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DATE: 10/17/2011

SUBJECT: Transmittal of the EECA For the Plant Support Buildings & Structures at Ports

TO: Maria Galanti **FROM: Joel Bradburne**

SOURCE REF: PPPO-03-1309473-12 **RMDC NUMBER:** FBP11/001-150

COMMITMENT MANAGEMENT – ACTION TRACKING

ACTION TRACKING NO. **ASSIGNED TO:**

FBP Due Date **DOE Due Date** **Agency Due Date**

Date Completed **Closure Documentation**

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OCT 13 2011

PPPO-03-1309473-12

Ms. Maria Galanti
Site Coordinator
Ohio Environmental Protection Agency
Southeast District Office
2195 Front Street
Logan, Ohio 43138

Dear Ms. Galanti:

TRANSMITTAL OF THE ENGINEERING EVALUATION/COST ANALYSIS FOR THE PLANT SUPPORT BUILDINGS AND STRUCTURES AT THE PORTSMOUTH GASEOUS DIFFUSION PLANT, PIKETON, OHIO

Reference: Letter from M. Galanti to K. Wiehle and J. Bradburne, "Ohio EPA Conditional Concurrence of the Engineering Evaluation/Cost Analysis for the Plant Support Buildings and Structures at the Portsmouth Gaseous Diffusion Plant and Approval of Alternate RAWP Submission Milestone," dated October 3, 2011

Enclosed please find the U.S. Department of Energy (DOE) transmittal of the final *Engineering Evaluation/Cost Analysis for the Plant Support Buildings and Structures at the Portsmouth Gaseous Diffusion Plant, Piketon, Ohio* (DOE/PPPO/03-0207&D4).

DOE does not dispute Ohio Environmental Protection Agency's conditional concurrence (referenced above) and has implemented the changes requested. Accordingly, pursuant to Paragraph 45.f of the *Director's Final Findings and Orders for Removal Action and Remedial Investigation and Feasibility Study and Remedial Design and Remedial Action for the Portsmouth Gaseous Diffusion Plant (Decontamination and Decommissioning Project)* [DFF&O], DOE is transmitting the enclosed document as a final version. Consistent with Table 1A of Section VII of the DFF&O, DOE will public notice the Engineering Evaluation/Cost Analysis within 45 days and initiate a 30-day public comment period.

If you have any questions or require additional information, please contact Kristi Wiehle of my staff at (740) 897-5020.

Sincerely,

Joel B. Bradburne
Portsmouth Site Lead
Portsmouth/Paducah Project Office

Enclosures:

1. Response to October 3, 2011 comments on D3 EE/CA document
2. Engineering Evaluation/Cost Analysis for the Plant Support Buildings and Structures at the Portsmouth Gaseous Diffusion Plant, Piketon, Ohio

cc w/enclosures:
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Responses to Ohio EPA Comments Received October 3, 2011
D3 Engineering Evaluation/Cost Analysis for the Plant Support Buildings and Structures at the Portsmouth Gaseous Diffusion Plant, Piketon, Ohio

COMMENTS RECEIVED OCTOBER 3, 2011

General Comments

1) Formatting: there are several instances where it appears that a quotation mark has been replaced with a strikeout mark (See, Section 2.1.7, paragraph 2, etc.).

> ***DOE Response*:** It is suspected that there strikeouts replacing quotation marks may be related to varying versions of Adobe, as the strikeouts do not appear in the DOE master version of the document. No change is necessary to the document. Additional hard copies can be provided upon request.

Specific Comments

1) Executive Summary, page ES-1, paragraph 3. Rephrase to state : ". . . in accordance with Attachment D in the DFF&O, *Generic Statement of Work for Conducting an Engineering Evaluation/Cost Analysis (EE/CA) and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) . . .*"

> ***DOE Response:*** Text revised as requested.

2) Executive Summary, page ES-1, paragraph 4. Rephrase 2nd sentence to read as follows: ". . . it also satisfies the requirements of the Removal Site Evaluation as required under the DFF&O."

> ***DOE Response*:** Text revised as requested.

3) Section 1.1, page 1, paragraph 1: Rephrase last sentence to read as follows: ". . . as required by the DFF&O."

> ***DOE Response*:** Text revised to read "as required under the DFF&O".

4) Section 1.1, page 1, paragraph 3. The document states the EE/CA is being documented in accordance with the NCP when it is really being documented pursuant to the DFF&O and consistent with the NCP. Please rephrase.

> ***DOE Response*:** Text re-phrased to read "This EE/CA is being documented in accordance with Attachment D in the DFF&O, *Generic Statement of Work for Conducting an Engineering Evaluation/Cost Analysis (EE/CA)* and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), including 40 *Code of Federal Regulations* (*CFR*) Section 300.415(b)(4)(i)."

5) Section 2.1.7, page 13, paragraph 5. Please redraft the last sentence to make it clear that it is only referring to the new permit requirements referenced in section 5.2.1, as opposed to existing permits since existing permits aren't subject to paragraph 9a (referencing Section 121 of CERCLA) of the DFF&O. Or just delete the last sentence.

> ***DOE Response*:** The last sentence has been removed from the document.

6) Section 3, page 15, paragraph 2: In the 3rd sentence, please delete the reference to DOE as lead agency since the DFF&Os were entered into pursuant to state law and utilize the CERCLA process as a framework. Simply deleting the 3rd sentence would suffice.

***DOE Response*:** "As lead agency" was deleted from the sentence.

7) Section 3, page 15, paragraph 2, last sentence. Rephrase the last sentence to read as follows: "The DFF&O also provides that D&D for certain identified buildings at PORTS will be conducted in accordance with CERCLA and the DFF&O."

***DOE Response*:** Text revised as requested.

8) Section 5.2.1, Protectiveness and ability to achieve RAOs, page 33, 2nd paragraph. Replace the reference to "CERCLA" in the first sentence with "response".

***DOE Response*:** Text revised as requested.

9) Section 5.2.1., New Permit Requirements, page 34. Delete the portion of the 1st bulleted paragraph, 1st sentence that refers to this action as a CERCLA action. Instead, cite to paragraph 9A of the DFF&O, which refers back to Section 121 of CERCLA. The same comment applies to the 2nd bulleted paragraph, first sentence. Same with respect to the 3rd bulleted paragraph.

***DOE Response*:** "CERCLA" removed from text and DFF&O citations added, as requested.

10) Section B.1, page B-7, paragraph 2. Delete the following from the first sentence: "…wastes, and residual soils waste materials generated during the removal action." This portion of the sentence is not necessary as the sentence refers to the materials previously listed.

***DOE Response*:** Text revised as requested.

11) Section B-1, page B-7, paragraph 3. Add "entirely" before "on-site" in the last sentence.

***DOE Response*:** Text revised as requested.

12) Section B.4.3, page B-11, paragraph 1. The first sentence is inaccurate. Substantive requirements apply to both on and off-site actions. It is the administrative requirements that do not apply to entirely on-site actions. Please rephrase or delete the sentence entirely.

***DOE Response*:** This sentence has been removed from the document.

13) Section B.4.3, page B-11, last paragraph. The first sentence implies that this is a CERCLA action. Please rephrase per the comments above (See, Comments 1-3, 6, 7, and 8). Delete the first reference to "CERCLA" and replace the 2nd reference to "CERCLA" with "such."

***DOE Response*:** Text revised as requested.

14) ARAR Comment: The NPDES storm water runoff general construction permit is an ARAR. It is promulgated pursuant to the Ohio's statutes and rules (i.e., it is a final action of the Director),

subject to appeal, and of general applicability. See also, OAC Rules 3745-39-04(B)(15), 3745-39-04(A)(1)(b), 3745-39-04(B)(16)(a), and 3745-39-04(A)(7)(a)(ii).

***DOE Response*:** The general construction permit entry was modified from a TBC to applicable.

ENGINEERING EVALUATION/COST ANALYSIS FOR THE PLANT SUPPORT BUILDINGS AND STRUCTURES AT THE PORTSMOUTH GASEOUS DIFFUSION PLANT, PIKETON, OHIO

U.S. Department of Energy
DOE/PPPO/03-0207&D4

October 2011

This document has been approved for public release:

Henry Thomas *(signature on file)* 9-1-2011
Classification & Information Control Officer Date

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ENGINEERING EVALUATION/COST ANALYSIS FOR THE PLANT SUPPORT BUILDINGS AND STRUCTURES AT THE PORTSMOUTH GASEOUS DIFFUSION PLANT, PIKETON, OHIO

U.S. Department of Energy
DOE/PPPO/03-0207&D4

October 2011

Prepared for
U.S. Department of Energy
Portsmouth/Paducah Project Office

by:
Fluor-B&W Portsmouth LLC, Under Contract DE-AC30-10CC40017

FBP-ER-EECA-BG-RPT-0002, Revision 5

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CONTENTS

FIGURES

TABLES

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ACRONYMS

AM	action memorandum
ARAR	applicable or relevant and appropriate requirement
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CFR	*Code of Federal Regulations*
COPC	contaminant of potential concern
D&D	decontamination and decommissioning
DFF&O	*Director's Final Findings and Orders for Removal Action and Remedial Investigation and Feasibility Study and Remedial Design and Remedial Action for the Portsmouth Gaseous Diffusion Plant (Decontamination and Decommissioning Project)*
DOE	U.S. Department of Energy
EE/CA	Engineering Evaluation/Cost Analysis
EPA	U.S. Environmental Protection Agency
FR	*Federal Register*
FS	feasibility study
FY	fiscal year
LDR	land disposal restriction
LLW	low-level (radioactive) waste
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NEPA	National Environmental Policy Act of 1969
NPDES	National Pollutant Discharge Elimination System
O&M	operation and maintenance
OAC	Ohio Administrative Code
Ohio EPA	Ohio Environmental Protection Agency
PCB	polychlorinated biphenyl
PORTS	Portsmouth Gaseous Diffusion Plant
PPE	personal protective equipment
RAO	removal action objective
RAWP	removal action work plan
RCRA	Resource Conservation and Recovery Act of 1976
RI	remedial investigation
ROD	record of decision
SAP	sampling and analysis plan
S&M	surveillance and maintenance
TBC	to-be-considered
TPMC	Theta Pro2Serve Management Company, LLC
TSCA	Toxic Substances Control Act of 1976
USDA	U.S. Department of Agriculture
USEC	United States Enrichment Corporation
WAC	waste acceptance criteria
WRCC	Western Regional Climate Center

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EXECUTIVE SUMMARY

The Ohio Environmental Protection Agency (Ohio EPA) and the U.S. Department of Energy (DOE) have entered into a formal agreement regarding performance of the decontamination and decommissioning (D&D) process at the DOE Portsmouth Gaseous Diffusion Plant located in Piketon (Pike County), Ohio. The term D&D refers to a variety of activities, such as removing structures, dismantling building contents and foundations, and deactivating equipment. The terms of the agreement between the Ohio EPA and DOE are contained in the *Director's Final Findings and Orders for Removal Action and Remedial Investigation and Feasibility Study and Remedial Design and Remedial Action for the Portsmouth Gaseous Diffusion Plant (Decontamination and Decommissioning Project)* (hereafter referred to as DFF&O) (Ohio EPA 2010). The DFF&O was effective as of April 13, 2010.

This Engineering Evaluation/Cost Analysis (EE/CA) presents and evaluates the relevant data to support a determination as to the need for a removal action with respect to the plant support buildings and structures listed in Table 1 of this EE/CA, defines the specific objectives of any necessary removal action, evaluates removal action alternatives, identifies a recommended alternative, and presents the recommended alternative to the public for its review and comment prior to issuing an Action Memorandum selecting the removal action alternative to be implemented.

This EE/CA is being documented in accordance with Attachment D in the DFF&O, *Generic Statement of Work for Conducting an Engineering Evaluation/Cost Analysis (EE/CA)* and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), including 40 *Code of Federal Regulations* (*CFR*) Section 300.415(b)(4)(i).

The set of buildings addressed in this EE/CA includes a subset of buildings presented in Attachment G of the DFF&O, as well as the X-530A facility which has been recently added to Attachment G. Since this EE/CA determines that action is appropriate and necessary, it also satisfies the requirements of the Removal Site Evaluation as required under the DFF&O. Surface features associated with a defined list of buildings or structures addressed by this EE/CA are the primary focus of this removal action evaluation. Surface features include any building or man-made structure that is at or above ground surface. Surface features include the slabs if the building is a slab-on-grade building. Also included in the scope are materials and equipment stored or used below grade or in subsurface features such as basements or valve pits within the building footprint. The subsurface structures, themselves, for the non-slab-on-grade buildings (walls, floors, and protective slabs or coverings), are not included in this decision. For such buildings, remaining subsurface structures and covering slabs will become part of future EE/CA(s) or the Process Building and Complex Facilities D&D Evaluation Project Record of Decision (ROD).

Based on a streamlined (qualitative) risk assessment as allowed by the DFF&O, DOE has determined that, if allowed to deteriorate in an uncontrolled manner, the plant support buildings and structures present a threat to human health, safety, and the environment through the potential release and migration of contaminants to the air, surface water, and soil. The deteriorating structures also present safety hazards and physical risks with respect to workers performing routine surveillance and maintenance (S&M) activities associated with these facilities. The streamlined risk assessment supports the need for a non-time-critical removal action.

The following removal action objectives are defined in the DFF&O and form the basis for identifying and evaluating the appropriate response actions:

- Determine the viability of facility reuse

- Meet applicable or relevant and appropriate requirements (ARARs) to the extent practicable (e.g., National Oil and Hazardous Substances Pollution Contingency Plan standards)

- Be protective of relevant receptors

- Be cost effective.

In identifying potential removal alternatives for the plant support buildings and structures, DOE considered potential reuse of the buildings and structures. DOE has evaluated potential reuse of the proposed buildings and structures consistent with existing policies on disposition, DOE Order 458.1 and applicable segments of DOE Order 5400. Due to the presence of contamination, the aging condition of the buildings, and anticipated cost of maintenance, no future use has been identified at this time for these buildings. Therefore, DOE is not developing a separate reuse alternative for the EE/CA. The developed alternative provides for the ability to either delay implementation of the remedy or remove the building from the remedy if a future use for an individual building is identified. As discussed in Section 4.1.2 of this EE/CA, DOE has determined that reuse will not be carried forward for the removal action alternatives analysis.

The following removal alternatives were developed and evaluated for effectiveness, implementability, and cost, consistent with the DFF&O, which mirrors the U.S. Environmental Protection Agency guidance:

- Alternative 1 – No Action
- Alternative 2 – Remove Structures, Off-site Disposition of Equipment and Materials
- Alternative 2a - Remove Structures, On- and Off-site Disposition of Equipment and Materials.

Alternative 1 is required to be evaluated and serves as a baseline to which the other alternative may be compared. In the No Action alternative, all S&M activities would cease, the buildings would continue to deteriorate, and D&D would not be performed. Final disposition of contaminants generated by the structures' gradual degradation and ultimate failure would not occur. Alternative 1 is implementable but ineffective at achieving the removal action objectives or reducing actual or potential risks to workers and the environment. No costs are associated with Alternative 1.

Alternative 2 consists of removing the surface structures and all equipment or materials, above or below ground, associated with the identified building or structure, and provided the associated waste acceptance criteria are met, the disposal of generated non-salvageable or reusable materials in appropriate off-site disposal facilities. The remedy would be implemented when the building is no longer being used and consistent with DOE sequencing and priorities. A separate decision would be made for the subsurface structures. Alternative 2 effectively achieves the removal action objectives and reduces the risks to human health and the environment. This alternative is technically and administratively implementable. The estimated cost for implementing Alternative 2 is approximately $66,000,000.

Alternative 2a, Remove Structures, On- and Off-site Disposition of Equipment and Materials, is the same as Alternative 2 but allows for on-site disposal if an on-site disposal cell is selected in a finalized ROD (i.e., a ROD concurred with by Ohio EPA) and such on-site disposal cell becomes available and operational for the waste stream pursuant to an Ohio EPA approved waste acceptance criteria prior to the Milestone identified for all staged waste to be taken off-site for disposal in an Ohio EPA approved Remedial Action Work Plan. At this time, DOE is evaluating an onsite disposal cell in the Site-Wide Waste Disposition Evaluation remedial investigation/feasibility study.

Following analysis of the alternatives, Alternative 2 is the recommended alternative for D&D of the plant support buildings and structures. This alternative has been determined to be the most cost-effective approach that satisfies the objectives of the removal action and meets the ARARs. If in the future a ROD is finalized that selects an onsite disposal cell as the remedy and all other conditions set forth in the DFF&O are satisfied, Alternative 2a can be used as a contingent remedy.

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1. INTRODUCTION TO THE DECONTAMINATION AND DECOMMISSIONING PROCESS

1.1 PURPOSE

The purpose of this Engineering Evaluation/Cost Analysis (EE/CA) is to present and evaluate relevant data to support a determination as to the need for a removal action for the plant support buildings and structures at the Portsmouth Gaseous Diffusion Plant (PORTS), define the specific objectives of any necessary removal action, evaluate the removal action alternatives, identify a recommended alternative, and present the recommended alternative to the public for its review and comment prior to issuing an Action Memorandum (AM) selecting the removal action alternative to be implemented. The set of buildings addressed in this EE/CA includes a subset of buildings presented in Attachment G of the *Director's Final Findings and Orders for Removal Action and Remedial Investigation and Feasibility Study and Remedial Design and Remedial Action for the Portsmouth Gaseous Diffusion Plant (Decontamination and Decommissioning Project*) (hereafter referred to as the DFF&O) (Ohio Environmental Protection Agency [Ohio EPA] 2010). Since this EE/CA determines that action is appropriate and necessary, it also satisfies the requirements of the Removal Site Evaluation as required under the DFF&O.

The Ohio EPA and U.S. Department of Energy (DOE) have entered into a formal agreement regarding the performance of decontamination and decommissioning (D&D) at PORTS, located in Piketon (Pike County), Ohio. The term D&D refers to a variety of activities, such as removing structures, dismantling building contents and foundations, and deactivating equipment. The terms of the agreement between Ohio EPA and DOE are contained in the DFF&O. The DFF&O was effective as of April 13, 2010.

This EE/CA is being documented in accordance with Attachment D in the DFF&O, *Generic Statement of Work for Conducting an Engineering Evaluation/Cost Analysis (EE/CA)* and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), including 40 *Code of Federal Regulations* (*CFR*) Section 300.415(b)(4)(i).

A Consent Decree, signed in 1989 by DOE and Ohio EPA, and an Administrative Consent Order (amended in 1997) with the U.S. Environmental Protection Agency (EPA) and DOE require the investigation and cleanup of soils and groundwater at PORTS in accordance with the Resource Conservation and Recovery Act of 1976 (RCRA) Corrective Action Program under Ohio hazardous waste laws. Investigation and cleanup efforts for any affected soils and groundwater will be addressed under the RCRA Corrective Action Program and are not part of this non-time-critical removal action.

1.2 PHASES OF THE D&D PROCESS

The final phase in the life cycle of a nuclear facility is D&D. It consists, generally, of decontamination, dismantlement of equipment and buildings, demolition of structures, and management of resulting materials. The D&D process includes activities described in Section III, Paragraph 5.e, of the DFF&O.

If it is determined that a removal action is needed with respect to the PORTS plant support buildings and structures, D&D activities will be conducted as a non-time-critical removal action pursuant to the DFF&O.

A non-time-critical removal action process consists of the following elements:

- An EE/CA is performed to evaluate the need for a removal action and potential removal action alternatives, recommend an appropriate alternative, and provide the public an opportunity for review and comment before making a final decision on a removal action.

- The EE/CA is followed by an AM decision document that does the following:

  - Authorizes the action
  - Identifies the action and cleanup goals
  - Explains the rationale for authorizing the removal action
  - Provides a response to comments received from public review of the EE/CA.

- The AM is followed by submittal of one or more Removal Action Work Plans (RAWPs) that provide the design, construction, operation, and maintenance details of the removal action as set forth in the AM. The RAWPs would also identify milestones in accordance with the DFF&O requirements for implementation of the work.

- Following completion of fieldwork activities and receipt of all validated data, a Removal Action Completion Report will be issued.

1.3 COMMUNITY PARTICIPATION

Community involvement is a necessary aspect of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) process and is required under the DFF&O. DOE is required to conduct community relations activities for this removal action project in compliance with the NCP and the DFF&O. State and community acceptance of this action will be addressed by providing the EE/CA to the regulators and making the EE/CA available to the public and Site-Specific Advisory Board for information and comment. Specifically, a brief description of this EE/CA and a notice of availability of the entire document will be published in the local newspaper(s). Public stakeholders will have 30 days, or longer if requested, to review the EE/CA and submit comments. A written response will be prepared to address significant comments and will be included in the Administrative Record. DOE will provide an opportunity for public information exchange during the 30-day public review and comment period. Documents referenced in the EE/CA will be part of the Administrative Record and available to the public for review.

2. SITE CHARACTERIZATION

2.1 PORTSMOUTH FACILITY AND REMOVAL ACTION PROJECT AREA DESCRIPTION AND NATURE AND EXTENT OF CONTAMINATION

2.1.1 Portsmouth Facility Description

The PORTS site is located in a rural area of Pike County, Ohio, east of the Scioto River on a 5.8-sq-mile area (Figure 1). The site is 2 miles east of the Scioto River in a small valley running parallel to and approximately 130 ft above the Scioto River floodplain. Pike County has approximately 28,200 residents. The nearest population center to the PORTS site is Piketon, Ohio, which is located approximately 5 miles north on U.S. Route 23.

PORTS occupies an upland area of southern Ohio with an average land surface elevation of 670 ft above mean sea level. It sits in a 1-mile-wide abandoned river valley situated above the Scioto River floodplain to the west. In much of the industrialized area of PORTS, the original topography has been modified and graded for construction of buildings and other facility components. Much of the industrialized area is located on fill that was removed from the higher elevations at PORTS, and placed in existing drainage valleys and depressions.

PORTS is drained by several small tributaries of the Scioto River. Sources of surface water drainage include stormwater runoff, groundwater discharge, and effluent from plant processes. The largest stream is Little Beaver Creek, which drains the northern and northeastern portions of the PORTS property before discharging into Big Beaver Creek. Big Run Creek is the smaller tributary of the Scioto River that drains the southern portion of the PORTS property.

Both Little Beaver Creek and Big Run Creek cut through unconsolidated material and intersect bedrock, and the ancestral Portsmouth River Valley essentially forms a large “bowl” around PORTS. Therefore, groundwater leaving the site through unconsolidated deposits via Little Beaver Creek and Big Run Creek eventually drains to the Scioto River.

Two ditches drain the western and southwestern portions of the PORTS property. Flow in these ditches is low to intermittent. The West Drainage Ditch receives water from surface water runoff, storm sewers, and plant effluent. The unnamed southwestern drainage ditch receives water mainly from storm sewers and groundwater discharge. These two drainage ditches continue west and ultimately discharge into the Scioto River.

The subsurface in the PORTS area consists of approximately 30 to 40 ft of unconsolidated Quaternary clastic sediments unconformably overlying Paleozoic bedrock that dips gently toward the east. In stratigraphic order, bedrock is overlain by fluvial Gallia sand and gravel (Gallia) and by the lacustrine Minford clay and silt (Minford) of the Teays Formation.

Bedrock consisting of clastic sedimentary rocks underlies the unconsolidated sediments beneath PORTS. The geologic structure of the area is very simple, with the bedrock (Cuyahoga shale, Sunbury shale, Berea sandstone, and Bedford shale) dipping gently to the east-southeast. No known geologic faults are located in the area; however, joints and fractures are present in the bedrock formations.

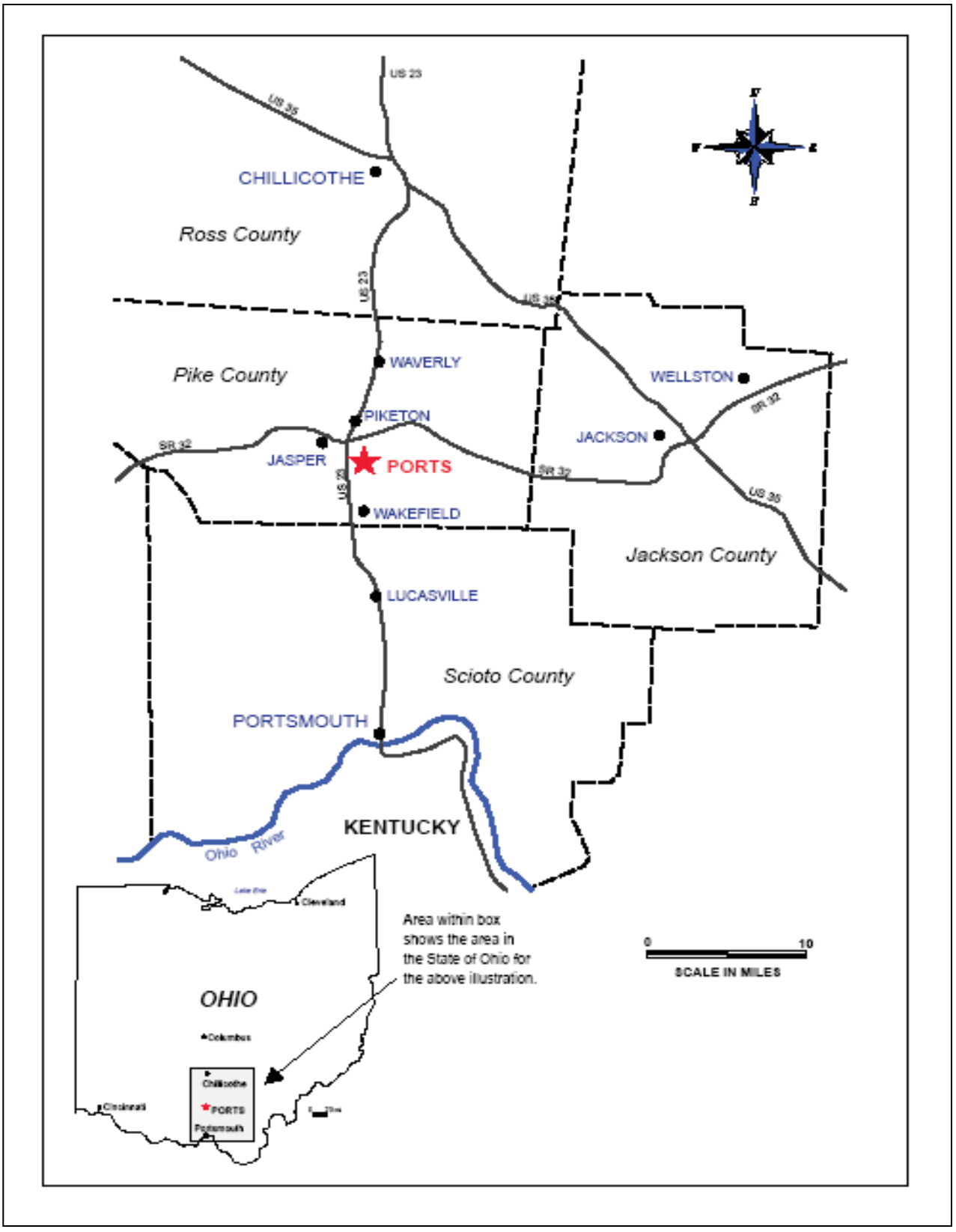

Figure 1. PORTS Site Vicinity Map

According to the soil survey of Pike County, Ohio, 22 soil types occur within the PORTS property boundary. The predominant soil type at PORTS is Omulga Silt Loam (U.S. Department of Agriculture [USDA] 1990). Most of the area within the active portion of the site is classified as urban land-Omulga complex with a 0-6 percent slope, which consists of urban land and a deep, nearly level, gently sloping, moderately well-drained Omulga soil in preglacial valleys. The urban land is covered by roads, parking lots, buildings, and railroads, which make identification of the soil series difficult. The soil in these areas is so obscured or disturbed that assignment of specific soil series is not feasible. Well-developed soil horizons may not be present in all areas inside Perimeter Road because of cut and fill operations related to construction.

The climate of the PORTS area can be described as humid continental and is characterized by warm, humid summers and cold, humid winters. Daily temperature averages are 73°F in the summer and 33°F in the winter. The average annual temperature is 54°F. Record high and low temperatures are 107°F and -25°F, respectively (Western Regional Climate Center [WRCC] 2009).

Precipitation is distributed relatively evenly throughout the year and averages approximately 40 in. per year. The month with the highest average amount of precipitation is May, and groundwater recharge and flood potential are greatest during this time. Fall is the driest season. Snowfall averages 19 in. per year. Although snow amounts vary greatly from year to year, an average of 8 days per year have snowfall in excess of 1 in. (WRCC 2009). Prevailing winds are from the south-southwest at approximately 5 mph. The highest average monthly wind speed of 11 mph typically occurs during the spring.

The terrain surrounding the plant, with the exception of the Scioto River floodplain, consists mainly of marginal farmland and densely forested hillsides. The Scioto River floodplain is extensively farmed. PORTS is situated on a 3,777-acre parcel of DOE-owned land. Twelve hundred acres of this area are located within the facility's Perimeter Road and comprise the centrally developed area. Five hundred acres of the land within Perimeter Road are fenced for controlled access. Approximately 190 buildings are located within PORTS, along with numerous utility structures. The DOE-owned land outside Perimeter Road is used for a variety of purposes, including a water treatment plant, holding ponds, sanitary and inert landfills, and open and forested buffer areas. The majority of site improvements associated with the gaseous diffusion plant are located within the fenced area. Within this area are three large process buildings and auxiliary buildings. A second developed area, covering approximately 300 acres, contains buildings and structures built for the Gas Centrifuge Enrichment Plant, portions of which are leased to United States Enrichment Corporation (USEC). These areas are largely devoid of trees, with grass and paved areas dominating the open space. The remaining area within Perimeter Road has been cleared and is essentially level.

A portion of the gaseous diffusion plant uranium enrichment facilities at PORTS is currently leased by USEC, including some of the buildings and structures in this EE/CA. The lease between DOE and USEC is active through July 1, 2016, although some buildings and structures may be returned to DOE on an earlier date. In addition to the leased buildings and structures, USEC also leases common areas, including ditches, creeks, ponds, and other areas such as roads and rail spurs that are necessary for ingress, egress, and proper maintenance of buildings. DOE and USEC are currently in negotiations to return the remaining majority of the gaseous diffusion plant facilities in the near future.

The economic region of influence for PORTS includes four counties in southern Ohio: Ross, Scioto, Jackson, and Pike. The largest city within 50 miles of the plant is Chillicothe, Ohio, with a population of 22,216 persons, based on year 2006 census results. The city of Chillicothe is located approximately 27 miles north of PORTS in Ross County, Ohio.

Pike County, the county in which PORTS is located, had a population of 28,269 persons in 2006. Other counties within the region of influence reported the following populations per the 2008 census: Jackson County, Ohio, 33,543; Ross County, Ohio, 75,556; and Scioto County, Ohio, 76,441. The nearest population center to PORTS is Piketon, Ohio, with a population of 1,907 persons reported in the 2000 Census.

2.1.2 Description of the Removal Action Project Area at the Site

Forty-six plant support buildings and structures addressed in this EE/CA are identified in Table 1, and a description of each building and structure is presented in Appendix A. The locations of these buildings are shown in Figure 2. Inclusion of a building on this list does not preclude a future reuse of the buildings if a need should be identified. Section 4.1.2.2 explains the modification to the decision if a building is reused.

2.1.3 Nature and Extent of Contamination

Based on previous reports (DOE 1993 and Theta Pro2Serve Management Company LLC [TPMC] 2006), materials of construction, process knowledge, and the nature and extent of potential contamination, the most common contaminants of potential concern (COPCs) have been identified and presented along with the building descriptions in the EE/CA. The most common COPCs, which are substances that have the potential to adversely affect human health and the environment because of their concentrations, distribution, and toxicity, include asbestos, lead, radionuclides (primarily uranium), mercury, and polychlorinated biphenyls (PCBs). Some individual buildings and structures also have the potential for volatile organic compounds, semivolatile organic compounds, heavy metals, corrosives, and biological hazards contaminants to be present.

The process knowledge inquiry included examination of available records and photographs about building use and history, interviews, and walkdowns of the buildings and structures. The walkdowns provided information about chemicals used in the buildings, materials used in building construction and their current condition, and radiologically controlled areas that resulted from existing radiological surveys. Knowledge of materials or chemicals used in the buildings was the basis for identifying additional COPCs and the information in the building descriptions provided in Appendix A of the EE/CA. The presence of older insulation or tiled floors indicates that asbestos is a COPC; older painted surfaces may contain lead and PCBs. In most instances, there is known building-specific contamination, as described in the building descriptions. In some cases, a building description (Appendix A of the EE/CA) will indicate there is no contamination present. That statement refers to the lack of any record of building-specific contamination being present. Nevertheless, based on the proximity of the buildings to areas of contamination or to historic releases, it is assumed that site-related contamination potentially exists at every building.

2.1.4 Previous Removal Actions and Investigations

Under the DFF&O, two AMs that have recently been signed include one for the Group 1 buildings (X-103, X-334, and X-344B) and one for the X-626 and X-630 Recirculating Cooling Water Complexes. Other buildings have been removed either as non-CERCLA maintenance actions or as CERCLA removal actions. Building descriptions presented in Appendix A include a summary of any previous removal actions and investigations, but most buildings have no previous actions or investigations.

Table 1. PORTS Process Support Buildings

Building Number	Building Name	DFF&O Group[a]	RAWP[b]
X-100	Administration Building	2	R1
X-100B	Air Conditioner Equipment Building	2	R1
X-101	Dispensary	2	R1
X-102	Cafeteria	2	R7
X-104	Guard Headquarters	2	R10
X-106	Tactical Response Building	1	R7
X-106C	New Fire Training Building	1	R12
X-108H	Pike Avenue Portal	1	R9
X-109A	Personnel Monitoring Station	1	R4
X-109B	Personnel Monitoring Station	1	R12
X-109C	Personnel Monitoring Station	1	R1
X-343	Feed Vaporization and Sampling Building	4	R12
X-530A	High Voltage Switch Yard	2	R4
X-530B	Switch House	2	R4
X-530C	Test and Repair Building	2	R4
X-530D	Oil House	2	R4
X-530E	Valve House	2	R4
X-530F	Valve House	2	R4
X-600	Steam Plant	3	R5
X-600B	Steam Plant Shop Building	3	R5
X-600C	Ash Wash Treatment Building	3	R5
X-611	Water Treatment Plant	2	R8
X-611C	Filter Building	1	R8
X-611D	Recarbonization Instrumentation Building	1	R8
X-611E	Clear Well and Chlorine Building	1	R8
X-612	Elevated Storage Tank	1	R10
X-614A	Sewage Pumping Station	1	R11
X-614B	Sewage Pumping Station	1	R11
X-618	North Holding Pond Storage Building	1	R11
X-621	Coal Pile Treatment Facility	3	R5
X-624-1	Decontamination Pad	2	R2
X-640-1	Fire Water Pump House	1	R10
X-640-2	Elevated Storage Tank	1	R10
X-735A	Landfill Utility Building	1	R9
X-743	Lumber Storage Facility	1	R3
X-744B	Salt Storage Building	1	R6
X-744G	Bulk Storage Building	2	R12
X-744H	Bulk Storage Building	1	R3
X-744J	Bulk Storage Building	1	R3
X-744L	Stores and Maintenance Warehouse	1	R12
X-744S	Warehouse S Non-UEA	1	R2
X-744W	Surplus and Salvage Warehouse	1	R6
X-750	Mobile Equipment Maintenance Shop	2	R11
X-750A	Garage Storage Building	1	R11
X-752	Warehouse	1	R6
X-752AT 1-4	Trailer Complex	1	R6

[a]DFF&O Attachment G Group 1 – Low Risk/Low Complexity, Group 2 – Industrial/Medium Complexity, Group 3 – Chemical/Medium Complexity, Group 4 – Radiological/High Complexity

[b]RAWP groupings are based on planned schedule for implementation and therefore do not correspond to DFF&O Attachment G groups.

