Section 02205 - Impacted Material Excavation.
- C. Section 02206 - Earthwork for Remediation.
- D. Part 6 - Statement of Work
- E. Part 8 - Environmental Health and Safety/Training Requirements
- F. Part 9 - Quality Assurance Requirements

1.3 REFERENCES

- A. Manual of Uniform Traffic Control Devices (MUTCD) for Streets and Highways, current edition.
- B. State of Ohio, Department of Transportation (ODOT): Construction and Material Specifications, current edition.

1.4 SUBMITTALS

- A. Submit a Traffic Control Plan to include the following requirements, at a minimum:
 - 1. Planned traffic routes for hauling all types of excavated impacted material from the excavation areas to the SMTA, OSDF, SP7, OMTA, Soil Staging Area (SSA) or other designated areas.
 - 2. Planned traffic routes for hauling material from OMTA to OSDF, OSDF borrow area to OSDF, and miscellaneous stockpiles to OSDF.
 - 3. Entering haul roads from the excavation areas.
 - 4. Safe movement of personnel and equipment within the excavation boundary.

5. Traffic crossings over below grade utilities that are energized or active (e.g., gas lines, drinking water lines, electrical lines, and storm sewer).
6. Designated pedestrian and equipment crossings.
7. Maintenance and cleaning of the Impacted Material Haul Road, planned traffic routes, pedestrian crossings, and equipment crossings.
8. Coordination with other site traffic.
9. Access control to and from radiological-control and certified areas.
10. Location of traffic signals, signs, and other methods or devices used for traffic control, including dedicated flaggers and spotters.
11. Monitoring and enforcement of speed limits within active work areas, support areas, and on haul roads.
12. Use of gates to restrict traffic access.
13. Entry and exit routes for all types of traffic activity (material delivery, fueling, equipment movement, and similar traffic activity).
14. Location for contaminated and non-contaminated equipment parking.

1.5 HEALTH AND SAFETY REQUIREMENTS

- A. Environmental health and safety, and training requirements as required in Part 8.
- B. Dust control shall be in accordance with Part 6.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Provide materials for traffic control, including stop and yield signs, as defined by the Traffic Control Plan and conforming to MUTCD and ODOT specifications.
- B. Provide fencing as specified in Section 02200.

PART 3 EXECUTION

3.1 TRAFFIC CONTROL

- A. Control traffic in accordance with the approved Traffic Control Plan.
- B. Supply, install, and maintain traffic control devices.
- C. Maintain speed limit of construction vehicles and equipment as required in Part 6.
- D. Ensure that haul equipment or other equipment traveling between certified and non-certified areas, remains on roads constructed of certified material. Perform wheel-wash activities and decontamination in accordance with requirements defined in Part 8. The Construction Manager will perform radiological monitoring in accordance with Section 02205.
- E. Identify entry points to the excavation area as part of the Traffic Control Plan. Provide entry points free of interference from non-project operations. Ensure that traffic entering haul roads yields to traffic already on the road.

- F. Ensure that all traffic routes are acceptable for use (stable) daily and after any event (rain) that may have altered the condition of the route.
- G. Routes that cause equipment and/or vehicles to operate on inclines shall be evaluated and any operational limits stated.

3.2 IMPACTED MATERIAL HAUL ROAD

- A. Control the Impacted Material Haul Road (IMHR) as a contamination area during excavation and hauling of above-WAC materials. The Construction Manager must approve all IMHR crossings from controlled areas.
- B. The Construction Manager may post or reclassify road crossing intersections with the IMHR during periods of inactivity.

3.3 UTILITY CROSSINGS

- A. Protect all energized or active utility lines outside of existing paved areas that intersect proposed traffic routes. Use a 1 inch thick steel plate or an equivalent alternative. Provide length and width of steel plates as required to protect the existing utilities. Provide calculations to support equivalent alternatives.

3.4 EQUIPMENT PARKING

- A. OSDF Contractor Administration Area
 - 1. Provide non-contaminated equipment parking areas within the OSDF Contractor Administration Area.
 - 2. Restrict personal vehicles from the equipment parking areas.
 - 3. Provide personnel parking at the OSDF Contractor Administration Area.
- B. Contaminated Equipment Parking Area
 - 1. Locate the contaminated equipment parking area as close as possible to the Radiological Control Point Facility.
 - 2. Maintain contaminated equipment parking areas free of mud, debris and standing water.
 - 3. Park contaminated equipment utilized in the SP7 area, or above-WAC areas at the boundary of the area, in accordance with Section 02205, until decontaminated and released from the area.
- C. All parking areas shall be constructed to insure that personnel accessing and servicing the vehicles shall have stable footing. The use of rip rap and other like materials is not acceptable.

3.5 BORROW AREA HAUL ROAD

- A. Install stop signs to create a four-way stop intersection where the Borrow Area Haul Road crosses the North Access Road, prior to hauling of borrow material.

END OF SECTION

SECTION 02205
IMPACTED MATERIAL EXCAVATION

PART 1 GENERAL

1.1 SCOPE

A. This Section includes the requirements for excavating, size-reducing, segregating, stockpiling, loading, hauling, and unloading impacted material. Activities include, but are not limited to, the following:

1. Excavation of all impacted materials to the design surface.
2. Segregation of impacted materials for disposition or reuse.
3. Size reduction of remaining structures, utilities, miscellaneous debris and other materials.
4. Loading, hauling and unloading of all impacted materials to the appropriate disposition.
5. Development and maintenance of project stockpiles.
6. Support of site monitoring and sampling activities.
7. Performance of area management activities.
8. Excavation of supplemental materials located beyond the design surface.
9. Excavation of utilities below the design surface.

1.2 RELATED SECTIONS AND DOCUMENTS

- A. Section 02100 – Surveying.
- B. Section 02150 – Traffic Control.
- C. Section 02206 – Earthwork for Remediation.
- D. Section 02210 – Asbestos Containing Material (ACM).
- E. Section 02216 – Waste Containerization.
- F. Section 02230 – Road Construction.
- G. Section 02275 – Surface Water Management and Erosion Control for Remediation.
- H. Section 02930 – Vegetation.
- I. Part 6 – Statement of Work.
- J. Part 8 – Environmental Health and Safety/Training Requirements.
- K. Part 9 – Quality Assurance Requirements.
- L. Impacted Materials Placement Plan (IMPP), On Site Disposal Facility (OSDF), 20100-PL-007, current revision.

1.3 REFERENCES

- A. Title 29, Code of Federal Regulations (CFR): 29 CFR 1926 Subpart P – Excavation, current edition.
- B. Waste Acceptance Criteria (WAC) Attainment Plan for On Site Disposal Facility (OSDF), 20100-PL-0014, current revision.

1.4 DEFINITIONS

- A. Active Stockpile: A stockpile specifically designed to operate for longer than 45 calendar days. This includes interim stockpiles that are older than 45 days and existing stockpiles as shown on the Construction Drawings.
- B. Debris: Impacted material that is generated during the excavation and removal of building structures, utilities, miscellaneous man-made materials, and natural materials. These materials include floor slabs; foundation walls; foundations; piers; footings; hydraulic ram casings; structural steel and miscellaneous metal; electrical duct-bank, manholes, electrical wiring, and power poles; remaining equipment and miscellaneous mechanical items; chain link and other fencing; agricultural drain tiles; and rock, asphaltic pavement, and other aggregate materials not defined as Special Materials.
- C. Design Surface: Excavated surface created when the Contractor excavates impacted material to the lines and grades shown on the Construction Drawings.
- D. Final Remediation Levels (FRLs): The permissible concentration of contaminants that can remain in site soil and sediment following completion of remedial actions.
- E. Impacted Material: Soil with contamination levels above the established FRLs or man-made materials. Impacted materials associated with the Project are presented in Table 02205-1.
- F. Interim Stockpile: An impacted material stockpile within the project boundary, that is intended to be dispositioned in less than 45 calendar days.
- G. Real-time Monitoring: Fluor Fernald will conduct real-time monitoring, consisting of several alternative methods of utilizing in-situ gamma spectroscopy, to analyze contaminant levels on the excavation surface.
- H. Special Materials: Impacted material requiring special handling as specified in this Section and presented in Table 02205-1.
- I. Supplemental Excavation: Removal of impacted material encountered beyond the design surface.
- J. Underground Storage Tank (UST): Tank that was used to contain an accumulation of a regulated substance, of which the volume was 10 percent or more beneath the surface of the ground.

- K. WAC: Waste acceptance criteria (WAC) for disposition of material at the OSDF as defined by the WAC Attainment Plan. This WAC includes radiological/chemical criteria for soil, physical criteria for debris, and criteria for ancillary remediation waste (i.e., analytical sample returns, PPE).

1.5 SUBMITTALS

- A. Submit an Excavation Work Plan, as required in Part 6 and Part 8, to include the following:
1. Technical approach, including equipment by size and type, for the execution and management of excavation, segregation, size reduction, loading, hauling and unloading, project stockpiling, monitoring, supplemental material excavation, and area management activities, for the following material types:
 - a. Below-WAC.
 - b. Above-WAC.
 - c. Special Materials.
 - d. UST.
 - e. Soil treated by others in the Soil Staging Area.
 2. Design calculations and analysis for excavations 20 feet deep or greater. These design calculations and analysis shall be certified by a Registered Professional Engineer (RPE) with registration in the State of Ohio.
 3. Technical approach, including equipment by size and type, for the demolition and removal of remaining structures (i.e. building foundations, slabs, sumps, monitoring wells, piers, hydraulic ram casings) located above the design surface. Methods shall address safe sequencing and stabilization of remaining structures during demolition and removal.
 4. Technical approach, including equipment by size and type, for excavation of utilities located above and below the design surface.
 5. Technical approach and methods for general area management and administrative control activities including:
 - a. Surveying.
 - b. Inclement weather operations.
 - c. Fencing.
 - d. Spreading, grading, and compaction.
 - e. Maintenance of surface conditions and slope stability.
 - f. Coordination of excavation activities with surface water management and erosion and sediment control measures.
 - g. Temporary shutdown and work stoppage.
 - h. Equipment decontamination and contamination control at project boundaries.
 - i. Haul road management.
 - j. Earthwork for remediation in accordance with Section 02206.
 - k. Material tracking and documentation.
 - l. Maintenance and fueling of equipment.
 - m. Coordination of dust control.
 - n. Seasonal shutdown.

- o. Installation of precertification boundaries.
- 6. Technical approach, including equipment by size and type, for de-watering and water control. Describe specific methods for pumping water contaminated with volatile organic compounds (VOCs) in accordance with Section 02275.
- 7. Technical approach, including equipment by size and type, for removal of Above-WAC and process-related residue from piping and debris, including methods to control and collect contaminated wash water. The technical approach shall establish a process to remove the residue and soil to allow the piping and debris to be placed in the OSDF.
- 8. Technical approach for management of soil from areas requiring treatment at the Soil Staging Area shown on the Construction Drawings. Specific dumping location within the area shall be as directed by the Construction Manager.
- 9. Technical approach for protecting the Great Miami Aquifer (GMA) from infiltration of contaminated soil and water during removal of structures and/or impacted soils within 5 feet of the GMA, and installation of GMA plugs, in accordance with Section 02206.
- 10. Technical approach for establishing and maintaining haul routes and ramps located within deep excavations, including maximum slope, minimum curve radius, and road width.
- 11. Technical approach for size reducing concrete and asphalt for temporary aggregate surfaces and/or to provide supplemental Category 1 material. Include technical approach for managing the area for size reduction activities.
- 12. Technical approach for managing Stockpile 7 (SP7), including:
 - a. Inclement weather operations.
 - b. Spreading, grading, and compaction.
 - c. Management of surface conditions and drainage.
 - d. Temporary shutdown and work stoppage.
 - e. Methods to prevent contamination of haul equipment tires.
 - f. Plan and details showing the unloading of Above-WAC impacted material at SP7.
- B. Maintain a daily record of underground utilities that have been excavated from below the design surface and submit a summary of the record, in the form of a redline drawing mark-up, every 30 days following the start of excavation beyond the design surface.