DFF&O = *Director's Final Findings and Orders for Removal Action and Remedial Investigation and Feasibility Study and Remedial Design and Remedial Action for the Portsmouth Gaseous Diffusion Plant (Decontamination and Decommissioning Project)*
RAWP = removal action work plan

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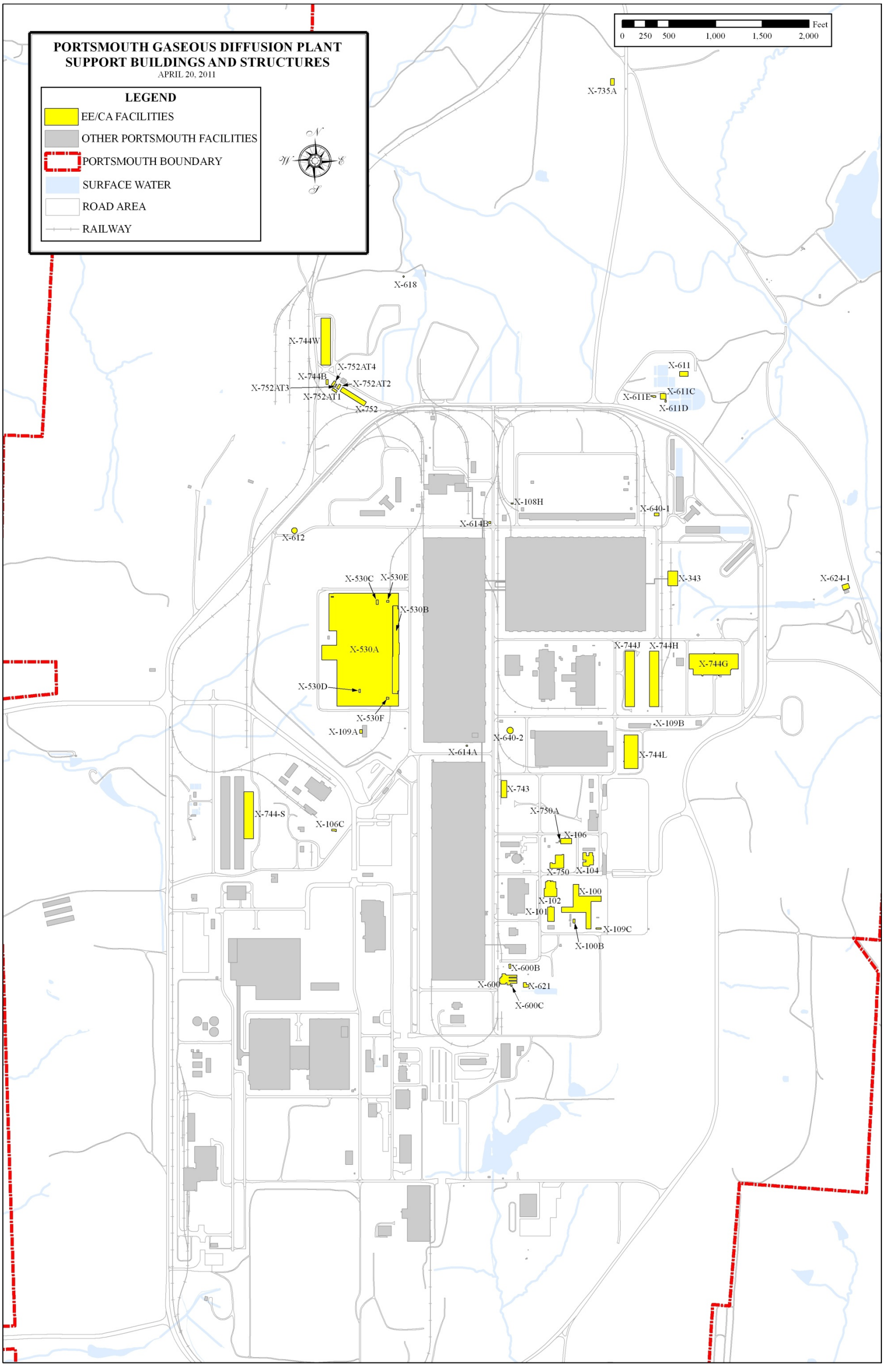

Figure 2. PORTS Remaining Buildings and Structures

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2.1.5 Assessment of Releases

An assessment of releases is provided with the building descriptions in Appendix A. When no release is indicated, that means that there is no record of a release unique to that building.

2.1.6 Streamlined Risk Evaluation

As allowed by the DFF&O, a streamlined (qualitative) risk assessment was performed for the Plant Support Buildings and Structures. The intent of a qualitative risk assessment is to determine the potential threat to human health and the environment using process knowledge. As discussed in Section 2.1.3, asbestos, lead, radionuclides (primarily uranium), mercury, and PCBs are the expected primary COPCs for the plant support buildings and structures.

Asbestos is a Class A carcinogen, which means it is known to cause cancer based on epidemiological studies. If appropriate controls are not in place, asbestos has the potential to affect human health and the environment during removal activities. Chrysolite, the most commonly found form of asbestos, is present in the transite siding at a volume of 12 to 50 percent. Chrysolite was also found in potable cold water layered-paper insulation at a volume of 30 to 40 percent, and it was in the potable cold water fittings, elbow and lagging, and circulating hot water jacket and insulation at a volume of 1 to 3 percent. This asbestos will continue to become more brittle and friable if not removed. If the asbestos is not removed, uncontrolled releases of asbestos would present a risk to human health and the environment. The exposure pathway for asbestos would most likely be through the air, and the primary pathway of concern would be inhalation, with the primary target organ being the lungs. The cancer effect would be asbestosis. Asbestos abatement would be accomplished using a licensed asbestos abatement contractor. Dust control measures, including misting and mechanical measures, would be employed during removal activities to minimize potential exposure and risk to human health and the environment. Air monitoring would be performed throughout D&D activities to ensure appropriate actions are taken, if required, to minimize potential exposure and risk to human health and the environment.

Lead is a Class B carcinogen, which means it is a probable human carcinogen. Lead-based paint is also expected to be present in many of the painted structures because of the plant's age. The lead paint would pose a threat to human health if it were to become airborne (i.e., mobile dust) or if it were subjected to heat. The primary pathways of exposure would be ingestion and inhalation, with the primary target organs being the central nervous system, bones, and kidneys. Neuropsychological impairment would be a systemic effect from exposure; children are particularly susceptible to exposures to lead. If the structures are removed, appropriate controls such as personal protective equipment (PPE) would be used to protect workers. Throughout the removal action, air samples would be collected to ensure appropriate actions are taken, if required, to minimize potential exposure and risk to human health and the environment.

Mercury is a Class D carcinogen, which means it is not currently classified as causing cancer in humans. The primary exposure route of concern is inhalation of mercury vapors. The crucial target organ is the brain; mercury primarily has adverse effects on the central nervous system and can cause developmental effects in children. Mercury is expected to be present in the buildings in such places as electrical switches and mercury vapor lamps. If released to the environment, the potential for human exposure via inhalation is increased.

PCBs are Class B carcinogens, which means they are probable human carcinogens. PCBs are particularly harmful to the liver via the ingestion exposure pathway. PCBs are found in fluorescent lights with PCB ballasts and oils containing PCBs. PCBs can also be found in older paints and in ventilation gaskets. Continued deterioration of the buildings could result in the potential release of PCBs to the environment. If released to the environment, the potential for human ingestion is increased.

Radionuclides are Class A carcinogens, which means they are proven to cause cancer in humans via a variety of exposure pathways, depending on the specific radionuclide in question. The uranium isotopes (e.g., uranium-234, uranium-235, and uranium-238 in particular) can cause kidney, liver, and lung cancers/tumors from direct exposure, inhalation, and ingestion. If released to the environment, the potential for human exposure via inhalation, ingestion, and direct exposure is increased.

If the plant support buildings and structures are allowed to remain in place, weather elements such as wind and rain could eventually result in infrastructure failure (e.g., asbestos transite siding blowing off buildings and structures), which, in turn, may result in an increased threat of exposure to human health and the environment. Risks to human health from exposure to the COPCs (asbestos, PCBs, lead, or uranium) are minimal under current conditions, however, future uncontrolled releases could cause increased risks to human health and the environment. In addition, the release of COPCs could impact ecological receptors via surface water migration.

The primary pathways of exposure, target organs, and systemic and cancer effects that could be a risk/hazard to human health with respect to the plant support buildings and structures COPCs are presented in Table 2.

Table 2. Health Data on the Primary Contaminants of Potential Concern for D&D of Plant Support Buildings and Structures at the PORTS Site

COPC	Carcinogen Class[a]	Human Health Exposure: Primary Pathway(s) of Potential Concern	Primary Target Organ(s) (for Systemic and/or Cancer Effects)	Reference for Carcinogen Class and Target Organs
Asbestos	A	Inhalation	Lung, asbestosis	ATSDR 2001
Lead	B1	Ingestion, inhalation	Central nervous system, bone, kidney, neuropsychological impairment	EPA 1989; ATSDR 2007
Mercury (elemental)	D	Inhalation of vapors	Central nervous system, kidney, developmental effects, gastrointestinal, eyes, urinary system	ATSDR 1999a
PCBs	B1	Ingestion, inhalation, dermal	Liver, hepatocellular tumors	ATSDR 2000
U-234	A	Inhalation, ingestion	Lung	IARC 2001; ATSDR 1999b
U-235	A	Ingestion, inhalation, external exposure to radiation	Kidney, lung, tumors, brain, liver, reproductive effects	IARC 2001; ATSDR 1999b
U-238	A	Ingestion, inhalation, external exposure to radiation	Kidney, lung, tumors (kidney, brain, liver), reproductive effects	IARC 2001; ATSDR 1999b

[a]Class A = human carcinogen, Class B1 = probable human carcinogen with limited human data, B2 = probable human carcinogen with sufficient evidence in animals, Class C = possible human carcinogen, Class D = not classified, and Class E = not a human carcinogen (EPA 1989).

ATSDR = Agency for Toxic Substances and Disease Registry
COPC = contaminant of potential concern
EPA = U.S. Environmental Protection Agency
IARC = International Agency for Research on Cancer
PCB = polychlorinated biphenyl

Security controls, including administrative and physical access controls, are currently in place to limit unauthorized access to these buildings, and only appropriately trained and authorized personnel are allowed entrance. These institutional controls reduce the potential for direct contact with, and exposure to, the COPCs.

However, institutional controls would not prevent deterioration of the buildings or eliminate the threat of COPC releases to the environment. As these buildings continue to age, the threat of radiological and chemical substance releases is increased, and it becomes more difficult to contain these materials and prevent a release to the environment. Radiological and chemical substances could be released directly to the environment via, for example, a breach in a containment wall, roof, or other physical control as the buildings age and deteriorate.

2.1.7 Federal, State, and Local ARARs, and To-Be-Considered Guidance

The applicable or relevant and appropriate requirements (ARARs) and to-be-considered (TBC) guidance identified for these activities evaluated under the removal alternatives are presented in Appendix B of this EE/CA. Each RAWP will identify the subset of Appendix B ARARs for the work scope covered by the RAWP. The majority of the ARARs apply to most buildings. ARARs for PCB capacitors are anticipated to only apply to X-744J and X-530B. More detail on which ARARs apply to which buildings will be provided in the RAWPs. If site conditions vary from that anticipated in the EE/CA, the comprehensive list of state environmental regulations will be assessed to determine if there are additional ARARs.

Applicable requirements are "those cleanup standards, standards of control, and other substantive environmental protection requirements, criteria, or limitations promulgated under federal or state law that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA site" (53 *Federal Register [FR]* 51435, December 21, 1988; 40 *CFR* 300.5). Relevant and appropriate requirements are "those cleanup standards, standards of control, and other substantive environmental protection requirements, criteria, or limitations promulgated under federal or state law that, while not applicable to a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA site, address problems or situations sufficiently similar to those encountered at the CERCLA site that their use is well suited to the particular site" (53 *FR* 51436; 40 *CFR* 300.5).

In addition to ARARs, there are other advisories, criteria, or guidance to be considered for a particular release. Collectively, they are referred to as TBC guidance. This guidance may be useful in determining remedies or cleanup levels that are protective of human health and the environment in the absence of ARARs.

Requirements under federal or state law may be either applicable or relevant and appropriate to CERCLA cleanup actions, but not both. However, requirements not considered applicable must be both relevant and appropriate to necessitate compliance. In cases where both a federal and state ARAR are available, or where two potential ARARs address the same issue, the more stringent regulation must be selected.

The portions of response actions conducted entirely on-site pursuant to Work Plans or plans concurred with or approved by Ohio EPA under the DFF&O can also be, at Respondent's discretion, conducted pursuant to Section 121 of CERCLA, 42 United States Code 9621(e)(1). To ensure CERCLA response actions proceed as rapidly as possible, EPA has reaffirmed this position in the final NCP (55 *FR* 8756, March 8, 1990). Substantive requirements directly pertain to the actions or conditions at the site, while administrative requirements facilitate their implementation (e.g., applying for permits, recordkeeping, consultation, inspections, and reporting). It is the intent of DOE to meet the substantive requirements of appropriate federal and state regulations in accordance with the ARARs. DOE must identify the Federal and state permits that would otherwise be required, substantive requirements, standards, criteria, or limitations that would be required under the permit process; and explain how the proposed action will meet these standards. This is a requirement of the DFF&O for PORTS.

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3. REMOVAL ACTION SCOPE, OBJECTIVES, AND SCHEDULE

This chapter summarizes DOE response authority and statutory limits under CERCLA and the DFF&O for D&D actions, removal action justification, removal action scope and objectives, and the planning schedule for D&D of the buildings addressed in this EE/CA.

CERCLA Section 104 addresses the response to releases or threats of releases of hazardous substances through removal actions. Executive Order 12580, "Superfund Implementation," delegates to DOE the response authorities for releases or threatened releases from or on any building under DOE's jurisdiction, custody, or control. DOE is authorized to conduct response measures (e.g., removal actions) under CERCLA. A response under CERCLA is appropriate when (1) hazardous substances are released or there is a substantial threat of such release into the environment, or (2) there is a release or substantial threat of a release into the environment of any pollutant or contaminant that may present an imminent and substantial danger to the public health or welfare. DOE and EPA have issued a joint policy statement (DOE and EPA 1995) that maintains building D&D activities should be conducted as CERCLA non-time-critical removal actions unless circumstances at the building make it inappropriate. The DFF&O also provides that D&D for certain identified buildings at PORTS will be conducted in accordance with CERCLA and the DFF&O.

The National Environmental Policy Act of 1969 (NEPA) requires all federal agencies to consider the possible effects (both adverse and beneficial) of their proposed activities before taking action. DOE has issued a Secretarial Policy Statement on NEPA (DOE 1994) that states DOE will hereafter rely on the CERCLA process for review of actions to be taken under CERCLA, and will address and incorporate NEPA values in CERCLA documents to the extent practicable. Such values may include socioeconomic, cultural, ecological, aesthetic, and health effects, both short term and cumulative, as well as environmental justice issues, land use issues, and the impacts from off-site transportation of wastes. Guidance states that NEPA values will be incorporated to the extent practicable, with more attention given to those aspects of the proposed action having the greater anticipated effects. In keeping with this policy, NEPA values have been incorporated into this EE/CA.

3.1 REMOVAL ACTION JUSTIFICATION

The following expected primary COPCs have been identified for the plant support buildings and structures:

- Asbestos from transite siding, piping insulation, etc.
- PCBs from light ballasts, ventilation gaskets, oils, paints, etc.
- Lead from lead-based paint
- Mercury from light bulbs and switches
- Radionuclides from fixed contamination in the structures.

Based on a streamlined risk assessment, DOE has determined that, if allowed to deteriorate in an uncontrolled manner, the plant support buildings and structures addressed in this EE/CA present a threat to human health, safety, and the environment through the potential release and migration of COPCs to the air, surface water, and soil. Under NCP, 40 *CFR* 300.415(b)(2)(v), one of the considerations for whether to conduct the removal action is weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released. Weather causes the degradation of the structures, either immediately in the case of severe weather or slowly in the case of relentless changes in temperatures and wind. For example, the potential for airborne asbestos release and exposure would increase over time as the transite panels, piping insulation, etc. associated with the buildings deteriorate. Building deterioration

may also result in the release of lead, mercury, and radionuclides via surface water that could impact ecological receptors.

The deteriorating structures also present safety hazards and physical risks with respect to workers on the reservation.

3.2 REMOVAL ACTION SCOPE AND OBJECTIVES

This non-time-critical removal action will address the surface features and subsurface equipment and materials within the footprint(s) of the plant support buildings and structures, including the slab if the structure is built on a slab.

Per the DFF&O, D&D includes dismantlement, demolition, and removal of equipment, structures, piping, and building contents both above and below ground within the building footprint. When subsurface features such as basements, wet wells, etc. exist, any concrete slabs covering the subsurface features, as well as underground structures, will be assessed and addressed under future EE/CA(s) or the Process Building and Complex Facilities D&D Evaluation Project Remedial Investigation (RI)/Feasibility Study (FS) and Record of Decision (ROD) (hereafter referred to as the Process Building project). The only soils that would be removed and disposed pursuant to this non-time-critical removal action are those adhering to structures or those that otherwise must be excavated as an integral part of the removal action. Soils and piping outside the footprint of the plant support buildings and structures addressed in this EE/CA are not included in this removal action decision.

The following removal action objectives (RAOs) are required by the DFF&O and form the basis for identifying and evaluating the appropriate removal action alternatives:

- **Determine the viability of facility reuse**. Does building reuse have a reasonable chance of succeeding, taking into account factors such as:

  - Nature and extent of contamination
  - Physical condition of the building(s)/structure(s)
  - Costs associated with bringing the building(s)/structure(s) into compliance with applicable standards and codes
  - Past use/operations
  - Location
  - Existence of any identified future need or use?

  Per the DFF&O, if reuse is determined to be viable, a removal action alternative for the building/ structure reuse will be included in the EE/CA. If reuse is determined not to be viable, the EE/CA must specifically state that reuse is not viable, provide an explanation supporting that determination, and not include a removal action alternative for the building/structure reuse. The determination of reuse viability is addressed in Section 4.1.2.

- **Meet ARARs to the extent practicable**. In accordance with Section 300.415(j) of the NCP, on-site removal actions conducted under CERCLA are required to attain ARARs to the extent practicable considering the exigencies of the situation.

- **Be protective of relevant receptors**. The removal action alternative must be protective of human health, safety, and the environment and protect against the release or threat of release and migration of contaminants to the air, surface water, and soil.

- **Be cost effective.** The NCP requires the benefit of a removal action be worth the cost compared to other alternatives.

3.3 REMOVAL ACTION PLANNING SCHEDULE

If an alternative that requires D&D is selected, a single AM would be submitted and separate RAWPs would be prepared for groups of buildings/structures, depending on the schedule for removal. Per the requirements of Table 1A of the DFF&O, the first RAWP would be submitted for Ohio EPA review within 90 days of DOE receiving Ohio EPA concurrence on the AM, unless otherwise mutually agreed to in writing by the parties, and will include buildings/structures for which DOE is prepared to proceed. DOE herein requests an alternate schedule for submission of RAWPs as described in this paragraph. DOE proposes to submit RAWPs for remaining buildings/structures within 90 days of DOE notifying Ohio EPA in writing that DOE is prepared to proceed with removal of any designated buildings/structures; the aforementioned 90-day period for submitting any such RAWP will be a Milestone Additionally, DOE will identify the RAWPs projected to be submitted within the fiscal year (FY), the FY+1, and the FY+2 in the annual submittal required pursuant to Paragraph 20.b of the DFF&O. The various removal actions would be initiated for each building/structure or groups of buildings/structures by the dates established in the approved schedules in the applicable RAWPs. Sampling and analysis plans (SAPs) to provide information necessary to design or implement the removal action will be submitted prior to the RAWPs to support development of the RAWPs.

A general unenforceable planning schedule with anticipated fiscal years for submittal of the RAWPs is included in Table 3. A list of which buildings is in which RAWP is included on Table 1. By mutual agreement of the Site Coordinators, the buildings/structures in one RAWP group may be moved to another or new RAWP group. All RAWPs will contain: a) a proposed schedule that includes a completion schedule for each task and clearly identifies which completion schedules are Milestones as required by Paragraph 19c of the DFF&O and b) any Milestones as required by Paragraph 12 a.v. of the DFF&O.

Table 3. Planning Schedule

RAWP Group	Fiscal Year of Submittal
R1	2012
R2	2012
R3	2013
R4	2013
R5	2013
R6	2013
R7	2013
R8	2015
R9	2016
R10	2017
R11	2018
R12	2020

RAWP = removal action work plan

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4. DEVELOPMENT OF REMOVAL ACTION ALTERNATIVES

This section identifies the removal technologies and options and the removal action alternatives to be evaluated in this EE/CA.

4.1 REMOVAL ACTION ALTERNATIVES

4.1.1 Identification of Removal Technologies and Process Options

This section identifies the technologies and disposal options based on site-specific conditions, contaminants, affected media, and anticipated activities. Technologies for building dismantlement and size reduction were identified based on their ability to meet RAOs, provide safety to workers, ensure feasibility of the technology under site-specific conditions, and provide radiological control of the D&D activity. This section also discusses disposal options for the waste streams that would be generated from the D&D activities until the Sitewide Waste Disposition Evaluation Project ROD is signed.

4.1.1.1 Structure dismantlement and size reduction

Multiple dismantlement and size-reduction technologies exist and could be used in performing removal actions for the plant support buildings and structures. The dismantlement and size-reduction technologies considered for this removal action are identified in Table 4. A description of the technologies and a discussion of their applicability and limitations are also provided in Table 4. Dismantlement and size-reduction technologies include conventional disassembly using mechanical hand tools, various electric and pneumatic hand tools (e.g., circular saw, porta-band saw, air impact wrench, etc.) and heavy machinery, including excavators with various processing heads (e.g., grappler, shear, cracker-jaw, concrete breaker, etc.). Selection of a technique would be based on the properties of the material being removed. The technologies considered for sealing floor drains and open piping include check valves, expandable plugs, and pipe end caps. Compaction has been used as a representative process option because this technique can be easily applied to a variety of materials and results in substantial volume reduction of the structural debris.

The RAWPs for each building group would provide the details for determining which technology to use on the various types of materials within each specific building.

4.1.1.2 Decontamination, stabilization, and removal technologies

Multiple decontamination, stabilization, and removal technologies exist to address the equipment, materials of building construction, and waste streams. The technologies available for decontamination, stabilization, and removal are identified in Table 5. A description of the technologies and a discussion of their applicability and limitations are also provided in Table 5. These technologies could be implemented to decontaminate equipment, structure surfaces, or generated waste either to meet disposal requirements or to allow the reuse of the equipment, material, or the building, itself.

4.1.1.3 Waste containerization options

For transportation and disposal, it would be necessary to containerize the waste generated during D&D activities. Many types of appropriate containers are available for the different waste streams anticipated to be generated, depending on which technologies identified in Sections 4.1.1.1 and 4.1.1.2 are applied. The types of containers most appropriate for this removal action would include, but not be limited to, gondolas, sealand containers, intermodal containers, roll-off boxes, strong-tight boxes (B-25), steel drums, and polyethylene drums. Because of the potential variety of wastes anticipated to be generated from D&D activities, it is possible that multiple container options would be used during implementation of the removal action.

Table 4. Description and Evaluation of PORTS Structure Dismantlement, Size-Reduction Technologies, Pipe/Utility Separation/Disconnection, and Lead-Based Paint/Asbestos Removal

Technology	Description	Applicability	Limitations	Comments
Conventional disassembly	Hand-held tools and saws used for hand removal of nuts and bolts, disconnection of piping (including floor drains), and modifications of utility conduits to form an air gap	May be applied to any area, including utility piping and floor drains	• Labor-intensive and slow • recommended for limited application	• No additional worker training required • Rotary saws, grinders, and other high-speed mechanical tools would produce airborne particulates and fines that may need to be collected • If applicable, verify utilities have been tagged per lockout/tagout procedure before being disconnected
Heavy machinery	Excavators with various processing heads such as grappler, shear, cracker jaw, concrete breaker, etc.	• Cut 0.6-cm (1/4-in.-thick) steel (large-diameter pipe), structural steel, tanks • Shear wooden support structures or siding • Reduce concrete to rubble	• Depending on processing head used, pipe ends that require further processing before decontamination, treatment, or disposal may be pinched • Eliminates airborne contamination associated with thermal cutting processes	If applicable, verify utilities have been tagged per lockout/tagout procedure before being disconnected
Electric and pneumatic tools	Circular saws, porta-band saws, air impact wrenches, etc.	Cut metal pipes and wooden structural members	• Clearance requirements have to be evaluated to determine most appropriate tool • Thickness of target would determine effectiveness	Safety concerns include the following: • Lacerations from blades, jagged metal, or splintering wood/siding • Flying particles from metal, wood, or transite shavings • Ergonomics/body postures for use of cutters • Noise exposures • Metal fumes and dust from metal cutting • If applicable, verify utilities have been tagged per lockout/tagout procedure before being disconnected

Table 4. Description and Evaluation of Structure Dismantlement, Size-Reduction Technologies, Pipe/Utility Separation/Disconnection, and Lead-Based Paint/Asbestos Removal (Continued)

Technology	Description	Applicability	Limitations	Comments
Compaction (crushing) and super compaction	Compresses wastes using hydraulic mechanical technology to achieve volume reduction	Scrap metal, concrete, glass, rubble, plastic material, rubber, paper, and cloth	• Limited to compressible wastes • Super compactors operating at 29,000 to 150,000 kPa (4,000 to 22,000 pounds psi) required to compact most items	• Greatly reduces volume of items with high void space such as tanks, etc. • Volume reduction factors of 4 to 5 can be achieved for scrap metal, resulting in densities as high as 150 lb/ft^3
Sealing of piping and/or floor drains using check valves, expandable plugs, and pipe end caps	After disconnection of pipe by mechanical means, pipe end would be sealed	May be applied to any disconnection (e.g., floor drain, pipe conduit [air gaps])	• Labor-intensive and slow • If pipe ends are pinched, would require additional processing to establish a seal	Verify utilities have been tagged per lockout/tagout procedure before being disconnected
Shredding	Shreds waste to provide waste volume reduction	Waste materials with large void spaces and thin metals	• Waste size restrictions for most shredders (> 3.175-cm [> 1.25-in.] rebar, 3.75-cm [1.25-in.] steel cable, and 10 cm [4.0 in.] Schedule 40 pipe) • Primarily for metal wastes	Not recommended because of limitations on size of material that can be shredded

Table 5. Description and Evaluation of PORTS Decontamination, Stabilization, and Removal Technologies

Technology	Description	Applicability	Limitations	Comments
Encapsulation	Fixes wastes by encasement in low-solubility solid matrix	Used for wastes that are unstable	Increases volume and mass of waste	Reduces potential for leaching to groundwater
Application of fixative stabilizer coatings	Application of paints, films, and resins used as coatings to fix and stabilize contaminants in place	Stabilizes radioactive contamination	• No removal of contaminant is achieved • Experiments to ensure effectiveness of stabilizer generally are needed because of site-specific requirements	Also useful for containment of contaminants on transite siding or other building materials
Scabbling	Uses physical means (steel shot, steel rods, carbide cutters, etc.) to loosen and remove surface contamination	Effective on flat, shatterproof surfaces (concrete)	• Effective for near-surface contamination • Creates additional waste	• Highly effective for removal of surface layer of concrete • Technology is readily available • Dust can be suppressed
Sponge blasting	Uses a sponge grit suspended in an air spray to loosen and remove surface contamination	Effective on flat, shatterproof surfaces (concrete, aluminum, steel, and painted or coated surfaces) and on hard to reach areas such as ceilings	• Effective for near-surface contamination • Creates additional waste	Sponge grit can be recycled
Abrasive blasting	Uses an abrasive medium (sand, glass beads, grit, or carbon dioxide pellets) suspended in an air spray to loosen and remove surface contamination	Effective on flat, shatterproof surfaces (concrete, aluminum, steel, and painted or coated surfaces) and on hard to reach areas such as ceilings	• Effective for surface contaminants up to 0.64-cm (0.25-in.) deep, depending on abrasive technique • Creates additional waste • Slow, labor-intensive technique that causes high potential for worker exposure	• Can produce substantial amount of contaminated dust • Appropriate for items that can be effectively decontaminated for reuse or “clean” disposal • Carbon dioxide minimizes additional waste streams
Destruction and removal	• Jackhammers that are hand-held or mounted to a backhoe may be used to break up concrete • Standard construction equipment may be used for removal	Applicable for reducing the size of large pieces of concrete	• No removal of contaminant is achieved • Slow, labor-intensive technique that increases potential for worker exposure • Metal cutting methods may be required if rebar is present	• Technology and equipment are readily available • Highly effective for removal • Can produce substantial amount of contaminated dust, but dust can be suppressed

4.1.1.4 Waste volumes

The anticipated waste volumes associated with removal of the plant support buildings and structures addressed in this EE/CA are summarized in Table 6. Approximately 95 percent of the wastes generated are expected to be sanitary/industrial solid waste. The original waste volume estimates were calculated for each building or structure. All waste volumes associated with these buildings are included in this EE/CA, even though the subsurface structure portion of the volume will be considered in future EE/CAs or the process building RI/FS decision. Some nominal portion of the volume is associated with subsurface structures, but the amount is within the +50/-30 percent accuracy required under CERCLA. Any potential volume change as a result of implementing recycling opportunities also would fall within the +50/-30 percent accuracy required. Historical recyclable volumes generated during demolition of the X-533 and X-633 buildings were nominally 10-20 percent.

Table 6. PORTS Anticipated Removal Action Wastes

Waste Type	Estimated Volume (cf)	Estimated Weight (tons)
Sanitary/industrial	3,168,046	136,597
LLW	101,671	7,813
MLLW	11,402	856
RCRA	634	39
TSCA	69,891	3,470

Source: Appendix A to this EE/CA.

EE/CA = engineering evaluation/cost analysis
LLW = low-level (radioactive) waste
MLLW = mixed low-level (radioactive) waste
RCRA = Resource Conservation and Recovery Act of 1976
TSCA = Toxic Substances Control Act of 1976

4.1.1.5 Waste disposition

Sufficient off-site waste disposal capacity is available for all waste streams anticipated to be generated if a removal action requiring D&D is selected. Although a variety of waste streams would be generated if a D&D removal action alternative is selected, the primary waste streams are expected to be sanitary/ industrial solid waste. RCRA hazardous wastes (or any waste mixed with hazardous waste) would be containerized for disposal in accordance with regulatory requirements. Storage areas meeting the substantive requirements for RCRA 90-day storage would be established to temporarily store hazardous wastes, if needed, pending transportation and disposal. Existing data are sufficient to allow determination of anticipated waste streams, identification of contaminants of concern, evaluation of potential risks, and development of approaches that would ensure worker safety. It is recognized that current data may not be sufficient to meet off-site disposal facilities' waste acceptance criteria (WAC). In such cases, any necessary additional sampling and analysis would be performed during performance of any selected removal action. It is anticipated that the waste material would require disposal as sanitary/industrial waste, RCRA hazardous waste, low-level (radioactive) waste (LLW), and/or mixed LLW.

Hazardous waste determinations to date are based on available process knowledge. Additional samples that contain representative portions of all wastes would be collected prior to removal and disposition. If the sample does not exhibit a hazardous characteristic and listed wastes were not managed in the building, the debris would be categorized as nonhazardous. Accordingly, sorting and segregation would be instituted as a best management practice to minimize the generation of hazardous waste. If the sampling results indicate the debris may be hazardous, follow up sampling may be conducted as necessary to further refine/define actual volumes requiring management as hazardous waste.

During performance of this non-time-critical removal action, wastes such as nonradioactive RCRA solid waste and/or liquid waste (e.g., decontamination wastes, liquids, etc.) and secondary waste streams also

could be generated and would require disposal as part of the removal action. It is anticipated that no on-site treatment of this waste would be necessary. However, if on-site treatment becomes necessary, DOE would consult with the Ohio EPA. Although not anticipated, hazardous waste would be treated, if necessary, to meet RCRA land disposal restrictions (LDRs) prior to disposal.

If wet decontamination techniques are employed, an ARARs-compliant decontamination area would be established. The collected decontamination water would be sampled and disposed of via an on-site treatment facility or a National Pollutant Discharge Elimination System (NPDES) outfall. If generated wastewaters do not meet the requirements for on-site treatment facilities or an NPDES outfall, those wastes would be sent off site for disposition.

If necessary to support the removal action, water that has accumulated in any basins, valve vaults, or wet wells would be sampled prior to removal and discharged through an on-site treatment system or NPDES outfall. This would be done in consultation with the Ohio EPA. If generated wastewaters do not meet the requirements for on-site treatment facilities or an NPDES outfall, those wastes would be sent off site for disposition.

Results of the characterization efforts, including additional disposal data obtained as necessary, would be used to separate debris (using reasonable efforts) into waste streams that conform to the proposed disposal facility WAC. A discussion of the primary waste disposal facilities being considered for waste from the D&D activities and a summary of their respective WAC are presented in the following sections. In addition, if wastes were generated that could not meet the WAC for the disposal facilities discussed in this EE/CA, other commercial disposal facilities would be used for these wastes.

Selection of the off-site facilities used for disposal would depend on the nature of the wastes generated. Sampling data would be collected from the plant support buildings and structures to determine the appropriate off-site disposal option. It is expected that the majority of generated waste would be disposed at an off-site facility that accepts sanitary/industrial solid waste. Off-site disposal facilities and facility-specific WAC, if applicable, would be evaluated to determine the appropriate off-site disposal path for the anticipated and potential waste streams listed in Table 7.

The option of developing an onsite disposal cell for waste generated under the DFF&O is under consideration through a separate set of decision documents. An engineered disposal facility capable of receiving nearly 5M cy of debris and soil is being evaluated and compared to offsite disposal locations. As part of this evaluation, potential WAC and siting locations are being evaluated. If selected, this disposal cell would have sufficient capacity to accept the volume of waste anticipated to be generated under this removal action decision. However, some of the waste generated under this EE/CA would most likely not meet the WAC and would have to be disposed off-site. A decision on this onsite cell will not be in place before the first waste is generated under this removal action decision.

Table 7. PORTS Anticipated and Potential Waste Streams

Waste Stream	Description
LLW	LLW is defined as radioactively contaminated, nonconsolidated solid material and is managed separately from non-LLW because of differing characterization requirements. Waste streams within this category can include scrap metal, concrete, asbestos, decontamination materials, including decontamination wastewaters generated on site, and secondary waste streams such as PPE generated during performance of a non-time-critical removal action.
Asbestos	This waste category consists of asbestos that can be demonstrated to meet the appropriate radiological release criteria and secondary waste streams, such as PPE generated during the performance of a non-time-critical removal action.
Mixed wastes (RCRA)	This waste category includes waste streams that have both a RCRA hazardous component and a radioactive component based on their origin within a radioactive materials management area or surface or volumetric contamination exceeding release limits.
Hazardous wastes	This waste category encompasses RCRA hazardous waste streams (that are not mixed wastes and do not exceed radiological release criteria) generated during the performance of a non-time-critical removal action.
TSCA	This waste includes PCB-contaminated waste streams that are not radiologically contaminated.
Nonradioactive, nonhazardous solid waste	This waste category includes wastes that are nonradioactive and nonhazardous, including miscellaneous trash (paper, cloth, wood, plastic, asbestos, etc.) generated outside the radiological work area boundary during performance of the non-time-critical removal action.

LLW = low-level (radioactive) waste
PCB = polychlorinated biphenyl
PPE = personal protective equipment
RCRA = Resource Conservation and Recovery Act of 1976
TSCA = Toxic Substances Control Act of 1976

4.1.1.6 Summary of disposal options

Waste streams that DOE anticipates would be generated during a D&D removal action are identified in Table 7. The primary waste stream is anticipated to be nonradioactive, nonhazardous solid waste from structure and foundation debris. Any hazardous waste would be treated, if necessary, to meet RCRA LDRs prior to disposal at a permitted commercial facility. If hazardous wastes with a radioactive component were encountered, they would also be treated, if necessary, to meet RCRA LDRs before being disposed at Energy*Solutions* in Utah. Radioactive wastes would also be disposed at a permitted federal facility and/or at Energy*Solutions* in Clive, Utah. Nonradioactive asbestos would be disposed at a permitted, commercial Subtitle D facility. No radioactive asbestos-containing wastes are anticipated; however, if found, such wastes would be disposed at a permitted federal facility or Energy*Solutions*. It is anticipated that all types of solid wastes that meets the WAC could be disposed at an onsite disposal cell if selected in the Site-Wide Waste Disposition Evaluation ROD. Any liquid decontamination waste or water removed from a subsurface structure would be sent to an on-site treatment system and/or discharged through an NPDES outfall. If water that has accumulated in basins, valve vaults, and wet wells is removed to support the removal action, it would be sampled, treated as necessary, and discharged through an NPDES outfall. If wastewaters that do not meet the requirements for on-site treatment facilities or an NPDES outfall are generated, those wastes would be sent off site for disposition. A summary of the waste disposal options for the various anticipated waste streams is presented in Table 8.

Table 8. Summary of Disposal Options for PORTS D&D Waste

Facility	Nonradioactive, Nonhazardous Solid Waste and Nonradioactive Asbestos	LLW (including Radioactive Asbestos)	Mixed Waste	Hazardous (RCRA) Waste	TSCA Waste	Radioactive Asbestos	Collected Water	Liquid Decon Waste	Clean Hard Fill
Energy*Solutions*		●	●			●			
Permitted federal facility		●	●			●			
Other permitted facilities (off site)	●			●	●		●	●	
PORTS on-site treatment facility(s) or existing NPDES outfalls							●	●	
On-site disposal cell (depending upon final Sitewide Waste Disposition Evaluation project ROD and WAC)	●	●	●	●	●	●			●
On-site fill									●

D&D = decontamination and decommissioning
LLW = low-level (radioactive) waste
NPDES = National Pollutant Discharge Elimination System
PORTS = Portsmouth Gaseous Diffusion Plant
RCRA = Resource Conservation and Recovery Act of 1976
ROD = record of decision
TSCA = Toxic Substances Control Act of 1976
WAC = waste acceptance criteria

4.1.2 Development of Removal Action Alternatives

DOE has identified no action and two alternatives for the Plant Support Buildings and Structures EE/CA. A renovation and reuse alternative was not carried forward for development in this EE/CA. The primary reasons a renovation/reuse alternative is not further considered includes the nature of the buildings and structures, their current state of deterioration, and the lack of any identified future need or use beyond current mission use. Many of the buildings were built for a specialized use, (e.g., monitoring stations, storage tanks, pump stations, feed vaporization and sampling building) and are not conducive to being remodeled for alternate uses. Some, such as the UF_6 Sampling Facility, were already remodeled for alternate uses and, as such, are more difficult to remodel in the future. Most of the buildings were built in the 1950s with later construction occurring in the 1970s. This means most of the structures are between 40 and 60 years old, with few, if any, upgrades over the years. Most buildings or structures have managed nuclear materials and are suspected of containing radiological contamination.

DOE has identified three alternatives to address the RAOs that were specified in Section 3:

- Alternative 1 - No Action
- Alternative 2 - Remove Structures, Off-site Disposition of Equipment and Materials
- Alternative 2a - Remove Structures, On- and Off-site Disposition of Equipment and Materials.

These removal alternatives are summarized in Sections 4.1.2.1 through 4.1.2.3.

4.1.2.1 Alternative 1 - no action

The No Action alternative is included to serve as a baseline for comparison to the other alternative. In the No Action alternative, no surveillance and maintenance (S&M) activities would occur, and the buildings and structures would continue to deteriorate. Final disposition of contaminants generated by the structures' gradual degradation and ultimate failure would occur with debris left where it falls.

4.1.2.2 Alternative 2 – Remove structures, off-site disposition of equipment and materials

The following text describes this removal action alternative. When DOE confirms there is no future use of a building or structure, when the building is no longer leased, and when funding and resources become available to implement any selected alternative, the removal action would be implemented. In identifying potential removal alternatives for the plant support buildings and structures, DOE considered potential reuse of the buildings. DOE has evaluated potential reuse of the proposed buildings consistent with existing policies on disposition of buildings, DOE Order 458.1 and applicable segments of DOE Order 5400. Due to the presence of contamination, the aging condition of the buildings and anticipated cost of maintenance, no future use has been identified at this time for these buildings. Therefore, DOE is not developing a separate reuse alternative for the EE/CA. The developed alternative provides for the ability to either delay implementation of the remedy or remove the building from the remedy if a future use for an individual building is identified. As discussed in Section 4.1.2 of this EE/CA, DOE has determined that reuse will not be carried forward for the removal action alternatives analysis.

Buildings that are shown to be free of contamination according to DOE Order 458.1 and applicable segments of DOE Order 5400.5, either under current conditions or after decontamination for the purpose of reusing the building, can be removed from this alternative and the corresponding decision through a decision modification pursuant to agreement between DOE and Ohio EPA and in accordance with CERCLA and the DFF&O. Ohio EPA-approved SAPs will be developed to guide the confirmation sampling used to demonstrate the lack of contamination of the building. The results of the sampling will be presented with the documented change to the remedy.

Demolition activities would be performed in compliance with the ARARs presented in Appendix B. The D&D activities include removal of scrap metal, equipment, infrastructure, and any waste materials and debris. The Clean Air Act of 1970, as amended, for control of asbestos and/or radionuclide emissions would be met. Engineering controls (e.g., spraying or misting water) would be used to minimize the release of fugitive dust or other contaminants during D&D activities.

Building removal activities may result in the generation of hazardous waste, asbestos, and other types of waste. All wastes, including but not limited to debris, contaminated personal protective equipment, and decontamination wastes, generated will be appropriately characterized and managed in accordance with appropriate state of Ohio laws and regulations for hazardous and solid waste, the federal Toxic Substances Control Act of 1976 (TSCA), and other requirements as specified in Appendix B. Mixed and hazardous waste stored in the RCRA-permitted storage areas will comply with the terms and conditions of the permit. Subsequent SAP(s) will be submitted to present the planned collection of data necessary to support the design or implementation of this alternative, especially with respect to characterizing potential waste streams.

Decontamination waters will be discharged to existing treatment plants and will comply with the requirements of the applicable NPDES permits for any permitted outfall through which this wastewater is discharged.

Any waste transferred offsite along public right-of-ways will meet packaging, labeling, marking, manifesting, and placarding requirements, depending on the waste. In addition, EPA in 40 *CFR* 300.440

requires that offsite disposal of any hazardous substance, pollutant, or contaminant generated during CERCLA response actions be sent to a treatment, storage, or disposal facility that complies with applicable federal and state laws and has been approved by EPA for acceptance of CERCLA waste.

The following activities would be the key components of Alternative 2 and would be further defined in the appropriate RAWPs or other appropriate project documentation:

- **Mobilization/Site Preparation/Upkeep of Facility Configuration and Controls**
  To the extent such activities meet the definition of D&D in the DFF&O, the following types of activities would be conducted:

  - Office activities, support trailers and utilities may need to be reconfigured or installed to support the D&D activities.

  - Parking areas, fences, lighting, and stormwater controls may also need reconfiguration or installation.

  - Equipment would be brought onto the site, vegetation may be removed, and until the D&D occurs, the building or structure would be maintained in a safe configuration.

  - This effort includes maintenance and housekeeping of the facilities and support systems in advance of D&D activities.

- **Support Activities for D&D**
  To the extent such activities meet the definition of D&D in the DFF&O, the following types of activities would be conducted:

  - There may be a need to upgrade or install transportation support facilities such as: haul roads, rail spurs, or decontamination facilities.

  - Depending on the recent mission of the building, there may be a need to relocate materials, offices, storage areas, treatment facilities, computer or communication systems, and construction of replacement services such as treatment facilities, or shop.

  - Environmental or radiological monitoring systems may need to be upgraded in support of D&D.

- **Utility Redistribution**
  To the extent such activities meet the definition of D&D in the DFF&O, the following types of activities would be conducted:

  - It may be necessary to relocate or redistribute site utilities before a building or structure is demolished.

  - New firewater, process water, storm water, sewers, air, or steam systems may need to be installed to support D&D.

  - Power distribution systems may need to be moved or reconfigured.

  - Switchyards may need to be replaced and temporary boilers installed to support the isolation and demolition of switchyards and the steam plant.

- **Removal of salvageable/reusable equipment**
  Equipment identified as salvageable/reusable is expected to include, but not be limited to, transformers, empty tanks, switchgear, wet well pumps, motors, and overhead trolley cranes. Equipment removal would be initiated prior to demolition and would continue as demolition of the structures progressed. Cranes and/or heavy equipment would be used to remove the equipment. Equipment identified as salvageable/reusable would be loaded onto the recycler or end-user vehicle for transport.

- **Removal of nonsalvageable/nonreusable equipment**
  Larger pieces of equipment and excess materials may be removed from the buildings and structures prior to demolition. Remaining waste would be removed from the buildings and structures prior to demolition. Any elements of the structures that require discrete packaging or disposal apart from the structure itself, such as remaining RCRA hazardous waste or asbestos, would also be removed. Liquids would be drained and collected. To the extent practical, equipment and materials would be removed from any subsurface structure, leaving only a structural shell below ground.

- **Decontamination**
  Pieces of equipment or portions of the structure could be cleaned of contamination to meet any disposal requirements, transportation requirements, or future use as part of this alternative. Decontamination to free-release criteria could be completed prior to recycling or reusing a component of the equipment or structure or prior to reusing the building itself. Decontamination could be accomplished by washing, blasting, or scabbling contaminated surfaces. Residue would be collected and disposed of appropriately as a secondary waste stream.

- **Asbestos removal**
  Some buildings contain asbestos that may remain in the buildings at the time of demolition. Engineering controls, including wetting methods, negative pressure air units, or containment structures, would be used to control air emissions during demolition according to ARARs. Air monitoring would be conducted to assure adequacy of engineering controls and PPE.

- **Demolition of surface structures**
  The above-grade portion of the plant support buildings and structures would be removed using excavators with concrete-breaker, bucket, shear, and grapple attachments. Consistent with Attachment G of the DFF&O, these structures would be removed to the slab. Likewise, where slabs are not covering subsurface features, the slabs would also be demolished.

- **Concrete characterization**
  Characterization of concrete would be conducted as part of this non-time-critical removal action. If cost effective, decontamination would occur if characterization data indicated the concrete walls would not qualify as clean hard fill (as defined in Ohio Administrative Code [OAC] 3745-400-01(E)). If it is not cost effective to decontaminate the concrete or the decontaminated concrete does not meet the requirements as clean hard fill, it would be disposed in accordance with ARARs. If characterization data indicates the concrete meets the requirements as clean hard fill per the ARARs, the concrete would be removed and could be rubblized for use as clean hard fill elsewhere on the PORTS site or otherwise disposed in accordance with ARARs.

- **Recycling/reuse**
  DOE may identify demolished materials or equipment meeting reuse criteria and requirements (e.g., ARARs, DOE order requirements, etc.) that may be recycled or reused. The materials or

equipment to be recycled or reused, and the conditions for recycle and reuse will be described in the RAWP. Such material would be prepared to meet the transportation requirements and conditions set forth by the recycler. Material or equipment otherwise eligible for recycling/reuse that is not recycled/reused will be dispositioned along with other material generated during the removal action.

- **Site restoration and demobilization**
  Upon completion of demolition, the equipment and materials used in the non-time-critical removal action would be demobilized from the site, and the site would be put in a safe configuration. Pathways for contaminant migration would be controlled (e.g., sealing of slabs, capping of pipelines, or removing remaining contamination open to the environment). Temporary access roads and laydown areas would be removed in accordance with the applicable RAWP. Disturbed areas would be regraded and seeded when activities in the area are complete.

- **Waste disposition**
  Waste generated by the removal action would be segregated, size-reduced if necessary, containerized, and shipped to an appropriately licensed off-site disposal facility. No decontamination or treatment would be required unless decontamination or treatment is necessary to meet LDRs or receiving facility WAC.

  Waters generated by the project (e.g., decontamination waters) would be sent to an existing on-site treatment facility or an existing NPDES outfall. Waters could be pretreated. If wastewaters do not meet the requirements for on-site treatment facilities or an NPDES outfall, those waters would be sent off site for disposal in accordance with ARARs.

4.1.2.3 Alternative 2a – Remove structures, on- and off-site disposition of equipment and materials

This alternative contains the same elements as Alternative 2. In addition, this alternative allows for on-site disposal in the event that an on-site disposal cell becomes operational and available for any project waste stream pursuant to the Ohio EPA-approved WAC issued under the Sitewide Waste Disposition Evaluation project ROD, prior to the Milestone (as identified pursuant to Paragraph 12.a.v. of the DFF&O) in the Ohio EPA concurred with RAWPs. This alternative includes both onsite and offsite disposal of solid waste. In the event that an onsite waste disposition component is implemented in accordance with the DFF&O, Paragraph 12.a.v of the DFF&O does not apply to any RAWPs issued thereafter, however, Paragraph 19 of the DFF&O does apply to any RAWPs issued thereafter.

5. ANALYSIS OF REMOVAL ACTION ALTERNATIVES

The alternatives developed in Section 4.1.2 have been evaluated against the short- and long-term aspects of three broad criteria: effectiveness, implementability, and cost. These main criteria are summarized in Table 9. The evaluations were used to draw sufficient distinctions between the alternatives to allow the identification of a recommended alternative.

Table 9. Criteria Used to Evaluate the PORTS Removal Action Alternatives

Effectiveness
• Protectiveness o Protective of public health and community (short and long term) o Protective of workers during implementation (short term) o Protective of the environment (short and long term) o Complies with ARARs
• Ability to achieve RAOs o Level of treatment/containment expected o No residual effect concerns o Will maintain control until long-term solution is implemented
Implementability
• Technical feasibility o Construction and operational considerations o Demonstrated performance/useful life o Adaptable to environmental conditions o Contributes to remedial performance
• Availability o Equipment o Personnel and services o Outside laboratory testing capacity o Off-site treatment and disposal capacity o Post-removal site control
• Administrative Feasibility o Permits required o Easements or rights-of-way required o Impact on adjoining property o Ability to impose institutional controls o Likelihood of obtaining exemption from statutory limits (if needed)
Cost
• Capital cost • Post-removal site control cost

ARAR = applicable or relevant and appropriate requirement
RAO = removal action objective

In accordance with DOE's *Secretarial Policy Statement on the National Environmental Policy Act of 1976 (NEPA)* (DOE 1994), NEPA values have been incorporated into the alternatives analysis.

5.1 ALTERNATIVE 1 – NO ACTION

The No Action alternative is included to serve as a baseline for comparison to the other alternatives. In the No Action alternative, no S&M activities would continue, including no major repairs or upgrades.

The plant support buildings and structures would continue to deteriorate and D&D would not be performed.

5.1.1 Effectiveness

Alternative 1 does not meet the RAOs.

Protectiveness and ability to achieve RAOs. Because this alternative consists of no action, the short-term risks to the public, workers, and environment would increase with the reduction in institutional controls. There could be immediate access to the buildings.

In the long term, further reduction in protection of human health and the environment would result from deterioration of the structures, with further potential risks to on-site worker health and safety resulting from eventual failure of the structures. The inevitable deterioration of the structures eventually could result in the release of contamination to the environment. Upon structural failure, release of contaminants to the atmosphere and surface water pathways could potentially occur (e.g., asbestos and lead-based paint could become airborne because of structural failure). This could also present a hazard to on-site workers from physical dangers associated with roof and building structure failure.

With regard to NEPA values, contaminant releases from the buildings could contaminate underlying media, limiting future uses of the site. Residual piles of debris would also hamper reindustrialization efforts at the site, diminish the potential for future jobs, and have a socioeconomic impact. Gradual deterioration of the structures would present limited impacts to air, soil, and other affected aspects of the environment, unless a catastrophic release of the contaminants occurred. Wetlands and floodplains would be impacted if asbestos, lead-based paint, or other potential contaminants migrated after being released through aging and degradation of the structures. No federal or state-listed threatened or endangered plant or animal species have been identified at the locations addressed in this EE/CA. Habitat for the federally endangered Indiana bat (*Myotis sodalis*) potentially exists in the vicinity, but these buildings and structures do not provide suitable habitat. Indiana bats require exfoliating trees, which are not present at these buildings.

Executive Order 12898, "*Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations,*" requires agencies to identify and address disproportionately high and adverse human health or environmental effects that the agencies' activities would have on minority and low-income populations. No census tracts near PORTS include a higher proportion of minorities than the national average. Some nearby tracts meet the definition of low-income populations, but there would be no disproportionately high and adverse environmental impacts to any minority or low-income populations because there is limited opportunity for off-site migration of contamination.

5.1.2 Implementability

Technical and administrative feasibility. The No Action alternative is technically readily implementable.

Availability of services and materials. No services or materials are required.

5.1.3 Cost

There are no costs associated with Alternative 1.

5.2 ALTERNATIVE 2 – REMOVE STRUCTURES, OFF-SITE DISPOSITION OF EQUIPMENT AND MATERIALS

Under this alternative, surface structures associated with the plant support buildings and structures, including slabs-on-grade, would be removed, as well as all material and equipment in surface and subsurface structures. Only subsurface walls and floors (and any slab covering a subsurface structure) would remain for a future decision. The removal action is described in detail in Section. 4.1.2.2.

5.2.1 Effectiveness

Alternative 2 would meet the RAOs.

Protectiveness and ability to achieve RAOs. Based on the streamlined risk assessment, D&D of the plant support buildings and structures would prevent, minimize, or eliminate potential and actual risks to workers and ecological receptors posed by the uncontrolled release or threat of release of the contaminants of potential concern. The D&D of these structures, equipment, and materials would prevent or minimize any migration of hazardous constituents to the environment.

The ARARs for this alternative are presented in Appendix B. All entirely on-site response actions under this non-time-critical removal action are anticipated to comply with the ARARs. The transportation of waste to any off-site disposal facility (and any treatment that may be required to satisfy LDRs or WAC) would be performed in accordance with the ARARs. Shipments would be accomplished via truck or rail. All off-site disposal activities would be conducted in accordance with disposal site permit requirements.

This alternative would permanently remove contaminants in the building structures from an uncontrolled environment. Waste would be disposed at an authorized, licensed, and/or permitted disposal facility (on site or off site) that would provide long-term containment for any hazardous and/or radioactive constituents. The disposal facility would prevent any residual effects on the environment, worker health and safety, and public health and safety.

With regard to NEPA values, future land use would not be inhibited if the structures were removed. There could be positive socioeconomic impacts if new industries were introduced to the area. No contaminants currently found in the structures would remain, so there would be no impact to the air, soil, and/or surrounding environments. Wetlands and floodplains would not be affected by the removal action because engineering controls would be implemented during the removal activities. No federal or state-listed threatened or endangered plant or animal species have been identified at the plant support buildings and structures addressed in this EE/CA. This alternative would not have any direct or indirect impacts on local socioeconomic resources as the scope of work is sufficiently small to be handled with existing work forces.

The Phase I archaeological survey (Schweikart et al. 1997) determined there are no archaeological resources within Perimeter Road; therefore, implementation of this alternative would not affect any archaeological resources. DOE will perform certain mitigation measures to address the adverse effects to properties that are considered eligible for inclusion in the National Register of Historic Places (see Appendix B for further discussion).

Executive Order 12898, *"Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations,"* requires agencies to identify and address disproportionately high and adverse human health or environmental impacts that agencies' activities would have on minority and low-income populations. No census tracts near PORTS include a higher proportion of minorities than the national average. Some nearby tracts meet the definition of low-income populations, but there would be no disproportionately high and adverse environmental impacts to any minority or low-income populations

because there is limited opportunity for off-site migration of contamination. Dust suppression and stormwater control would prevent releases from implementation of this alternative. Additionally, this action would benefit populations in the vicinity of the site because the presence and mobility of hazardous constituents would be reduced after the action is completed.

If Alternative 2 is implemented, building deterioration that could otherwise result in a significant increase in contaminant release would not occur. Risks to on-site workers and the public could increase slightly during implementation, however, these risks would be managed by adhering to health and safety requirements and PORTS procedures. Chemical, radiological, and physical risks to workers would be controlled by engineering controls and/or PPE.

Alternative 2 would include the shipment of wastes to off-site disposal facilities. These shipments would increase cargo and vehicle-related transportation risks to workers (e.g., crew) and members of the public. If characterization of the concrete and surrounding soils indicates the concrete can be left in place (see Section 4.1.1.2) or if equipment or materials are reused or recycled, the number of shipments would be reduced, lessening the associated transportation risks.

Existing Permit Requirements. There are several existing permits at Portsmouth, including but not limited to, an NPDES permit for the discharge of wastewater and a RCRA Part B permit for the storage of hazardous waste. Project activities subject to any of the existing permit(s) must continue to comply with such permits.

New Permit Requirements. The following permit application or administrative notification activities would normally be triggered if this removal action were not being conducted entirely as an on-site action. The substantive requirements of these notification and permit activities are listed as ARARs in Appendix B.

- A notice of intent for coverage under Ohio's NPDES general permit ("Authorization for Storm Water Discharges Associated with Construction Activity under NPDES," NPDES OHC00003) for stormwater discharges associated with construction/demolition activities would normally need to be filed if the activities were not being performed as part of an entirely on-site response action under Paragraph 9.a of the DFF&O. The stormwater runoff controls in the general permit are substantive requirements for this response action, as listed in Table B.2 of Appendix B, and would be met through the implementation of best management practices to control pollutants in runoff as detailed in the RAWP. Such practices will include soil stabilization (e.g., seeding), perimeter structural practices (e.g., gabions, silt fences, sediment traps), and stormwater management devices.

- Planned asbestos removal activities would require formal notification to the state pursuant to 40 *CFR* 61.145(c) and OAC 3745-20-04, if the activities were not being performed as an entirely on-site action under Paragraph 9.a of the DFF&O. Off-site activities would be subject to these formal notification requirements. Substantive requirements that are identified as ARARs and will be met for this action include those for asbestos removal, handling, and disposal activities as detailed in 40 *CFR* 61.145(a)(1) [OAC 3745-20-04(A)(1)]; 40 *CFR* 61.145(c)(1)(i) through (iv) [OAC 3745-20-04(A)(1) (a) through (d)]; 40 *CFR* 61.150(b)(1) - (2) [OAC 3745-20-05(A)]; 40 *CFR* 61.150(a)(3) [OAC 3745-20-05(B)(2)]; 40 *CFR* 61.150(b)(3) [OAC 3745-20(B)(5)]; 40 *CFR* 61.150(b)(1) and (2) [OAC 3745-20-05(A)]; and 40 *CFR* 61.150(a)(4) [OAC 3745-20-05(B)(4)].

- If DOE were to establish new RCRA or TSCA storage or treatment area(s) as part of this removal activity, they would have to meet applicable RCRA permit modification or TSCA approval requirements, respectively, if the activities were not being performed as an entirely on-site action under Paragraph 9.a of the DFF&O. The ARARs for operating new storage and treatment units for RCRA hazardous wastes and TSCA PCB wastes, as detailed in Appendix B, constitute the substantive requirements under such permit modification or approval requirements. Storage and treatment units would be designed and operated to meet the ARARs listed in Appendix B.

Subsequent project documents to be prepared and submitted for Ohio EPA review pursuant to the terms of the DFF&O (e.g., RAWPs) for this removal action will describe in more detail the activities planned to meet the ARARs and TBC guidance.

5.2.2 Implementability

Technical and administrative feasibility. This alternative is technically and administratively feasible. Conventional construction/removal techniques would be used to remove the equipment, materials, and structures. Off-site disposal of waste materials would occur at existing facilities that have sufficient existing capacities. After D&D is complete, the sites would be regraded to final design grade.

Availability of services and materials. Sufficient equipment and personnel are available for this alternative. On-site waste storage is available, if necessary, for unexpected or unknown wastes generated during the D&D process and waste being prepared for and waiting for off-site disposal. Off-site disposal services are available.

5.2.3 Cost

The total estimated cost for removal of all aspects of the structures associated with the plant support buildings and structures addressed in this EE/CA is approximately $66,000,000. This cost represents removal and off-site disposal of the structures and all equipment and materials, including both subsurface and surface features, of the plant support buildings and structures. These costs were obtained from the costs associated with Critical Decision-1. In general, costs were identified for each building and were developed for components of the D&D, including characterization, equipment removal, and building demolition. Off-site disposal costs are included with each component that generates waste. A rollup of costs from all activities within the scope of this EE/CA is shown in Table 10. The costs presented are direct costs and do not include costs associated with contractor oversight and project management. These are capital costs escalated to Fiscal Year 2011 dollars. There are no operations and maintenance (O&M) activities, so no O&M or present worth costs are presented.

Table 10. PORTS Alternative 2 Costs

Element	Cost
Characterization	$925,598
Excess material removal	$510,273
Utility isolation	$1,102,450
Decontamination	$5,286,062
Equipment removal	$12,973,893
ACM removal	$15,422,716
Above-ground demolition	$25,225,625
Slab demolition	$5,012,688

ACM = asbestos-containing material

5.3 ALTERNATIVE 2A, REMOVE STRUCTURES, ON- AND OFF-SITE DISPOSITION OF EQUIPMENT AND MATERIALS

5.3.1 Effectiveness

Protectiveness and ability to achieve RAOs. As with Alternative 2, Alternative 2a is protective and meets the ARARs identified. The difference between Alternatives 2 and 2a is that the use of an onsite disposal location combined with offsite disposal locations would shorten the miles traveled for waste disposal, lessening transportation risks. The degree of risk reduction would be dependent on whether and when an onsite disposal location might become available.

5.3.2 Implementability

Technical and administrative feasibility. An onsite disposal facility is not currently available or authorized so this alternative is not technically or administratively implementable at this time. Otherwise, the implementability of Alternative 2a is the same as for Alternative 2.

Availability of services and materials. Any designed onsite disposal cell would be anticipated to have sufficient capacity to accommodate the waste volumes expected to be generated by this demolition alternative.

5.3.3 Cost

Costs for Alternative 2a are anticipated to be reduced over the costs of Alternative 2. Any decrease in costs would depend on the timing and outcome of the site-wide waste disposition decision for PORTS. If that decision results in selecting an on-site disposal option, the earlier the decision is made, the more the costs would be expected to decrease (DOE 2002).

6. COMPARATIVE ANALYSIS OF REMOVAL ACTION ALTERNATIVES

This section compares the alternatives on the basis of effectiveness, implementability, and cost. The comparative analysis is presented in Table 11.

Table 11. Comparative Analysis of PORTS Removal Action Alternatives

Alternative	Effectiveness	Implementability	Estimated Cost
1. No action	• Will not achieve RAOs • Will not remove hazardous or radiological constituents • Least protective of human health and the environment • Highest potential for environmental release • Does not provide long-term or permanent solution • Does not result in progress toward site cleanup goals	• Readily implementable technically	$0
2. Remove Structures, Off-site Disposition of Equipment and Materials	• Will achieve RAOs • Protective of human health and the environment • Could be implemented in compliance with ARARs • Could be implemented in a manner protective of workers and public • Provides long-term solution • Results in progress toward site cleanup goals • Effective at isolating contaminants from the environment	• Readily implementable utilizing conventional, readily available construction techniques • Services and materials are readily available • Appropriate permitted disposal facilities with sufficient capacity are available to disposition wastes generated from facilities removal	$66,000,000
2a. Remove Structures, On and Off-site Disposition of Equipment and Materials	• Same as Alternative 2 • Short-term transportation risks could be reduced over Alternative 2 with onsite disposal	• Onsite disposal not currently available or approved. Not implementable at this time. • Same as Alternative 2, onsite disposal facility would have sufficient capacity.	Cost reduction over Alternative 2 depends on when onsite is available

ARAR = applicable or relevant and appropriate requirement
RAO = removal action objective

6.1 EFFECTIVENESS COMPARISON

The No Action alternative (Alternative 1) does not meet RAOs; remove hazardous substances, pollutants, and contaminants from the environment; provide a long-term or permanent solution; or contribute to progress toward overall site cleanup goals. The plant support buildings and structures addressed in this EE/CA would remain in place and, as time passed, would be subject to deterioration, thereby presenting the potential for release of hazardous substances, pollutants, and contaminants to the environment and presenting a substantial safety hazard with respect to workers on the reservation.

Alternative 2 and Alternative 2a, would be the more effective alternatives with respect to the mitigation or prevention of releases of hazardous substances, pollutants, and contaminants to the environment, and would provide a long-term solution by removing the facilities (e.g., structures, equipment) that pose potential risks to human health and the environment. These alternatives also meet RAOs, comply with ARARs, and contribute progress toward the overall site cleanup goals.

Because of increased short-term risks (e.g., potential for contaminant release created by implementation of the removal action), Alternative 2 results in greater short-term risks than Alternative 1. However, with appropriate planning and application of engineering (e.g., dust suppression) and administrative (e.g., procedures) controls, these risks can be controlled at an acceptable level. Engineering controls that minimize the release of contaminants would be implemented during the removal of equipment, asbestos material, and structures.

The short-term effectiveness of Alternative 2a is the same as Alternative 2 except onsite disposal would reduce the transportation risks associated with offsite transport of waste. The reduction in risk depends on if and when onsite disposal may become available.

6.2 IMPLEMENTABILITY COMPARISON

Alternative 1 would be easier to implement because no activities would be required, however, both alternatives are implementable using existing technologies and services. Alternative 2 could be implemented using readily available construction equipment and common industry practices. Additionally, appropriately permitted disposal facilities with sufficient capacity are available to disposition wastes anticipated to be generated from removal of the plant support buildings and structures.

Any on-site disposal facility would be designed with sufficient volume to accommodate the waste anticipated to be generated in Alternative 2a. However, Alternative 2a is not currently implementable because an onsite disposal cell is not available or authorized.

6.3 COST COMPARISON

Comparative analysis of the removal action alternatives is provided in Table 11. The cost for Alternative 1 is $0. The current estimated cost for removal and off-site disposal of the structures and associated equipment and materials (Alternative 2) is approximately $66,000,000. Alternative 2a costs would be lower than Alternative 2, depending on if or when an onsite disposal cell would become available (DOE 2002).

7. RECOMMENDED REMOVAL ACTION ALTERNATIVE

Alternative 2, Remove Structures, Off-site Disposition of Equipment and Materials, is the recommended alternative for D&D of the plant support buildings and structures addressed in this EE/CA. This alternative has been determined to be the most cost-effective approach that satisfies the objectives for the removal action and meets the ARARs to the extent practicable. This recommended removal action contributes to the efficient performance of the anticipated long-term remedial action for this site.

A contingent remedy is also recommended. Alternative 2a, Remove Structures, On- and Off-site Disposition of Equipment and Materials, allows for on-site disposal if an on-site disposal cell is selected in a finalized ROD (i.e., a ROD concurred with by Ohio EPA) and such on-site disposal cell becomes available and operational for the waste stream pursuant to an Ohio EPA approved WAC prior to the Milestone identified for all staged waste to be taken off-site for disposal in an Ohio EPA approved RAWP. At this time, DOE is evaluating an onsite disposal cell in the Site-Wide Waste Disposition Evaluation RI/FS. In the event the contingent waste disposition component is implemented, Paragraph 12.a.v does not apply to any RAWPs issued thereafter. In the event the contingent waste disposition component is implemented, Paragraph 19 does apply to any RAWPs issued thereafter.

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APPENDIX A: PLANT SUPPORT BUILDINGS AND STRUCTURES DESCRIPTIONS

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CONTENTS

ACRONYMS

ACM	asbestos-containing material
ACP	American Centrifuge Plant
AST	above-ground storage tank
CAAS	Criticality Accident Alarm System
CPRTF	Coal Pile Runoff Treatment Facility
CCZ	contamination control zone
DOE	U.S. Department of Energy
GCEP	Gas Centrifuge Enrichment Plant
HPFW	high-pressure fire water
OCB	oil-filled circuit breaker
NPDES	National Pollutant Discharge Elimination System
PA	public address
PCB	polychlorinated biphenyl
PORTS	Portsmouth Gaseous Diffusion Plant
RCRA	Resource Conservation and Recovery Act of 1976
SAA	satellite accumulation area
TCE	trichloroethene
TPMC	Theta Pro2Serve Management Company, LLC
TSCA	Toxic Substances Control Act of 1976
UST	underground storage tank

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A.1 GROUP R1

A.1.1 X-100 – ADMINISTRATION BUILDING

Description of Building: The X-100 Administration Building is a two-story, 135,000-sq ft office building built in 1954. This building has four wings extending from a cement and block core that has a basement and penthouse. The wings of this building are wood frame with asbestos-cement siding (square transite tiles), and the exterior walls are 25 percent windows. The center of the core serves as a security vault on all three floors. There is a freight elevator on the south side of the core facing a parking lot.