1.6 VERIFICATION OF THE EXISTING CONDITIONS

- A. Verify existing conditions as specified in Section 02100.

1.7 HEALTH AND SAFETY REQUIREMENTS

- A. Environmental Health and Safety, and Training requirements shall be as required in Part 8.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Provide 20-mil sheets of Herculite or equal for use in buffer areas.

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- B. Provide 3/8-inch yellow nylon rope fence. Posts shall be in accordance with Section 02200.

2.2 EQUIPMENT

- A. Furnish and maintain equipment to perform required operations in conformance with these specifications and in accordance with Part 8.
- B. Equipment used to haul impacted material over the existing paved IMHR, shall be equal to or less than the gross vehicle weight and axle loading for a Caterpillar CAT D300E haul truck (gross vehicle weight of 120,000 pounds and maximum axle width of 9-feet 10-inches). Pavement width of the existing two-way IMHR is 24-feet. Select equipment and equipment width to ensure safe operation on this road.
- C. Equipment used within the excavation area shall be equal or less than the gross weight for a Caterpillar CAT 350L track hoe (112,500 pounds). However, the Construction Manager may approve the use of heavier equipment in this area provided the Contractor submits calculations certified by a registered Professional Engineer, as part of the Excavation Work Plan, that ensure slope stability.
- D. Equipment used to excavate, load, haul, and unload impacted materials shall have enclosed cabs. Enclosed cab is defined as an equipment cab isolated from outside environment (intact windows, doors, panels and floors surrounding driver with all windows and doors shut) which provides a barrier from intrusion of outside airborne particles. Any heating, ventilating, or air conditioning units associated with the equipment cab must not provide a direct path for outside air to enter (air conditioner on air recirculate mode) unless the air is first passed through a high efficiency particulate air filter pulled directly from outside the cab.
- E. Furnish placards, placard carriers and 3-inch nominal diameter mounted sealable polyvinyl-chloride (PVC) tubes to serve as manifest carriers on all haul trucks. Install at locations as directed by the Construction Manager.
- F. Assign equipment used to haul material to the OSDF with unique alpha-numeric identifiers. This identifier shall be placed on both sides of the truck cab and shall be visible from 10 feet.
- G. Equip trucks used for hauling of the impacted material with automatic load cover tops or employ Best Available Technology (BAT) methods to ensure that no airborne materials are emitted from the haul truck bed or load, whether empty or full.
- H. Provide water tank trucks, water wagons, hydroseeders, portable tanks, pressure distributors, piping, sprinklers or other equipment designed to apply water and/or dust suppressant and crusting agent uniformly and in controlled quantities to variable surface widths to provide fugitive dust control as required in Part 6.
- I. Provide pressure wash or comparable equipment as approved by the Construction Manager to clean visible process residue and soil from piping and debris to allow the piping and debris to be placed in the OSDF.
- J. Provide portable wash equipment to wash vehicle tires and vehicle exteriors as necessary.

- K. Equipment used for size reducing concrete and asphalt materials shall be capable of processing debris to the size requirements of Category 1 material. In addition, equipment will be equipped to remove rebar and other miscellaneous embedded metals and provide mitigation of fugitive dust release.

PART 3 EXECUTION

3.1 GENERAL

- A. Prior to performing any excavation activities, satisfy the following requirements:
1. Complete preliminary survey and layout work in accordance with Section 02100.
 2. Establish dust control methods in accordance with the Contractor's approved Dust Control Plan.
 3. Install and manage surface water management and erosion and sediment control measures in accordance with Section 02275.
 4. Install, modify, and manage construction safety and radiological-control fence, including installation of construction area signs specified in Part 8. Install posts at spacing recommended by the manufacturer's installation procedures and as required to prevent sagging. Posts with less than 4 feet remaining above the ground after installation shall have safety caps installed.
 5. Obtain survey and red line markup of area isolation trench to verify completeness.
- B. Perform all excavation activities in compliance with 29 CFR Part 1926.650 through 1926.652, and Part 8 of the contract documents.
- C. Radiological control and certified area signs will be furnished and installed by the Construction Manager.
- D. Install and manage traffic control devices in accordance with Section 02150.
- E. Establish and manage Special Materials Transfer Area(s) (SMTA) as follows:
1. Establish the SMTA adjacent to the project boundary so that it is accessible from the excavation area and the Former Production Area. Use areas designated on the Construction Drawings or an existing building slab, paved parking area, or new aggregate surface as approved by the Construction Manager.
 2. Construct ingress/egress to the SMTA, including access roads, ramps, and drainage improvements as required.
 3. Install new aggregate surface SMTA in accordance with the Construction Drawings and Section 02230, and provide positive drainage.
 4. The SMTA shall not be used as a Contractor laydown area.
 5. The SMTA shall be controlled as a radiological buffer area in accordance with this Section and Part 8.
- F. Perform fracturing of concrete slabs as part of initial excavation activities. Excavate fractured materials concurrent with the adjacent Above-WAC or Below-WAC material. Fracturing of at-

grade concrete slabs may continue concurrently with Above-WAC soil removal, but concrete outside of Above-WAC areas shall not be removed until Above-WAC soil removal has been completed, unless otherwise approved by the Construction Manager.

- G. Establish controls for removal of ACM in accordance with Section 02210.
- H. Stockpile concrete materials as necessary to facilitate the generation of Category 1 material in accordance with this Section or as directed by the Construction Manager.
- I. Blasting, including use of explosives or explosive devices, is not permitted.
- J. Unless otherwise noted on the Construction Drawings, the following slope stability requirements shall apply during excavation activities:
 - 1. Excavation slopes with depths less than 20-feet shall be performed in accordance with applicable Occupational Safety and Health Administration (OSHA) guidelines.
 - 2. Temporary excavation slopes with depths greater than 20-feet shall be no steeper than 1.5H:1V with a maximum height of 13 feet between 15 foot benches. Sloped excavations greater than 20 feet in depth shall be designed by a Registered Professional Engineer (RPE) with registration in the state of Ohio.
 - 3. Design slopes and slopes created by supplemental excavation shall be no steeper than 2H:1V with a maximum height of 13 feet between 15 foot benches.
- K. Remove material adjacent to structures that extend above the excavation surface, as well as the structures themselves, in a safe manner to ensure that an unstable condition is not created.
- L. The following additional requirements shall apply to equipment for excavation, loading, hauling, and unloading:
 - 1. Dedicate and restrict equipment required to excavate, load, haul and place Above-WAC material, as well as soil requiring treatment, to that specific use until decontamination rinsing has been completed and approved by the Construction Manager. Upon approval by the Construction Manager that no visible material is present on exterior equipment surfaces, or in haul truck beds, equipment may be used elsewhere.
 - 2. Prohibit tracked equipment from hauling, operating, or tracking over the Impacted Material Haul Road (IMHR) or other paved roadways, unless otherwise approved by the Construction Manager.
 - 3. Maintain equipment within the excavation area during periods of non-work (evenings, weekends, and holidays) unless equipment decontamination has been completed and the Construction Manager has approved the equipment removal.
 - 4. Complete decontamination activities and request a radiological survey of the equipment by the Construction Manager prior to moving equipment out of radiological contamination areas.
- M. Perform intermediate and final surveys as specified in Section 02100 for measurement and periodic progress payment and to confirm attainment of the design surface.

3.2 GENERAL EXCAVATION

- A. Excavate impacted materials in accordance with the Contractor's approved Excavation Work Plan.
- B. At a minimum, excavate surface material within the Limits of Excavation to a depth of 2 feet, based on preliminary surveys specified in Section 02100.
- C. Excavate and load material in such a manner that enables the Construction Manager to visually observe all excavation and loading operations as required to accurately manifest material for disposition.
- D. Excavations shall generally proceed in an up-gradient to down-gradient pattern to the lines and grades shown on the Construction Drawings, unless otherwise directed by the Construction Manager.
- E. Keep excavation equipment in contaminated areas to prevent recontamination of areas excavated to final grade. Excavate an area by methods that prevent drainage of surface water into the area.
- F. Unless otherwise noted on the Construction Drawings or directed by the Construction Manager, excavate material from known Above-WAC areas in accordance with this Section, prior to excavating any Below-WAC material.
- G. Survey and stake excavation areas as shown on the Construction Drawings, in accordance with Section 02100.
- H. Excavate all known utilities as indicated on the Construction Drawings. Prior to removal, cap, drain, purge and/or plug utility lines to be excavated as directed by the Construction Manager. Prevent release of material into surrounding soil. If fluids or hold-up material is encountered in utility lines, stop work and notify the Construction Manager. Plug sanitary and process lines when liquid flow is detected. Any material released from the sewer or process lines will be excavated and dispositioned as directed by the Construction Manager.
- I. Stop excavation and immediately notify the Construction Manager if unidentified utilities or underground structures (tanks) are encountered.
- J. Piping that is deformed, closed or otherwise hinders visual inspection shall be managed as Above-WAC debris.
- K. If a utility is suspected of containing ACM, notify the Construction Manager and manage in accordance with Section 02210.
- L. Excavate, size-reduce, and handle piping and debris in such a manner to minimize the generation of Above-WAC debris or friable asbestos.
- M. Design contours and grades shown on the Construction Drawings represent the minimum limits of excavation required to capture contamination and foundations, while maintaining safe slope requirements. Minimal changes may be proposed in the Contractor's Excavation Work Plan, submitted in accordance with this Section, to incorporate breaks in contours, ponding of water, equipment accessibility, etc. These changes shall not exceed 10% of the total designed excavation quantity.

- N. In the event a historic, prehistoric, or archeological site, feature, or object is discovered, stop excavation in the area and immediately notify the Construction Manager.
- O. Continuously observe excavations for Special Materials or change in materials. In the event a Special Material or change in materials is encountered, stop excavation in the area and immediately notify the Construction Manager. Dispose of Special Materials in accordance with Table 02205-1 and as directed by the Construction Manager.
- P. In the event solvent saturated soils are encountered, stop excavation in the area and immediately notify the Construction Manager. Excavate, load, and haul the material to the Soil Staging Area as directed by the Construction Manager.
- Q. In the event active monitoring wells are encountered, stop excavation in the area and immediately notify the Construction Manager.
- R. Prevent damage to any adjacent structures, materials, and equipment, including utilities that are to remain, or those installed for performance of this work. If damage occurs due to the Contractor's work, Contractor shall repair damage at no additional cost to Fluor Fernald.
- S. Dispose of impacted material in accordance with this Section. Table 02205-1 provides guidance for the disposition of materials that may be encountered which will be disposed at the 3 destinations identified in this Section. Notify the Construction Manager in the event that materials are discovered that do not appear to be represented in Table 02205-1. The Construction Manager will provide oversight of material movement to ensure compliance with this Section.
- T. OSDF disposition requires the following:
1. Compliance with requirements stated in the WAC Attainment Plan and the IMPP.
 2. Clean process-related residue from all piping and debris in accordance with the Contractor's approved Excavation Work Plan. Notify the Construction Manager of residue that is not readily removed and manage the debris as directed.
 3. Comply with criteria identified in Table 02205-1 for disposition of Special Materials at the OSDF.
 4. Remove, package, load and haul ACM in accordance with Section 02210.
- U. SP7 disposition requires the following:
1. Soil, piping and debris exceeds the requirements for OSDF disposition as outlined in Table 02205-1.
 2. Piping and debris shall be less than 10 inches in at least one dimension, and no longer than 8 feet in any dimension.
- V. SMTA disposition requires the following:
1. Soil, piping and debris exceeds the requirements for OSDF and SP7 disposition as outlined in Table 02205-1.
 2. All materials shall be containerized in accordance with Section 02216.

3. Loaded containers shall be placed in the SMTA in a manner that protects the containers from damage. Do not stack containers.

3.3 EXCAVATIONS APPROACHING THE GMA

- A. Stop excavation activities in the immediate area and immediately notify the Construction Manager if sands and gravel are encountered, even if the design surface has not been reached.
- B. Use caution when excavations encroach on the 5-foot protective cover over the unsaturated sands and gravel of the GMA. GMA elevations are shown on the Construction Drawings.
- C. Prior to initiating work activities which will encroach on the 5-foot protective cover but not extend within 2-feet of the GMA, coordinate with the Construction Manager as follows:
 1. Excavate to achieve design grades shown on the Construction Drawings or to remove Above-FRL material as directed by the Construction Manager.
 2. Allow the Construction Manager 24 hours to examine the nature of the material in the bottom of the excavation to determine if GMA sediments are present, perform real-time monitoring, collect physical samples in the area to be backfilled, and identify any necessary pumping requirements for ponded water.
 3. Immediately following monitoring and sampling collection by the Construction Manager, initiate backfilling to protect the GMA in accordance with Section 02206.
- D. Prior to initiating work activities which will encroach within 2 feet of or breach the GMA, obtain written approval and direction from the Construction Manager. Proceed as follows:
 1. Excavate to achieve design grades shown on the Construction Drawings or to remove Above-FRL material as directed by the Construction Manager.
 2. Allow the Construction Manager to perform real-time monitoring and collect physical samples in the area prior to backfilling.
 3. Immediately following monitoring and sampling collection by the Construction Manager, initiate backfilling to protect the GMA in accordance with Section 02206.

3.4 ABOVE-WAC EXCAVATIONS

- A. Establish excavation boundary and buffer area controls for Above-WAC areas and areas containing soil requiring treatment. The Construction Manager will administratively maintain buffer areas.
 1. Establish excavation area boundaries at surveyed and staked locations, in accordance with this Section, unless otherwise directed by the Construction Manager.
 2. Install T-posts and rope fence at the excavation boundary.
 3. Establish the buffer area adjacent to the excavation area to serve as a controlled loading area between the excavation area and the surrounding radiological controlled area.
 4. Grade the buffer area to drain into the excavation.
 5. Install T-posts and rope fence around the buffer area as directed by the Construction Manager.
 6. Cover the buffer area with a 20-mil sheet of Herculite, or equivalent, as directed by the Construction Manager.

7. Collect water encountered during excavation and pump as specified in Section 02275.
 8. Keep the buffer area clean and free of dirt and mud.
 9. Remove spillage before releasing haul equipment from the buffer area.
- B. Load haul equipment by reaching over the excavation area boundary and dumping directly into haul equipment located in the buffer area. Load haul equipment in a manner that prevents spillage and accumulation of material on the wheels and components of the haul equipment. Remove all visible material that accumulates on the exterior of the truck. Multiple loading areas may be established within the buffer area, as approved by the Construction Manager.
- C. If the Construction Manager identifies Above-WAC contamination on the exterior of haul equipment, wash the equipment within the buffer area (with low volume, high-pressure washer or approved equivalent).
- D. Remove debris (concrete, asphalt, and miscellaneous structures) from Above-WAC areas and pressure wash the debris to remove any soil/residue. The Construction Manager will visually monitor washing operations to ensure that debris is free of all soil/residue and approved for loading and hauling to the OSDF. The Construction Manager may require additional washing as necessary to satisfy visual inspection.
- E. Debris from Above-WAC areas not approved for disposal at the OSDF shall be dispositioned at SP7 in accordance with this Section.
- F. Excavate Above-WAC soil/gravel in 3+/-1 foot lifts, or as directed by the Construction Manager, to the design surface, as shown on the Construction Drawings. Excavate soil with radiological contaminants; load and haul the material to SP7 in accordance with this Section. Load and haul soil with organic contaminants Above-WAC to the Soil Staging Area.
- G. The Construction Manager will perform real-time monitoring on excavated side slopes after each lift is removed and on the excavation floor upon achieving the Above-WAC contamination limits shown on the Construction Drawings. In Above-WAC areas contaminated with Tc-99, as shown on the Construction Drawings, the Construction Manager will perform physical sampling at the design depth. Allow 10 working days for sampling and analysis. Do not proceed with further excavation in this area until directed by the Construction Manager.
- H. If initial depth of Above-WAC material is below the existing surface, excavate Below-WAC material in 2+/-1 foot lifts until Above-WAC material has been reached, then proceed in 3+/-1 foot lifts, or as directed by the Construction Manager.
- I. Perform supplemental Above-WAC excavations, as directed by the Construction Manager, if monitoring or analysis identifies additional Above-WAC material beyond the limits shown on the Construction Drawings or in areas not shown on the Construction Drawings.

3.5 UST EXCAVATIONS

Excavate USTs and areas that previously contained USTs shown on the Construction Drawings, as well as USTs discovered during excavation, as follows:

- A. Excavate to expose the top of tank to allow the Construction Manager to assess the tank's condition.
- B. The Construction Manager will inspect the tank for the presence of liquid or non-soil residue.
- C. If the tank contains liquid or non-soil residue, as determined by the Construction Manager, proceed as follows:
 - 1. Pump remaining tank contents into drums provided by the Construction Manager.
 - 2. Move filled drums from the excavation area to the SMTA as directed by the Construction Manager.
 - 3. The Construction Manager will remove the drums from the SMTA for appropriate disposition.
- D. Excavate the tank upon confirmation from the Construction Manager that the tank is empty. Ensure that water does not accumulate in the tank from the surrounding excavation.
- E. During excavation, stage the tank, soil excavated from around the UST, and soil excavated from areas that previously contained USTs separate from the other excavated materials.
- F. Upon confirmation from the Construction Manager that the tank is free of visible process residue, size-reduce the tank to meet physical WAC and dispose of it in the OSDF as a discrete waste stream.
- G. If the tank cannot be cleaned of visible process residue, as determined by the Construction Manager, size-reduce the tank as specified in this section for disposition as directed.
- H. Over-excavate soil surrounding UST excavations and from areas that previously contained USTs to remove any visible stains and as directed by the Construction Manager. Transport this soil to the OSDF.

3.6 BELOW-WAC EXCAVATIONS

Excavate Below-WAC material to the limits shown on the Construction Drawings as follows:

- A. Remove slabs, concrete pads, asphalt, gravel, base and sub-base to sub-grade soil within Below-WAC areas. Load and haul this material to the OMTA-Bulk Debris, or to the OSDF, as directed by the Construction Manager. Notify the Construction Manager for real-time monitoring prior to subsequent excavation in the Below-WAC area.
- B. Perform subsequent excavations in 3+/-1 foot lifts, or as directed by the Construction Manager, to achieve the design surface shown on the Construction Drawings. Load and haul material to the OSDF in accordance with this Section.
- C. Over-excavate a minimum of 6 inches in areas where impacted material was stockpiled or pushed for load-out during excavation to allow for visual inspection and disposition of any debris that may have been tracked into the soil.

- D. In Below-WAC excavation driven by contamination rather than removal of underground structures, the Construction Manager will perform real-time monitoring upon removal of each lift and upon achieving the limits shown on the Construction Drawings. Do not proceed with further excavation in the areas until directed by the Construction Manager.
- E. Coordinate real-time monitoring with the Construction Manager as necessary to maintain project progress in other areas while real-time monitoring is being conducted, in accordance with this Section.
- F. Upon reaching the design surface, notify the Construction Manager for real-time monitoring.

3.7 MATERIAL SEGREGATION

- A. During excavation, segregate materials by the impacted material categories as defined in the IMPP. Maximize the volume of Category 1 material. The Construction Manager shall provide direction for any deviations in segregation.
- B. Segregate all Below-WAC material to support construction of the four zones of each OSDF cell (protective layer, select impacted material layer, impacted material layer, and contouring layer).
- C. Segregate existing surface aggregate material and size-reduced concrete and asphalt materials for use as temporary aggregate material in accordance with the Construction Drawings.
- D. Add aggregate material to Category 1, soil and soil-like material, to maximize Category 1 quantities as required for OSDF placement activities.

3.8 SIZE REDUCTION

- A. Size-reduce remaining structures (i.e., building foundations, slabs, sumps, hydraulic ram casings) located above the design surface to meet the physical WAC for OSDF.
- B. Size-reduce concrete and asphalt structures (i.e., building slabs, concrete/asphalt pads, roads, parking areas) to maximize the generation of material for temporary aggregate surfaces.
- C. Size-reduce concrete and asphalt structures (i.e., building slabs, concrete/asphalt pads, roads, parking areas) to generate supplemental Category 1 material as directed by the Construction Manager.
- D. Size-reduce piping and debris to meet the physical WAC for OSDF in accordance with the IMPP, or size requirement for SP7 in accordance with this Section.
- E. Size-reduce metal materials (i.e., structural steel, piping, equipment, miscellaneous metal) in accordance with IMPP and Part 8. Load all metal components in bulk and haul to the OSDF.
- F. Size-reduction shall be by mechanical means and not by flame or torch cutting.

3.9 GENERAL LOADING AND HAULING

- A. Use paved haul roads designated on the Construction Drawings for hauling. Upon entering the

paved haul roads with haul equipment, do not exit except to the excavation area, SP7, SSA, OMTA Bulk Debris Area, and/or the OSDF, without approval by the Construction Manager.

- B. When hauling materials to the SMTA, enter the SMTA from the excavation area only.
- C. Load haul equipment in a fashion to minimize load shifting and to prevent spillage during transit.
- D. Extend automatic covers on suitably equipped haul equipment, whether full or empty, during all periods of equipment movement.
- E. Keep equipment cab closed and stay within the equipment cab when inside any posted contamination area without appropriate PPE except in emergency situations.
- F. Provide material tracking information in accordance with the Material Tracking Plan located on the Construction Drawings.
- G. Prior to loading and hauling, material designated for the OSDF shall be void of free liquid.