The building is used for administrative and related functions. The building provides offices for central files, document records, senior United States Enrichment Corporation management, Security, Engineering, Nuclear Material Control, U.S. Nuclear Regulatory Commission, Quality Assurance, Nuclear Regulatory Affairs, Atomic Employees Credit Union, Mail, Safety Analysis, subcontractors, and others. There is a significant amount of records in all three vaults and a large quantity of abandoned files throughout the remainder of the half unoccupied building (Theta Pro2Serve Management Company, LLC [TPMC] 2006). Located in one half of the basement are the Print Shop, Secured Communications Center, and Telephone Switchboard. The other half of the basement contains a hydraulic system for the freight elevator and a steam condensate tank. There is an ambient air monitoring station located in the penthouse. Half of the building is currently unoccupied (U.S. Department of Energy [DOE] 1993). There are no known underground storage tanks (USTs) or above-ground storage tanks (ASTs) associated with the building.

Known or Potential Radiological Hazards: None

Known or Potential Chemical Hazards:

- Janitor and office supplies are used and stored in the building.
- Asbestos-containing material (ACM) is reported to be in the thermal system insulation on the piping, transite siding tile, floor tile, and asbestos/polychlorinated biphenyl (PCB) ventilation duct gaskets (DOE 1993, TPMC 2006).
- Lead-based paints may be present on some of the walls and pipes (DOE 1993, TPMC 2006).
- Original fluorescent light fixtures may contain PCBs in the ballasts and mercury in the bulbs (DOE 1993, TPMC 2006).

Known Releases of Contaminants:

- A trichloroethene (TCE) spill may have occurred in front of the spray booth in the office machine repair shop. Discolored stains on the tile were observed in front of the spray booth. Also, a partially full 5-gal container of TCE was stored in the spray booth (DOE 1993).

- Two occurrences involving ammonia fumes from a leaking ammonia container were reported. Exhaust fans were activated to evacuate the fumes. No residual contamination was reported. (DOE 1993).

- Recent walkdowns have identified damaged transite siding and peeling interior and exterior paint.

Contaminants of Potential Concern: ACM, lead, PCBs, TCE, and mercury

Previous Removal Actions or Investigations: None

Estimated Waste Volume and Weight: 279,763 cu ft; 12,103 tons

A.1.2 X-100B – AIR CONDITIONER EQUIPMENT BUILDING

Description of Building: The X-100B Air Conditioner Equipment Building is an 800-sq ft, steel-framed structure built in 1958. The building provides air conditioning to the adjacent X-100 Administrative Building from spring through fall and is also used for the maintenance of air conditioning equipment. The building contains chiller equipment, a feed tank system, and an equipment maintenance area. Overhead pipes leading from the northeastern corner of the building to the X-100 Administrative Building contain chilled water, potable water, and steam. Utilities in the building include electricity and potable water. Electrical power is provided by electrical substation X-502 located to the west of the building. The building has one floor drain that discharges to the storm sewer system. There is one sink in the building that discharges to the sanitary sewer system. There are no known USTs or ASTs or below-grade structures associated with the building.

Known or Potential Radiological Hazards: None

Known or Potential Chemical Hazards:

- ACM is present in the thermal system insulation on the piping and, possibly, in the vessel walls. Some abatement work (encapsulation) has been conducted on the piping (DOE 1993).

- The age of the building suggests that lead-based paints may be present on the piping and building walls (DOE 1993).

- Ethylene glycol is used in the chiller system and Freon is used in the new air conditioning air-cooled condenser on the west side of the building (TPMC 2006).

- There is a flammable storage cabinet containing penetrating oil for the compressor and janitorial supplies (DOE 1993).

Known Releases of Contaminants: Paint, potentially containing lead, is peeling from exterior and interior surfaces.

Contaminants of Potential Concern: ACM and lead

Previous Removal Actions or Investigations: None

Estimated Waste Volume and Weight: 8,476 cu ft; 537 tons

A.1.3 X-101 – DISPENSARY

Description of Building: The X-101 Dispensary, which was built in 1954, is a 10,300-sq ft, single-story, wood-framed building with a 300-sf penthouse for the heating, ventilation and air conditioning system. The exterior walls of the building are covered with transite shingle siding. The floor is reinforced concrete with tile covering.

The building houses a hospital that includes five treatment rooms, four doctor's offices with examination rooms, a laboratory, an X-ray room, a ward, an emergency room, a decontamination area, a lobby waiting room, an office area, medical records storage room, physical therapy area, audio booth, secure storage closet for prescription drugs, and vision and pulmonary function test equipment. The X-ray room was originally built using a lead-backed rock lath applied to the wood studs of the walls and doors. There are no known USTs or below-grade structures associated with the building.

The building is currently used for physical examinations and occasionally for treatment of illness or minor injury. Industrial Hygiene department offices are in the building on the west end.

Known or Potential Radiological Hazards: None

Known or Potential Chemical Hazards:

- Hazardous substances stored in the building and waste streams constitute potential sources of contamination, including X-ray solutions and fixers, janitorial supplies, drugs, cylinders of compressed gases, medical waste, and radioactive wastewater from decontaminating employee patients (DOE 1993). The X-ray machine currently in use has its own attached lead shielding. This newer type machine also has an electronic X-ray developing system and does not require or create X-ray solutions and fixers. The biohazard medical waste is currently handled/disposed of through a contract with a certified company that collects and disposes of biohazard waste. Any potential radioactive wastewater generated from decontaminating employee patients is collected in a tank and disposed of on site in accordance with all applicable procedures.

- Lead-based paints may be present on the walls and pipes (DOE 1993, TPMC 2006).

- Fluorescent light fixtures may contain PCBs in ballasts and mercury in bulbs (DOE 1993, TPMC 2006).

- PCBs are reported to be in the uninsulated ventilation ductwork.

- ACM is reported to be in the thermal system insulation on the piping, and transite siding (DOE 1993, TPMC 2006). ACM is also assumed to be in the floor tile.

Known Releases of Contaminants: None

Contaminants of Potential Concern: ACM, lead, PCBs, and mercury.

Previous Removal Actions or Investigations: None

Estimated Waste Volume and Weight: 61,977 cu ft; 3,669 tons

A.1.4 X-109C – PERSONNEL MONITORING STATION

Description of Building: The X-109C Personnel Monitoring Station is a 70-sq ft steel mobile home trailer installed in 1975. Personnel monitoring stations are used as assembly points for personnel evacuating buildings served by the Criticality Accident Alarm System (CAAS), if alarm systems sound or if public address (PA) system announcements are initiated, and have been used routinely to conduct evacuation drills. The building is equipped with an argon gammagraph for personnel radiation exposure monitoring. There are no known USTs presently or historically associated with the building. There are no wastewater discharges from the building, no floor drains or catch basins, or no sources of drinking water. There are no known PCB-containing capacitors or transformers (DOE 1993, TPMC 2006). There are no below-grade structures associated with this building.

Known or Potential Radiological Hazards: None

Known or Potential Chemical Hazards:

- Floor tiles may contain ACM, and fluorescent light fixtures and bulbs may contain PCBs and mercury (DOE 1993, TPMC 2006).

- Painted interior and exterior surfaces may contain lead-based paint. Paint is peeling from the skirting all around the building (DOE 1993).

Known Releases of Contaminants: None

Contaminants of Potential Concern: ACM, PCBs, mercury, and lead.

Previous Removal Actions or Investigations: None

Estimated Waste Volume and Weight: 2,013 cu ft; 130 tons

A.2 GROUP R2

A.2.1 X-624-1 – DECONTAMINATION PAD

Description of Building: X-624-1 was constructed in 1991 and is a partially covered pad located next to X-624 with a roof and two sides. This pad is 3,500 sq ft and presently contains miscellaneous stored items, which appear to be large metallic pieces and some large containers. Previously, equipment was cleaned of mud and any contaminants mixed in the mud at this pad in the early 1990s. There are no below-grade structures associated with this building.

Known or Potential Radiological Hazards: None

Known or Potential Chemical Hazards: None

Known Releases of Contaminants: None

Contaminants of Potential Concern: None

Previous Removal Actions or Investigations: None

Estimated Waste Volume and Weight: 20,129 cu ft; 1,277 tons

A.2.2 X-744S –WAREHOUSE S NON-UEA

Description of Building: The X-744S warehouse was originally built in 1957 and near the present location of Bldg. X-7725. The X-744S warehouse was moved to its present location in 1978. The warehouse is a 50,000-sq ft, single-story, steel-framed structure covered with 26-gauge galvanized, corrugated steel siding panels and 24-gauge galvanized, corrugated steel roof panels with a concrete slab floor (DOE 1993). This warehouse, along with the X-744T and X-744U warehouses, was used to store lithium hydroxide (DOE 1993, TPMC 2006). The warehouse is currently empty (TPMC 2006) and the building has no utilities. There are no known wastewater discharges from this building. The stormwater discharge from the roof of building enters the West Storage Ditch (DOE 1993). There are no known USTs, ASTs, or below-grade structures associated with the building.

Known or Potential Radiological Hazards: None

Known or Potential Chemical Hazards: There is potential for chemical contamination from the materials previously stored in the building. The X-744S warehouse, in combination with other warehouses (X-744T and X-744U), reportedly contained tens of thousands of 110-gal metal drums of lithium hydroxide (DOE 1993).

Known Releases of Contaminants:

- A release of lithium hydroxide in this building has been reported. The lithium hydroxide was originally packaged in fiber drums that were found to be inadequate. In 1988, the 77- and 55-gal drums were double wrapped in plastic and overpacked into 110-gal steel drums (DOE 1993).

- Soil around the warehouse is contaminated with lithium (DOE 1993).

Contaminants of Potential Concern: Lithium hydroxide from stored materials.

Previous Removal Actions or Investigations: None

Estimated Waste Volume and Weight: 157,751 cu ft; 7,603 tons

A.3 GROUP R3

A.3.1 X-743 – LUMBER STORAGE FACILITY

Description of Building: The X-743 Lumber Storage Yard is a large concrete slab on a fill-based platform with open sides and a corrugated asbestos roof supported by steel columns. The south end of the platform is ramped to ground level. The concrete slab, not including the ramp, is approximately 13,750 sq ft, with dimensions of approximately 76 ft × 180 ft. The ramp adds an additional 2,660 sq ft. A railway spur runs parallel to the building on the west side.

The shed was built in the mid-1950s to provide storage for treated lumber and sawdust. At one time, materials were loaded directly off railroad cars onto the platform. Lumber was stored there until about 1989-90. Over time, its function expanded to include storage of acid and gas cylinders. The shed is now used to store empty gas cylinders on the north end, and for storage of pipe and equipment on the south end. There are no below-grade structures associated with this building.

Known or Potential Radiological Hazards: Contaminated cylinders are stored on the pad.

Known or Potential Chemical Hazards:

- A wide variety of materials and equipment has been, and is still, stored at the X-743 building. The pad may have contamination in the concrete from releases of these materials or from equipment.
- The roof material contains ACM.

Known Releases of Contaminants: The pad has numerous stains that indicate the release of oil or other potential contaminants.

Contaminants of Potential Concern: Radionuclides and ACM

Previous Removal Actions or Investigations: None

Estimated Waste Volume and Weight: 18,329 cu ft; 818 tons

A.3.2 X-744H – BULK STORAGE BUILDING

Description of Building: The X-744H Bulk Storage Building, built in 1953, is a 58,700-sq ft, single-story, steel-framed structure with corrugated metal siding and roof over a concrete pad. It was originally a fabrication shop during the Portsmouth Gaseous Diffusion Plant (PORTS) construction, but was converted into a warehouse in 1956. From 1958 to 1964, the building was used as supplemental storage of uranium hexafluoride and for storage of cylinders that contain heel quantities of uranium hexafluoride. Spill control equipment was also stored in the building. Radioactively contaminated non-Resource Conservation and Recovery Act of 1976 (RCRA) and non-Toxic Substances Control Act of 1976 (TSCA) wastes were stored in the North Waste Management Unit on the north end of the building. Visual assessment indicates the building is not in very good condition. The north end of the bulk storage portion of the building is a secured area and the remaining areas of the building are closed for general access (DOE 1993). The building is currently used for bulk storage of new and surplus equipment (TPMC 2006). There is no known water supply to this building. The water connections were removed and the drains were plugged when the building was converted into a warehouse. There is no known wastewater discharge from this building. Stormwater runoff from the roof is discharged to the East Drainage Ditch. There are no known USTs or below-grade structures associated with the building.

Known or Potential Radiological Hazards: This building has contaminated equipment within the boundaries of the contamination control zones (CCZs). Fixed and surficial radioactive contamination may exist in the storage areas (DOE 1993).

Known or Potential Chemical Hazards:

- Lead-based paint may have been used on the surfaces of the interior and exterior walls due to the age of the building (DOE 1993).
- ACM waste (cooling tower fill) is stored in a secured area of the building (DOE 1993).
- Two pole-mounted transformers on the west side of the building are assumed to be PCB contaminated (DOE 1993).
- Several drums in the North Waste Management Unit have “PCB” stenciled on their sides (DOE 1993).
- Fluorescent light fixtures are assumed to contain ballasts containing PCBs and bulbs containing mercury.

Known Releases of Contaminants:

- Soil around the area of the removal near the north AST is contaminated with benzene, toluene, ethylbenzene, xylenes, petroleum hydrocarbons, and lead (DOE 1993).

- Fixed and surficial radioactive contamination may exist in the storage areas (DOE 1993).
- There are numerous floor stains within the building (2011 photographs).
- Potentially lead-based paint is peeling from exterior and interior surfaces (2011 photographs).

Contaminants of Potential Concern: Radionuclides, lead, ACM, PCBs, and mercury

Previous Removal Actions or Investigations: There were two 1,200-gal diesel fuel ASTs located at the building, one north and one west of the building. The tanks were removed but the dike for the north AST remains with a sign instructing personnel to stay at least 15 ft away.

Estimated Waste Volume and Weight: 213,265 cu ft; 8,666 tons

A.3.3 X-744J – BULK STORAGE BUILDING

Description of Building: The X-744J Bulk Storage Building, also known as Warehouse #17, is a 58,700-sq ft, single-story, steel-framed building with prefabricated corrugated metal siding and roof that sits on a concrete pad. This building was reportedly constructed in 1953 as a fabrication/pipe, plumbing, and mechanical shop and was converted into a warehouse in 1956, when all utilities were disconnected, removed, and drains plugged. Sanitary water is supplied to the building for the fire sprinkler system. Two ASTs that were associated with the building include a 1,200-gal diesel fuel tank and a 55-gal gasoline tank. Both of these ASTs have been removed. There are no known USTs associated with the building (DOE 1993).

The building is used to store a wide variety of new and surplus equipment and supplies, including new pole transformers, calcium hypochlorite, sodium bifluoride, sodium hydroxide, sodium nitrate, ammonium carbonate, alumina, sodium hexametaphosphate, desiccant, ferric sulfate, magnesium fluoride, freon 11, salt, sodium sulfate, PCBs in static capacitors, and bags of absorbent. The north end of the building, which houses miscellaneous classified hardware, is separated from the remainder of the building.

Known or Potential Radiological Hazards: Two small areas (2 ft × 3 ft) of fixed radioactive contamination have been discovered but the majority of the building has not been surveyed (DOE 1993).

Known or Potential Chemical Hazards:

- Due to the age of the building, lead-based paint may have been used on the surfaces of the walls (DOE 1993).
- An asbestos survey of the building indicated there were no ACM present in the building (DOE 1993).
- Although no other chemical hazards have been reported, there may be additional hazards due to the varied nature of the materials and equipment stored in the building.

Known Releases of Contaminants: None

Contaminants of Potential Concern: Radionuclides, lead, and PCBs.

Previous Removal Actions or Investigations: The two ASTs (1,200-gal diesel tank and 55-gal gasoline tank) were removed.

Estimated Waste Volume and Weight: 212,806 cu ft; 8,616 tons

A.4 GROUP R4

A.4.1 X-109A – PERSONNEL MONITORING STATION

Description of Building: The X-109C Personnel Monitoring Station, built in 1955, is a 1,100-sq ft block building with a concrete slab roof and floor. It was originally used as a switch house for a temporary power switch yard during original PORTS construction. The building has an abandoned restroom. Personnel monitoring stations are used as assembly points for personnel evacuating buildings served by the CAAS, if alarm systems sound or if PA system announcements are initiated, and have been used routinely to conduct evacuation drills. Sanitary waste was previously discharged from this building to a septic system that has been rendered permanently inoperable. The building is connected to the plant's water supply (DOE 1993, TPMC 2006). Miscellaneous materials and equipment are currently stored in the building. There are no below-grade structures associated with this building.

Known or Potential Radiological Hazards: There is an area of fixed radiological contamination on the floor.

Known or Potential Chemical Hazards:

- The building contains a solvent vat with residual residue and a drum containing solvent. Both the residue and solvent are considered to be nonhazardous material. An old air conditioner located in the building may contain Freon.

- Fluorescent light fixtures and bulbs may contain PCBs and mercury (TPMC 2006).

- Lead-based paint is potentially present on interior and exterior surfaces of the building. Paint on the interior concrete floor is peeling (DOE 1993).

Known Releases of Contaminants: In 1992, an overflow of the septic tank that supported this building was discovered in an area approximately 70 ft behind the building. The tank was pumped out twice. The contents were treated as hazardous wastes and were found to be a mixture of oil (possibly fuel oil or used drained oil) and sewage. A waste oil storage shed (X-740) was located next to the X-109A building until its demolition in 2006. There may be oil-contaminated soil in the vicinity of the septic tank. The sanitary system has been rendered permanently inoperable (DOE 1993).

Contaminants of Potential Concern: Radionuclides, PCBs, mercury, and freon.

Previous Removal Actions or Investigations: Asbestos surveys conducted in 1988 through 1990 did not reveal the presence of asbestos (DOE 1993).

Estimated Waste Volume and Weight: 6,498 cu ft; 316 tons

A.4.2 X-530A – HIGH VOLTAGE SWITCH YARD

Description of Building: The X-530A High Voltage Switch Yard, constructed in 1954, is located immediately due west of the X-330 Process Building in the central portion of PORTS. Throughout its operational life, this switch yard has been used to control power distribution to PORTS and the Gas Centrifuge Enrichment Plant (GCEP).

This building is an open yard surrounded on three sides by a perimeter fence. It measures 1,200 ft × 650 ft. A Sergeant's Yard extends to the west from the main yard. The bed of the switch yard contains a 1- to 3-ft layer of 1- to 3-in.-diameter limestone gravels, which are underlain by clay soils. A series of north-south French drains are sandwiched between the clay layer and limestone bed. These French drains discharge to Storm Sewers A and B and the northern two tributaries of the West Drainage Ditch. Electrical cables and a grounding grid are located on and/or under the limestone gravel bed (DOE 1993).

The X-530A High Voltage Switch Yard contains electrical transformers, switching equipment, and various towers and other elements that comprise the overall steel superstructure of the building. High-voltage, oil-filled circuit breakers (OCBs) and gas circuit breakers provide line switching capabilities. Oil-filled transformers step power down to a nominal 13.8 kV. All of the transformers currently contain mineral oil with < 50 ppm PCBs. The Sergeant's Yard supplies power to the Ohio Valley Electric Power Company. It contains one 150 mVA transformer and its associated OCBs. A gas cart containing sulfur hexafluoride gas (SF_6) and equipment for flushing the circuit breakers is stored in the switch yard.

The switch yard is served by and part of the plant electrical utility system. Water from the X-611 Water Treatment Facility supplies water to the sprinkler system that serves the transformers in the switch yard (DOE 1993).

This Engineering Evaluation/Cost Analysis addresses the above-grade structures and equipment associated with the switch yard.

Known or Potential Radiological Hazards: None

Known or Potential Chemical Hazards:

- Chemicals that have been stored and used in the switch yard include PCB-based transformer oil (Askarel), mineral oil, and lead. The oil was contained in various transformers, circuit breakers, and tanks (DOE 1993).

- Pole-mounted transformers in the switch yard may contain PCBs (DOE 1993).

- Lead-covered power cables may be present in the switch yard (DOE 1993; TPMC 2006).

- OCBs in the switch yard were repainted in the 1980s. Just prior to this repainting, the old paint on the OCBs was removed by sandblasting. This old paint may have been lead-based. Sandblasting residue was observed in the switch yard, which means that the switch yard may be contaminated with residual lead from the old paint (DOE 1993).

- Lead-covered power cables may be present in the switch yard (DOE 1993, TPMC 2006).

- No asbestos or ACM is present in the switch yard (DOE 1993).

Known Releases of Contaminants:

- Over many years of operations, some of this oil was released accidentally to the limestone gravel bed from leaking oil transfer lines and overfilling of OCBs. Oil stains are visible on the limestone gravel under all of the transformers in the switch yard (DOE 1993).

- Several spills and fires have occurred in the switch yard. In March 1990, a ruptured gasket resulted in the release of 1,000 to 1,500 gal of oil. Spill containment was implemented before the oil reached the West Holding Pond. A portion of the spill was assumed to have soaked into the limestone gravel bed and soil in the switch yard (DOE 1993).

- Prior to 1993, a transformer explosion and fire occurred in the Sergeant's Yard. An estimated 20 to 30 gal of mineral oil were released to the limestone gravel bed. The oils were wiped down and soil sampling was performed. No PCBs were detected in the samples (DOE 1993).

Contaminants of Potential Concern: PCBs and lead

Previous Removal Actions or Investigations:

- Prior to 1993, a PCB survey was conducted in the switch yard. Most of the transformers and OCBs contained oil with PCBs at concentrations < 50 ppm, but some grounding transformers had concentrations up to 90 ppm (DOE 1993). More recent information suggests that the oil has been changed in the grounding transformers and they now contain oil with < 50 ppm PCBs.

- An asbestos survey of the switch yard was conducted prior to 1993. No asbestos was found in the switch yard proper, but ACM was present in some of the buildings located within the perimeter of the switch yard (DOE 1993).

Estimated Waste Volume and Weight: 370,134 cu ft; 1,724 tons

A.4.3 X-530B – SWITCH HOUSE

Description of Building: The X-530B Switch House consists of three structures: a Control House, North Switch House, and South Switch House. The complex covers an area of approximately 112,600 sq ft, and the Control House is located between the Switch Houses.

Control House: The Control House is a rectangular two-story, steel-framed structure with corrugated cement asbestos (transite) siding on a reinforced concrete slab. This building is 120 ft in length along the axis of the building group and about 67 ft wide. The second, or operating, floor is also on reinforced concrete. The exterior walls are fluted insulated metal panels for the full height of the building.

The first, or ground, floor houses carrier current equipment, two battery rooms with batteries and chargers, supervisory cabinets, alarm relay cabinets, heaters, a room containing ventilating and air-conditioning equipment, and a synchronous condenser amplifying and field rheostat controls. The operating floor contains the substation control panels, lighting and auxiliary power control panel, and an operator's console. The operating floor also contains a kitchen, restroom, and shower facilities.

Switch Houses: Electric power at 13.8 kV from the X-530A Switch Yard is received at the high-voltage switchgear of the Switch Houses and is distributed in underground tunnels to the X-326 and X-330 Process Buildings, X-300 Plant Control Facility, and other buildings.

Switch Houses are one-story, steel-framed structures with flat reinforced concrete slab roofs. The walls of the buildings are corrugated transite siding and the roof consists of metal panels supported on steel framing.

An underground power tunnel adjacent to the east wall of the Switch Houses extends the full length of the buildings and connects with the Control House and the outside tunnel distribution system. The interior underground power tunnels are reinforced concrete box-type structures, sloped for drainage, waterproofed, and provided with openings for access.

The roof area of the Switch Houses is a deck area that contains 13.8 kV switch gear and synchronous condensers. Switchgear and synchronous condensers are installed on the roof of each of the two Switch Houses. The ground floors house auxiliary equipment such as synchronous condenser controls and pumps, switch gear air compressors, low-voltage switch gear, heating and ventilating equipment, distribution transformers and panels, batteries, and lighting transformers and panels.

Known or Potential Radiological Hazards:

- Ventilation ducts and fans on the ground floor of both the North and South Switch Houses are contaminated with radionuclides.

- There are areas of fixed radiological contamination on the first floors concrete floor.

Known or Potential Chemical Hazards:

- ACM is potentially present in cable trays, thermal insulation, floor tile, and transite siding.
- Lead-based paint is potentially present due to the age of the building.
- Battery rooms have batteries containing battery acid.
- PCBs are potentially present in transformers, synchronous condensers, ventilation duct gaskets, and fluorescent light fixture ballasts.
- Mercury is potentially present in switches and fluorescent light tubes.
- Nitrogen is used for pressure control in numerous places within the buildings.

Known Releases of Contaminants:

- There are battery acid stains on floors in the battery rooms, with some leading from the batteries to the floor drains. In September 1992, a battery electrolyte discharge occurred in the North Switch House, which was diluted and cleaned.
- Numerous lubricating, hydraulic, and potentially PCB oil stains on floors due to spills and leakage.

Contaminants of Potential Concern: Radionuclides, ACM, lead, PCBs, mercury, and battery acid residue

Previous Removal Actions: None

Estimated Waste Volume and Weight: 361,975 cu ft; 14,873 tons

A.4.4 X-530C – TEST AND REPAIR BUILDING

Description of Building: The X-530C Test and Repair Building is a 1,200-sf building of steel frame construction on a concrete slab with transite siding. Constructed in 1954, this building provides an electrical maintenance shop for the X-530 Switch Yard Complex, work benches, lunchroom, and a restroom. There are no below-grade structures associated with this building.

Known or Potential Radiological Hazards: None

Known or Potential Chemical Hazards:

- ACM is present in the transite siding and thermal pipe insulation.
- Lead-based paint is potentially present due to the age of the building.
- Fluorescent light fixtures may be present that contain PCBs in the ballasts and mercury in the tubes due to the age of the building.

Known Releases of Contaminants: None

Contaminants of Potential Concern: ACM, lead, PCBs, and mercury

Previous Removal Actions or Investigations: None

Estimated Waste Volume and Weight: 10,453 cu ft; 674 tons

A.4.5 X-530D – OIL HOUSE

Description of Building: The X-530D Oil House is a 500-sq ft steel-framed structure on a concrete slab with transite siding and roof built in 1954. The building encloses equipment that provides insulating oil exchange in electrical equipment at the switch yard. Oil drained from the non-PCB transformers and breakers is stored, filtered, and recycled through this building. There are two 15,900-gal tanks and two 34,000-gal tanks in the switch yard that are associated with this building (DOE 1993). The only oil processed in this building contained less than 50 ppm PCBs.

There are no below-grade structures associated with this building.

Known or Potential Radiological Hazards: None

Known or Potential Chemical Hazards:

- The building siding and roof are ACM.
- Painted surfaces potentially contain lead-based paint.

Known Releases of Contaminants:

- Oil leaks are common around the pumps and oil-soaked absorbent material has been seen around all the mechanical equipment (DOE 1993).
- In 1976, an oil film was seen in the West Drainage Ditch that was traced to an overflow from an uncovered 3-gal garbage can in the X-530D Oil House.

Contaminants of Potential Concern: ACM and lead

Previous Removal Actions or Investigations: None

Estimated Waste Volume and Weight: 2,578 cu ft; 192 tons

A.4.6 X-530E – VALVE HOUSE

Description of Building: The X-530E Valve House is a 500-sf, reinforced-concrete structure built in 1954. This building is located on the north side of the X-530A Switch Yard. A below-ground pump house contains eight water pumps and distribution lines that are part of the deluge fire water system protecting high voltage transformers on the north side of the switch yard. There are below-grade structures associated with this building.

Known or Potential Radiological Hazards: None

Known or Potential Chemical Hazards:

- There are 30 mercury switches used in this building.
- Although it is thought the oil processed in this building was < 13 ppm in PCB content, the processing of higher PCB content oil at some time is assumed for risk assessment purposes.
- Any painted surfaces are assumed to have lead-based paint.

Known Releases of Contaminants: There are oil stains on pumping equipment.

Contaminants of Potential Concern: Lead, PCBs, and mercury

Previous Removal Actions or Investigations: None

Estimated Waste Volume and Weight: 1,165 cu ft; 120 tons

A.4.7 X-530F – VALVE HOUSE

Description of Building: The X-530F Valve House is a 500-sq ft reinforced concrete structure built in 1954. It is located on the south side of the X-530A Switch Yard. A belowground pump house contains eight water pumps and distribution lines that are part of the deluge fire water system protecting high voltage transformers on the south side of the switch yard.

There are below-grade structures associated with this building.

Known or Potential Radiological Hazards: None

Known or Potential Chemical Hazards:

- There are 30 mercury switches used in this building.
- Although it is thought that the oil processed in this building was < 13 ppm in PCB content, the processing of higher PCB content oil at some time is assumed for risk assessment purposes.
- Any painted surfaces are assumed to have been painted with lead-based paint.

Known Releases of Contaminants: There are oil stains on pumping equipment.

Contaminants of Potential Concern: Lead, PCBs, and mercury

Previous Removal Actions or Investigations: None

Estimated Waste Volume and Weight: 1,165 cu ft; 120 tons

A.5 GROUP R5

A.5.1 X-600 – STEAM PLANT

Description of Building: The X-600 Steam Plant was built in 1953 and is a 19,506-sq ft building constructed on a concrete slab with concrete walls on the ground floor and transite siding on a steel frame for the operating floor and upper floor. The control room is located on the operating floor. The building has produced steam to heat buildings, vaporize uranium hexafluoride, maintain process temperatures, and clean equipment throughout the plant site (DOE 1993, TPMC 2006).

Three coal-fired boilers are used in conjunction with necessary auxiliary equipment to generate the required quantity of steam. The building was upgraded with stack emissions abatement and coal handling capital improvement in the 1980s and 1990s. Steam is distributed through two lines referred to as the east and west loops. The condensate is returned to the condensate tank located at the Steam Plant. Coal is trucked into the plant and delivered to the coal storage yard or placed directly into the coal conveyor system. Coal dumped into the coal chute is fed onto a system of large belt conveyors that transport it to the coal bunker room where a conveyor distributes it to the three coal bunkers. Coal from the bunkers slides through baffles down four chutes into stokers that feed the boiler. The fly ash is removed by mechanical dust collectors and electrostatic precipitators before the gases are released to the atmosphere through the boiler stacks. Stack particulate emissions to the atmosphere are controlled by electrostatic precipitators and ash is removed from the boilers by a vacuum conveying system. The ash is stored in silos and periodically hauled to an off-site landfill. Water used in the boilers to produce steam is softened using sodium zeolite and hydrogen zeolite that are contained within tanks. To regenerate the sodium zeolite and hydrogen zeolite tanks, a large brine tank and a 4,000-gal sulfuric acid AST are used, respectively. The ASTs are diked and are located on the west

side of the X-600 Steam Plant. Pumps are used to draw the materials into the zeolite tanks when the resins in the tanks need to be regenerated. After the water is softened, it is pumped into a degasifier to drive off the carbon dioxide and is then pumped into a deaerator storage tank. The boiler feed water is supplied from the deaerator storage tank and the condensate tank (DOE 1993, TPMC 2006).

Sanitary water is supplied to the building for boiler water, sinks, and the restroom. Steam condensate returns from the site and is fed back to the boilers. The sanitary wastewater discharges (bathrooms and sinks) are connected to the sanitary sewer and ultimately flow to the sewage treatment building. Storm water flows directly into a nearby ditch and discharges into the South Holding Pond. Surface water runoff, zeolite regeneration water, and blowdown water are discharged into Storm Sewer G, and then to the South Holding Pond and National Pollutant Discharge Elimination System (NPDES) Outfall 002. Wastewater entering floor drains at the building flows into the coal runoff lagoon and is treated at the X-621 building (NPDES Outfall 002) for pH adjustment and metal and suspended solids removal before discharge to the South Holding Pond (DOE 1993).

Known or Potential Radiological Hazards:

- The X-600 Steam Plant is designated as being radioactively contaminated because of the natural radiation of coal (DOE 1993).

- There may be contamination in the return steam condensate from radioactive facilities (DOE 1993, TPMC 2006).

Known or Potential Chemical Hazards:

- Some raw materials, hazardous materials, and hazardous waste streams associated with the X-600 Steam Plant include asbestos, sulfuric acid, ethylene glycol, kerosene, transmission fluid, hardness buffer, alum, waste coal sludge (arsenic and other metals), waste oil (benzene), cleaning solvents, scrap metal, aerosol cans, asbestos insulation, rags, fluorescent light bulbs, and incandescent light bulbs (DOE 1993).

- The major source of solid waste found at the Steam Plant is coal ash from the hoppers, coal dust, and fly ash (DOE 1993).

- ACM is present or has been observed in the form of thermal system insulation on condensate pipes, zeolite tanks, boilers, other piping, and in the transite siding (DOE 1993). Floor tile containing asbestos is also suspected due to the age of the building.

- Lead-based paint may have been applied to the walls due to the age of the building (DOE 1993).

- A transformer containing Pyranol (PCB dielectric fluid) is located in the north central area of the ground level floor and may contribute to PCB contamination (DOE 1993).

- Fluorescent light fixtures may contain ballasts with PCBs and bulbs may contain mercury (DOE 1993).

- Two 135-gal, hand-pumped drums containing lube oil are located on a diked platform. Also located on the platform are four 5-gal lube oil containers and one 5-gal container of transmission fluid (DOE 1993).

- A diked, 4,000-gal sulfuric acid AST is located outside on the west side of the building. The dike has cracks and has leaked during integrity tests (DOE 1993).

Known Releases of Contaminants:

- On March 3, 1990, a fish kill occurred in a drainage ditch to the South Holding Pond. Due to the low pH caused by the discharge of hydrogen zeolite regeneration water that consists of diluted sulfuric acid, 400 blue gill fish were killed. The discharge occurred due to the erosion of the floor under the hydrogen zeolite tanks and around the acid pumps. Undocumented sulfuric acid spills and releases have occurred when acid was used to regenerate the hydrogen zeolite tanks. A documented release of 4 gal of sulfuric acid occurred when a portion of an abandoned pipe to the acid storage tank was removed. The area was flushed with water and discharged to a flow drain. The flow to the South Holding Pond was blocked (DOE 1993).

- Small stains were visible around a PCB transformer located in the north-central portion of the ground floor of the building (DOE 1993).

- Oil stains were observed on and around the three boiler feed pumps located in the south-central area of the ground floor, on and around acid pumps located in the northwest corner of the ground floor, and in the room on the east side of the ground floor near the turbines. The stains may be a source of PCB contamination due to the various types of oils used over the years in the pumps and turbines (DOE 1993).

- Oil stains were observed in the area of the platform containing the two 135-gal, hand-pumped drums that contain lube oil and the 5-gal container of transmission fluid. Information obtained indicated that leaks had occurred in the past from the hand pumps. A visual assessment was performed of the pumps but no leaks were observed. The potential for leaks into the floor drains was reduced by placing the oils and fluids on the containment platform (DOE 1993).

- A white precipitant-like stain was observed near a 55-gal drum of sodium sulfate that is located on the operating floor. It is possible the stain is from a spill from the drum (DOE 1993).

Contaminants of Potential Concern:

- ACM associated with thermal insulation, transite siding and floor tile
- Lead associated with lead-based paint
- PCBs associated with oils, transformer fluid, and fluorescent light fixture ballasts
- Mercury associated with fluorescent light bulbs
- Sodium sulfate associated with drum leakage
- Sulfuric acid associated with the AST
- Arsenic, beryllium, cadmium, manganese, thorium (specifically thorium-228), and uranium (specifically uranium-235 and 238) associated with coal, coal ash and fly ash.

Previous Removal Actions or Investigations: None

Estimated Waste Volume and Weight: 157,539 cu ft; 15,196 tons

A.5.2 X-600B – STEAM PLANT SHOP BUILDING

Description of Building: The X-600B Steam Plant Shop is a 1,000-sq ft building built in 1981 that is constructed of metal panels that fit together on a central beam, with a main structure built on a concrete slab. A flammable storage cabinet and a metal storage shed are located outside the building. The building is used to conduct repairs and maintenance on parts and components associated with the X-600 Steam Plant and serves as a storage area for small replacement parts and maintenance equipment. The only known water supplied to the building is water to a sink and a drinking fountain. Wastewater discharges into a sink and floor drain, both of which are connected to the sanitary sewer that ultimately flows to the X-6619 Sewage Treatment Facility. Steam is used to heat the building. There is no mention of any known USTs, ASTs, or below-grade structures associated with the X-600B building.

Known or Potential Radiological Hazards: None

Known or Potential Chemical Hazards:

- Hazardous materials that can be found in the X-600B Steam Plant Shop and its appurtenances include pipe sealants (adhesives, cements), oils (penetrating and lube), used oil, grease, degreasing solutions, aerosol paint cans, etc. (DOE 1993, 2011 walkdown).

- Hazardous wastes stored in a marked satellite accumulation area (SAA) include rags, gloves, scrap metal, and fluorescent light bulbs stored in 55-gal drums or the original box. The SAA is located in the northeast corner of the building (DOE 1993).

- No asbestos, lead-based paint, or other hazardous building materials are known to be present in the building or equipment (DOE 1993).

- Although the X-600B Steam Plant Shop was built in 1981, it is possible, but unlikely, that the fluorescent light ballasts contain PCBs. No data exist that would identify possible PCB-contaminated oils used in this building (DOE 1993).

Known Releases of Contaminants: Oil and grease stains are evident on the floor, but no sampling data are known to exist with respect to these stains (DOE 1993).

Contaminants of Potential Concern: None

Previous Removal Actions or Investigations: None

Estimated Waste Volume and Weight: 9,429 cu ft; 536 tons

A.5.3 X-600C – ASH WASH TREATMENT BUILDING

Description of Building: The X-600C Ash Wash Treatment Building was built in 1985 and comprises 400 sq ft of floor space. The floor and bottom half of the building structure are comprised of concrete; the top half of the building structure is comprised of corrugated metal on a steel frame. The removal of ash from water that collects in the ash silos is performed in the X-600C building (DOE 1993), which includes the use of ash handling blowers, a wash system, a cyclone separator, and ash collection silos (TPMC 2006).

There is no known water supply to the building and no wastewater is known to discharge into the sanitary waste system from this building. Ash removal water is normally vacuum pumped from the top of the ash silos into a thickener tank before it is discharged. The wastewater is normally discharged into the South Holding Pond, but can be diverted to the Coal Pile Treatment Building (X-621) (DOE 1993).

There are no known USTs, ASTs, or below-grade structures associated with this building.

Known or Potential Radiological Hazards: None

Known or Potential Chemical Hazards:

- There are no known hazardous substances, raw materials, or products stored, treated, or generated at the X-600C building (DOE 1993).
- There are no known hazardous or solid waste management units associated with this building. Ash sludge from the filter presses is collected in the hoppers and deposited on the coal ash pile in the coal yard. The coal ash contains arsenic and metals that are common to coal (DOE 1993).
- ACM is not known to be present in the building (DOE 1993).
- Lead is not known to be present in the building (DOE 1993).
- No known PCB equipment or PCB-contaminated equipment is present in the building. Incandescent lighting is used in the building (DOE 1993).

Known Releases of Contaminants: None

Contaminants of Potential Concern: Arsenic, beryllium, cadmium, manganese, thorium (specifically Th^{228}), and uranium (specifically U^{235} and U^{238}) associated with coal, coal ash and fly ash.

Previous Removal Actions or Investigations: None

Estimated Waste Volume and Weight: 9,782 cu ft; 640 tons

A.5.4 X-621 – COAL PILE TREATMENT FACILITY

Description of Building: The X-621 Coal Pile Runoff Treatment Facility (CPRTF), which was built in 1984, has an area of 1,900 sq ft and is constructed of steel with a concrete floor. In 1992, a 400-sq ft room was added to the east side of the building. The CPRTF is used as a treatment building to adjust pH and remove iron, copper, and zinc from the surface runoff of the coal storage yard, and to divert wastewaters from the steam plant. Wastewater that has been treated with sodium hydroxide (NaOH), anionic polymer, and alum is discharged from the X-621 CPRTF via Outfall 602 to the X-230K South Holding Pond. The South Holding Pond provides a quiescent zone for the settling of suspended solids and dissipation of chlorine. It also provides for the adjustment of pH before discharge. There is one 25,000-gal AST containing NaOH at this building. An earthen dike is used as a secondary containment. Water to the X-621 CPRTF for the emergency shower, eyewash, polymer dilution, and flushing is provided by the plant water system. Floor drains are piped to the X-621 building lagoon (DOE 1993). There are no known USTs associated with this building.

Known or Potential Radiological Hazards: None

Known or Potential Chemical Hazards:

- Hazardous materials found in the X-621 CPRTF building include NaOH in a 25,000-gal AST, bags of alum, caustic soda, Betz Foam-Trol, citric acid, and anionic polymer. The quantities of these materials vary on a weekly basis (DOE 1993).
- The X-621 CPRTF does not generate any hazardous wastes. The normal waste stream from the X-621 building includes sludges from the filter press, which is collected in hoppers and disposed at the X-735 Landfill (DOE 1993).
- There is no PCBs or PCB-contaminated equipment present at the CPRTF. A transformer located on the east side of the building does not contain PCBs (DOE 1993).
- Due to the age of the building, no ACM, lead-based paint, or fluorescent light fixtures containing ballasts with PCBs or tubes containing mercury are expected in the building.

Known Releases of Contaminants:

- A NaOH spill has occurred at this building. Five 55-gal drums containing potentially NaOH-contaminated soil were located on a pallet outside of the X-621 building (DOE 1993).
- There are stains near the citric acid drums and near the polymer tank, and brown splatter stains near the filter press on the floor and ceiling (DOE 1993).

Contaminants of Potential Concern: NaOH and citric acid.

Previous Removal Actions or Investigations: None

Estimated Waste Volume and Weight: 7,275 cu ft; 406 tons

A.6 GROUP R6

A.6.1 X-744B – SALT STORAGE BUILDING

Description of Building: The X-744B Salt Storage Building is a 1,000-sq ft, 3-sided wooden structure built in 1979 that is used to store salt for de-icing plant roads. One end of the building is open for access by front end loaders to drive into the building, load the salt, and place it in salt trucks for delivery to the plant roads. Storm water runoff that discharges to the North Holding Pond constitutes the only source of wastewater from the building. There are no known USTs or below-grade structures associated with the building; it does not contain insulation; and is not painted. There are no transformers or other known PCB-contaminated equipment known to be associated with this building.

Known or Potential Radiological Hazards: None

Known or Potential Chemical Hazards: The potential for an environmental impact exists if large amounts of rainwater or water from another source enter the building because of the quantity of salt stored at this building.

Known Releases of Contaminants: None

Contaminants of Potential Concern: Salt

Previous Removal Actions or Investigations: None

Estimated Waste Volume and Weight: 3,390 cu ft; 156 tons

A.6.2 X-744W – SURPLUS AND SALVAGE WAREHOUSE

Description of Building: The X-744W Surplus and Salvage Warehouse is a 94,000-sq ft, single-story building with steel-framed construction and corrugated metal siding and a roof that sits on a concrete pad. The building was built in 1957 and was initially located near the X-751 GCEP Mobile Equipment Garage and the X-1000 Parking Lot Area. In 1983, the frame and siding were relocated to the present location. The warehouse stores surplus plant equipment such as desks, shelves, calculators, tools, electronic equipment, construction materials, pumps, and raw materials for potential auction/sale to the public. The type of material stored at the warehouse changes continuously due to the sales of the material to the public. The building has an area located in its center that contains restrooms, showers, and offices. There are no known USTs associated with the building (DOE 1993). Sanitary water for the restrooms is supplied to the building via the X-611Water Treatment Plant (DOE 1993, TPMC 2006). The wastewater (water from the restroom and showers) from the building is discharged into a septic tank and leach field located northeast of the X-744W building (DOE 1993).

Known or Potential Radiological Hazards: None

Known or Potential Chemical Hazards:

- The raw materials or substances at the X-744W warehouse include paints and coatings; oils, such as mop oil and cutting oil; inorganics, such as activated alumina, sodium bicarbonate, and batteries. General housekeeping solid wastes are generated at the warehouse (DOE 1993).

- Due to the age of the building lead-based paint may have been used on the interior office walls. No documentation was available on the possible presence of lead-based paint (DOE 1993).

- Although no contamination has been reported, potential sources of contamination include items that are brought into the building for storage, which could include PCBs, oils, and solvents (DOE 1993).

Known Releases of Contaminants: Approximately 300 pounds of sulfuric acid was spilled on the east drive of the X-744W warehouse when two wooden pallets containing wet cell batteries slipped off a flatbed truck. The acid was neutralized and cleaned up. It is possible that trace amounts of acid and lead may remain (DOE 1993).

Contaminants of Potential Concern: Lead

Previous Removal Actions or Investigations: None

Estimated Waste Volume and Weight: 157,786 cu ft; 6,943 tons

A.6.3 X-752 – WAREHOUSE

Description of Building: The X-752 Warehouse, formally known as the Hazardous Waste Storage Unit, is a 20,000-sq ft building constructed of corrugated metal on a steel frame built on a concrete slab. The southeast end of the building contains 8-in. concrete dikes that were constructed to contain and segregate the various types of liquid wastes once stored at the building. Thirty large concrete tubs or vats measuring approximately 5 ft × 10 ft × 1.5 ft that provided secondary containment for stored wastes remain in the building. The building was built in 1978 and operated until 1980 as a general purpose warehouse. From 1980 to 1986, the building was used to store radioactive, mixed, and hazardous wastes. From 1986 to 1992, the building was operated as a hazardous waste storage unit. In 1992, all of the stored wastes were transferred to the X-7725 GCEP Recycle/Assembly Building. Currently, the west half of the building (separated with a wall) contains radiologically contaminated equipment and containerized waste. The east half of the building contains clean supplies to support the waste shipping operation at the X-747 complex. There are no known USTs, ASTs, or below-grade structures associated with this building.

Known or Potential Radiological Hazards:

- The west side of the building is designated a CCZ (TPMC 2006).
- Radioactive and mixed wastes were stored at the building (DOE 1993, TPMC 2006).

Known or Potential Chemical Hazards:

- Paint observed peeling from the ceiling and most of the walls may contain lead due to the age of the building (DOE 1993).
- Fluorescent light fixture ballasts may contain PCBs (DOE 1993) and the tubes may contain mercury.
- Hazardous chemical residues are assumed to be present in the concrete (TPMC 2006).

Known Releases of Contaminants:

- A release of several 55-gal drums of chromic acid occurred in February 1988 near the southeastern door of the building and clean up was conducted. However, no sampling was reportedly performed to confirm cleanup completion. There is evidence of contamination under the concrete slab (DOE 1993).
- Oil stains have been observed on the floor throughout the building. A potential source of these oil stains is the PCB waste oil that was previously stored in drums at the building (DOE 1993).

- Other floor stains were observed at locations where 55-gal drums of radioactive, mixed, and RCRA and TSCA wastes were stored. Drums contained radioactive and mixed sludge, TCE wastes, paint wastes, flammable solvents, cyanide wastes, mercury residues, watery sludges containing metals, lab packs containing expired laboratory chemicals, and chromic acid. It is not known whether the stains were due to possible contamination from past waste storage or condensation (DOE 1993).

Contaminants of Potential Concern: Radionuclides, PCBs, mercury, lead, and chromic acid residue

Previous Removal Actions or Investigations: None

Estimated Waste Volume and Weight: 74,902 cu ft; 3,435 tons

A.6.4 X-752AT 1-4 – TRAILER COMPLEX

Description of Building: The X-752AT 1-4 Trailer Complex is located on the south side of the X-752 warehouse and consists of four trailers: one for offices, one for a donning/doffing building, one for a break room, and one that contains men's and women's locker rooms.

Known or Potential Radiological Hazards: None

Known or Potential Chemical Hazards: None

Known Releases of Contaminants: None

Contaminants of Potential Concern: None

Previous Removal Actions or Investigations: None

Estimated Waste Volume and Weight: 6,427 cu ft; 112 tons

A.7 GROUP R7

A.7.1 X-102 – CAFETERIA

Description of Building: The X-102 Cafeteria, constructed in 1954, is a 19,000-sq ft single-story, wood-framed building with cement-asbestos shingles covering the exterior walls. The cafeteria consists of the northern section, which is used for food preparation, serving, and storage, and the southern section, which contains the dining area and meeting rooms. The building was remodeled in the 1980s. The building has served as a cafeteria since its construction. There are no known USTs associated with the building.

Known or Potential Radiological Hazards: None

Known or Potential Chemical Hazards:

- Lead-based paints may be present on pipes (DOE 1993, TPMC 2006).
- Fluorescent light fixtures may contain PCBs in ballasts and mercury in bulbs (DOE 1993, TPMC 2006).
- Ventilation ducts may contain PCB-impregnated gaskets (DOE 1993, TPMC 2006).
- ACM is reported to be in the thermal system insulation on the piping, and cement-asbestos transite siding (DOE 1993, TPMC 2006).

Known Releases of Contaminants: None

Contaminants of Potential Concern: ACM, lead, PCBs, and mercury.

Previous Removal Actions or Investigations: None

Estimated Waste Volume and Weight: 108,699 cu ft; 6,619 tons

A.7.2 X-106 – TACTICAL RESPONSE BUILDING

Description of Building: The X-106 Tactical Response Building is a 6,200-sq ft, single-story, concrete block building with a metal-tar-gravel roof. Transite siding is located above the large vehicle doors across the north side of the building. The building was built in 1955 and served as the fire station into the early 1980s. It is currently used as office space by the Protective Force physical fitness staff and for storage of Protective Forces equipment and gear.

The X-106 building is divided into the following rooms: locker, clothing storage, laser, general storage, shower, tower (formerly used to hang fire hoses to dry), weapons vault, and the main equipment storage room with five-bay garage doors. The current use for this building is for storage. However, the building provides inside parking for the emergency mobile communications van.

This building has steam, fire water, electric, drinking water, sanitary sewer, storm sewer, and telephone services. Water is supplied to the building via the X-611 Water Treatment Plant. There are no known USTs or below-grade structures associated with the building.

Known or Potential Radiological Hazards: None

Known or Potential Chemical Hazards:

- Based on asbestos surveys, ACM is reported to be on the thermal system insulation on the steam lines (DOE 1993, TPMC 2006). Transite siding is also located above the large vehicle doors across the north side of the building.
- Because of the age of the building, lead-based paint is suspected to be present on the walls and pipes; however, there is no formal documentation (DOE 1993, TPMC 2006).
- PCBs may be present in the fluorescent light fixtures and mercury in the bulbs.
- Lead from spent ammunition is stored in the building to be recycled, therefore, there is a potential for lead contamination.

Known Releases of Contaminants: None

Contaminants of Potential Concern: ACM, lead, PCBs, and mercury.

Previous Removal Actions or Investigations: A PCB survey of electrical equipment was conducted at the building and no PCB equipment or PCB-contaminated equipment was found (DOE 1993).

Estimated Waste Volume and Weight: 45,238 cu ft; 2,722 tons

A.8 GROUP R8

A.8.1 X-611 – WATER TREATMENT PLANT

Description of Building: The X-611 Water Treatment Plant (Chemical Building) was constructed in 1954 and is a two-story, 8,000-sq ft concrete building housing lime mixing equipment, a control room, battery room, and break room. It has a fuel oil heating unit that is currently not in use.

A 60,000 gal AST that contains carbon dioxide is located south of the building (DOE 1993).

Known or Potential Radiological Hazards: None

Known or Potential Chemical Hazards:

- Raw materials stored in the building include lime, chlorine cylinders, polyvinyl chloride cement and cleaner, bleach, and descaler (DOE 1993).
- The thermal piping insulation contains ACM (DOE 1993, TPMC 2006).
- Lead-based paint is potentially present due to the age of the building.
- Fluorescent light fixtures may contain ballasts with PCBs and bulbs may contain mercury (DOE 1993, TPMC 2006).

Known Releases of Contaminants:

- The top floor of the building, which houses lime hoppers, is covered with powdered lime. The room on the first floor of the building that contains the lime shakers is also coated with lime dust (DOE 1993).
- Exterior paint, possibly lead-based, is peeling.

Contaminants of Potential Concern: ACM, lead, PCBs, mercury and calcium oxide.

Previous Removal Actions or Investigations: None

Estimated Waste Volume and Weight: 77,941 cu ft; 7,271 tons

A.8.2 X-611C – FILTER BUILDING

Description of Building: The X-611C Filter Building is a two-level, 600-sq ft reinforced concrete structure with a concrete roof slab. The superstructure extends one story above the outside grade and above the substructure. The substructure serves as a wet well for the supply pumps and filtered water basins, or clear well. The building is divided into two separate areas for filtering and pumping. The filter operating floor, which is approximately 7 ft below the normal level of water in the X-611 Water Treatment Plant secondary basin, contains four sand filters. A clear well below provides filtered water storage. The pump room, which is adjacent to the filter area and at the same floor level, contains four high-lift pumps and a balcony that provides space for motor controls and access to the east entrance door. There are two diesel generators located on the same level as the pumps and filters. There are below-grade structures associated with this building.

Known or Potential Radiological Hazards: None

Known or Potential Chemical Hazards: Lead-based paint is potentially present due to the age of the building.

Known Releases of Contaminants: There are floor stains near the diesel generators that may have resulted from fuel or hydraulic oil leakage.

Contaminants of Potential Concern: Lead associated with lead-based paint

Previous Removal Actions or Investigations: None

Estimated Waste Volume and Weight: 7,875 cu ft; 559 tons

A.8.3 X-611D – RECARBONIZATION INSTRUMENTATION BUILDING

Description of Building: The X-611D Recarbonization Instrument Building, which was built in 1979, is a 200-sq ft metal frame and siding structure that sits on a concrete slab. This building houses controls and equipment for the addition of carbon dioxide to water prior to filtering in the X-611C Filter Building. There are no below-grade structures associated with the building.

Known or Potential Radiological Hazards: None

Known or Potential Chemical Hazards:

- Fluorescent light fixtures may contain ballasts with PCBs and bulbs with mercury due to the age of the building (DOE 1993, TPMC 2006).

- Lead-based paint may have been used on internal and external surfaces due to the age of the building (DOE 1993, TPMC 2006).

Known Releases of Contaminants:

- Numerous floor stains are visible due to corrosion and grease.
- There are numerous roof leaks that could potentially result in contaminant migration.

Contaminants of Potential Concern: PCBs, mercury and lead

Previous Removal Actions or Investigations: None

Estimated Waste Volume and Weight: 1,871 cu ft; 110 tons

A.8.4 X-611E – CLEAR WELL AND CHLORINE BUILDING

Description of Building: The X-611E Clear Well and Chlorine Building, constructed in 1996, is a single-story, cement block structure on a concrete slab. Water is chlorinated prior to distribution into the sanitary water system/low-pressure fire water system in this building. A below-grade clear well is utilized to allow water to meet regulatory retention time requirements.

Known or Potential Radiological Hazards:
None

Known or Potential Chemical Hazards:

- Chlorine is stored in cylinders within the building but is assumed to be removed prior to the initiation of decontamination and decommisioning.
- Due to the age of the building, fluorescent light fixtures may contain ballasts with PCBs and bulbs with mercury (DOE 1993, TPMC 2006).
- Due to the age of the building, lead-based paint may have been applied to the walls of the building.

Known Releases of Contaminants: Paint, potentially containing lead, is peeling from exterior and interior surfaces.

Contaminants of Potential Concern: Lead, ACM, PCBs, and mercury.

Previous Removal Actions or Investigations: None

Estimated Waste Volume and Weight: 3,178 cu ft; 170 tons

A.9 GROUP R9

A.9.1 X-108H – PIKE AVENUE PORTAL

Description of Building: The X-108H Pike Avenue Portal is a 100-sq ft wooden building sitting on a concrete slab that has been used as a security check point since it was built in 1976. There is no water known to be supplied to this building or sanitary sewer connections (DOE 1993, TPMC 2006). Personnel working in the X-330 and X-333 Process Buildings, and in the X-340 Complex enter and exit through this portal. There are no USTs or below-grade structures associated with this building.

Known or Potential Radiological Hazards: None

Known or Potential Chemical Hazards:

- Due to the age of the building, lead-based paint may be present (TPMC 2006).
- Fluorescent light fixtures may contain PCBs in their ballasts and have mercury in their tubes (TPMC 2006).
- A pole-mounted transformer is assumed to contain PCBs (DOE 1993, TPMC 2006).
- Floor tile is assumed to be ACM.

Known Releases of Contaminants: Although there are no known documented releases of contaminants from this building, paint that is assumed to be lead-based is peeling from exterior and interior surfaces and the ceiling shows signs of deterioration.

Contaminants of Potential Concern: ACM, lead, PCBs, and mercury.

Previous Removal Actions or Investigations: None

Estimated Waste Volume and Weight: 1,660 cu ft; 59 tons

A.9.2 X-735A – LANDFILL UTILITY BUILDING

Description of Building: The X-735A Landfill Utility Building is a 5,200-sf steel frame and siding structure with a concrete floor used in support of X-735 Landfill operations. Constructed in 1980, the building is used for heavy equipment storage and repair, and office space. A lunchroom, restroom, and shower facilities are also part of the building. A floor drain in the vehicle maintenance area discharges to a sediment trap at the southern end. A 4,000-gal diesel fuel UST along with a dispenser pump is located immediately south of the building. The building's septic and wastewater discharge to a septic system and leach field. There are no below-grade structures associated with this building.

Known or Potential Radiological Hazards: None

Known or Potential Chemical Hazards:

- Fluorescent light fixtures could potentially contain PCBs in the ballasts and mercury in the bulbs.
- Diesel fuel and oil leakage associated with equipment storage and repair could be potential hazards.

Known Releases of Contaminants: None

Contaminants of Potential Concern: PCBs and mercury.

Previous Removal Actions or Investigations: None

Estimated Waste Volume and Weight: 11,690 cu ft; 478 tons

A.10 GROUP R10

A.10.1 X-104 – GUARD HEADQUARTERS

Description of Building: The X-104 Guard Headquarters is a 10,600-sq ft concrete and concrete block office building built in 1954. This building is used for routine protective forces activities and contains offices, a training room, a physical fitness room, locker rooms, a locksmith shop, weapons cleaning area, a kitchen, a lunch room, restrooms, and storage lockers for guard equipment. It also contains an emergency generator with an associated diesel fuel AST. Water is supplied to the building for drinking, showers, and restroom usage, and wastewater (floor drains and drains) from the building is discharged into the sanitary sewer system.

Known or Potential Radiological Hazards: None

Known or Potential Chemical Hazards:

- Four storage areas are located in the building: one for storing aerosol cans, fluorescent and incandescent light bulbs, and nickel-cadmium batteries; one for storing metal shavings from the locksmith section; and two for storing oily, lead-contaminated rags used in weapons cleaning and maintenance (DOE 1993).

- ACM is reported to be in the thermal system insulation on pipelines in the building (DOE 1993, TPMC 2006). ACM may also be located in the floor tiles.

- Documentation indicates the building was coated with potential lead-based paint (DOE 1993, TPMC 2006).

- The building contains fluorescent lighting fixtures that may contain ballasts with PCBs and light bulbs with mercury.

Known Releases of Contaminants:

- Recent walkdowns show paint peeling from exterior surfaces and interior ceiling deterioration.

- There are floor stains associated with diesel fuel leakage around the emergency generator (DOE 1993).

Contaminants of Potential Concern: ACM, lead, PCBs, and mercury

Previous Removal Actions or Investigations: A 37-year old UST (Tank # 104) was removed in 1991. No leaks or releases were observed from the tank.

Estimated Waste Volume and Weight: 49,935 cu ft; 2,998 tons

A.10.2 X-612 – ELEVATED STORAGE TANK

Description of Building: The X-612 Elevated Storage Tank stores sanitary water for the Sanitary Fire Water System and for general use. This tank provides a storage capacity of 250,000 gal of water at an elevation 170 ft above the foundation. The tank has a standard-type cylindrical steel construction with ellipsoidal top and bottom, is painted in alternate bands of white and orange, and is equipped with ruby aircraft warning lights. A combination valve pit and concrete foundation at the base of the tank riser houses the valves required for the connections to the piping grid and flow meter orifice. There is an altitude valve located in the tank to prevent an overflow. There are six steel legs in addition to the stand-pipe riser supporting the tank. Each leg is supported on a concrete pier-type footing and it is assumed that each leg has a steel base plate attached to anchor bolts embedded in the concrete at the top of the piers. There is no structural slab below this tank. When the foundations were built in August 1953, the contractor excavated approximately 420 cy to construct the footings, valve pit, and concrete foundation piers totaling 175 cy.

Known or Potential Radiological Hazards: None

Known or Potential Chemical Hazards: The original paint and at least one repaint was lead-based paint.

Known Releases of Contaminants: None

Contaminants of Potential Concern: Lead associated with lead-based paint

Previous Removal Actions or Investigations: None

Estimated Waste Volume and Weight: 918 cu ft; 118 tons

A.10.3 X-640-1 – FIRE WATER PUMP HOUSE

Description of Building: The X-640-1 Fire Water Pump House, which was constructed in 1960, is a single-story, 1,600-sq ft masonry building with a concrete floor that contains fire water pumps and a diesel generator. A remediated 500-gal UST was replaced with a 400-500-gal AST on a pedestal. The pump house is part of the High-Pressure Fire Water (HPFW) System that supplies water to sprinkler systems in X-326, X-330, and X-333, remaining cooling towers, X-343, and American Centrifuge Plant (ACP) site. There are below-grade structures associated with this building.

Known or Potential Radiological Hazards: None

Known or Potential Chemical Hazards:

- Thermal insulation contains ACM (DOE 1993).
- Lead-based paint may have been used on surfaces (DOE 1993).

Known Releases of Contaminants: None

Contaminants of Potential Concern: ACM and lead

Previous Removal Actions or Investigations: None

Estimated Waste Volume and Weight: 3,567 cu ft; 200 tons

A.10.4 X-640-2 – ELEVATED STORAGE TANK

Description of Building: The X-640-2 Elevated Storage Tank is a 300,000-gal, 265-ft-high elevated steel tank that is part of the HPFW system. This tank supplies water to sprinkler systems in X-326, X-330, X-333, remaining cooling towers, X-343, and the ACP site. The tank has a combination valve pit and concrete foundation at its base.

Known or Potential Radiological Hazards: None

Known or Potential Chemical Hazards: The tank was painted red and white in the summer of 1992. Due to the lack of documentation, the red paint must be considered potentially lead based (DOE 1993).

Known Releases of Contaminants: None

Contaminants of Potential Concern: Lead

Previous Removal Actions or Investigations: None

Estimated Waste Volume and Weight: 1,095 cu ft; 139 tons

A.11 GROUP R11

A.11.1 X-614A – SEWAGE PUMPING STATION

Description of Building: The X-614A Sewage Pumping Station is located in the outfall of the sanitary sewer system to pump sanitary wastes from the plant area collection system into a force main that discharges into the X-6619 Sewage Treatment Plant.

This building, located just south of the X-330 Process Building, consists of an underground pumping vault, with a concrete slab top; the latter forms the floor of a pump house where the pumping equipment motors and controls are installed.

The concrete pumping vault, which is 15 ft × 29 ft × approximately 27-ft deep, is divided into a dry well section containing the pumps, valves, and piping, and the wet well, which constitutes a reservoir for receiving and temporarily storing sewage for intermittent pump operations.

The pump house is a concrete block building 15 ft square and 9 ft high. A single entrance door provides access to the building, and manholes in the floor provide access to the wet and dry wells below.

Known or Potential Radiological Hazards: Both above- and below-grade structures are radiologically contaminated.

Known or Potential Chemical Hazards:

- Due to the age of the building, lead-based paint is assumed to have been used on exterior and interior surfaces.
- Sewage is assumed to contain hazardous materials such as heavy metals, volatiles, semivolatiles, and biological agents (e.g., E. coli, etc.).
- Float switches in the wet well may contain mercury.

Known Releases of Contaminants: The building has been radiologically contaminated as a result of contaminant releases from other buildings which are serviced by the sewage system. Contaminants have been transferred from the below-grade structure and equipment to the above-grade structure and equipment.

Contaminants of Potential Concern:

- Radionuclides associated with sewage
- Lead associated with lead-based paint
- Mercury associated with float switches
- Heavy metals, volatiles, semivolatiles, and biological agents associated with sewage.

Previous Removal Actions or Investigations: None

Estimated Waste Volume and Weight: 883 cu ft; 50 tons

A.11.2 X-614B – SEWAGE PUMPING STATION

Description of Building: The X-614B Sewage Pumping Station, built in 1954, provides a sump where sanitary wastes from the buildings in the north portion of the site are drained. This station also contains pumping facilities for discharging the sewage at a higher elevation into the main sewer system.

The pumping station, located northeast of the X-330 Process Building, consists of an underground reinforced concrete vault 7.5 ft square and 22.5 ft deep, a manhole in the top, connections to the sewers, and pumping equipment mounted on a concrete platform in the upper portion of the structure. The lower portion of the vault contains a sump and sewage storage chamber for intermittent operation.

Known or Potential Radiological Hazards: Both above- and below-grade structures are radiologically contaminated.

Known or Potential Chemical Hazards:

- Due to the age of the building, lead-based paint is assumed to have been used on exterior and interior surfaces.
- Sewage is assumed to contain hazardous materials such as heavy metals, volatiles, semi-volatiles, and biological agents (e.g., E. coli, etc.).
- Float switches in the wet well may contain mercury.

Known Releases of Contaminants: The building has been radiologically contaminated as a result of contaminant releases from other buildings which are serviced by the sewage system. Contaminants have been transferred from the below-grade structure and equipment to the above-grade structure and equipment.

Contaminants of Potential Concern:

- Radionuclides associated with sewage
- Lead associated with lead-based paint
- Mercury associated with float switches
- Heavy metals, volatiles, semivolatiles, and biological agents associated with sewage.

Previous Removal Actions or Investigations: None

Estimated Waste Volume and Weight: 883 cu ft; 50 tons

A.11.3 X-618 – NORTH HOLDING POND STORAGE BUILDING

Description of Building: The X-618 North Holding Pond Storage Building is a 100-sq ft, steel-framed "Butler"-type building on a concrete pad. This building was built in 1981 and was once used to store emergency response equipment, such as sampling materials, skimmers, and floating booms for the Environmental Control Department. The building was upgraded in 1989 and now contains monitoring equipment for the X-230L North Holding Pond. The monitoring equipment continuously samples the pond for temperature, pH, and flow rate, and provides the means for samplers to collect composite samples for total suspended solids and metals. Water is pumped by a submerged pump from the North Holding Pond through piping to the X-618 building for sampling, and is then returned to the holding pond. A floor drain in the building contains a conduit through which the piping runs; therefore, any spills or releases to the building would be returned back to the North Holding Pond via this drain. The building has plastic foam insulation, fluorescent lights, and electric heat. A refrigeration unit is also contained within the building to hold composite samples that have been collected. There are no known USTs, ASTs, or below-grade structures associated with the building.

Known or Potential Radiological Hazards: None

Known or Potential Chemical Hazards:

- Fluorescent light fixtures may contain ballasts with PCBs and bulbs with mercury (DOE 1993, TPMC 2006).
- Surfaces may be painted with lead-based paint (DOE 1993, TPMC 2006).

Known Releases of Contaminants: None

Contaminants of Potential Concern: PCBs, lead, and mercury.

Previous Removal Actions or Investigations: None

Estimated Waste Volume and Weight: 2,119 cu ft; 119 tons

A.11.4 X-750 – MOBILE EQUIPMENT MAINTENANCE SHOP

Description of Building: The X-750 Mobile Equipment Maintenance Shop is a 15,500-sq ft building of masonry construction with a concrete floor. This building has been in operation as the main on-site fueling station since 1953. It is also used to maintain the mobile equipment fleet in-plant operations. The building has a vehicle repair shop, refueling station, tire change bay, wash bay, and oil change bay. The building also houses offices, restrooms, and a lunchroom (DOE 2003, TPMC 2006). There are two USTs associated with the building, including a 20,000-gal gasoline fuel UST and a 20,000-gal diesel fuel UST. These fuels are used for dispensing into mobile equipment on site (DOE 1993).

Known or Potential Radiological Hazards: None

Known or Potential Chemical Hazards:

- Vehicle maintenance chemicals such as gasoline, diesel, and alcohol fuels, lubricating oils, motor oils, cutting oils, greases, antifreeze, solvents, carburetor cleaner, kerosene, tires, batteries, pesticides, and janitorial supplies, and battery acid are used and stored in this building (DOE 1993, TPMC 2006).
- PCBs are located in ventilation duct gaskets and potentially in fluorescent light fixture ballasts (DOE 1993, TPMC 2006).
- Mercury is potentially contained in fluorescent light bulbs (DOE 1993, TPMC 2006).
- ACM is located in piping insulation throughout the building (DOE 1993, TPMC 2006).
- Lead-based paint is suspected due to the age of the building (DOE 1993, TPMC 2006).
- Drained oil is contained in 55-gal drums (TPMC 2006).

Known Releases of Contaminants:

- Numerous fuel, oil, and grease stains on the floor have been observed.
- There is soil contamination associated with former leaking USTs and contamination of surrounding pavements due to leaking vehicle fluids.

Contaminants of Potential Concern: PCBs, mercury, ACM, lead, solvents, pesticides and acids

Previous Removal Actions or Investigations: Several gasoline and diesel USTs have been removed due to leakage.