3.10 STOCKPILING

- A. Install construction safety fence around active stockpiles in accordance with Section 02200.
- B. Install appropriate signage, provided by the Construction Manager, around the boundary of all active stockpiles.
- C. Install erosion control measures around active stockpile in accordance with Section 02275.
- D. Maintain fencing, signage, and erosion control measures for the duration of the active stockpile's existence.
- E. Repair contractor-inflicted damage to active stockpile support structures (i.e., silt fence, perimeter fence) to their original condition within 24 hours of damage discovery at no additional cost to Fluor Fernald.
- F. Apply crusting agent as specified in Section 02930 within 7 calendar days upon completion of the active soil stockpile or if the active soil stockpile is to be inactive for more than 45 calendar days.
- G. Compact/seal the surface of the stockpile in use at the close of each work-day to prevent fugitive dust and erosion.
- H. Construct stockpiles with maximum slopes of 3H:1V and a maximum height to base ratio 0.2.
- I. Locate interim stockpiles within the Limits of Work upon approval of the Construction Manager. Remove interim stockpiles within 45 calendar days.
- J. Stockpile excavated surface aggregate materials and size-reduced concrete and asphalt in the OMTA-Bulk Debris Area, located north of the IMHR as shown on the Construction Drawings.

This material shall be used as temporary aggregate material or as supplemental Category 1 material.

- K. Stockpiles shall not be located within 30 feet of an excavation top-of-slope.
- L. In addition to general stockpiling requirements, the following requirements shall apply to the management of SP7:
 - 1. Use dedicated equipment for the preparation and management of SP7.
 - 2. Maintain ingress/egress to the SP7, including access roads, ramps, and drainage features.
 - 3. Maintain the unloading area that prevents haul equipment tires from coming in contact with the Above-WAC material.
 - 4. Place Above-WAC material in locations designated by the Construction Manager.
 - 5. Decontaminate tools and equipment used to place and manage Above-WAC material within SP7 prior to requesting release. Following decontamination, the Construction Manager will perform a radiological survey to release tools and equipment.
- M. Cover soil or debris containing non-friable ACM with approximately 6 inches of stockpiled soil that is visually free of ACM at the end of the day.

3.11 MONITORING AND SAMPLING

- A. The Construction Manager will perform real-time monitoring of all Below-WAC areas following removal of surface aggregate; concrete and asphalt slabs, pads, roads and parking areas, and between each lift in contaminated areas until the design surface has been achieved, including the design surface.
- B. The Construction Manager will perform real-time monitoring between excavation lifts for Above-WAC materials.
- C. The Construction Manager will perform radiological monitoring before equipment is released from a buffer area, as required in Part 8. Working in rain and/or wet weather will increase scanning time.
- D. The Construction Manager will perform visual monitoring during excavation for Special Materials that are not permitted in the OSDF or that will require additional processing to meet WAC. If Special Materials are found, real-time monitoring may be performed to verify removal and determine appropriate disposition of the material.
- E. The Construction Manager will visually monitor all piping and debris to ensure no visible process residue remains, in order to be placed in the OSDF.
- F. The Construction Manager will perform real-time monitoring to verify that the excavation area has met the requirements for precertification.
- G. When real-time monitoring or sampling is required, excavate in an alternate location within the excavation area while awaiting the results, at no additional cost to Fluor Fernald. Excavate alternate locations a minimum of 50 feet from the area being monitored. Allow up to 2 working days for monitoring after area is ready for monitoring. Extend duration for monitoring at least 1 working day for each day precipitation occurs.

- H. The Construction Manager and regulatory agencies may collect samples from the excavation, haul equipment and the OSDF at any time during the project at no additional cost to Fluor Fernald.
- I. The Construction Manager will monitor water collected in Above-WAC excavations for the presence of VOCs. If VOCs are detected, the water will be sampled and analyzed to determine disposition.
- J. The Construction Manager will perform magnetometer surveys to verify that all ferrous debris has been removed from areas where former underground utilities and structures were excavated.

3.12 PRECERTIFICATION AND SUPPLEMENTAL EXCAVATION

- A. The Construction Manager will perform real-time monitoring to pre-certify an area as having attained FRL requirements.
- B. Perform supplemental excavations beyond the design surface as directed by the Construction Manager, or if the following conditions exist:
 - 1. Real-time monitoring and/or physical sampling identifies material beyond the design surface that does not meet FRL requirements.
 - 2. Unidentified utilities or other impacted materials are found beyond the design surface.
- C. Install rope fencing along the perimeter of the pre-certified area upon notification from the Construction Manager that precertification has been achieved. The Construction Manager will install appropriate signs.

3.13 AREA MANAGEMENT

- A. Maintain construction safety fence and radiological-control fence as specified in this section, Section 02200, and as shown on the Construction Drawings.
- B. Water management shall be as specified in Section 02275.
- C. Perform stabilization of the excavated areas using crusting agent and temporary seeding in accordance with Sections 02275 and 02930.
- D. Notify the Construction Manager prior to removing sediment and debris from ditches, drains and erosion control devices. The Construction Manager will sample and test sediment for WAC compliance. Remove and de-water sediment in accordance with the following:
 - 1. Notify the Construction Manager two (2) days prior to removing sediment from ditches, drains and erosion and sediment control devices for sampling and analysis of the sediment for disposition.
 - 2. Remove accumulated sediment from ditches, drains and erosion and sediment control devices as directed by the Construction Manager. In no case shall sediment reduce the available depth of the associated feature to less than two-thirds the depth shown on Construction Drawings.
 - 3. De-water sediment removed from Above-WAC areas within the associated Above-

- WAC area.
4. De-water sediment removed from ditches, drains and erosion and sediment control devices adjacent to and up-gradient of the associated feature as necessary to allow water to drain immediately back into the feature.
 5. Pending approval from the Construction Manager, disposition de-watered sediment to the OSDF unless otherwise directed by the Construction Manager.
 6. Excavate, collect and place sediments accumulated in the SP7 surface water control devices in SP7.
- E. Implement seasonal closure methods at the end of each construction season, as described in the Contractor's approved Excavation Work Plan. Maintain seasonal closure through winter shutdown. Seasonal shutdown requirements include, but are not limited to:
1. Maintain surface water management and erosion and sediment controls.
 2. Maintain dust control, as required in Part 6.
 3. Perform equipment decontamination, as required.
 4. Remove water from excavation during seasonal closure, when water depth exceeds 1-foot. Pump water out of the excavations in a manner that maintains the integrity of the 2H:1V side slopes, (i.e., no rapid draw down) and prevents an overflow condition. The pumping priority for open excavations is as follows:
 - a. Open excavation areas containing impacted material that are located up-gradient of remediated areas,
 - b. Completed excavations, and
 - c. Other uncompleted excavations.
 5. Seed/stabilize stockpiles.

3.14 UTILITY REMOVAL BELOW THE DESIGN SURFACE

- A. Prior to excavating utilities below the design surface, satisfy the following conditions:
1. Complete the intermediate survey, as specified in Section 02100.
 2. Obtain Construction Manager approval that real-time monitoring of the design surface is complete.
- B. Excavate and remove utilities in accordance with the details shown on the Construction Drawings and this Section.
- C. Backfill utilities located below the design surface in accordance with the details shown on the Construction Drawings and Section 02206.
- D. If visual monitoring identifies Special Materials during these utility excavations, perform supplemental excavation in accordance with this Section.
- E. Excavate miscellaneous debris that is encountered below the design excavation grade and disposition in accordance with this Section.
- F. Maintain a daily record of underground utilities excavated from below the design surface.

END OF SECTION

Table 02205-1

The table should be interpreted to read that material in column 1 may be dispositioned at the appropriate destination in columns 2-4 if the corresponding criteria are met.

MATERIAL	DESTINATION*		
	OSDF	SP7 ⁽¹⁾	SMTA ⁽²⁾
Soil – general excavation/UST	<ul style="list-style-type: none"> Meets WAC 	<ul style="list-style-type: none"> Above-WAC 	<ul style="list-style-type: none"> Not applicable
Soil – Requiring treatment	<ul style="list-style-type: none"> Prohibited pending treatment and direction by the Construction Manager 	<ul style="list-style-type: none"> Prohibited pending treatment and direction by the Construction Manager 	<ul style="list-style-type: none"> Fails treatment
Debris – general excavation/UST	<ul style="list-style-type: none"> Meets WAC 	<ul style="list-style-type: none"> Above-WAC Visible residue cannot be removed 	<ul style="list-style-type: none"> Not applicable
Debris – Above-WAC	<ul style="list-style-type: none"> Meets WAC and free of visible soil/residue 	<ul style="list-style-type: none"> Visible soil/residue cannot be removed 	<ul style="list-style-type: none"> Not applicable
Asbestos ⁽³⁾	<ul style="list-style-type: none"> Meets WAC and passes visual inspection by CM 	<ul style="list-style-type: none"> Above-WAC and non-friable Visible soil/residue cannot be removed and non-friable 	<ul style="list-style-type: none"> Friable and fails visual inspection by CM
Non-pressurized Containers ⁽³⁾	<ul style="list-style-type: none"> Meets WAC, free of visible soil/residue, and contains no free liquid, product, etc 	<ul style="list-style-type: none"> Above-WAC and contains no free liquid, product, etc. Visible soil/residue cannot be removed and contains no free liquid, product, etc. 	<ul style="list-style-type: none"> Contains free liquid, residue, etc
Piping/Pumps ⁽³⁾	<ul style="list-style-type: none"> Meets WAC, free of visible soil/residue, and contains no free liquid 	<ul style="list-style-type: none"> Interior not visible and contains no free liquid Visible soil/residue cannot be removed and contains no free liquid 	<ul style="list-style-type: none"> Not applicable
Transformers/Electrical Equipment ⁽³⁾	<ul style="list-style-type: none"> Meets WAC and free of visible soil/residue 	<ul style="list-style-type: none"> Visible soil/residue cannot be removed and drained of all fluid 	<ul style="list-style-type: none"> Contains fluid
Brick including Acid Brick ⁽³⁾	<ul style="list-style-type: none"> No acid brick⁽⁴⁾ 	<ul style="list-style-type: none"> Acid brick⁽⁴⁾ 	<ul style="list-style-type: none"> Not applicable
Lead Acid Batteries ⁽³⁾	<ul style="list-style-type: none"> Prohibited 	<ul style="list-style-type: none"> Prohibited 	<ul style="list-style-type: none"> Containerize
Medical Infectious Waste ⁽³⁾			
Non-soil Residue ⁽³⁾			
Pressurized Containers ⁽³⁾			
Tires ⁽³⁾			
Uranium Metal ⁽³⁾			
Sealed radiological calibration sources			

(1) Must meet SP7 size requirements per this Section (2) SMTA materials must be containerized. (3) Special Material per this Section. (4) Acid brick is red or reddish-brown brick and fragments.
* These are final destinations beyond which the contractor bears no responsibility for material movement. The OMTA area is a handoff to the OSDF. The Soil Staging Area and the OMTA Bulk Debris Area are interim holding areas prior to disposition at a final destination

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SECTION 02206
EARTHWORK FOR REMEDIATION

PART 1 GENERAL

1.1 SCOPE

- A. This Section includes requirements for earthwork associated with remediation of the former production area to include, but is not limited to:
1. Excavation of backfill material.
 2. Excavation and placement of materials for ditches and berms.
 3. Placement of backfill material in trenches excavated for utility removal in areas below design surface.
 4. Placement of plug material over the unsaturated sands and gravels of the Great Miami Aquifer (GMA).
 5. Interim grading for drainage and road preparation.

1.2 RELATED SECTIONS AND DOCUMENTS

- A. Section 02100 – Surveying.
- B. Section 02150 – Traffic Control.
- C. Section 02205 – Impacted Material Excavation.
- D. Section 02230 – Road Construction.
- E. Section 02275 – Surface Water Management and Erosion Control for Remediation.
- F. Section 02930 – Vegetation.
- G. Part 6 - Statement of Work.
- H. Part 8 - Environmental Health & Safety/ Training Requirements.
- I. Part 9 - Quality Assurance Requirements.

1.3 REFERENCES

- A. American Society for Testing and Materials (ASTM):
1. ASTM C150 Specification for Portland Cement, current edition.
 2. ASTM D698 Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lb/ft), current edition.

3. ASTM D2216 Test Method for Laboratory Determination of Water (Moisture) Content of Soil and Rock, current edition.
4. ASTM D2487 Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System), current edition.
5. ASTM D2922 Standard Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
6. ASTM D3017 Standard Test Methods for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).
7. ASTM D4643 Test Method for Determination of Water (Moisture) Content of Soil by Microwave Oven Method.

1.4 DEFINITIONS

- A. Fill Material: Non-impacted soil obtained from within the excavation area, below the design surfaces, following pre-certification by Fluor Fernald, or from a designated borrow area.
- B. Design Surface: Excavated surfaces created when the Contractor excavates impacted material to the lines and grades as shown on the Construction Drawings.
- C. GMA Plug: Non-impacted gray clay material from the certified Borrow Area used to maintain a minimum protective cover thickness over, and seal breaches into, the GMA unsaturated sands and gravels.
- D. Clay Plug: Same material as specified for GMA Plug used to create a protective cover thickness over pilings to be cut off and left in place as shown on the Construction Drawings.

1.5 SUBMITTALS

- A. Submit a Contractor's Earthwork Work Plan in accordance with Section 02200, to include this Section.
- B. Submit for approval, name, address, and qualifications of an independent soil testing laboratory and resume(s) of field technician(s).
- C. Within seven (7) calendar days of obtaining samples and performing field tests, provide copies of all lab and field tests performed by the soil testing laboratory and Contractor performing field tests. Soil test results shall include Standard Proctor moisture density tests, sieve analysis, density tests, and Proctor curves for each type of material to be used prior to its use. Field test results shall include a map depicting locations and depth/lift.
- D. Submit specification sheet and MSDS for sodium bentonite grout.
- E. Submit specification sheet and MSDS for Portland cement.
- F. Submit as-built survey to verify completion of design excavation in accordance with Section 02100, Surveying.

- G. Documentation of nuclear density gauge calibration in accordance with manufacturer's requirements.

1.6 EXISTING CONDITIONS

- A. Verify existing conditions as specified in Section 02100.

1.7 HEALTH AND SAFETY REQUIREMENTS

- A. Environmental health and safety, and training requirements shall be as required in Part 8.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Backfill material shall be free of debris, foreign objects, large rock fragments (maximum dimension of 6 inches), organic, and other deleterious materials.
- B. GMA plug material shall be backfill material conforming to CL classification according to United Soil Classification System in accordance with ASTM D2487.
- C. Use the designated certified borrow area as the source for GMA plug material.
- D. Material used to backfill utility trenches located below the design surface and areas where grout plugs are installed into air-gapped storm sewers shall be surrounding soils following pre-certification by Fluor Fernald. The fill material shall be relatively free of debris, foreign objects, large rock fragments, organic, and other deleterious materials.
- E. Use below-FRL material from the excavation area, following pre-certification by Fluor Fernald, as a source of fill and backfill material for supplemental excavations as directed by the Construction Manager.
- F. Portland cement per ASTM C150, normal – Type 1.
- G. Sodium bentonite grout.
- H. Safety signs around ponds shall be exterior quality signs with minimum 4 inch high letter and shall state, "Life jackets required when working within 5 feet of edge of ponds, use of buddy system required". Hand written signs are unacceptable.

2.2 EQUIPMENT

- A. Furnish and maintain equipment to perform required operations in conformance with the requirements of these specifications and in accordance with Part 8.

- B. Choice of equipment to perform required operations in conformance with these specifications should be the responsibility of the Contractor. However, any equipment that results in waste or damage of material, inaccurate work, or is otherwise objectionable shall be promptly replaced as directed by the Construction Manager.
- C. Equipment used to haul non-impacted material over the existing paved Impacted Material Haul Road (IMHR), shall be equal to or less than the gross weight and axle loading for a Caterpillar CAT D300E haul truck (gross vehicle weight of 120,000 pounds and maximum axle width of 9-feet 10-inches). Pavement width of the existing two-way IMHR is 24-feet. Select equipment and equipment width to ensure safe operation on this road.
- D. Equipment used within the excavation area shall be equal or less than the gross weight for a Caterpillar CAT 350L track hoe (112,5000 pounds). However, the Construction Manager may approve the use of heavier equipment in this area provided the Contractor submits supporting calculations in accordance with Section 02205.
- E. Furnish compaction equipment, as needed.

PART 3 EXECUTION

3.1 GENERAL

- A. Perform intermediate surveys in accordance with Section 02100, to confirm attainment of design surface prior to initiating earthwork activities below the design surface.
- B. Stop excavation activities and immediately notify the Construction Manager upon discovery of unexpected cultural resources suspected to be historic, prehistoric, or archeological site, feature or object.
- C. Excavate soil below the design surface with equipment free of visible above-FRL soil.
- D. Use material from the immediate excavation area or a designated borrow area to meet backfill requirements for trenches and supplemental excavations.
- E. Perform construction activities such that surface water runoff from non-certified construction areas does not flow into pre-certified areas in accordance with Section 02275.
- F. Outside of utility trenches created by excavating utilities below the design surface, maintain slope stability in accordance with Section 02205.

3.2 BACKFILL

- A. Obtain backfill material from an area approved by the Construction Manager. In high-leachability areas, as shown on the Construction Drawings, obtain backfill from precertified or certified areas meeting the 20 mg/kg total Uranium FRL, as directed by the Construction Manager.

- B. Maintain a minimum 5-foot protective cover over the unsaturated sands and gravel of the GMA in accordance with the following. GMA elevations are shown on the Construction Drawings.
1. Following excavation activities that encroach on the 5-foot protective cover but do not extend within 2-feet of the GMA, install GMA plug as follows:
 - a. Immediately following monitoring and sampling activities specified in Section 02205, survey the excavation and initiate backfilling.
 - b. Backfill using GMA plug material meeting the requirements of this Section. Complete backfilling within 5 days following sampling.
 - c. Backfill GMA plug material in 8-inch +/- 1-inch loose lifts until protective cover is returned to a minimum thickness of 5-feet.
 - d. Compact backfill in each 8-inch loose lift to at least 95% Standard Proctor dry density (ASTM D698) within 0 to +3% of optimum moisture content.
 2. Following excavation activities that encroach within 2 feet of or breach the GMA, install GMA plug as follows:
 - a. Immediately following monitoring and sampling activities specified in Section 02205, survey the excavation and initiate backfilling.
 - b. Backfill using GMA Plug material meeting the requirements of this Section.
 - c. If precipitation is likely within the next 24 hours, as determined by the Construction Manager, immediately place a minimum fresh compacted thickness of 2 feet. Otherwise, place the 2 feet of compacted cover within 24 hours of excavating to within 2 feet or breaching the GMA.
 - d. Place the first lift of backfill material in an approximate 18-inch loose lift. Compact the first lift using 4 passes of compaction equipment as approved by the Construction Manager.
 - e. Backfill the remaining lifts in 8-inch +/- 1-inch loose lifts until the protective cover is returned to a minimum of 5 feet. Compact backfill in each 8-inch loose lift to at least 95% Standard Proctor dry density (ASTM D698) within 0 to +3% of optimum moisture content. These lifts must be continuous over the entire breached area.
- D. Install clay plug in locations shown on the Construction Drawings in accordance with the following:
1. Backfill using clay plug material meeting the requirements of this Section.
 2. Place backfill in 8-inch +/- 1-inch loose lifts as necessary to achieve a total compacted thickness of 2-feet.
 3. Compact each lift with four (4) passes of compaction equipment as approved by the Construction Manager.
 4. If clay plug is placed over an open pile, seal any void spaces within the pile with sodium bentonite grout and cap the top 2 feet of the pile with Type 1 Portland cement ASTM C150 prior to placing the clay plug. Sodium bentonite grout shall

be mixed at a water ratio of 2.1 pounds of sodium bentonite per gallon of water, and have a minimum density of 9.4 lbs./gallon. Grout viscosity shall be field checked periodically to assure proper viscosity of 70 +/- 6 seconds using the Marsh funnel viscometer. Tremie the grout into the open pile to eliminate void space.

- E. Excavate, remove utilities, and backfill trenches below the design surface in accordance with the following:
 - 1. Remove utilities located below the design surface in accordance with Section 02205 and details specified on the Construction Drawings.
 - 2. Remove water collected in trenches to sump areas and pump it to the Tank Farm Settling Basin as specified in Section 02275.
 - 3. For utility trenches located below design surface, backfill in accordance with the Construction Drawings.

3.3 FIELD QUALITY CONTROL

- A. In-place density testing will be performed in accordance with ASTM D2922. Nuclear density gauge (ASTM D2922) will be calibrated in accordance with the manufacturer's requirements. Documentation of this calibration will be provided to the Construction Manager. Register any nuclear or radiological sources brought on site in accordance with the requirements of Part 8.
- B. Perform in-place moisture tests in accordance with ASTM D3017, or ASTM D4643 as applicable.
- C. Determine moisture-density curves in accordance with ASTM D698 (Standard Proctor). Test results must be reviewed and approved by the Construction Manager.
- D. If in-place density and/or moisture tests indicate that work does not meet specified requirements, remove work and replace or re-compact to specified requirements. If visual inspection indicates that work has not been performed as specified, correct work to comply with the requirements.
- E. Perform soil classification in accordance with ASTM D2487.
- F. Frequency of Tests: Frequency of in-place density and moisture testing shall be whichever of the following requires the greatest number of test:
 - 1. Once each day when compacting GMA plug material.
 - 2. Once each compacted lift of GMA plug material.
 - 3. Once every 3,000 sq. ft. of compacted GMA plug material.
- G. Notify the Construction Manager of activities that will require testing/inspection a minimum of 24 hours prior to the start of such activities.

3.4 EARTHEN BERMS

- A. Install earthen berms at locations shown on the Construction Drawings using soils from surrounding area following pre-certification by Fluor Fernald.
- B. Place material in 8-inch loose lifts.
- C. Compact each lift of berm with 4 passes of compaction equipment approved by the Construction Manager.

3.5 INTERIM GRADING

- A. When the design surface has been achieved, perform interim grading as follows:
 - 1. Correct washouts or other similar irregularities to maintain the design surface slopes of 2H:1V or less.
 - 2. Grade to maintain smooth continuous slopes.
 - 3. Finish ditches so they drain readily.
 - 4. Perform temporary seeding in accordance with Section 02930.
 - 5. Repair any damage within 3 working days.

3.6 SURFACE WATER MANAGEMENT

- A. Manage surface water in accordance with Section 02275 and the Contractor's approved Surface Water Management and Erosion Control Work Plan.
- B. Perform excavation in a manner that promotes positive drainage.
- C. Install earthen berms as shown on the Construction Drawings. Apply temporary seed and fertilizer on earthen berms in accordance with Section 02930.

3.7 SEASONAL SHUTDOWN

- A. Perform seasonal shutdown activities in accordance with Section 02205.