Estimated Waste Volume and Weight: 57,952 cu ft; 1,192 tons

A.11.5 X-750A – GARAGE STORAGE BUILDING

Description of Building: The X-750A Garage Storage Building is a 500-sq ft, steel-framed structure that stores heavy equipment parts, tires, and miscellaneous parts (DOE 1993, TPMC 2006). There are no wastewater discharges from the building other than stormwater runoff. Water is not supplied to the building. There are no USTs, ASTs, or below-grade structures associated with this building.

Known or Potential Radiological Hazards: None

Known or Potential Chemical Hazards:

- Lead-based paint may be present based on the age of the building (DOE 1993, TPMC 2006).
- Fluorescent light fixtures may have ballasts that contain PCBs and bulbs that may contain mercury (DOE 1993, TPMC 2006).

Known Releases of Contaminants: None

Contaminants of Potential Concern: Lead, PCBs, and mercury

Previous Removal Actions or Investigations: None

Estimated Waste Volume and Weight: 1,590 cf; 74 tons

A.12 GROUP R12

A.12.1 X-106C – NEW FIRE TRAINING BUILDING

Description of Building: The X-106C New Fire Training Facility is a 2-story, all-steel structure on a concrete slab with an outside stairway to a partial third level. The building is used by on-site Fire Protection personnel to comply with State required training. A below-grade water tank associated with the X-106B Old Fire Training Building that has been demolished is located approximately 100 ft to the south of the X-106C building. The tank is approximately 12 ft deep, 12 ft wide, and 6 ft long. The tank is used by the Fire Department to check the pumps on pumper trucks.

Known or Potential Radiological Hazards: None

Known or Potential Chemical Hazards: None

Known Releases of Contaminants: None

Contaminants of Potential Concern: None

Previous Removal Actions or Investigations: None

Estimated Waste Volume and Weight: 3,779 cu ft; 227 tons

A.12.2 X-109B – PERSONNEL MONITORING STATION

Description of Building: The X-109B Personnel Monitoring Station is a 120-sq ft, steel-framed building constructed with steel siding in 2006. This building has no water supply. Personnel monitoring stations are used as assembly points for personnel evacuating buildings served by the CAAS, if alarm systems sound or if PA system announcements are initiated, and have been used routinely to conduct evacuation drills. There are no below-grade structures associated with this building.

Known or Potential Radiological Hazards: None

Known or Potential Chemical Hazards: The pole-mounted transformer associated with this building may contain PCBs.

Known Releases of Contaminants: None

Contaminants of Potential Concern: PCBs associated with pole-mounted transformer

Previous Removal Actions or Investigations: None

Estimated Waste Volume and Weight: 2,189 cu ft; 83 tons

A.12.3 X-343 – FEED VAPORIZATION AND SAMPLING BUILDING

Description of Building: The X-343 Feed Vaporization and Sampling Facility was constructed in 1981 and was used to vaporize uranium hexafluoride for feed for the diffusion cascade, sampling uranium hexafluoride cylinders prior to feeding them to the process buildings, and removal of technicium-99 from uranium hexafluoride chemical trapping. This building was the receiving point for all inbound uranium hexafluoride feed material and the shipping point for the empty cylinders after having been fed to the diffusion cascade.

The structure of this building consists of steel framing with exterior cement-asbestos (transite) siding set on a concrete slab. The building occupies a total floor area of approximately 18,500 sq ft. The building features hanger-type doors in the north and south walls. A row of single-story rooms, offices, a control room, locker rooms, electrical and mechanical rooms, and a janitor closet are along the west wall of the building. Recirculating heating water from the X-633 Pump House/X-333 recirculating cooling water system was used to heat this building until the diffusion cascade was shut down. Currently, the building is heated with steam and electric space heaters. A lower level is located on the east side of the building that extends under the autoclave heads for access to autoclave drain piping. The building is connected to the process buildings through tie-lines that pass through a heated duct between X-343 and X-333 Process Building. A control room is available to monitor the process.

The building contains seven steam-heated containment autoclaves. Three of the autoclaves are 84 in. in diameter and are equipped with rollers, and four of the autoclaves are 72 in. in diameter and are not equipped with rollers. These autoclaves were designed for feed vaporization only. The building is equipped with three 20-ton bridge cranes that were used to place cylinders into the autoclaves as well as retrieve cylinders from storage and place into storage.

Known or Potential Radiological Hazards:

- The primary radiological contaminants of concern are uranium and technicium-99. Other radionuclides that were introduced to the diffusion cascade include plutonium-239 and neptunium-237.

- Due to the presence of uranium hexafluoride feed cylinders in this building, the potential for radionuclide contamination exists. Valves on cylinders of uranium hexafluoride occasionally malfunctioned and resulted in small releases (DOE 1993, TPMC 2006).

- Floor areas around the autoclave and valving manifolds are radiologically contaminated (DOE 1993, TPMC 2006).

- Routine maintenance activities performed on the autoclaves resulted in the generation of radioactive scrap metal waste (DOE 1993).

Known or Potential Chemical Hazards:

- Raw materials or products such as adhesive spray and nitrocellulose lacquer (TPMC 2006).
- Janitorial and maintenance supplies such as penetrating oil, hydraulic oil, and starting fluid (TPMC 2006).
- Acetylene cylinders (TPMC 2006).
- Lead-based paint may be present (TPMC 2006).
- Fluorescent light fixture ballasts may contain PCBs and the tubes may contain mercury (TPMC 2006).
- Freon is present in cold recovery uranium recovery equipment (TPMC 2006).

Known Releases of Contaminants:

- Uranium hexafluoride cylinder valve maintenance and pigtail connection activities occasionally resulted in small releases of radiological contamination. The highest potential for radiological contamination exists in the high bay area (DOE 1993, TPMC 2006).
- The building is heated with the site's recirculating heating water system. A rupture in the recirculating heating water system resulted in possible chromate contamination of the piping system in the building, however, no written documentation was available for confirmation (DOE 1993).

Contaminants of Potential Concern:

- Radionuclides, including mainly uranium and smaller amounts of technicium-99, plutonium-239, and neptunium-237 associated with releases.
- Lead associated with lead-based paint.
- Mercury associated with fluorescent bulbs.
- PCBs associated with fluorescent light fixture ballasts.
- Chromate associated with recirculating heating water system rupture.

Previous Removal Actions or Investigations: None

Estimated Waste Volume and Weight: 110,036 cu ft; 8,354 tons

A.12.4 X-744G – BULK STORAGE BUILDING

Description of Building: The X-744G Bulk Storage Building is a steel-framed building with a concrete floor. The building is divided into an eastern section of approximately 49,000 sq ft and a western section of approximately 37,000 sq ft. Across the north side of the building is an open, but covered, area of 20,000 sq ft called the "north drum storage area". There is also a 60-ft-high bay area inside the building. This building was built in 1956 for use as a pipe yard for the assembly of cascades for the process buildings. Since 1957, the warehouse has been used for storage of uranium hexafluoride in 5-, 8-, and 12-in. cylinders, uranium oxides, nitrates (from X-705 Decontamination Building processes and off-site sources), uranium solutions, contaminated cascade trapping materials, contaminated solid scrap, contaminated wastes (oil adsorbent and oil-soaked cleaning rags from the process buildings), and special nuclear material. This building was also used for sampling solid contaminated scrap. The building housed an aluminum smelter that operated from the late 1960s until 1981, and was used for melting aluminum parts into aluminum ingots. The building contains a sealed glovebox used for homogenizing and sampling alumina and sodium fluoride. In August 1992, all RCRA hazardous wastes were removed from the building (DOE 1993). The building is currently the Uranium Management Center for staging and shipping various types of uranium material and container types.

Potable water is supplied to the building and sanitary waste discharges to the sanitary sewer. There are no floor drains in the storage areas. Heat is provided by an oil furnace and the office is air conditioned. There is a 2,000-gal diesel fuel tank located south of the building (DOE 1993), but there are no known USTs associated with the building. There are no below-grade structures associated with this building.

Known or Potential Radiological Hazards: The floors are beta contaminated (fixed contamination). Upon visual assessment, it appears that several coats of sealant/varnish have been applied to contain the contamination (DOE 1993).

Known or Potential Chemical Hazards:

- Due to the age of the building lead-based paint may have been used to paint exterior and interior surfaces. The floors are marked with yellow truck lanes, which may contain lead since most caution colors of paint have lead content.

- The building contains fluorescent light fixtures that have ballasts that may contain PCBs and bulbs containing mercury. The building also utilizes mercury vapor lighting.

- There are five pole-mounted transformers outside the building that may be contaminated with PCBs.

- A wide variety of chemicals have been stored and/or processed in this building.

Known Releases of Contaminants:

- The floors of the building are beta contaminated (fixed contamination). Upon visual assessment, it appears several coats of sealant/varnish have been applied to contain the contamination (DOE 1993).

- There are numerous spill stains on the floor.

Contaminants of Potential Concern: Radionuclides, ACM, lead, PCBs and mercury

Previous Removal Actions or Investigations: None

Estimated Waste Volume and Weight: 490,379 cu ft; 19,691 tons

A.12.5 X-744L – STORES AND MAINTENANCE WAREHOUSE

Description of Building: The X-744L Stores and Maintenance Warehouse is a 53,300-sq ft prefabricated structure built in 1983 that consists of a metal roof, metal walls, steel beams, and a concrete slab on a graded floor. The building exterior walls measure 150 ft × 150 ft (DOE 1993). The building is separated into north and south sections. The north half of the building is used for bulk storage of new and surplus equipment and supplies. The south section, which is separated from the north section by a chain-link wall and is tightly controlled and monitored, is a storage area for compressor components, valve components, large equipment, process and non-process equipment used for general plant support, and radiologically contaminated material and equipment.

Although the building is supported by electric utilities and a sprinkler system, there are no sanitary sewer connections or drinking water at the building. There is no sanitary discharge associated with this building and no other wastewater discharge other than the storm water runoff. There are no known ASTs, USTs, or below-grade structures associated with the building.

Known or Potential Radiological Hazards: Radiologically contaminated equipment is located in the south portion of the building within CCZs (DOE 1993, TPMC 2006, 2011 photographs). The northern portion of the building has a 2-ft × 3-ft area that is radiologically contaminated (DOE 1993).

Known or Potential Chemical Hazards:

- There is a potential for exposure to mercury from releases in the southern portion of the building (DOE 1993).
- There is no ACM in the building according to existing documentation (DOE 1993).
- Paints (red, yellow, and orange) used to indicate "caution" may have some lead content (DOE 1993).
- Although no other chemical hazards have been reported, there may be additional hazards due to the varied nature of materials and equipment stored in the building.

Known Releases of Contaminants:

- A mercury manometer was broken in March 1990 in the south section of the building. The amount of mercury was not a reportable quantity and the spill was cleaned up the same day (DOE 1993).
- In September 1990, a mercury manometer was moved and mercury vapor was possibly released (DOE 1993).

Contaminants of Potential Concern: Lead, mercury, and radionuclides.

Previous Removal Actions or Investigations: None

Estimated Waste Volume and Weight: 213,194 cu ft; 8,633 tons

A.13 REFERENCES

DOE 1993. *Report for Environmental Audit Supporting Transition of the Gaseous Diffusion Plants to the United States Enrichment Corporation, Appendix A, Volumes I and II: Portsmouth Sites/Facilities Reports,* U.S. Department of Energy, Portsmouth, OH, June.

TPMC 2006. *Facility Condition Survey of Portsmouth Gaseous Diffusion Plant Facilities, Piketon, Ohio,* TPMC/PORTS-59/R1, Theta Pro2Serve Management Company, LLC August.

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APPENDIX B: APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS AND TO-BE-CONSIDERED GUIDANCE FOR PLANT SUPPORT BUILDINGS AND STRUCTURES ENGINEERING EVALUATION/COST ANALYSIS

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CONTENTS

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TABLES

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ACRONYMS

ARAR	applicable or relevant and appropriate requirement
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CFR	*Code of Federal Regulation*
D&D	decontamination and decommissioning
DFF&O	Director's Final Findings and Orders
DOE	U.S. Department of Energy
EE/CA	engineering evaluation/cost assessment
EPA	U.S. Environmental Protection Agency
FS	feasibility study
HEU	highly enriched uranium
LPP	LATA/Parallax Portsmouth, LLC
NCP	National Oil and Hazardous Substances Contingency Plan
NRCE	National Register Criteria for Evaluation
OHI	Ohio Historic Inventory Form
Ohio EPA	Ohio Environmental Protection Agency
OHPO	Ohio Historic Preservation Officer
OSWER	U.S. Office of Solid Waste and Emergency Response
PORTS	Portsmouth Gaseous Diffusion Plant
RI	remedial investigation
TBC	to-be-considered [guidance]
T&E	threatened and endangered

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B.1 INTRODUCTION

In accordance with the requirements of the Director's Final Findings and Orders (DFF&O) and pursuant to Ohio's laws and regulations, and utilizing 40 *Code of Federal Regulations* (*CFR*) Section 300.415(j) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) and the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) as a framework, on-site removal actions are required to attain applicable or relevant and appropriate requirements (ARARs) to the extent practicable, considering the exigencies of the situation. The ARARs include only federal and state environmental or facility siting laws/regulations; they do not include occupational safety or worker radiation protection requirements. Additionally, per the DFF&O and 40 *CFR* 300.400(g)(3), substantive requirements of other advisories, criteria, or guidance may be considered in determining remedies (to-be-considered [TBC] category).

As defined in paragraph 5.e of the DFF&O, decontamination and decommissioning (D&D) activities include deactivation of equipment; removal and cleaning of process residues and deposits from equipment structures and piping; dismantlement, demolition, and removal of equipment, structures, piping, building contents, concrete foundations, and any residual soil which adheres to the foregoing or otherwise must be excavated as part of D&D activities; treatment, disposition, and disposal, off-site or in a secure on-site disposal cell the above listed materials. The proposed removal action alternatives include: (Alternative 1) no action; (Alternative 2) remove structures, off-site disposition of equipment and materials; and (Alternative 2a) remove structures, on- and off-site disposition of equipment and materials. The proposed removal action alternative (i.e., other than no action) would comply with all identified ARARs/TBCs.

Paragraph 9.a of the DFF&O provides that portions of response actions conducted entirely on-site pursuant to Work Plans or plans concurred with or approved by Ohio Environmental Protection Agency (Ohio EPA) under the Order can be conducted pursuant to Section 121(e)(1) of CERCLA, 42 *United States Code* Section 9621. Section 121(e)(1) specifically provides that no federal, state, or local permit shall be required for the portion of any removal or remedial action conducted entirely as an on-site response action. In addition to "permits", the U.S. Environmental Protection Agency (EPA) has interpreted this section broadly to cover: "all administrative provisions from other laws, such as recordkeeping, consultation, and reporting requirements. In other words, administrative requirements do not apply to on-site response actions." (Office of Solid Waste and Emergency Response [OSWER] 9205.5-10A). Those portions of the removal action that are taken off site are subject to both the substantive and administrative requirements of applicable laws. Only the substantive requirements in the ARARs and TBCs in the table in this appendix shall be binding for entirely on-site actions.

ARARs are typically divided into three groups: chemical-specific, location-specific, and action-specific. Pursuant to EPA guidance, there are no ARARs invoked for a "no action" alternative. Tables B.1 and B.2 group the location- and action-specific ARARs/TBCs, respectively, for the D&D removal action. There were no chemical-specific ARARs identified. In some cases, the conditions associated with the prerequisite requirements have not been confirmed to be present; if the subject condition is encountered during implementation of the action, then the specified ARAR would apply. A brief description of key ARAR/TBC topics follows.

B.2 CHEMICAL-SPECIFIC ARARS/TBCS

Chemical-specific ARARs provide health or risk-based concentration limits or discharge limitations in various environmental media (i.e., surface water, groundwater, soil, and air) for specific hazardous substances, pollutants, or contaminants. The scope of this action is D&D of facilities and does not include remediation of environmental media, therefore, there are no chemical-specific ARARs triggered.

B.3 LOCATION-SPECIFIC ARARS/TBCS

Location-specific requirements establish restrictions on permissible concentrations of hazardous substances or establish requirements for how activities will be conducted because they are in special locations (e.g., wetlands, floodplains, critical habitats, streams). The location-specific ARARs for the protection of historic properties are listed in Table B.1.

B.3.1 FLOODPLAINS AND WETLANDS

None of the activities associated with the removal action alternatives would be conducted within any floodplain. In addition, no wetlands are present at or near the vicinity of the buildings. Thus, no impacts to either floodplains or wetlands would result from either of the alternatives considered for this proposed removal action.

B.3.2 THREATENED AND ENDANGERED SPECIES

Neither of the removal action alternatives would adversely impact any federally or state-listed threatened and endangered (T&E) species located or seen at the Portsmouth Gaseous Diffusion Plant (PORTS). Consequently, none of the requirements for protection of T&E species or critical habitat are included as ARARs.

B.3.3 CULTURAL RESOURCES

Cultural resources include prehistoric or historic districts, sites, buildings, structures, or objects considered important to a culture, subculture, or community for scientific, traditional, religious, or any other reason. When these resources meet any one of the National Register Criteria for Evaluation (36 *CFR* Part 60.4), they may be termed historic properties and thereby are eligible for inclusion on the National Register of Historic Places.

In order to identify architectural resources, a systematic and comprehensive survey of PORTS was completed. As part of the architectural survey, an Ohio Historic Inventory Form (OHI) was completed for each of the 196 resources. The OHI forms were submitted to and recorded by the Ohio Historic Preservation Officer (OHPO). The architectural inventory report documenting the results of the survey was accepted by the OHPO in March 2011 (U.S. Department of Energy [DOE] 2011). Information about the buildings in this Engineering Evaluation/Cost Assessment (EE/CA) can be found in the inventory report.

The proposed activities are described in Section 4.1 of this EE/CA.

The project area (area of potential effect) for this proposed undertaking includes facilities that are located throughout the PORTS site and the areas in close proximity to each of the structures, all of which are within Perimeter Road. Based on the results of the Phase I Archaeological Survey at PORTS, it was determined that all of the area within Perimeter Road was disturbed during plant construction. Therefore, no archaeological resources would be impacted during a removal action.

PORTS' architectural resources have been divided into three broad categories based on their original function: Cold War-era core processing facilities; Cold War-era processing support facilities; and Non-Cold War-era mission facilities.

- Cold War-era core processing facilities: These eligible historic properties are character defining resources. They are unique to the production of highly enriched uranium (HEU) by the gaseous diffusion process (PORTS historic mission). These facilities are central to telling the PORTS' Cold

War-era story. These properties are eligible under Criterion A of the National Register Criteria for Evaluation (NRCE). Mitigation measures are typically identified for this category of facilities, but none are included in the scope of this EE/CA.

- Cold War-era processing support facilities: These eligible properties were essential to the HEU production process. They were, however, not unique to uranium enrichment facilities and could be found on other large industrial sites. These properties are eligible under Criterion A of the NRCE. Mitigation measures are identified for this category of facilities.

- Non-Cold War era mission facilities: These are resources that were not specifically associated with the Cold War-era mission. This category can be further divided into two subcategories: resources that date to the Cold War-era, but were not specifically associated with the enrichment process; and resources that were (or are) associated with other missions. These resources may date after the Cold War-era or they may date to the era but not be associated with the Cold War-era mission. For example, Environmental Management facilities are in this category. These facilities are not considered to be eligible.

The following 10 Cold War Mission "processing support resources" are being evaluated for demolition under this EE/CA:

- The X-100 Administration Building
- The X-104 Guard Headquarters
- A series of buildings associated with the X-530 switchyard complex
    - The X-530B Switch House
    - The X-530C Test and Repair Building
    - The X-530D Oil House
    - The X-530E Valve House
- The X-600 Steam Plant
- The X-611 Water Treatment Plant
- The X-612 Elevated Storage Tank
- The X-750 Mobile Equipment Maintenance Shop.

Three additional facilities being evaluated for demolition in the EE/CA are the best "representatives" of a type of general support facility to the uranium enrichment process:

- The X-109A Personnel Monitoring Station
- The X-614-A Sewage Pumping Station
- The X-744H Warehouse.

The documentation level for the 10 core processing support facilities and the three "representative" facilities described above will consist of: a detailed written history and description; a compendium of copies of historic documentation including photographs, floor plans, equipment layout, and training manuals; and new photography and interpretive graphics, as appropriate. In most cases, high-quality, detailed photographs and drawings of the interior and exterior of these resources as well as their floor plans and arrangement of their equipment already exist in PORTS records. After the available historic documentation is analyzed, it will be determined if new photography and graphic documentation is needed to preserve the significance of these resources.

The balance of the structures proposed for demolition in the EE/CA are indistinct and non-representative support facilities (e.g., trailers, portals, shelters, sewage lift stations, etc.) that provided a variety of functions to the gaseous diffusion process. These non-distinct support facilities are utilitarian and not unique to the PORTS Cold War mission.

Information that is gathered for implementation of any proposed mitigation measures must be deemed suitable for public release before it can be made available. Should aspects of the proposed measures include items which have classification concerns, DOE will appropriately maintain and control those materials and will review them periodically to ascertain whether or not they may be added to the collection of publicly available information.

In addition to the specific measures described above for the processing support resources and the core processing resources, DOE has also proposed a comprehensive interpretation effort for the DOE-built environment at PORTS. The comprehensive measures are found in the Remedial Investigation (RI)/ Feasibility Study (FS) Work Plan for the Process Buildings and Complex Facilities D&D Evaluation Project (hereinafter referred to as the Process Buildings project). The measures agreed to and memorialized in the DFF&O RI/FS/Proposed Plan and subsequent record(s) of decision for the Process Buildings project also provide the comprehensive measures for the facilities proposed for removal in this EE/CA and the DOE PORTS built environment overall.

B.4 ACTION-SPECIFIC ARARS/TBCS

Action-specific ARARs include operation, performance, and design requirements or limitations based on the waste types, media, and removal/remedial activities. The ARARs for the D&D alternatives include requirements related to waste characterization, scrap metal removal, decontamination, waste storage, treatment and disposal, and transportation of hazardous materials.

B.4.1 BUILDING REMOVAL

The D&D alternatives include removal of scrap metal, equipment, infrastructure, any waste materials and debris, and, where necessary, stabilization of foundation concrete surfaces, etc. Requirements under the Clean Air Act of 1970, as amended, for control of asbestos and/or radionuclide emissions included in Table B.2 would have to be met. Requirements for the closure of tanks containing hazardous (i.e., acids used for cooling water treatment) materials would have to be met.

B.4.2 WASTE MANAGEMENT

Building removal activities may result in the generation of Resource Conservation and Recovery Act of 1976, as amended, solid or hazardous waste and asbestos-containing waste materials.

Although some characterization has been performed, additional waste streams may be identified during implementation of the removal action.

All primary wastes (e.g., D&D debris) and secondary wastes (e.g., contaminated personal protective equipment, decontamination wastes) generated during building remediation activities must be appropriately characterized and managed in accordance with appropriate state of Ohio laws and regulations for hazardous and solid waste, the federal Toxic Substances Control Act of 1976, DOE Order requirements, or other requirements as specified in the ARARs tables. Hazardous waste determinations will be made based on available process knowledge and sampling/analysis results. Assuming no listed hazardous wastes are present and the sample does not exhibit a hazardous characteristic, the debris will be categorized as nonhazardous. Requirements associated with the characterization, storage, treatment, and

disposal of the aforementioned waste types are listed in Table B.2. Hazardous and other waste may be accumulated and stored in appropriate short-term storage areas at PORTS. Long-term storage of waste is not anticipated. The *Closure Performance Review Guidance* will be consulted if a 90-day storage area in any of the buildings needs to be closed.

B.4.3 TRANSPORTATION

As noted in the DFF&O Paragraph 9.a, the NCP at 40 *CFR* 300.400(e)(1) defines "on-site" as meaning "the areal extent of contamination and all suitable areas in very close proximity to the contamination necessary for the implementation of the response action." Off-site disposal, by definition, is not an on-site response action and is subject to all substantive, procedural, and administrative requirements of all legally applicable laws but not to any requirements that might normally be labeled relevant and appropriate under the ARARs process.

Any wastes transferred off site or transported in commerce along public right-of-ways must meet the requirements summarized on Table B.2, depending on the type of waste (e.g., hazardous, low-level, mixed, or solid waste). These requirements include packaging, labeling, marking, manifesting, and placarding for hazardous materials in accordance with 49 *CFR* 170-180 *et seq.* Transport of D&D wastes along roads within the PORTS site must meet the requirements of the *Transportation Safety Document for the On-Site Transfer of Hazardous Material at the Portsmouth Gaseous Diffusion Plant, Piketon, Ohio* (LATA/Parallax Portsmouth, LLC [LPP] 2008).

In addition, EPA in 40 CFR 300.440 requires that the off-site transfer of any hazardous substance, pollutant, or contaminant generated during response actions be to a treatment, storage, or disposal facility that complies with applicable federal and state laws and has been approved by EPA for acceptance of such waste (see also the "Off-Site Rule" at 40 *CFR* 300.440 *et seq.*). Accordingly, DOE will verify with the appropriate EPA regional contact that any needed off-site facility is acceptable for receipt of these D&D wastes before transfer.

B.5 REFERENCES

DOE 2011. *National Historic Preservation Act Section 110 Survey of Architectural Properties at the Portsmouth Gaseous Diffusion Plant in Scioto and Seal Townships, Piketon, Ohio*, DOE/PPPO/03-0147&D0, January.

LPP 2008. *Transportation Safety Document for the On-site Transfer of Hazardous Material at the Portsmouth Gaseous Diffusion Plant, Piketon, Ohio*, LPP-0021/R3, LATA/Parallax Portsmouth, LLC, November.

OSWER 1998. *RCRA, Superfund & EPCRA Hotline Training Module, Introduction to: Applicable or Relevant and Appropriate Requirements*, OSWER Directive 9205.5-10A, U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, Washington, D.C., June.

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Table B.1. Location-specific ARARs for Plant Support Buildings and Structures at the Portsmouth Gaseous Diffusion Plant, Portsmouth, Ohio

Location	Requirements[a]	Prerequisite	Citation
	Cultural resources		
Presence of historic properties	Federal agencies must take into account the effect of the undertaking on any district, site, building, structure, or object that is included in or eligible for inclusion on the National Register.	Federal agency undertaking that may impact historical properties listed or eligible for inclusion on the National Register of Historic Places—**applicable**	16 USC 470f 36 *CFR* 800.1(a)
	Federal agencies must initiate measures to assure that where, as a result of Federal action, a historic property is to be substantially altered or demolished, timely steps are taken to make or have made appropriate records.	Substantial alterations or demolition of a historic property—**applicable**	16 USC 470h-2(b)

[a]The requirements portion of the ARARs table is intended to provide a summary of the cited ARAR. The omission of any particular requirement does not limit the scope of the cited ARARs.

ARAR = applicable or relevant and appropriate requirement
CFR = *Code of Federal Regulations*
USC = United States Code

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Table B.2. Action-specific ARARs for Plant Support Buildings and Structures at the Portsmouth Gaseous Diffusion Plant, Portsmouth, Ohio

Action	Requirements[a]	Prerequisite	Citation
	Site preparation, construction, and excavation activities		
Activities causing release of air pollutants	Shall not cause the emission or escape into the open air from any source or sources whatsoever of smoke, ashes, dust, dirt, grime, acids, fumes, gases, vapors, odors, or any other substances or combinations of substances in such manner or in such amounts as to endanger the health, safety, or welfare of the public, or cause unreasonable injury or damage to property.	Activities causing the release of air pollution nuisances as defined in *OAC* 3745-15-07(A)—**applicable**	*OAC* 3745-15-07
	The operation of a hazardous waste facility shall not cause, permit, or allow the emission there from of any particulate matter, dust, fumes, gas, mist, smoke, vapor, or odorous substance that unreasonably interferes with the comfortable enjoyment of life or property by persons living or working in the vicinity of the facility or that is injurious to public health.	Site where hazardous waste will be managed such that air emissions may occur—**applicable**	*RC* 3734.02(I)
Activities causing fugitive dust (particulate) emissions	Shall take reasonable achievable control measures to prevent particulate matter from becoming airborne. Reasonable achievable control measures shall include, but are not limited to, the following:	Fugitive emissions from transportation, land-disturbing, or building alteration activities located in areas identified in Appendix A to *OAC* 3745-17-08, except as exempted under *OAC* 3745-17-08(A)(3)—**relevant and appropriate**	*OAC* 3745-17-08(B)
	• Use, where possible, of water or chemicals for control of dust and in demolition of existing buildings or structures, construction operations, grading of roads, or the clearing of land;		*OAC* 3745-17-08(B)(1)
	• Periodic application of asphalt, oil (excluding used oil), water, or other suitable chemicals on dirt or gravel roads and parking lots, materials stock piles, and other surfaces that can create airborne dusts, or the use of canvas or other suitable coverings for all materials stockpiles and stockpiling operations except temporary stockpiles;		*OAC* 3745-17-08(B)(2) and (6)

Table B.2 Action-specific ARARs for Plant Support Buildings and Structures at the Portsmouth Gaseous Diffusion Plant, Portsmouth, Ohio (continued)

Action	Requirements[a]	Prerequisite	Citation
Activities causing fugitive dust (particulate) emissions (continued)	• Install and use hoods, fans, and other equipment to adequately enclose, contain, capture, vent, and control the fugitive dust at the point(s) of capture to the extent possible with good engineering design. Equipment must meet the efficiency requirements of *OAC* 3745-17-08(B)(3)(a) and (b);		*OAC* 3745-17-08(B)(3)
	• Use of adequate containment methods during sandblasting or similar operations;		*OAC* 3745-17-08(B)(5)
	• Cover, at all times, open-bodied vehicles when transporting materials likely to become airborne;		*OAC* 3745-17-08(B)(7)
	• Pave and maintain roadways in a clean condition; and		*OAC* 3745-17-08(B)(8)
	• Promptly remove, in such a manner as to minimize or prevent resuspension, earth or other material from paved streets onto which this material has been deposited by trucking or earth moving equipment or erosion by water or other means.		*OAC* 3745-17-08(B)(9)
Airborne radionuclide emissions	Emissions of radionuclides to the ambient air from DOE facilities shall not exceed those amounts that would cause any member of the public to receive an EDE of 10 mrem per year.	Radionuclide air emissions to the ambient air from DOE facilities—**applicable**	40 *CFR* 61.92
Radiation protection of the public and the environment	Except as provided in 458.1(4)(b)(1)(c), exposure to individual members of the public from radiation shall not exceed a total EDE of 0.1 rem/year (100 mrem/year), exclusive of the dose contributions from background radiation, any medical administration the individual has received, or voluntary participation in medical/research programs.	Radionuclide emissions from all exposure modes from all DOE activities (including remedial actions) at a DOE facility—**TBC**	DOE Order 458.1(4)(b) and (c)
	Shall use, to the extent practicable, procedures and engineering controls based on sound radiation protection principles to achieve doses to members of the public that are ALARA.		DOE Order 458.1(4)(d)

Table B.2 Action-specific ARARs for Plant Support Buildings and Structures at the Portsmouth Gaseous Diffusion Plant, Portsmouth, Ohio (continued)

Action	Requirements[a]	Prerequisite	Citation
Activities causing storm water runoff (e.g., demolition)	Dischargers must utilize best management practices to control pollutants in storm water discharges during and after construction, which may include, as appropriate, soil stabilization practices (e.g., seeding), perimeter structural practices (e.g., gabions, silt fences, sediment traps), and storm water management devices as detailed in Part III.G.2 ("Controls") of NPDES OHC000003.	Storm water runoff discharges from land disturbed by construction activity disturbance of ≥ 1 acre total, except where otherwise exempt as specified in 40 *CFR* 122.26(b)(15)—**applicable**	Authorization for Storm Water Discharges Associated with Construction Activity under NPDES OHC000003, Part III.G.2
	Waste generation, characterization, and segregation		
Characterization of solid waste	Must determine if solid waste is hazardous or is excluded under 40 *CFR* 261.4 [*OAC* 3745 51-04]; and	Generation of solid waste as defined in 40 *CFR* 261.2—**applicable**	40 *CFR* 262.11(a) *OAC* 3745-52-11(A)
	Must determine if waste is listed as a hazardous waste in 40 *CFR* Part 261 [*OAC* 3745-51-30 to 3745-51-35]; or	Generation of solid waste that is not excluded under 40 *CFR* 261.4—**applicable**	40 *CFR* 262.11(b) *OAC* 3745-52-11(B)
	Must determine whether the waste is identified in subpart C of 40 *CFR* 261[*OAC* 3745-51-20 to 3745-51-24], characterizing the waste by using prescribed testing methods or applying generator knowledge based on information regarding material or processes used.	Generation of solid waste that is not listed in subpart D of 40 *CFR* 261 and not excluded under 40 *CFR* 261.4—**applicable**	40 *CFR* 262.11(c) *OAC* 3745-52-11(C)
	Must refer to Parts 261, 262, 264, 265, 266, 268, and 273 of Chapter 40 [*OAC* 3745-51, 3745-54 to 3745-57, 3745-65 to 3745-69, 3745-205, 3745-256, 3745-266, 3745-270, and 3745-273] for possible exclusions or restrictions pertaining to management of the specific waste.	Generation of solid waste that is determined to be hazardous—**applicable**	40 *CFR* 262.11(d) *OAC* 3745-52-11(D)
Characterization of hazardous waste	Must obtain a detailed chemical and physical analysis of a representative sample of the waste(s) that, at a minimum, contains all the information that must be known to treat, store, or dispose of the waste in accordance with 40 *CFR* 264 and 268 *OAC* 3745-54 to 3745-57, 3745-205, and 3745-270].	Generation of RCRA hazardous waste for storage, treatment or disposal—**applicable**	40 *CFR* 264.13(a)(1) and (2) *OAC* 3745-54-13(A)(1) and (2)

Table B.2 Action-specific ARARs for Plant Support Buildings and Structures at the Portsmouth Gaseous Diffusion Plant, Portsmouth, Ohio (continued)