END OF SECTION

SECTION 02210
ASBESTOS CONTAINING MATERIALS (ACM)

PART 1 GENERAL

1.1 SCOPE

This Section includes the following requirements for asbestos containing materials (ACM), but is not limited to:

- A. Handling, packaging, loading, hauling, and unloading friable and non-friable asbestos containing material (ACM).
- B. Removal of at- or below-grade ACM, which may include the following:
 - 1. Pipes coated with thermal system insulation.
 - 2. Electrical cable insulated with ACM.
 - 3. Fireproofing tape in electric manholes.
 - 4. Piping containing gasket material.
 - 5. Piping coated with construction mastic.
 - 6. ACM embedded in concrete.
 - 7. Buried ACM not associated with underground utilities.
- C. Placement at the On-Site Disposal Facility (OSDF).

1.2 DEFINITIONS

- A. Asbestos: Chrysotile, amosite, crocidolite, tremolite asbestos, anthophyllite asbestos, actinolite asbestos, and any of these minerals that has been chemically treated and/or altered. For purposes of this specification, asbestos includes presumed asbestos containing material (PACM), as defined herein.
- B. ACM: Any material containing more than 1 percent asbestos. For purposes of this specification, the term ACM includes PACM, as defined below.
- C. PACM: Thermal system insulation (TSI) and surfacing material found in buildings constructed no later than 1980. The designation of material as "PACM" may be rebutted by performance of bulk sampling and analysis demonstrating that the PACM does not contain more than 1 percent asbestos, as described in 29 CFR 1926.1101(k)(5).
- D. Active Asbestos Waste Disposal: Unloading of asbestos waste and placement at the OSDF is considered active asbestos waste disposal as termed in the referenced administrative code and federal regulations.
- E. Class I Asbestos Work: Activities involving the removal of TSI and surfacing ACM and ACM. For purposes of this specification, includes, but is not limited to, the first time removal of at- or below-grade TSI associated with utilities.
- F. Class II Asbestos Work: Activities involving the removal of ACM which is not TSI or surfacing material. For purposes of this specification, includes but is not limited to, first

time removal of at- or below-grade ACM other than TSI and surfacing material that is associated with utilities.

- G. Renovation: Altering in any way one or more facility components. Operations in which load-supporting structural members are wrecked or taken out are excluded from this definition. Removal of ACM related to at- or below-grade utilities is considered a renovation activity for purposes of the referenced administrative code and federal regulations.
- H. Inactive Asbestos Waste Disposal Site: Any disposal site or portion of it where additional asbestos-containing waste material has not been deposited for 1 year and where the surface is not disturbed by vehicular traffic. For purposes of this specification, includes locations where ACM that was previously removed from a building or structure, or excess ACM building materials, was buried for disposal.
- I. Removal of transite or other non-friable ACM from an inactive asbestos landfill does not fall under a certain "class" of work as defined by OSHA. Requirements will be established using best available technology and best management practices to minimize worker exposure.
- J. Asbestos Competent Person: A person capable of identifying asbestos hazards in the work place, selecting appropriate control strategies for the asbestos exposure, and prompt corrective action. Person has the forty-hour asbestos contractor/supervisor training and holds the Asbestos Hazard Abatement Specialist Certification from the Ohio Department of Health (ODOH).

1.3 RELATED DOCUMENTS

- A. Section 02205 – Impacted Material Excavation.
- B. Part 6 - Statement of Work.
- C. Part 8 – Environmental Health and Safety, and Training Requirements.
- D. Impacted Materials Placement Plan (IMPP), On Site Disposal Facility (OSDF), 20100-PL-007, current revision.

1.4 REFERENCES

- A. Ohio Administrative Code (OAC), Chapter 3745-20, Asbestos Emission Control.
- B. Ohio Administrative Code (OAC), Chapter 3701-34, Asbestos Hazards Abatement Rules.
- C. Title 29, Code of Federal Regulations (CFR), Part 1926.1101, Asbestos.
- D. United States Environmental Protection Agency (U.S. EPA) 40 CFR 61, Subpart M, (NESHAPS).

1.5 HEALTH AND SAFETY REQUIREMENTS

- A. Part 6 – Statement of Work.

- B. Part 8 - Environmental Health & Safety/Training Requirements.
- C. Part 9 - Quality Assurance Requirements.

1.6 SUBMITTALS

- A. Submit an ACM Removal and Handling Work Plan, prepared by an Asbestos Project Designer certified by the ODOH and in compliance with all applicable federal (CFR) and state (OAC) requirements in accordance with Part 8 of this Contract.
- B. Submit the following documentation prior to initiation of ACM work:
 - 1. Names of all personnel assigned to the asbestos removal tasks of the Project.
 - 2. Copies of asbestos training certificates for asbestos workers, project designer, contractor/supervisor.
 - 3. Documentation, in the form of a physician's written opinion, that each worker performing Class I, Class II, or Class III asbestos removal tasks are physically fit to perform asbestos work.
 - 4. Documentation, in the form of a physician's written opinion, that each worker involved in asbestos removal work is physically fit to wear a respirator.
 - 5. Documentation of quantitative respirator fit-test.
 - 6. Documentation of respirator training.
 - 7. Employee exposure assessments (if available).
 - 8. Documentation of current certification as a licensed asbestos abatement contractor by the State of Ohio, as required for Class I work.
 - 9. State of Ohio certification for all personnel as required by law (for friable asbestos work).
 - 10. State of Ohio certification for the Asbestos Project Designer.
 - 11. Copy of required notifications and applicable fees to ODOH.
- C. Submit completed Asbestos Daily Job Site Inspection forms, monthly, following the start of ACM removal or handling.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Disposal Bags: Clear polyethylene a minimum of 6 mils thick.
- B. Sheeting: Clear polyethene a minimum of 6 mils thick
- C. Surfactants: Childers - CP-225 CHIL-SORB or approved equal.
- D. Encapsulants:
 - 1. Childers - CP-240 CHIL-LOCK.
 - 2. Certified Technologies - Certane 2050.
 - 3. Eppert Environmental Products - Eppco #1.
 - 4. International Protection Coatings Corp - Serpiloc.
 - 5. Or approved equal.

- E. Lockdowns:
 - 1. Certane - 1050 - Clearcoat.
 - 2. Eppert - Fiber-Seal.
 - 3. International Protection Coatings Corp - Serpiloc.
 - 4. Or approved equal.
- F. Other materials required by the Contractor for handling and packaging of ACM including, but not limited to, asbestos warning tape and signs, tape, knives, and garden sprayer.
- G. Glovebags made of 6-mil plastic, seamless at the bottom, designed for asbestos work.

2.2 EQUIPMENT

- A. For glovebags, a HEPA filtered vacuum system may be used to provide negative air pressure in accordance with the requirements of 29 CFR 1926.1101.
- B. HEPA filtered vacuum for cleanup.
- C. Cable pulling equipment.
- D. Any and all equipment required to implement the removal as defined for the Contractor ACM Removal and Handling Work Plan.

PART 3 EXECUTION

3.1 GENERAL

- A. The Contractor shall make the required notifications and pay applicable fees to the ODOH and provide a copy of all documentation to the Construction Manager.
- B. At least 10 working days prior to issuing notification to the ODOH, the Contractor shall meet with the Construction Manager and Environmental Compliance Officer to ensure that the Contractor's Ohio Department of Health Notification and Construction Manager's Ohio EPA Notification are consistent.
- C. Excavate and remove underground utilities in such a manner that mitigates the generation of friable asbestos material. Friable asbestos material created by Contractor work activities shall be removed and handled by the Contractor at no additional cost to Fluor Fernald.
- D. The Contractor shall:
 - 1. Comply with work practices and procedures set forth in all applicable Federal, State, and local codes, regulations, and standards.
 - 2. Obtain ODOH certification as a licensed asbestos abatement contractor by the State of Ohio, as required, for friable asbestos removal.

3. Ensure workers, supervisors, and project designer performing asbestos work have necessary ODOH certifications, as required, for friable asbestos removal.
 4. Ensure workers have been assessed by medical and physician's written opinions have been documented for asbestos work and respirator use.
 5. Take precautions to prevent creation of friable ACM during handling.
 6. Ensure Contractor's (inclusive of Subcontractor) employees are informed of the presence of ACM in the project work areas in accordance with 29 CFR 1926.1101(d) and OAC 3745-20-06(B)(4).
 7. Establish a restricted work area at the OSDF that is adequate to deter entry of unauthorized personnel within 100 feet of the ACM work areas during unloading, deposition, burial, and initial compaction of asbestos containing waste materials, in accordance with OAC 3745-20-06(B)(4).
 8. Establish an asbestos regulated area for Class I, II, and III asbestos work, or where airborne concentrations of asbestos exceed, or there is a reasonable possibility to exceed a PEL, in accordance with 29 CFR 1926.1101 (e). The regulated area shall be marked to minimize the number of persons within the area and protect persons outside the regulated area from exposure to airborne asbestos. Access to regulated areas shall be limited to authorized persons.
 9. Obtain and conform to required training in accordance with Part 8.
- E. Materials to be used as encapsulants and surfactants shall be in original, new, and unopened packages and containers bearing manufacturer's name, label and the following information:
1. Name of material.
 2. Manufacturer's stock number and date of manufacture.
 3. Manufacturer's name.
 4. Thinning instructions.
 5. Application instructions.
 6. Material Safety Data Sheets (MSDSs).

3.2 APPLICATION

- A. Use wet methods, or wetting agents, and other work practices and engineering controls to prevent creation of visible asbestos emissions during abatement and handling of ACM.
- B. Perform personal air monitoring in accordance with 29 CFR 1926.1101(f) including sampling necessary to complete initial exposure assessments.
- C. The Contractor shall ensure an Asbestos Competent Person is within the ACM area anytime ACM is disturbed, removed, packaged, excavated, handled, loaded, hauled, or unloaded.
- D. The Contractor's Asbestos Competent Person shall perform documented inspections of the ACM work areas and adjacent areas daily during disturbance, excavation, handling, hauling, loading, unloading or placement of ACM waste. If there is visual evidence of asbestos contamination (e.g. spills of ACM waste) outside the demarcated ACM waste handling work areas, the Contractor shall take immediate action to abate the hazard, as described in the Contractor's ACM Removal and Handling Work Plan. The incident shall be reported immediately to the Construction Manager.

3.3 REMOVAL

A. Removal Procedures of ACM TSI:

1. Wet all ACM to be removed, or components or sections to be removed with ACM in place, with amended water solution and maintain wet until placed into disposal containers, double-bag in disposal bags, or sealed in 2 layers of sheeting.
2. Wrap large components removed intact in 2 layers of sheeting, secure with tape and properly label in accordance with OAC 3745-20-05(C)(1) and 29 CFR 1926.1101.
3. All piping (less than 12 inches in diameter) insulated with ACM may be removed with ACM in place. Wrap the piping in manageable sections with 2 layers of plastic sheeting, maintaining wet until wrapped. Use glovebags to remove ACM from each end of the section of pipe to be cut. Seal the exposed ACM with plastic and tape. Wet-brush and sponge, or clean the pipe by an equivalent method, the surfaces from which ACM has been removed. Double bag and seal. After the glove bag is removed, cut the pipe in the area that has been stripped of asbestos. Label the section of pipe that is wrapped, yet containing ACM, and the bag containing the glove bagged ACM in accordance with OAC 3745-20-05(C)(1) and 29 CFR 1926.1101.
4. Remove ACM from pipes that are larger than 12 inches in diameter by stripping of ACM in glove bags or mini-containments. Double bag the glove bag and contents; seal and label the bags in accordance with OAC 3745-20-05(C)(1) and 29 CFR 1926.1101. Size reduce the stripped piping as required.
5. Handle ACM with sharp-edged components as specified in this Section.
6. To remove any remaining ACM from stripped pipes or components, wet-brush and sponge, or clean by an equivalent method, the surfaces from which ACM has been removed in order to remove all visible ACM residue.
7. Pipes that exceed the WAC for the OSDF shall be cut into lengths as directed by the Construction Manager.
8. Pipes that meet the WAC for the OSDF shall be size reduced into lengths to meet the requirements of the IMPP.
9. The Construction Manager will inspect the work area at the completion of work for any visible debris.

B. Removal of 13.2 kV Power Feeder Cables (includes fireproofing tape in manholes and cable):

1. Confined space entry will be required for removal of feeder cables within manholes and requirements are stated in Part 8 of this Contract.
2. Use wetting agents to ensure there are no visible emissions of asbestos fibers.
3. Wrap the fireproofed feeder cable in 2 layers of sheeting and secure with tape.
4. Remove friable ACM located at each end of the cable located within the electric manholes using a glove bag. Leave a length of cable exposed in the manhole so that the remaining cable can be pulled out of the conduit using the exposed end.
5. Cut the feeder cable and remove from the manhole.
6. Remove wrapped or bagged ACM from the manhole.
7. Clean the manhole using a HEPA vacuum to remove any remaining asbestos debris.
8. The Construction Manager will inspect the wrapped section to ensure the integrity of the wrap and the absence of radiological contamination.

9. Label wrapped sections in accordance with OAC 3745-20-05(C)(1) and 29 CFR 1926.1101.
10. The Construction Manager will visually inspect the manhole to ensure that all asbestos containing debris has been removed.
11. Using wet methods or amended water, remove the remaining feeder cable by use of pulling equipment.
12. Wrap the feeder cable in plastic shrink film or sheeting and then place into designated container.
13. Label wrapped sections in accordance with 29 CFR 1926.1101.
14. Clean the pulling area and manhole using a HEPA vacuum.
15. After the cable has been removed, the Construction Manager will perform an inspection of the work area for visible debris.

C. Removal of Below-grade Piping Containing Asbestos Gaskets:

1. When possible, do not expose gasket by breaking or cutting the flange.
2. If a gasket becomes exposed by breaking or cutting the flange at the gasket, is visibly deteriorated, and is unlikely to be removed intact, perform glove bag removal as described in 29 CFR 1926.1101 (g)(5)(ii).
3. If a gasket becomes exposed by breaking or cutting the flange at the gasket is able to be removed intact, remove the gasket and immediately place in a disposal container. Scrape any residue using wet methods.
4. Lock down any visible gasket material by saturating the material with lockdown, applied with a garden sprayer or equivalent method.
5. If size reduction is necessary and gasket material is exposed, seal the flange area with 2 layers of sheeting and duct tape.
6. Size reduce piping at lengths so that the flange where the gasket material is located is undisturbed.
 - a. Size reduce into lengths as directed by the Construction Manager when the piping exceeds the waste acceptance criteria (WAC).
 - b. Size reduce into lengths less as specified in the IMPP when piping meets WAC.
 - c. Size reduce if piping exceeds the maximum diameter accepted at the OSDF as described in the IMPP.
 - d. Size reduce perpendicular to the run of pipe without breaking or cutting the gasket.
7. At the completion of work, the Construction Manager will inspect the work area for any visible/exposed debris.

D. Removal of Asbestos Containing Mastic-coated Piping:

1. Remove mastic-coated piping in accordance with OSHA requirements for Class II work.
2. Thoroughly wet mastic with amended water.
3. Size reduce the piping inside of the excavation using equipment that will minimize generation of airborne fibers.
 - a. If piping is Above WAC, size reduce and dispose in accordance with Section 02205.

- b. If piping meets WAC, size reduce in accordance with the IMPP.
 4. Size reduce pipes that are greater than 12 inches in diameter to meet the OSDF WAC using methodology to prevent generation of friable asbestos fibers.
 5. Encapsulate both ends of each section of piping and all other locations where damage to the mastic is visible.
 6. Double bag and seal any ACM mastic that becomes dislodged from the piping in 6-mil asbestos bags.
 7. Label according to OSHA 29 CFR 1926.1101.
 8. At the completion of work, the Construction Manager will inspect the work area for any visible debris.
- E. Removal of Concrete Encased Transite (transite conduit):
1. Removal of transite encased in concrete is generally OSHA Class II work, with the following exceptions.
 - a. Class I work practices may be applicable if the condition of the material is friable, or;
 - b. if the method used for removal causes material to become friable.
 2. Thoroughly wet concrete/transite material with amended water.
 3. Remove electrical cable, if present, using a cable puller.
 4. Remove and size reduce concrete/transite material to meet OSDF WAC using methodology to minimize or prevent generation of friable asbestos.
 5. Encapsulate both of the open ends of the transite.
 6. Transite protruding beyond the concrete shall be double wrapped and sealed with sheeting.
 7. The Construction Manager will inspect the work area at the completion of work for visible debris.
- F. The Contractor shall use the following methods for excavation of previously removed ACM that was buried for disposal:
1. The Contractor's Asbestos Competent Person shall walk the work area and identify ACM visible at the surface before excavation, at least once a day during excavation and/or placement, and at the end of the shift. The walks shall be documented on the Asbestos Daily Job Site Inspection form.
 2. Wet methods or wetting agents shall be used during handling, packaging, and loading of ACM, or soil or debris containing ACM.
 3. Care shall be taken so that the friable ACM does not break or crumble during handling and so that non-friable ACM is not handled in such a manner that it becomes friable.
 4. Encapsulate the exposed surfaces of broken transite panels that are segregated from the soil or debris and stacked on pallets.
 5. Apply surfactants or encapsulants during size reducing of any large pieces of ACM to meet the OSDF WAC physical size criteria.
 6. Do not leave ACM exposed at the surface of the stockpile or OSDF at the end of the work day.

7. Exposed ACM during excavation shall be covered with soil at the end of the work day. Exposed ACM during excavation may be locked down in lieu of covering with soil if work will resume in that area within 36 hours.
8. Friable ACM that was previously removed and then buried for disposal shall be handled as follows:
 - a. Wet with amended water (water mixed with surfactant) or encapsulate, and separate from the impacted material.
 - b. Wrap friable ACM components meeting the OSDF WAC physical size criteria and large pieces removed intact in 2 layers of sheeting, secured with duct tape, and labeled in accordance with OAC 3745-20-05(C)(1) and OSHA 29 CFR 1926.1101. Multiple pieces may be grouped together before wrapping, provided WAC physical size criteria is still met.
 - c. Double bag and seal pieces of friable ACM not conducive to wrapping in a 6-mil polyethylene bag. Label in accordance with OAC 3745-20-05(C)(1) and OSHA 29 CFR 1926.1101.
 - d. Handle friable ACM with sharp-edged components (e.g. nails, screws, metal lath, tin sheeting) capable of tearing the polyethylene bags or sheeting in one of the following ways:
 - e. Pad or wrap and secure the sharp-edge components in a manner to prevent tearing of the polyethylene, then wrap or bag in accordance with this Section.
 - f. Place into polyethylene-lined containers (i.e. fiberboard boxes or drums). Metal containers are not allowed.
 - g. The polyethylene liner shall be sealed prior to sealing the container. The container shall be labeled in accordance with OAC 3745-20-05(C)(1) and 29 CFR 1926.1101.
 - h. Segregate wrapped, bagged, or containerized, friable ACM, from other excavated material and accumulate at the Special Materials Transfer Area. When a full, segregated load is accumulated, it shall be loaded and hauled to the OSDF. Loads shall be prepared and secured to prevent any visible emissions, load loss, and spillage or leakage of liquids.
9. Handle non-friable ACM as follows:
 - a. Wet transite or other non-friable ACM with amended water to reduce potential for release of fibers.
 - b. Manually (by hand) remove pieces of transite or other non-friable ACM larger than 1 foot in any direction.
 - c. Stack large, intact pieces of transite or other non-friable ACM on pallets and wrap the entire stack in 2 layers of sheeting.
 - d. Double bag smaller pieces of transite or other non-friable ACM not conducive to wrapping.
 - e. Incidental pieces of transite or other non-friable ACM less than 12 inches in maximum dimension contained in soil and soil-like material or debris can be placed in the OSDF as Category 1 (soil and soil-like) or Category 2 material without segregation.
 - f. Avoid excessive breakage of the transite or other non-friable ACM during manual removal or during use of heavy equipment in the area.

- g. Cover soil or debris containing non-friable ACM, which is temporarily staged in a stockpile, with 6 inches of soil that is visually free of ACM at the end of the day.
10. The Construction Manager will inspect the area at the completion of work for visible debris.

END OF SECTION

SECTION 02216
WASTE CONTAINERIZATION

PART 1 GENERAL

1.1 SCOPE

This Section provides the requirements for containerizing materials to be dispositioned at the Special Materials Transfer Area (SMTA).

1.2 REFERENCES

- A. Title 49, Code of Federal Regulations (CFR), Parts 106-199.

1.3 RELATED SECTIONS AND DOCUMENTS

- A. Section 02205 – Impacted Material Excavation
- B. Part 6 – Statement of Work.
- C. Part 8 – Environmental Health & Safety/Training Requirements.
- D. Part 9 – Quality Assurance Requirements.

1.4 QUALITY CONTROL REQUIREMENTS

- A. Notify the Construction Manager prior to any containerization activities. The Construction Manager shall be present at all times during all containerization activities.
- B. Store and handle containers in a manner that maintains the integrity of the container and keeps it free from damage.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Provide cribbing material to facilitate loading and lifting of containers.
- B. Provide 20-mil Herculite, as specified in Section 02205, for spill control.
- C. Provide tools for preparing containers and fastening lids.

2.2 EQUIPMENT

- A. Provide equipment required for the movement of the containers. Equipment must meet pre-use and inspection requirements in accordance with Part 8.

PART 3 EXECUTION

3.1 GENERAL

- A. Containers, associated hardware, absorbent material and liners will be provided and delivered to the SMTA by the Construction Manager. The typical container used for bulk loading of soil will be top-loading and have approximate dimensions of 6.5'H x 8'W x 20'L. These containers shall have a weight limitation of approximately 42,000 pounds gross weight and a freeboard requirement of no more than 3".
- B. Notify the Construction Manager 14 days prior to initial containerization activities to ensure the delivery of containers. After initial delivery, allow 7 days for delivery of additional containers.
- C. Comply with weight limitations of containers provided, as directed by the Construction Manager.
- D. Do not fill containers during periods of rain, snow, sleet, hail, or heavy fog. Close, cover or arrange the containers in a manner that will prevent water from entering or accumulating in them.
- E. Containers may be considered a confined space. Contact the Construction Manager for monitoring prior to entering any container.

3.2 PREPARING CONTAINER FOR LOADING

- A. Prior to filling, prepare containers at the SMTA or an area designated by the Construction Manager as follows:
 - 1. Remove lids per manufacturer's recommendations.
 - 2. Install liners as directed by the Construction Manager.
 - 3. Repair any holes in the liner using duct tape.
 - 4. Install absorbent material as directed by the Construction Manager.
 - 5. Secure absorbent material in place using duct tape.
- B. Notify the Construction Manager for documentation of the container preparation prior to loading.