Action	Requirements[a]	Prerequisite	Citation
Determinations for land disposal of hazardous waste	Must determine if the waste meets the treatment standards in 40 *CFR* 268.40, 268.45, or 268.49 [*OAC* 3745-270-40, 3745-270-45, and 3745-270-49] by testing in accordance with prescribed methods or use of generator knowledge of waste.	Generation of RCRA hazardous waste for storage, treatment or disposal—**applicable**	40 *CFR* 268.7(a) *OAC* 3745-270-07(A)
	Must determine each EPA Hazardous Waste Number (Waste Code) to determine the applicable treatment standards under 40 *CFR* 268.40 et seq. [*OAC* 3745-270-40 et seq.].	Generation of RCRA hazardous waste for storage, treatment or disposal—**applicable**	40 *CFR* 268.9(a) *OAC* 3745-270-09(A)
	Must determine the underlying hazardous constituents [as defined in 40 *CFR* 268.2(i) and *OAC* 3745-270-02] in the waste.	Generation of RCRA characteristically hazardous waste (and is not D001 non-wastewaters treated by CMBST, RORGS, or POLYM of Section 268.42 Table 1) for storage, treatment or disposal—**applicable**	40 *CFR* 268.9(a) *OAC* 3745-270-09(A)
	Must determine whether the waste meets other applicable treatment standards under 40 *CFR* 268.9 [*OAC* 3745-270-09] for characteristic wastes.	Generation of RCRA characteristically hazardous waste—a**pplicable**	40 *CFR* 268.9(b) to (d) *OAC* 3745-270-09(B) to (C)
Characterization and management of wastewater (e.g., decon water)	On-site wastewater treatment units (including tank systems, conveyance systems, and ancillary equipment used to treat, store or convey wastewater to the wastewater treatment facility) are exempt from the requirements of RCRA Subtitle C standards.	On-site wastewater treatment units subject to regulation under Section 402 or Section 307(b) of the CWA—**applicable**	40 *CFR* 264.1(g)(6) *OAC* 3745-54-01(G)(6)
Characterization and management of industrial wastewater	Industrial wastewater discharges that are point source discharges under Section 402 of the CWA, as amended, are not solid wastes for purpose of hazardous waste management.	Generation of industrial wastewater for discharge—**applicable**	40 *CFR* 261.4(a)(2) *OAC* 3745-51-04(A)(2)
Segregation of scrap metal for recycle	Material is not subject to RCRA requirements for generators, transporters, and storage facilities under 40 *CFR* Parts 262 through 266, 268, 270, or 124 [*OAC* 3745-50-40 to 3745-50-235 or 3745-52, 3745-53, 3745-54 to 3745-57, 3745-65 to 3745-69, 3745-205, 3745-256, 3745-266, and 3745-270].	Scrap metal, as defined in 40 *CFR* 261.1(c)(6) intended for recycle—**applicable**	40 *CFR* 261.6(a)(3)(ii) *OAC* 3745-51-06(A)(3)(b)

Table B.2 Action-specific ARARs for Plant Support Buildings and Structures at the Portsmouth Gaseous Diffusion Plant, Portsmouth, Ohio (continued)

Action	Requirements[a]	Prerequisite	Citation
Management of recyclable materials for precious metal recovery	Recyclable materials being collected, transported or stored that are being reclaimed to recover economically significant amounts of gold, silver, platinum, palladium, iridium, osmium, rhodium, ruthenium, or any combination of these must be managed in accordance with the substantive requirements of *OAC* 3745-266-70.	Management of recyclable materials for precious metal recovery—**applicable**	*OAC* 3745-266-70
Management of spent lead acid batteries being reclaimed	Spent lead acid batteries being collected, transported and stored prior to regeneration must be managed in accordance with particular hazardous waste requirements depending on permit status and whether they are being reclaimed through regeneration or in other ways. Management options are detailed in 40 *CFR* 266.80 [*OAC* 3745-266-80]. Spent lead acid batteries can also be managed as universal wastes under 40 *CFR* 273 [*OAC* 3745-273].	Management of spent lead acid batteries being reclaimed—**applicable**	40 *CFR* 266.80 *OAC* 3745-266-80
Characterization of LLW	Shall be characterized using direct or indirect methods and the characterization documented in sufficient detail to ensure safe management and compliance with the WAC of the receiving facility.	Generation of LLW for storage or disposal at a DOE facility—**TBC**	DOE M 435.1-1(IV)(I)
	Characterization data shall, at a minimum, include the following information relevant to the management of the waste:		DOE M 435.1-1(IV)(I)(2)
	• Physical and chemical characteristics;		DOE M 435.1-1(IV)(I)(2)(a)
	• Volume, including the waste and any stabilization or absorbent media;		DOE M 435.1-1(IV)(I)(2)(b)
	• Weight of the container and contents;		DOE M 435.1-1(IV)(I)(2)(c)
	• Identities, activities, and concentrations of major radionuclides;		DOE M 435.1-1(IV)(I)(2)(d)
	• Characterization date;		DOE M 435.1-1(IV)(I)(2)(e)

Table B.2 Action-specific ARARs for Plant Support Buildings and Structures at the Portsmouth Gaseous Diffusion Plant, Portsmouth, Ohio (continued)

Action	Requirements[a]	Prerequisite	Citation
Characterization of LLW (continued)	• Generating source; and		DOE M 435.1-1(IV)(I)(2)(f)
	• Any other information that may be needed to prepare and maintain the disposal facility performance assessment, or demonstrate compliance with performance objectives.		DOE M 435.1-1(IV)(I)(2)(g)
Packaging of solid LLW for storage (e.g., radioactively contaminated debris)	Shall be packaged in a manner that provides containment and protection for the duration of the anticipated storage period and until disposal is achieved or until the waste has been removed from the container.	Storage of LLW in containers at a DOE facility—**TBC**	DOE M 435.1-1(IV)(L)(1)(a)
	Vents or other measures shall be provided if the potential exists for pressurizing or generating flammable or explosive concentrations of gases within the waste container. Containers shall be marked such that their contents can be identified.		DOE M 435.1-1(IV)(L)(1)(b) and (c)
Decontamination of radioactively contaminated equipment and building structures	Property potentially containing residual radioactive material must not be released or cleared from DOE control unless it is either demonstrated not to contain residual radioactive material based on process and historical knowledge, radiological monitoring or surveys, or a combination of these; or the property is evaluated and appropriately monitored or surveyed in accordance with DOE Order 458.1(4)(k)(3)(b).	Residual radioactive material on equipment and building structures intended for unrestricted use—**TBC**	DOE Order 458.1(4)(k)(3)
Release of radiological materials or scrap metal for reuse	Before being released, property shall be monitored or surveyed to determine the types and quantities of residual radioactive material within the property; the quantities of removable and total residual radioactive material on property surfaces (including residual radioactive material on or under any coating); and that contamination within or on the property is in compliance with applicable DOE Authorized Limits of DOE Order 458.1(4)(k)(6).	Radionuclide-contaminated materials and equipment intended for recycle or reuse—**TBC**	DOE Order 458.1(4)(k)(3)(b)(1)–(2) and (4)

Table B.2 Action-specific ARARs for Plant Support Buildings and Structures at the Portsmouth Gaseous Diffusion Plant, Portsmouth, Ohio (continued)

Action	Requirements[a]	Prerequisite	Citation
Release of radiological materials or scrap metal for reuse (continued)	Where potentially contaminated surfaces are difficult to access for measurement (as in some pipes, drains, and ductwork), such property may be released after case-by-case evaluation and documentation based on both the history of its use and available measurements sufficient to demonstrate that the unsurveyable surfaces are likely to meet DOE Authorized Limits.		DOE Order 458.1(4)(k)(3)(b)(3)
Torch cutting of metal coated with paint that may contain PCBs	No person may open burn PCBs. Combustion of PCBs by incineration as approved under Section 761.60 (a) or (e), or otherwise allowed under Part 761, is not open burning.	Management of PCB waste for storage or disposal—**applicable**	40 *CFR* 761.50(a)(1)
Management of PCB items	Any person removing from use a PCB Item containing an intact and non-leaking PCB Article must dispose of it in accordance with Section 761.60(b), or decontaminate it in accordance with Section 761.79. PCB Items where the PCB Articles are no longer intact and non-leaking are regulated for disposal as PCB bulk product waste under Section 761.62(a) or (c).	Management of PCB waste for storage or disposal—**applicable**	40 *CFR* 761.50(b)(2)
Demolition of a facility containing RACM	Remove all RACM from the facility before demotion and follow the procedures for asbestos emission control and RACM handling as appropriate and detailed in 40 *CFR* 61.145(c)(1) through (7) [*OAC* 3745-20-04(A)(1) through (7)].	Demolition of a facility that contains RACM exceeding the volume requirements of 40 *CFR* 61.145(a)(1) [*OAC* 3745-20-02(B)]—**applicable**	40 *CFR* 61.145(a)(1) *OAC* 3745-20-04(A)(1)
	• RACM need not be removed before demolition if:		40 *CFR* 61.145(c)(1)(i) *OAC* 3745-20-04(A)(1)(a)
	• It is Category I nonfriable ACM that is not in poor condition and is not friable;		
	• It is on a facility component that is encased in concrete or other similarly hard material and is adequately wet whenever exposed during demolition;		40 *CFR* 61.145(c)(1)(ii) *OAC* 3745-20-04(A)(1)(b)
	• It is not accessible for testing and was, therefore, not discovered until after demolition began and, as a result of the demolition, the material cannot be safely removed (exposed RACM and asbestos-contaminated debris must be adequately wet at all times); or		40 *CFR* 61.145(c)(1)(iii) *OAC* 3745-20-04(A)(1)(c)

Table B.2 Action-specific ARARs for Plant Support Buildings and Structures at the Portsmouth Gaseous Diffusion Plant, Portsmouth, Ohio (continued)

Action	Requirements[a]	Prerequisite	Citation
Demolition of a facility containing RACM (continued)	• It is Category II nonfriable ACM and the probability is low that the materials will become crumbled, pulverized, or reduced to powder during demolition.		40 *CFR* 61.145(c)(1)(iv) *OAC* 3745-20-04(A)(1)(d)
Management of ACM prior to disposal	Discharge no visible emissions to the outside air or use one of the emission control and waste treatment methods specified in paragraphs (a)(1) through (a)(4) of 40 *CFR* 61.150 [paragraphs (B)(1) through (B)(4) of *OAC* 3745-20-05].	Generation, collection, processing, packaging, and transportation of any asbestos-containing waste material that is not Category I or II nonfriable ACM waste that did not become crumbled, pulverized, or reduced to powder [40 *CFR* 61.150(a)(5)] —**applicable**	40 *CFR* 61.150(a) *OAC* 3745-20-05(B)
	For facilities demolished where the RACM is not removed prior to demolition according to §§61.145(c)(i) – (iv) [*OAC* 3745-20-04(A)(1) or (D)], adequately wet ACM at all times after demolition and keep wet during handling and loading for transport. Such ACM does not have to be sealed in leak-tight containers or wrapping but may be transported and disposed of in bulk in leak-tight transport vehicles that are securely covered or enclosed and cause no visible emissions.		40 *CFR* 61.150(a)(3) *OAC* 3745-20-05(B)(2)
	As applied to demolition and renovation, the requirements of 40 *CFR* 61.150(a) [*OAC* 3745-20-05(B) and (C)] do not apply to Category I or II nonfriable ACM that is has not been crumbled, pulverized, or reduced to powder.		40 *CFR* 61.150(a)(5) *OAC* 3745-20-05(B)(5)
	All asbestos-containing waste material shall be deposited as soon as practicable at a waste disposal site operated in accordance with the provisions of 40 *CFR* 61.154 [*OAC* 3745-20-06] or an EPA-approved site that coverts RACM and asbestos-containing waste materials into nonasbestos (asbestos-free) materials according to the provisions of 40 *CFR* 61.155 [*OAC* 3745-20-13].		40 *CFR* 61.150(b)(1) - (2) *OAC* 3745-20-05(A)
	The requirements of 40 *CFR* 61.150(b)(1) and (2) do not apply to Category I nonfriable ACM that is not RACM.		40 *CFR* 61.150(b)(3)
Characterization and management of universal waste	A large quantity handler of universal waste is prohibited from disposing, diluting, or treating universal waste except in accordance with 40 *CFR* 273 [*OAC* 3745-273-33 or 3745-273-37].	Generation of universal waste [as defined in 40 *CFR* 273 and *OAC* 3745-273] for disposal—**applicable**	40 *CFR* 273.31 *OAC* 3745-273-31

Table B.2 Action-specific ARARs for Plant Support Buildings and Structures at the Portsmouth Gaseous Diffusion Plant, Portsmouth, Ohio (continued)

Action	Requirements[a]	Prerequisite	Citation
Characterization and management of universal waste (continued)	Must manage universal waste in accordance with 40 *CFR* 273 [*OAC* 3745-273-33] in a way that prevents releases of any universal waste or component of a universal waste to the environment.		40 *CFR* 273.33 *OAC* 3745-273-33(A)
	Must label or mark the universal waste to identify the type of universal waste.		40 *CFR* 273.34 *OAC* 3745-273-34
	May accumulate waste for no longer than one year from the date the waste is generated or received from another handler unless the requirements of 40 *CFR* 273.35(b) [*OAC* 3745-273-35(B)] are met.		40 *CFR* 273.35(a) *OAC* 3745-273-35(A)
	May accumulate universal waste for longer than one year from the date the waste is generated or received from another handler if such activity is solely for the purpose of accumulation of such quantities of universal waste as necessary to facilitate proper recovery, treatment, or disposal. However, the handler bears the burden of proving that such activity was solely for this purpose.		40 *CFR* 273.35(b) *OAC* 3745-273-35(B)
	Shall ensure that all employees are thoroughly familiar with proper waste handling and emergency procedures relative to their responsibilities during normal facility operations and emergencies.		40 *CFR* 273.36 *OAC* 3745-273-36
	Must immediately contain all releases of universal wastes and other residues from universal wastes, and must determine whether any material resulting from the release is hazardous waste, and if so, must manage the hazardous waste in compliance with all applicable requirements.		40 *CFR* 273.37 *OAC* 3745-273.37
	Must keep a record of each shipment of universal waste received and sent from the facility and retain record for at least 3 years. Record must include waste handler, shipper, or destination facility name and address, quantity and type of waste, and date shipment left or was received at facility.		40 *CFR* 273.39 *OAC* 3745-273.39

Table B.2 Action-specific ARARs for Plant Support Buildings and Structures at the Portsmouth Gaseous Diffusion Plant, Portsmouth, Ohio (continued)

Action	Requirements[a]	Prerequisite	Citation
Management of universal waste lamps (fluorescent, mercury vapor)	Must contain any lamp in containers or packages that are structurally sound, adequate to prevent breakage, and compatible with the contents of the lamps.	Generation of universal waste lamps [as defined in 40 *CFR* 273.9 and *OAC* 3745-273-05]—**applicable**	40 *CFR* 273.33(d)(1) *OAC* 3745-273-33(D)(1)
	Such containers and packages must remain closed and must lack evidence of leakage, spillage, or damage that could cause leakage of hazardous constituents under reasonably foreseeable conditions.		
	Must immediately clean up and place in a container any lamp that is broken and must place in a container any lamp that shows evidence of breakage, leakage, or damage that could cause the release of mercury or other hazardous constituents to the environment.		40 *CFR* 273.33(d)(2) *OAC* 3745-273-33(D)(2)
	Each lamp or container or package in which such lamps are contained must be labeled or marked clearly with one of the following phrases: "Universal Waste-Lamp(s)," or "Waste Lamps," or "Used Lamps."		40 *CFR* 273.34(e) *OAC* 3745-273-34(E)
	Mark or label the individual item with the date the lamp(s) became a waste, or mark or label the container or package with the date the wastes were received.		40 *CFR* 273.35(c) *OAC* 3745-273-35(C)
Management of used oil	Used oil shall not be stored in a unit other than a tank, container, or RCRA regulated unit.	Generation and storage of used oil, as defined in 40 *CFR* 279.1 [*OAC* 3745-279-01(A)(12)], that meets the applicability requirements of 40 *CFR* 279.10—**applicable**	40 *CFR* 279.22(a) *OAC* 3745-279-22(A)
	Containers and aboveground tanks used to store used oil must be in good condition (no severe rusting, apparent structural defects, or deterioration) and not leaking (no visible leaks).		40 *CFR* 279.22(b)(1) and (2) *OAC* 3745-279-22(B)(1) and (2)
	Containers and aboveground tanks used to store used oil and fill pipes used to transfer used oil into USTs must be labeled or marked clearly with the words "Used Oil."		40 *CFR* 279.22(c)(1) and (2) *OAC* 3745-279-22(C)(1)
	Upon detection of a release of used oil to the environment, a generator must stop the release; contain, clean up, and properly manage the released used oil; and, if necessary, repair or replace any leaking used oil storage containers or tanks prior to returning to service.	Release of used oil to the environment—**applicable**	40 *CFR* 279.22(d) *OAC* 3745-279-22(D)

Table B.2 Action-specific ARARs for Plant Support Buildings and Structures at the Portsmouth Gaseous Diffusion Plant, Portsmouth, Ohio (continued)

Action	Requirements[a]	Prerequisite	Citation
Management of PCB waste	Any person storing or disposing of PCB waste must do so in accordance with 40 *CFR* 761, Subpart D.	Storage or disposal of waste containing PCBs at concentrations ≥ 50 ppm—**applicable**	40 *CFR* 761.50(a)
	Any person cleaning up and disposing of PCBs shall do so based on the concentration at which the PCBs are found.	Cleanup or disposal of PCB remediation waste as defined in 40 *CFR* 761.3—**applicable**	40 *CFR* 761.61
Decontamination of PCB contaminated materials prior to use, re-use, distribution, in commerce or disposal as a non-TSCA waste	Chopping (including wire chopping), distilling, filtering, oil/water separation, spraying, soaking, wiping, stripping of insulation, scraping, scarification or the use of abrasives or solvents may be used to remove or separate PCBs to the decontamination standards for liquids, concrete, or non-porous surfaces, as listed in 40 *CFR* 761.79(b).	Generation of PCB wastes, including water, organic liquids, non-porous surfaces (scrap metal from disassembled electrical equipment), concrete, and non-porous surfaces covered with porous surfaces, such as paint or coating on metal—**applicable**	40 *CFR* 761.79(b)
Decontamination of water containing PCBs to levels acceptable for discharge	For water discharged to a treatment works or to navigable waters, decontaminate to < 3 µg/L (approximately < 3 ppb)or a PCB discharge limit included in a permit issued under Section 304(b) or 402 of the CWA; or	Discharge of water containing PCBs to a treatment works or navigable waters—**applicable**	40 *CFR* 761.79(b)(1)(ii)
Decontamination of water containing PCBs to levels acceptable for unrestricted use	Decontaminate to ≤ 0.5 µg/L (approximately ≤ 0.5 ppb) for unrestricted use.	Release of water containing PCBs for unrestricted use—**applicable**	40 *CFR* 761.79(b)(1)(iii)
Decontamination of organic liquids or non-aqueous inorganic liquids containing PCBs	For organic liquids or non-aqueous inorganic liquids containing PCBs, decontamination standard is < 2 mg/kg (i.e., < 2 ppm) PCBs.	Release of organic liquids or non-aqueous liquid containing PCBs—**applicable**	40 *CFR* 761.79(b)(2)
Decontamination of non-porous surfaces in contact with liquid PCBs to levels acceptable for unrestricted use	For non-porous surfaces previously in contact with liquid PCBs at any concentration, where no free-flowing liquids are currently present, ≤ 10 µg PCBs per 100 sq cm (≤ 10 µg/100 $cm^{2)}$ as measured by a standard wipe test (40 *CFR* 761.123) at locations selected in accordance with Subpart P of 40 *CFR* 761.	Release of non-porous surfaces in contact with liquid PCBs at any concentration for unrestricted use—**applicable**	40 *CFR* 761.79(b)(3)(i)(A)

Table B.2 Action-specific ARARs for Plant Support Buildings and Structures at the Portsmouth Gaseous Diffusion Plant, Portsmouth, Ohio (continued)

Action	Requirements[a]	Prerequisite	Citation
Decontamination of non-porous surfaces in contact with non-liquid PCBs to levels acceptable for unrestricted use	For non-porous surfaces in contact with non-liquid PCBs (including non-porous surfaces covered with a porous surface, such as paint or coating on metal), clean to Visual Standard No. 2, Near-White Blast Cleaned Surface Finish of the NACE. A person shall verify compliance with standard No. 2 by visually inspecting all cleaned areas.	Release of non-porous surfaces in contact with non-liquid PCBs for unrestricted use—**applicable**	40 *CFR* 761.79(b)(3)(i)(B)
Decontamination of non-porous surfaces in contact with liquid PCBs to levels acceptable for disposal in a TSCA smelter	For non-porous surfaces previously in contact with liquid PCBs at any concentration, where no free-flowing liquids are currently present, decontaminate to < 100 µg/100 cm^2 as measured by a standard wipe test (Section 761.123) at locations selected in accordance with Subpart P of 40 *CFR* 761.	Disposal of non-porous surfaces previously in contact with liquid PCBs at any concentration into a smelter operating in accordance with Section 761.72(b)—**applicable**	40 *CFR* 761.79(b)(3)(ii)(A)
Decontamination of non-porous surfaces in contact with non-liquid PCBs to levels acceptable for disposal in a TSCA smelter	For non-porous surfaces in contact with non-liquid PCBs (including non-porous surfaces covered with a porous surface, such as paint or coating on metal) clean to Visual Standard No. 3, Commercial Blast Cleaned Surface Finish, of the NACE. A person shall verify compliance with Standard No. 3 by visually inspecting all cleaned areas.	Disposal of non-porous surfaces in contact with non-liquid PCBs into a smelter operating in accordance with Section 761.72(b) —**applicable**	40 *CFR* 761.79(b)(3)(ii)(B)
Decontamination of concrete recently contaminated with PCBs	Decontamination standard for concrete is < 10 µg/100 cm^2 as measured by a standard wipe test (Section 761.123) if the decontamination procedure is commenced within 72 hours of the initial spill of PCBs to the concrete or portion thereof being decontaminated.	Decontamination of concrete within 72 hours of the initial spill of PCBs to the concrete—**applicable**	40 *CFR* 761.79(b)(4)
Disposal of materials previously contaminated with PCBs as non-TSCA waste	Materials from which PCBs have been removed by decontamination in accordance with 40 *CFR* 761.79, not including decontamination wastes and residuals under 40 *CFR* 761.79(g), are considered unregulated for disposal under Subpart D of TSCA (40 *CFR* 761).	Disposal of materials from which PCBs have been removed—**applicable**	40 *CFR* 761.79(a)(4)

Table B.2 Action-specific ARARs for Plant Support Buildings and Structures at the Portsmouth Gaseous Diffusion Plant, Portsmouth, Ohio (continued)

Action	Requirements[a]	Prerequisite	Citation
Risk-based decontamination of PCB-containing materials	May decontaminate to an alternate risk-based decontamination standard under 40 *CFR* 761.79(h) if the standard does not pose an unreasonable risk of injury to health or the environment.	Decontamination of materials contaminated with PCBs—**applicable**	40 *CFR* 761.79(h)
Management of PCB/radioactive waste	Any person storing such waste ≥ 50 ppm PCBs must do so taking into account both its PCB concentration and radioactive properties, except as provided in 40 *CFR* 761.65(a)(1), (b)(1)(ii) and (c)(6)(i).	Generation of PCB/radioactive waste for disposal—**applicable**	40 *CFR* 761.50(b)(7)(i)
	Any person disposing of such waste must do so taking into account both its PCB concentration and its radioactive properties.		40 *CFR* 761.50(b)(7)(ii)
	If, after taking into account only the PCB properties in the waste, the waste meets the requirements for disposal in a facility permitted, licensed, or registered by a state as a municipal or non-municipal non-hazardous waste landfill, then the person may dispose of such waste without regard to the PCBs, based on its radioactive properties alone.		40 *CFR* 761.50(b)(7)(ii)
	Storage		
Storage of hazardous wastes restricted from land disposal	Prohibits storage of hazardous waste restricted from land disposal unless the generator stores such waste in tanks, containers, or containment buildings on site solely for the purpose of accumulating such quantities as necessary to facilitate proper recovery, treatment, or disposal.	Accumulation of hazardous wastes restricted from land disposal solely for purpose of accumulation of quantities as necessary to facilitate proper recovery, treatment, or disposal—**applicable**	40 *CFR* 268.50 *OAC* 3745-270-50
Temporary storage and accumulation of hazardous waste in containers on site	A generator may accumulate hazardous waste at the facility provided that: • The waste is placed in containers that comply with the applicable requirements in 40 *CFR* 265.171-173 (Subpart I) [*OAC* 3745-66-70 to 3745-66-73],	Accumulation of RCRA hazardous waste on-site as defined in 40 *CFR* 260.10—**applicable**	40 *CFR* 262.34(a)(1)(i) *OAC* 3745-52-34(A)(1)(a)
	• Container is marked with the date upon which each period of accumulation begins,		40 *CFR* 262.34(a)(2) *OAC* 3745-52-34(A)(2)

Table B.2 Action-specific ARARs for Plant Support Buildings and Structures at the Portsmouth Gaseous Diffusion Plant, Portsmouth, Ohio (continued)

Action	Requirements[a]	Prerequisite	Citation
Temporary storage and accumulation of hazardous waste in containers on site (continued)	• Container is marked with the words "hazardous waste" • The generator complies with the requirements in paragraph (A)(5) of rule 3745-270-07 and rules 3745-65-16, 3745-65-30 to 3745-65-37, and 3745-65-50 to 3745-65-56 of the Administrative Code. Generator is exempt from all requirements in rules 3745-66-10 to 3745-66-21 and 3745-66-40 to 3745-66-48 of the Administrative Code except for paragraphs (A) and (B) of rule 3745-66-11 and rule 3745-66-14 of the Administrative Code.		40 *CFR* 262.34(a)(3) *OAC* 3745-52-34(A)(3) 40 *CFR* 262.34(a)(4) *OAC* 3745-52-34(A)(4) 40 *CFR* 262.34(a)(1) *OAC* 3745-52-34(A)(1)(e)
	Must be marked with either the words "Hazardous Waste" or with other words that identify the contents. For the excess waste, must comply within 3 days with the requirements of *OAC* 3745-52-34(A) or other applicable provisions of Chapter 3745-52 of the Administrative Code. During the 3-day period, comply with *OAC* 3745-52-34(C)(1)(a) and (b). Must mark container holding excess accumulation with the date the excess accumulation began.	Accumulation of 55 gal or less of hazardous waste or 1 qt or less of acutely hazardous waste at or near any point of generation—**applicable**	40 *CFR* 262.34(c)(1)(ii) *OAC* 3745-52-34(C)(1)(b) 40 *CFR* 262.34(c)(2) *OAC* 3745-52-34(C)(2)
Accumulation of rejected shipments of hazardous waste	A generator who receives a shipment of hazardous waste back as a rejected load or residue from a facility in accordance with a manifest discrepancy may accumulate the waste on-site in accordance with paragraphs (A) and (B) or (D), (D), and (F) of *OAC* 3745-52-34 depending on the amount of hazardous waste on-site in that calendar month.	Accumulation of RCRA hazardous waste on-site as defined in 40 *CFR* 260.10—**applicable**	40 *CFR* 262.34(m) *OAC* 3745-52-34(M)
Management of hazardous waste stored in containers	If container is not in good condition (e.g., severe rusting, structural defects) or if it begins to leak, must transfer waste into container in good condition. Use container made or lined with materials compatible with waste to be stored so that the ability of the container is not impaired. Keep containers closed during storage, except to add/remove waste.	Storage of RCRA hazardous waste in containers—**applicable**	40 *CFR* 264.171 *OAC* 3745-55-71 40 *CFR* 264.172 *OAC* 3745-55-72 40 *CFR* 264.173(a) *OAC* 3745-55-73(A)

Table B.2 Action-specific ARARs for Plant Support Buildings and Structures at the Portsmouth Gaseous Diffusion Plant, Portsmouth, Ohio (continued)

Action	Requirements[a]	Prerequisite	Citation
Management of hazardous waste stored in containers (continued)	Open, handle, and store containers in a manner that will not cause containers to rupture or leak.		40 *CFR* 264.173(b) *OAC* 3745-55-73(B)
Inspection of RCRA container storage area	At least weekly, must inspect areas where containers are stored, looking for leaking containers and for deterioration of containers and the containment system caused by corrosion or other factors.	Storage of RCRA hazardous waste in containers—**applicable**	40 *CFR* 264.174 *OAC* 3745-55-74
Operation of a RCRA container storage area	Area must be sloped or otherwise designed and operated to drain liquid from precipitation, or containers must be elevated or otherwise protected from contact with accumulated liquid.	Storage in containers of RCRA hazardous wastes that do not contain free liquids—**applicable**	40 *CFR* 264.175(c) *OAC* 3745-55-75(C)
Storage of RCRA hazardous waste with free liquids in containers	Area must have a containment system designed and operated in accordance with 40 *CFR* 264.175(b) [*OAC* 3745-55-75(B)] as follows:	Storage of RCRA hazardous waste with free liquids or F020, F021, F022, F023, F026 and F027 in containers—**applicable**	40 *CFR* 264.175(a) and (d) *OAC* 3745-55-75(A) and (D)
	• A base must underlie the containers that is free of cracks or gaps and is sufficiently impervious to contain leaks, spills, and accumulated precipitation until the collected material is detected and removed;		40 *CFR* 264.175(b)(1) *OAC* 3745-55-75(B)(1)
	• Base must be sloped or the containment system must be otherwise designed and operated to drain and remove liquids resulting from leaks, spills, or precipitation, unless the containers are elevated or are otherwise protected from contact with accumulated liquids;		40 *CFR* 264.175(b)(2) *OAC* 3745-55-75(B)(2)
	• Must have sufficient capacity to contain 10 percent of the volume of containers or volume of largest container, whichever is greater;		40 *CFR* 264.175(b)(3) *OAC* 3745-55-75(B)(3)
	• Run-on into the system must be prevented unless the collection system has sufficient capacity to contain along with volume required for containers; and		40 *CFR* 264.175(b)(4) *OAC* 3745-55-75(B)(4)
	• Spilled or leaked waste and accumulated precipitation must be removed from the sump or collection area in a timely manner as or necessary to prevent overflow.		40 *CFR* 264.175(b)(5) *OAC* 3745-55-75(B)(5)

Table B.2 Action-specific ARARs for Plant Support Buildings and Structures at the Portsmouth Gaseous Diffusion Plant, Portsmouth, Ohio (continued)

Action	Requirements[a]	Prerequisite	Citation
Storage of ignitable or reactive waste in containers	Containers holding ignitable or reactive waste must be located at least 15 m (50 ft) from the facility's property line.	Storage of ignitable or reactive RCRA hazardous waste in containers—**applicable**	40 *CFR* 264.176 *OAC* 3745-55-76
Storage of incompatible waste in containers	Must not place incompatible wastes in same container unless comply with 40 *CFR* 264.17(b) [*OAC* 3745-54-17(B)].	Storage of "incompatible" RCRA hazardous wastes in containers—**applicable**	40 *CFR* 264.177(a) *OAC* 3745-55-77(A)
	Waste shall not be placed in an unwashed container that previously held an incompatible waste or material.		40 *CFR* 264.177(b) *OAC* 3745-55-77(B)
	A container holding incompatible wastes must be separated from any waste or nearby materials or must protect them from one another by using a dike, berm, wall, or other device.		40 *CFR* 264.177(c) *OAC* 3745-55-77(C)
Design and operation of a hazardous waste facility (e.g., storage areas)	Facilities must be designed, constructed, maintained, and operated to minimize the possibility of a fire, explosion, or any unplanned sudden or nonsudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water which could threaten human health or the environment.	Construction or setup of a RCRA hazardous waste facility—**applicable**	40 *CFR* 264.31 *OAC* 3745-54-31
Required equipment	All facilities shall be equipped with the following:		40 *CFR* 264.32 *OAC* 3745-54-32
	• An internal communications or alarm system capable of providing immediate emergency instruction to facility personnel.		40 *CFR* 264.32(A) *OAC* 3745-54-32(A)
	• A device capable of summoning emergency assistance from local police departments, fire departments, or Ohio EPA or local emergency response teams.		40 *CFR* 264.32(B) *OAC* 3745-54-32(B)
	• Portable fire extinguishers, fire control equipment, including but not limited to, special extinguishing equipment, such as that using foam, inert gas, or dry chemicals, spill control equipment, and decontamination equipment.		40 *CFR* 264.32(C) *OAC* 3745-54-32(C)
	• Water at adequate volume and pressure to supply water hose streams, or foam producing equipment, or automatic sprinklers, or water spray systems.		40 *CFR* 264.32(D) *OAC* 3745-54-32(D)

Table B.2 Action-specific ARARs for Plant Support Buildings and Structures at the Portsmouth Gaseous Diffusion Plant, Portsmouth, Ohio (continued)

Action	Requirements[a]	Prerequisite	Citation
Hazardous waste facility - security system	Must prevent the unknowing entry, and minimize the possibility for the unauthorized entry, of persons or livestock onto the active portion of his facility.	Operation of a RCRA hazardous waste facility—**applicable**	40 *CFR* 264.14(a) *OAC* 3745-54-14(A)
	Must have a 24-hour surveillance system which continuously monitors and controls entry onto the active portion of the facility; or an artificial or natural barrier which completely surrounds the active portion of the facility; and a means to control entry, at all times, through the gates or other entrances to the active portion of the facility.		40 *CFR* 264.14(b) *OAC* 3745-54-14(B)
	Must post a sign with the legend "Danger – Unauthorized Personnel Keep Out" at each entrance to the active portion of a facility and at other locations in sufficient numbers to be seen from any approach in the active portion. Legend must be written in English and be legible from a distance of at least twenty-five ft.		40 *CFR* 264.14(c) *OAC* 3745-54-14(C)
Hazardous waste facility – general inspection requirements	Must inspect facility for malfunctions and deterioration, operator errors, and discharges to identify any problems and remedy any deterioration or malfunction of equipment or structures on a schedule that ensures that the problem does not lead to an environmental or human health hazard.	Operation of a RCRA hazardous waste facility—**applicable**	40 *CFR* 264.15(a) and (c) *OAC* 3745-54-15(A) and (C)
Hazardous waste facility – training requirements	Facility personnel must successfully complete a program of classroom instruction or on-the-job training in accordance with the program outlined in 40 *CFR* 264.16 [*OAC* 3745-54-16] and take part in an annual review of this initial training.	Operation of a RCRA hazardous waste facility—**applicable**	40 *CFR* 264.16 *OAC* 3745-54-16
Hazardous waste facility - testing and maintenance of equipment	All facility communications or alarm systems, fire protection equipment, spill control equipment, and decontamination equipment, where required, shall be tested and maintained as necessary to assure its proper operation in time of emergency.	Operation of a RCRA hazardous waste facility—**applicable**	40 *CFR* 264.33 *OAC* 3745-54-33

Table B.2 Action-specific ARARs for Plant Support Buildings and Structures at the Portsmouth Gaseous Diffusion Plant, Portsmouth, Ohio (continued)