3.3 FILLING CONTAINER

- A. Upon approval of container preparation by the Construction Manager, transport containers from the SMTA to the excavation area.
- B. Stage container in the buffer area to facilitate loading. Use cribbing as necessary to facilitate clean loading and assist in lifting the container following loading.
- C. The Construction Manager will visually monitor the material for free liquids prior to containerization. Material moisture content shall not result in "bleeding" of liquids.
- D. Load material into the container in a manner that prevents spillage into the buffer area or onto the container exterior (e.g. place Herculite apron over container to protect exterior).
- E. Fill container to maximize material volume while complying with container weight limits and maximum 3" freeboard requirement.

- F. Remove all visible material that accumulates on the container exterior and place this material, along with any material that may have accumulated in the buffer area, back into the area from which it was excavated.
- G. Prior to placing absorbent material on top of containerized material, allow the Construction Manager the opportunity to sample the material.
- H. Place additional absorbent materials on top of the waste as directed by Construction Manager.
- I. Set the lid on the container while in the buffer area.
- J. The Construction Manager will perform radiological monitoring on containers prior to release from the buffer area, as required in Part 8. If radiological contamination is found on the exterior of the container, clean the container exterior within the buffer area as directed by the Construction Manager.
- K. Upon release from the buffer area, weigh the container as needed to ensure compliance with container weight limitations.
- L. Haul the loaded container from the buffer area to the SMTA, using equipment approved by the Construction Manager.
- M. Prior to securing the container lid in the SMTA, notify the Construction Manager to perform a final visual inspection of the container and its contents.
- N. Secure the container lid in the SMTA using fasteners and any special tools provided by the Construction Manager.
- O. The Construction Manager will remove containers from the SMTA for final shipping preparation by others.

END OF SECTION

SECTION 02275
SURFACE WATER MANAGEMENT AND EROSION CONTROL FOR REMEDIATION

PART 1 GENERAL

1.1 SCOPE

- A. This Section includes, but is not limited to, the following:
1. Installation of erosion and sediment control measures.
 2. Maintenance of existing and new erosion and sediment control measures installed by this Contract, including removal of all temporary erosion control facilities.
 3. Management of surface water in construction and excavation areas, including pumping of surface water to the Tank Farm Settling Basin during general excavation and pumping of volatile organic compound (VOC)-contaminated water to portable tanks.
 4. Modification of existing storm sewer system.
 5. Installation and maintenance of runon/runoff controls along the perimeter of the project boundary.
 6. Protection of the unsaturated sands and gravels of the Great Miami Aquifer (GMA) from runon within the excavation areas, including installation and maintenance of runon controls.
 7. Management of area for precertification.
 8. Stabilization of disturbed excavation areas or stockpiles.
 9. Inspection requirements.

1.2 RELATED SECTIONS AND DOCUMENTS

- A. Section 02100 – Surveying.
- B. Section 02205 – Impacted Material Excavation.
- C. Section 02206 – Earthwork for Remediation.
- D. Section 02270 – Surface Water Management and Erosion Control
- E. Section 02930 – Vegetation.
- F. Part 6 – Statement of Work.
- G. Part 8 – Environmental Health and Safety/Training Requirements.
- H. Part 9 – Quality Assurance Requirements.

1.3 REFERENCES

- A. State of Ohio, Department of Natural Resources (ODNR), Rainwater and Land Development, Ohio's Standard for Stormwater Management Land Development and Urban Stream Protection, current edition.

- B. State of Ohio, Department of Transportation (ODOT), Construction and Material Specifications, current edition.
- C. Surface Water Management Plan (SWMP) for the Remediation of Areas 3A and 4A, Document No. 20800-PL-0003, Rev. 0.

1.4 SUBMITTALS

- A. For each product proposed for use, submit the following:
 - 1. Manufacturer's product data and recommended methods of installation and maintenance.
 - 2. Certification from manufacturer that the product meets the material requirements of this Section, including test results.
 - 3. Material Safety Data Sheet (MSDS), if applicable.
- B. Prepare and submit a Contractor's Surface Water Management and Erosion Control Work Plan (SWMECWP) in accordance with Section 02270, including the following:
 - 1. Descriptions of the surface water management and erosion and sediment control measures to be implemented during excavation of Above-WAC areas and throughout the duration of this Contract.
 - 2. Methods for installing and maintaining surface water management and erosion and sediment control measures until completion of Work.
 - 3. Plan drawings illustrating the location and sequencing of the surface water management and erosion and sediment control measures.
 - 4. Plan drawings illustrating the location of detention areas, including volumes, and limits of active excavation draining to detention areas.
 - 5. Sequencing and timing of storm sewers to be air-gapped/plugged. State when, where, and how each sewer will be air-gapped/plugged.
 - 6. Methods and measures for plugging pipes daylighting at the excavation boundary.
 - 7. Methods for collection and discharge of surface water from the excavated areas, and measures to minimize erosion of the excavated areas during work progress, inclement weather and at the end of each work day, as well as during winter shutdown. Include details showing hose anchor configuration at the input to the Tank Farm Settling Basin.
 - 8. Methods and measures for collection of VOC-contaminated water from suspect areas.
 - 9. Methods and measures for protecting the GMA from runoff from excavation areas, including protective measures at the top of excavation slope and on benches.
- C. Contractor's records of inspection of erosion and sediment control measures as specified herein shall be submitted monthly upon completion of the inspection report.

1.5 HEALTH AND SAFETY REQUIREMENTS

- A. Environmental health and safety, and training requirements shall be as required in Part 8.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Furnish silt fence in accordance with ODNR, composed of, at a minimum, strong rot-proof polymeric fibers formed into a woven fabric which has fabric and fence post properties as shown on the Construction Drawings.
- B. Furnish erosion control woven blanket-like material (coir matting) made of biodegradable coir rope containing the following material properties:
 - 1. Coconut fiber content: 100%.
 - 2. Weight: 22 ounces per square yard.
 - 3. Thickness: 0.3 inches.
 - 4. Open Area: 38 percent.
 - 5. Tensile Strength: 1350 lb/ft by 626 lb/ft (length by width).
 - 6. Elongation: 34 percent by 38 percent (length by width).
- C. Furnish metal staples specifically made to anchor erosion control blankets. Anchors will be 11 gauge wire formed into a staple shape with minimum dimensions of 6 inches by 1 inch by 6 inches.
- D. Furnish dust suppression/crusting agent in accordance with Section 02930.
- E. Furnish backfill in accordance Section 02206.

2.2 EQUIPMENT

- A. Furnish 3,000 gal. portable tank, as needed, to hold water contaminated with volatile organic compounds (VOCs).
- B. Furnish pumps, filters, hoses and other appurtences required to execute work as specified in the Contractor's approved SWMECWP.

PART 3 EXECUTION

3.1 GENERAL

- A. Construct and maintain erosion and sediment control measures as specified in this Section, the Contractor's approved SWMECWP, and as shown on the Construction Drawings. Maintain existing erosion and sediment control facilities and measures in accordance with this Section.
- B. Minimize runoff into disturbed excavation areas by grading the surrounding area away from the disturbed area and/or by Temporary Diversions as shown on the Construction Drawings.
- C. As the excavation progresses, excavate sumps at resulting low points used for water collection of perched and/or surface water. Do not penetrate to within 5 feet of the GMA with sump excavations.

- D. Dewater excavations in accordance with the Construction Drawings. Water collected from a 10-yr, 24-hr or lesser storm event (precipitation not to exceed 4.1 inches of rainfall) within active excavations and below design grade utility removal shall be pumped to the Tank Farm Settling Basin. Collected water shall be pumped down to a depth of less than one foot remaining in the bottom of the excavation within 3 days of the last rainfall.
- E. The Construction Manager will sample and analyze excavation water present in suspect VOC areas prior to a discharge event. Upon approval from the Construction Manager, following sampling and analysis, pump collected VOC-contaminated water to portable tanks provided by the Contractor and transport to the AWWT per the Contractor's approved SWMECWP. Locate the portable tanks as directed by the Construction Manager. The Construction Manager will oversee delivery of the VOC-contaminated water to the AWWT.
- F. Plug storm sewers at the excavation boundary prior to removal of storm sewer piping located within the excavation area. Plug storm sewer system in such a manner to minimize water collected in an abandoned system.
- G. Remove erosion and sediment control measures after the disturbed excavation areas are stabilized as specified in Section 02930, when directed by the Construction Manager.

3.2 SILT FENCES

- A. Install silt fence at locations down-gradient of areas to be disturbed until Above WAC areas have been excavated and associated drainage and erosion control structures have been established as shown on the Construction Drawings. Remove and dispose accumulated sediment as specified in Section 02205.
- B. Install breaks and overlaps in silt fence to allow equipment access to construction areas.

3.3 EROSION CONTROL BLANKETS

- A. Install and maintain erosion control blankets, as required by the Contractor's approved SWMECWP in accordance with manufacturer's recommendations.
- B. At a minimum space staples at 12 inches on center along top edge and invert of ditches and 24 inches on center at midpoint of slopes.

3.4 TANK FARM SETTLING BASIN AND DITCHES

- A. Remove accumulated sediment and debris from the Tank Farm Settling Basin and ditches. In no case shall sediment build up to a depth greater than 10 inches in the Tank Farm Settling Basin or to a depth greater than one-half the constructed depth of the ditch.
- B. Remove sediment and debris as specified in Section 02205.

3.5 GMA PROTECTION

- A. Limit excavations within 5 feet of the GMA to periods of dry weather.

- B. Slope bench terrace directly above the GMA toward the excavated slope as shown on the Construction Drawings. Grade the bench terrace to a sump for pumping to prevent runoff into the GMA.
- C. Size and locate pumps for sumps along benches above the GMA such that no water from within the excavation area shall overflow into the GMA from a 10-yr, 24-hr or lesser storm event. The bottom of the sump will not extend to within 5 feet of the GMA. Contractor will have additional pumps available when the excavations approach the GMA.
- D. For excavations extending to within 5-feet of the GMA elevation shown on the Construction Drawings, maintain less than one foot of standing water in the excavations at all times by pumping water to the Tank Farm Settling Basin or an adjacent area, as necessary.
- E. Backfill over the GMA in accordance with Section 02206.
- F. In areas where 2 feet of compacted cover has been recently restored following excavation which has extended to within 2 feet of or breached the GMA, pump ponded water from the affected excavation as soon as practical (but within 24 hours or by the direction of the Construction Manager) following a precipitation event.

3.6 PRECERTIFICATION

- A. All pipes that daylight at the excavation face shall be plugged at the excavation face prior to precertification in accordance with Section 02205 and the Construction Drawings.
- B. Install runoff controls along perimeter of precertification boundary, as shown on the Construction Drawings, to prevent surface water from non-certified areas from flowing into precertified areas.
- C. During precertification, direct drainage from precertified areas to the Tank Farm Settling Basin. Routing of surface water pump lines must be approved by the Construction Manager. Notify Construction Manager prior to pumping to the sediment basin.
- D. Maintain surface water management within the area to be precertified in accordance with this Section until precertification is complete.

3.7 INSPECTION

- A. Inspect erosion and sediment control measures in accordance with Section 02270.
- B. File records of inspections in accordance with Section 02270. In addition, the records of inspection shall include destination of pumping ponded water, estimated quantity of ponded water and corrective action measures, if any, that are required. The records of inspection shall indicate if any areas are not in compliance or contain a certification that control measures are effective and in compliance with this Section and Section 02270.

END OF SECTION