Action	Requirements[a]	Prerequisite	Citation
Hazardous waste facility - access to communications or alarm system	Whenever hazardous waste is being poured, mixed, spread, or otherwise handled, all personnel involved in the operation shall have immediate access to an internal alarm or emergency communication device, either directly or through visual or voice contact with another employee, unless such a device is not required under 40 *CFR* 264.32 [*OAC* 3745-54-32].	Operation of a RCRA hazardous waste facility—**applicable**	40 *CFR* 264.34(a) *OAC* 3745-54-34(A)
	If there is only one employee on the premises while the facility is operating, such employee shall have immediate access to a device capable of summoning external emergency assistance, unless such a device is not required under 40 *CFR* 264.32 [*OAC* 3745-54-32].		40 *CFR* 264.34(b) *OAC* 3745-54-34(B)
Hazardous waste facility - required aisle space	Shall maintain aisle space to allow the unobstructed movement of personnel, fire protection equipment, spill control equipment, and decontamination equipment to any area of facility operation in an emergency, unless it can be satisfactorily demonstrated that aisle space is not needed for any of these purposes.	Operation of a RCRA hazardous waste facility—**applicable**	40 *CFR* 264.35 *OAC* 3745-54-35
Hazardous waste facility - purpose and implementation of a contingency plan	Substantive requirements will be met to minimize hazards to human health or the environment from fires, explosions or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water.	Operation of a RCRA hazardous waste facility—**applicable**	40 *CFR* 264.51(a) *OAC* 3745-54-51(A)
	Substantive requirements shall be implemented immediately whenever there is a fire, explosion or release of hazardous waste or hazardous waste constituents which could threaten human health or the environment.		40 *CFR* 264.51(b) *OAC* 3745-54-51(B)
Hazardous waste facility - content of contingency plan	Comply with the substantive requirements of §§264.51 and 264.56 [rules 3745-54-51 and 3745-54-56 of the Administrative Code] in response to fires, explosions, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface waster at the facility. 40 *CFR* 264.52(a) through (f) [*OAC* 3745-54-52(A) through (F)] describes what must be included in the Plan.	Operation of a RCRA hazardous waste facility—**applicable**	40 *CFR* 264.52 *OAC* 3745-54-52

Table B.2 Action-specific ARARs for Plant Support Buildings and Structures at the Portsmouth Gaseous Diffusion Plant, Portsmouth, Ohio (continued)

Action	Requirements[a]	Prerequisite	Citation
Hazardous waste facility-emergency coordinator	At all times, there shall be at least one employee either on the facility premises or on call with responsibility for coordinating all internal emergency response measures. This coordinator shall be thoroughly familiar with all aspects of the facility's contingency plan, all operations and activities at the facility, the locations and characteristics of waste handled, the location of all records within the facility, and the facility layout. In addition, this person shall have the authority to commit the resources needed to implement the contingency plan.	Operation of a RCRA hazardous waste facility—**applicable**	40 *CFR* 264.55 *OAC* 3745-54-55
Hazardous waste facility – emergency procedures	Whenever there is an imminent or actual emergency situation, the emergency coordinator, or his designee when the emergency coordinator is on call, must immediately implement the substantive requirements detailed in 40 *CFR* 264.56 [*OAC* 3745-54-56].	Operation of a RCRA hazardous waste facility—**applicable**	40 *CFR* 264.56 *OAC* 3745-54-56
Temporary storage of RCRA remediation waste in a staging pile	May be temporarily stored (including mixing, sizing, blending, or other similar physical operations intended to prepare the wastes for subsequent management or treatment) at a facility provided that the staging pile will be designed to: • Facilitate a reliable, effective and protective remedy; • Prevent or minimize releases of hazardous wastes and constituents into the environment, and minimize or adequately control cross-media transfer, as necessary, to protect human health and the environment (e.g., through the use of liners, covers, run on/run off controls, as appropriate).	Accumulation of non-flowing hazardous remediation waste (or remediation waste otherwise subject to land disposal restrictions) as defined in 40 *CFR* 260.10—**applicable**	40 *CFR* 264.554(d)(1) *OAC* 3745-57-74 40 *CFR* 264.554(d)(1)(i) *OAC* 3745-57-74(D)(1)(a) 40 *CFR* 264.554(d)(1)(ii) *OAC* 3745-57-74(D)(1)(b)
	Must not place incompatible wastes in same pile unless comply with 40 *CFR* 264.17(b) [*OAC* 3745-54-17(B)]. Incompatible wastes must be separated from any waste or nearby materials or must protect them from one another by using a dike, berm, wall, or other device.	Storage of "incompatible" remediation waste in staging pile—**applicable**	40 *CFR* 264.554(f)(1) *OAC* 3745-57-74(F)(1) 40 *CFR* 264.554(f)(2) 3745-57-74(F)(2)

Table B.2 Action-specific ARARs for Plant Support Buildings and Structures at the Portsmouth Gaseous Diffusion Plant, Portsmouth, Ohio (continued)

Action	Requirements[a]	Prerequisite	Citation
Temporary storage of PCB waste in a non-RCRA regulated area	Must not pile remediation waste on the same base where incompatible wastes or materials were previously piled, unless the base has been decontaminated sufficiently to comply with *CFR* 274.17(b) [*OAC* 3745-54-17(B)].		40 *CFR* 264.554(f)(3) *OAC* 3745-57-74(F)(3)
	Except as provided in 40 *CFR* 761.65 (b)(2), (c)(1), (c)(7), (c)(9), and (c)(10), after July 1, 1978, facilities used for the storage of PCBs and PCB items designated for disposal shall comply with the storage unit requirements in 40 *CFR* 761.65(b)(1).	Storage of PCBs and PCB items at concentrations ≥ 50 ppm for disposal—**applicable**	40 *CFR* 761.65(b)
	The facilities shall meet the following criteria:		40 *CFR* 761.65(b)(1)
	• Adequate roof and walls to prevent rain water from reaching the stored PCBs and PCB Items;		40 *CFR* 761.65(b)(1)(i)
	• Adequate floor that has continuous curbing with a minimum 6-in. high curb. Floor and curb must provide a containment volume equal to at least two times the internal volume of the largest PCB article or container or 25% of the internal volume of all articles or containers stored there, whichever is greater. *Note*: 6 in. minimum curbing not required for area storing PCB/radioactive waste;		40 *CFR* 761.65(b)(1)(ii)
	• No drain valves, floor drains, expansion joints, sewer lines, or other openings that would permit liquids to flow from the curbed area.		40 *CFR* 761.65(b)(1)(iii)
	• Floors and curbing constructed of Portland cement, concrete, or a continuous, smooth, nonporous surface as defined at Section 761.3, which prevents or minimizes penetration of PCBs; and		40 *CFR* 761.65(b)(1)(iv)
	• Not located at a site that is below the 100-year flood water elevation.		40 *CFR* 761.65(b)(1)(v)
Temporary storage of PCB waste in a RCRA-regulated area	Does not have to meet storage unit requirements in 40 *CFR* 761.65(b)(1) provided unit is stored in compliance with RCRA and PCB spills are cleaned up in accordance with Subpart G of 40 *CFR* 761.	Storage of PCBs and PCB items at concentrations ≥ 50 ppm for disposal—**applicable**	40 *CFR* 761.65(b)(2)(i) thru (iv)

Table B.2 Action-specific ARARs for Plant Support Buildings and Structures at the Portsmouth Gaseous Diffusion Plant, Portsmouth, Ohio (continued)

Action	Requirements[a]	Prerequisite	Citation
Temporary storage of PCB waste in containers	Container(s) shall be marked as illustrated in 40 *CFR* 761.45(a).	Storage of PCBs and PCB items at concentrations ≥ 50 ppm for disposal—**applicable**	40 *CFR* 761.40(a)(1)
	Storage area must be properly marked as required by 40 *CFR* 761.40(a)(10).		40 *CFR* 761.65(c)(3)
	Any leaking PCB items and their contents shall be transferred immediately to a properly marked non-leaking container(s).		40 *CFR* 761.65(c)(5)
	Except as provided in 40 *CFR* 761.65(c)(6)(i) and (ii), container(s) shall be in accordance with requirements set forth in DOT HMR at 49 *CFR* 171-180.		40 *CFR* 761.65(c)(6)
	Items shall be dated when they are removed from service and the storage shall be managed so that PCB items can be located by date. [Note: Date should be marked on container]	PCB items (includes PCB wastes) removed from service for disposal—**applicable**	40 *CFR* 761.65(c)(8)
Risk-based storage of PCB remediation waste or bulk product waste prior to disposal	May store in a manner other than prescribed in 40 *CFR* 761.65 if the method will not pose an unreasonable risk of injury to health or the environment.	Storage of PCB remediation waste or bulk product waste prior to disposal—**applicable**	40 *CFR* 761.61(c) 40 *CFR* 761.62(c)
Temporary storage of bulk PCB remediation waste or PCB bulk product waste in a TSCA waste pile	Waste must be placed and managed in accordance with the design and operation standards, including liner and cover requirements and run-off control systems, in 40 *CFR* 761.65(c)(9).	Storage of bulk PCB-remediation waste or PCB bulk product waste at cleanup site or site of generation—**applicable**	40 *CFR* 761.65(c)(9)(i)
	Requirements of 40 *CFR* 761.65(c)(9) may be modified under the risk-based disposal option of Section 761.61(c).		40 *CFR* 761.65(c)(9)(iv)
Storage of PCB/radioactive waste in containers	For liquid wastes, containers must be nonleaking.	Storage of PCB/radioactive waste in containers other than those meeting DOT HMR performance standards—**applicable**	40 *CFR* 761.65(c)(6)(i)(A)
	For nonliquid wastes, containers must be designed to prevent buildup of liquids if such containers are stored in an area meeting the containment requirements of 40 *CFR* 761.65(b)(1)(ii); and		40 *CFR* 761.65(c)(6)(i)(B)
	For both liquid and nonliquid wastes, containers must meet all substantive requirements pertaining to nuclear criticality safety.		40 CFR 761.65(c)(6)(i)(C)

Table B.2 Action-specific ARARs for Plant Support Buildings and Structures at the Portsmouth Gaseous Diffusion Plant, Portsmouth, Ohio (continued)

Action	Requirements[a]	Prerequisite	Citation
Temporary staging and storage of LLW	Ensure that radioactive waste is stored in a manner that protects the public, workers, and the environment and that the integrity of waste storage is maintained for the expected time of storage.	Management and storage of LLW at a DOE facility—**TBC**	DOE M 435.1-1(I)(F)(13)
	Shall not be readily capable of detonation, explosive decomposition, reaction at anticipated pressures and temperatures, or explosive reaction with water.		DOE M 435.1-1(IV)(N)(1)
	Shall be stored in a location and manner that protects the integrity of waste for the expected time of storage.		DOE M 435.1-1(IV)(N)(3)
	Shall be managed to identify and segregate LLW from mixed waste.		DOE M 435.1-1(IV)(N)(6)
	Staging of LLW shall be for the purpose of accumulation of such quantities of waste as necessary to facilitate transportation, treatment, and disposal.		DOE M 435.1-1(IV)(N)(7)
	Treatment/disposal		
Disposal of RCRA-prohibited hazardous waste in a land-based unit	May be land disposed only if it meets the applicable requirements in the table "Treatment Standards for Hazardous Waste" at 40 *CFR* 268.40 (*OAC* 3745-270-40) before land disposal. The table lists either "total waste" standards, "waste-extract" standards, or "technology-specific" standards [as detailed further in 40 *CFR* 268.42 (*OAC* 3745-270-42)].	Land disposal, as defined in 40 *CFR* 268.2, of RCRA prohibited waste [as listed in 40 *CFR* 268.20 to .39 (*OAC* 3745-270-20 to -39)] —**applicable**	40 *CFR* 268.40(a) *OAC* 3745-270-40(A) 40 *CFR* 268.30 to 268.40 *OAC* 3745-270-30 to -40 40 *CFR* 268.42 *OAC* 3745-270-42
	For characteristic wastes (D001 – D043) that are subject to the treatment standards, all underlying hazardous constituents must meet the UTSs specified in 40 *CFR* 268.48 (*OAC* 3745 -270-48).	Land disposal of restricted RCRA characteristic wastes (D001-D043) that are not managed in a wastewater treatment unit that is regulated under the CWA, that is CWA equivalent, or that is injected into a Class I nonhazardous injection well—**applicable**	40 *CFR* 268.40(e) *OAC* 3745-270-40(E) 40 *CFR* 268.48 *OAC* 3745-270-48

Table B.2 Action-specific ARARs for Plant Support Buildings and Structures at the Portsmouth Gaseous Diffusion Plant, Portsmouth, Ohio (continued)

Action	Requirements[a]	Prerequisite	Citation
Disposal of RCRA-prohibited hazardous waste in a land-based unit (continued)	May be land disposed if the wastes no longer exhibit a characteristic at the point of land disposal, unless the wastes are subject to a specified method of treatment other than DEACT in 40 *CFR* 628.40 (*OAC* 3745-270-48), or are D003 reactive cyanide.	Land disposal of RCRA-restricted characteristic wastes—**applicable**	40 *CFR* 268.1(c)(4)(iv) *OAC* 3745-270-01(C)(4)
Debris	May be land disposed if treated prior to disposal as provided under the "Alternative Treatment Standards for Hazardous Debris" in 40 *CFR* 268.45(a)(1)-(5) [*OAC* 3745-270-45(A) (1)-(5)] unless it is determined under 40 *CFR* 261.3(f)(2) [*OAC* 3745-51-03(F)(2)] that the debris is no longer contaminated with hazardous waste or the debris is treated to the waste specific treatment standard provided in 40 *CFR* 268.40 (*OAC* 3745-270-40) for the waste contaminating the debris.	Land disposal, as defined in 40 *CFR* 268.2 (*OAC* 3745-270-02), of RCRA-restricted hazardous debris—**applicable**	40 *CFR* 268.45(a) *OAC* 3745-270-45(A)
	The hazardous debris must be treated for each "contaminant subject to treatment," which must be determined in accordance with 40 *CFR* 268.45(b) [*OAC* 3745-270-45(B)].		40 *CFR* 268.45(b) *OAC* 3745-270-45(B)
Soils	May be land disposed if treated prior to disposal according to the alternative treatment standards of 40 *CFR* 268.49(c) [*OAC* 3745-270-49(C)] or according to the UTSs specified in 40 *CFR* 268.48 (*OAC* 3745-270-48) applicable to the listed hazardous waste and/or applicable characteristic of hazardous waste if the soil is characteristic.	Land disposal, as defined in 40 *CFR* 268.2 (*OAC* 3745-270-02), of RCRA-restricted hazardous soils—**applicable**	40 *CFR* 268.49(b) and (c) *OAC* 3745-270-49(B) and (C)
Variance from a treatment standard for RCRA restricted hazardous wastes	A variance from a treatment standard may be approved if: • It is not physically possible to treat the waste to the level specified in the treatment standard, or by the method specified as the treatment standard; or • It is inappropriate to require the waste to be treated to the level specified in the treatment standard or by the method specified as the treatment standard, even though such treatment is technically possible. *NOTE:* Variance approval will be granted through the DFF&O document approval process and included in the appropriate DFF&O document.	Generation of a RCRA hazardous waste requiring treatment prior to land disposal—**applicable**	40 *CFR* 268.44 *OAC* 3745-270-44

Table B.2 Action-specific ARARs for Plant Support Buildings and Structures at the Portsmouth Gaseous Diffusion Plant, Portsmouth, Ohio (continued)

Action	Requirements[a]	Prerequisite	Citation
Disposal of treated hazardous debris	Debris treated by one of the specified extraction or destruction technologies on Table 1 of this section and which no longer exhibits a characteristic is not a hazardous waste and need not be managed in RCRA subtitle C facility. Hazardous debris contaminated with listed waste that is treated by an immobilization technology must be managed in a RCRA subtitle C facility.	Treated debris contaminated with RCRA-listed or characteristic waste—**applicable**	40 *CFR* 268.45(c) *OAC* 3745-270-45(C)
Disposal of hazardous debris treatment residues	Except as provided in 268.45(d)(2) and (d)(4) [*OAC* 3745-270-45(D)(2) and (D)(4)], treatment residues must be separated from the treated debris using simple physical or mechanical means, and such residues are subject to the waste-specific treatment standards for the waste contaminating the debris. Layers of debris removed by spalling are hazardous debris that remain subject to treatment standards.	Residues from the treatment of hazardous debris—**applicable**	40 *CFR* 268.45(d)(1) – (5) *OAC* 3745-270-45(D)(1) – (5)
Prohibition of dilution to meet LDRs	Except as provided under 40 *CFR* 268.3(b) [*OAC* 3745-270-03(B)], must not in any way dilute a restricted waste or the residual from treatment of a restricted waste as a substitute for adequate treatment to achieve compliance with land disposal restriction levels.	Land disposal, as defined in 40 *CFR* 268.2 (*OAC* 3745-270-02), of RCRA-restricted hazardous soils—**applicable**	40 *CFR* 268.3(a) *OAC* 3745-270-03(A)
Pretreatment standards for discharges to a permitted wastewater treatment unit	Pollutants introduced to POTWs shall not pass through POTWs or interfere with the operation or performance of the POTW. Substances listed in *OAC* 3745-3-04(B) shall not be introduced into a POTW.	Discharge of wastewater containing pollutants to a POTW—**relevant and appropriate**	*OAC* 3745-3-04
	Must notify POTW immediately of all discharges that could cause problems to the POTW, including any slug loading, in accordance with *OAC* 3745-3-05.		*OAC* 3745-3-05
	Industrial users are subject to national categorical pretreatment standards under 40 *CFR* 403.6 and to the general requirements listed in *OAC* 3745-3-09 regarding the interpretation and application of pretreatment standards.		*OAC* 3745-3-09

Table B.2 Action-specific ARARs for Plant Support Buildings and Structures at the Portsmouth Gaseous Diffusion Plant, Portsmouth, Ohio (continued)

Action	Requirements[a]	Prerequisite	Citation
Disposal of wastewaters containing RCRA hazardous constituents in a CWA wastewater treatment unit	Disposal is not prohibited if the wastes are managed in a treatment system which subsequently discharges to waters of the U.S. under the CWA unless the wastes are subject to a specified method of treatment other than DEACT in 40 *CFR* 268.40 (*OAC* 3745-270-40) or are D003 reactive cyanide.	Disposal of RCRA restricted hazardous wastes that are hazardous only because they exhibit a hazardous characteristic and are not otherwise prohibited under 40 *CFR* Part 268—**applicable**	40 *CFR* 268.1(c)(4)(i) *OAC* 3745-270-01(C)(4)
Disposal of wastewaters in a CWA wastewater treatment unit	No entity shall cause pollution or place or cause to be placed any sewage, sludge, sludge materials, industrial waste, or other wastes in a location where they cause pollution of any waters of the state. No person shall violate or fail to perform any duty imposed by sections 6111.01 to 6111.08 of the Revised Code or violate any order, rule, or term or condition of a permit issued or adopted by the director of environmental protection pursuant to those sections.	Discharge of contaminants to waters of the state – **applicable**	*ORC* 6111.04 *ORC* 6111.07
Treatment and disposal of ignitable, reactive, or incompatible RCRA wastes	Must take precautions to prevent accidental ignition or reaction of waste, and waste must be separated and protected from sources of ignition or reaction. Must take precautions to prevent reactions that: • Generate extreme heat, pressure, fire or explosion, or violent reactions. • Produce uncontrolled toxic mists, fumes, dusts, or gases in sufficient quantities to threaten human health or the environment. • Produce uncontrolled flammable fumes or gases in sufficient quantities to pose a risk of fire or explosions. • Damage the structural integrity of the device or facility. • Through other like means threaten human health or the environment.	Operation of a RCRA facility that treats or stores ignitable, reactive, or incompatible wastes—**applicable**	40 *CFR* 264.17(a) *OAC* 3745-54-17(A) 40 *CFR* 264.17(b) *OAC* 3745-54-17(B)
Disposal of solid wastes	Except as provided in paragraph (D) of *OAC* 3745-27-02, no person shall establish or modify a solid waste disposal facility without meeting the substantive criteria as follows:	Management and disposal of solid waste—**applicable**	*OAC* 3745-27-02(A)

Table B.2 Action-specific ARARs for Plant Support Buildings and Structures at the Portsmouth Gaseous Diffusion Plant, Portsmouth, Ohio (continued)

Action	Requirements[a]	Prerequisite	Citation
Disposal of solid wastes (continued)	Disposal of solid wastes shall only be by the following methods or combination thereof:		*OAC* 3745-27-05(A)
	• Disposal at a licensed sanitary landfill facility		*OAC* 3745-27-05(A)(1)
	• Incinerating at a licensed incinerator		*OAC* 3745-27-05(A)(2)
	• Composting at a licensed composting facility		*OAC* 3745-27-05(A)(3)
	• Alternative disposal methods either as engineered fill or land application, provided use will not create a nuisance or harm human health or the environment and is capable of complying with other applicable laws.		*OAC* 3745-27-05(A)(4)
Prohibition on open dumping of solid wastes	Temporary storage of putrescible solid wastes in excess of seven days, or temporary storage of any solid wastes where such storage causes a nuisance or health hazard shall be considered open dumping.	Temporary storage of solid waste prior to collection for disposal or transfer—**applicable**	*OAC* 3745-27-03(A)(2)
	No person shall conduct, permit, or allow open dumping. In the event that open dumping is or has occurred, person(s) responsible shall promptly remove and dispose or otherwise manage the solid waste and shall submit verification that the waste has been properly managed.	Management and disposal of solid waste**—applicable**	*OAC* 3745-27-05(C)
Treatment of LLW	Waste treatment to provide more stable waste forms and to improve the long-term performance of a LLW disposal facility shall be implemented as necessary to meet performance objectives of the disposal facility.	Generation of LLW for disposal at a DOE facility—**TBC**	DOE M 435.1-1(IV)(O)
Disposal of solid LLW at DOE facilities	Shall meet waste acceptance requirements before it is transferred to the receiving facility.	Generation of LLW for disposal at a DOE facility—**TBC**	DOE M 435.1-1(IV)(J)(2)
Disposal of refrigeration equipment	With the exception of the substitutes in the end uses listed in 40 *CFR* 82.154(a)(1)(i) – (vi), no person maintaining, servicing, repairing, or disposing of appliances may knowingly vent or otherwise release into the environment any refrigerant or substitute from such appliances.	Appliances that contain Class I or II substances used as a refrigerant—**applicable**	40 *CFR* 82.154(a)(1)
	De minimis releases associated with good faith attempts to recycle or recover refrigerants are not subject to this prohibition.		40 *CFR* 82.154(a)(2)

Table B.2 Action-specific ARARs for Plant Support Buildings and Structures at the Portsmouth Gaseous Diffusion Plant, Portsmouth, Ohio (continued)

Action	Requirements[a]	Prerequisite	Citation
Disposal of refrigeration equipment (continued)	No person may dispose of such appliances, except for small appliances, MVACs, and MVAC-like appliances, without: • Observing the required practices set forth in 40 *CFR* 82.156, and • Using equipment that is certified for that type of appliance pursuant to 40 *CFR* 82.158.		40 *CFR* 82.154(b)
Disposal of asbestos-containing waste material (e.g., transite siding, pipe lagging, insulation, ceiling tiles)	All asbestos-containing waste material must be deposited as soon as practicable at a waste disposal site operated in accordance with Section 61.154 [*OAC* 3745-20-06] or a site that converts RACM and asbestos-containing waste material into nonasbestos (asbestos free) material according to the provisions of 40 *CFR* 61.155 [*OAC* 3745-20-13].	Removal and disposal of RACM except Category I nonfriable asbestos containing material—**applicable**	40 *CFR* 61.150(b)(1) and (2) *OAC* 3745-20-05(A)
	May use an alternative emission control and waste treatment method that will control asbestos emissions equivalent to currently required methods, the alternative method is suitable for the intended application, and the alternative method will not violate other regulations and will not result in increased water or land pollution or occupational hazards.		40 *CFR* 61.150(a)(4) *OAC* 3745-20-05(B)(4)
Exclusions for disposal or reuse of construction and demolition debris, or "clean hard fill" [as defined in *OAC* 3745-400-01(E)]	Construction and demolition debris facility requirements do not apply to construction and demolition debris or clean hard fill used in one or more of the following ways: • Any construction site where construction debris and trees and brush removed in clearing the construction site are used as fill material on the site where the materials are generated or removed; • Any site where clean hard fill is used, either alone or in conjunction with clean soil, sand, gravel, or other clean aggregates, in legitimate fill operations; • Any site where debris is not disposed, such as where debris is reused or recycled in a beneficial manner, or stored for a temporary period remaining unchanged and retrievable.	Use of construction and demolition debris or clean hard fill at a site—**applicable**	*OAC* 3745-400-03

Table B.2 Action-specific ARARs for Plant Support Buildings and Structures at the Portsmouth Gaseous Diffusion Plant, Portsmouth, Ohio (continued)

Action	Requirements[a]	Prerequisite	Citation
Disposal of construction and demolition debris	Shall be disposed of only in an authorized construction and demolition debris facility or solid waste disposal facility; by means of open burning if permitted as provided in *OAC* 3745-19; or by other methods provided such methods are demonstrated to be capable of disposing without creating a nuisance or health hazard, without causing water pollution, and without violating any regulations under Chapters 3745, 3704 or 3734.	Disposal of construction and demolition debris—**applicable**	*OAC* 3745-400-04(A) and (B)
Disposal of construction and demolition debris as "clean hard fill"	Clean hard fill (does not include materials contaminated with hazardous, solid, or infectious waste) consisting of reinforced or nonreinforced concrete, asphalt concrete, brick (includes but is not limited to refractory brick and mortar), block, tile, or stone shall be managed in one or more of the following ways: • Recycled into usable construction material; • Disposed in construction and demolition debris or other waste facilities; • Used in legitimate fill operations for construction purposes or to bring the site up to consistent grade, on the site of generation, or on a site other than the site of generation, pursuant to paragraph (C) of *OAC* 3745-400-05.	Use of clean hard fill to bring a construction site up to consistent grade—**applicable**	*OAC* 3745-400-05(A)
	Clean hard fill may be stored for a period of less than two years. "Stored" means held in a manner remaining retrievable and substantially unchanged. Clean hard fill piled adjacent to a construction materials processing facility shall not be considered stored for more than 2 years if the pile is active, i.e., if clean hard fill material is added to and removed from the pile within a 2 year period.		*OAC* 3745-400-05(B)
Performance-based disposal of PCB remediation waste	Shall be disposed according to 40 *CFR* 761.60(a) or (e), or decontaminated in accordance with 40 *CFR* 761.79.	Disposal of liquid PCB remediation waste—**applicable**	40 *CFR* 761.61(b)(1)

Table B.2 Action-specific ARARs for Plant Support Buildings and Structures at the Portsmouth Gaseous Diffusion Plant, Portsmouth, Ohio (continued)

Action	Requirements[a]	Prerequisite	Citation
Performance-based disposal of PCB remediation waste (continued)	May dispose by one of the following methods: • In a high-temperature incinerator under 40 *CFR* 761.70(b); • By an alternate disposal method under 40 *CFR* 761.60(e); • In a chemical waste landfill under 40 *CFR* 761.75; • In a facility under 40 *CFR* 761.77; or • Through decontamination in accordance with 40 *CFR* 761.79.	Disposal of nonliquid PCB remediation waste (as defined in 40 *CFR* 761.3)—**applicable**	40 *CFR* 761.61(b)(2) 40 *CFR* 761.61(b)(2)(i) 40 *CFR* 761.61(b) (2)(ii)
Risk-based disposal of PCB remediation waste	May dispose of in a manner other than prescribed in 40 *CFR* 761.61(a) or (b) if the method will not pose an unreasonable risk of injury to health or the environment.	Disposal of PCB remediation waste—**applicable**	40 *CFR* 761.61(c)
Disposal of PCB decontamination waste and residues	Shall be disposed of at their existing PCB concentration unless otherwise specified in 40 *CFR* 761.79(g).	PCB decontamination waste and residues for disposal—**applicable**	40 *CFR* 761.79(g)
Disposal of PCB liquids (e.g., from drained electrical equipment)	Must be disposed of in an incinerator that complies with 40 *CFR* 761.70, except: For mineral oil dielectric fluid, may be disposed in a high efficiency boiler according to 40 *CFR* 761.71(a). For liquids other than mineral oil dielectric fluid, may be disposed in a high efficiency boiler according to 40 *CFR* 761.71(b).	PCB liquids at concentrations ≥ 50 ppm—**applicable**	40 *CFR* 761.60(a) 40 *CFR* 761.60(a)(1) 40 *CFR* 761.60(a)(2)

Table B.2 Action-specific ARARs for Plant Support Buildings and Structures at the Portsmouth Gaseous Diffusion Plant, Portsmouth, Ohio (continued)

Action	Requirements[a]	Prerequisite	Citation
Disposal of PCB-contaminated precipitation, condensation, or leachate	May be disposed in a chemical waste landfill that complies with 40 *CFR* 761.75 if:	PCB liquids at concentrations ≥ 50 ppm from incidental sources and associated with PCB articles or non-liquid PCB wastes—**applicable**	40 *CFR* 761.60(a)(3)
	• Disposal does not violate 40 *CFR* 268.32(a) or 268.42(a)(1), and		40 *CFR* 761.60(a)(3)(i)
	• Liquids do not exceed 500 ppm and are not ignitable waste as described in 761.75(b)(8)(iii).		40 *CFR* 761.60(a)(3)(ii)
Disposal of PCB transformers	Shall be disposed of in either:	PCB-contaminated electrical equipment (including transformers that contain PCBs at concentrations of ≥ 50 ppm and < 500 ppm in the contaminating fluid) as defined in 40 *CFR* 761.3—**applicable**	40 *CFR* 761.60(b)(1)
	• An incinerator that complies with 40 *CFR* 761.70, or		40 *CFR* 761.60(b)(1)(i)(A)
	• A chemical waste landfill that is compliant with 40 *CFR* 761.75 provided all free flowing liquid is removed from the transformer, the transformer is filled with a solvent, the transformer is allowed to stand for at least 18 continuous hours, and then the solvent is thoroughly removed.		40 *CFR* 761.60(b)(1)(i)(B)
Performance-based disposal of PCB bulk product waste	May dispose of by one of the following:	Disposal of PCB bulk product waste as defined in 40 *CFR* 761.3—**applicable**	40 *CFR* 761.62(a)
	• In an incinerator under Section 761.70,		40 *CFR* 761.62(a)(1)
	• In a chemical waste landfill under Section 761.75,		40 *CFR* 761.62(a)(2)
	• In a hazardous waste landfill under Section 3004 or /Section 3006 of RCRA,		40 *CFR* 761.62(a)(3)
	• Under alternate disposal under Section 761.60(e),		40 *CFR* 761.62(a)(4)
	• In accordance with decontamination provisions of Section 761.79;		40 *CFR* 761.62(a)(5)
	• In accordance with the thermal decontamination provisions of Section 761.79(e)(6) for metal surfaces in contact with PCBs.		40 *CFR* 761.62(a)(6)
Risk-based disposal of PCB bulk product waste	May dispose of in a manner other than that prescribed in 40 *CFR* 761.62(a) if the method will not pose an unreasonable risk of injury to health or the environment.	Disposal of PCB bulk product waste as defined in 40 *CFR* 761.3—**applicable**	40 *CFR* 761.62(c)

Table B.2 Action-specific ARARs for Plant Support Buildings and Structures at the Portsmouth Gaseous Diffusion Plant, Portsmouth, Ohio (continued)

Action	Requirements[a]	Prerequisite	Citation
Disposal of PCB bulk product waste in solid waste landfill	May dispose of the following in a municipal or non-municipal non-hazardous waste landfill.	Disposal of non-liquid PCB bulk product waste listed in 40 *CFR* 761.62(b)(1) — **applicable**	40 *CFR* 761.62(b)(1)
	• Plastics (such as plastic insulation from wire or cable; radio, television and computer casings; vehicle parts; or furniture laminates); preformed or molded rubber parts and components; applied dried paints, varnishes, waxes or other similar coatings or sealants; caulking; Galbestos; non-liquid building demolition debris; or non-liquid PCB bulk product waste from the shredding of automobiles or household appliances from which PCB small capacitors have been removed (shredder fluff)		40 *CFR* 761.62(b)(1)(i)
	• Other PCB bulk product waste, sampled in accordance with the protocols set out in subpart R of 40 *CFR* Part 761, that leaches PCBs at < 10 µg/L of water measured using a procedure used to simulate leachate generation		40 *CFR* 761.62(b)(1)(ii)
	May dispose of in a municipal or non-municipal nonhazardous waste landfill if:	PCB bulk product waste not meeting conditions of 40 *CFR* 761.62(b)(1) (e.g., paper/felt gaskets contaminated by liquid PCBs) —**applicable**	40 *CFR* 761.62(b)(2)
	• The PCB bulk product waste is segregated from organic liquids disposed of in the landfill, and		40 *CFR* 761.62(b)(2)(i)
	• Leachate is collected from the landfill and monitored for PCBs.		40 *CFR* 761.62(b)(2)(ii)
Disposal of fluorescent light ballasts	Must be disposed of in a TSCA disposal facility as bulk product waste under 40 *CFR* 761.62 or in accordance with the decontamination provisions of 40 *CFR* 761.79.	Generation for disposal of fluorescent light ballasts containing PCBs in the potting material—**applicable**	40 *CFR* 761.60(b)(6)(iii)
Disposal of PCB-contaminated electrical equipment (except capacitors)	Must remove all free-flowing liquid from the electrical equipment and dispose of the removed liquid in accordance with 40 *CFR* 761.60(a), and	Generation of PCB-contaminated electrical equipment (as defined in 40 *CFR* 761.3) for disposal—**applicable**	40 *CFR* 761.60(b)(4)

Table B.2 Action-specific ARARs for Plant Support Buildings and Structures at the Portsmouth Gaseous Diffusion Plant, Portsmouth, Ohio (continued)

Action	Requirements[a]	Prerequisite	Citation
Disposal of PCB-contaminated electrical equipment (except capacitors) (continued)	Dispose of by one of the following methods: • In a facility managed as a municipal solid waste or non-municipal non-hazardous waste; • In an industrial furnace operating in compliance with 40 *CFR* 761.72; or • In a disposal facility under 40 *CFR* 761.60.	Drained PCB-contaminated electrical equipment, including any residual liquids—**applicable**	40 *CFR* 761.60(b)(4)(i)
Disposal of PCB capacitors	Any person must assume that a capacitor manufactured prior to July 2, 1979, whose PCB concentration is not established, contains ≥ 500 ppm PCBs. If the date of manufacture is unknown, any person must assume the capacitor contains ≥ 500 ppm PCBs.	Generation of PCB capacitors with ≥ 500 ppm PCBs for disposal—**applicable**	40 *CFR* 761.2(a)(4)
	Shall comply with all requirements of 40 *CFR* 761.60 unless it is known from label or nameplate information, manufacturer's literature, or chemical analysis that capacitor does not contain PCBs.		40 *CFR* 761.60(b)(2)(i)
	Shall dispose of in accordance with either of the following: • Disposal in an incinerator that complies with 40 *CFR* 761.70; or • Disposal in a chemical waste landfill that complies with 40 *CFR* 761.75.	Generation of PCB capacitors with ≥ 500 ppm PCBs for disposal—**applicable**	40 *CFR* 761.60(b)(2)(iii)
	Shall dispose of in one of the following disposal facilities approved under 40 *CFR* 761.60: • Incinerator under 40 *CFR* 761.70; • Chemical waste landfill under 40 *CFR* 761.75; • High efficiency boiler under 40 *CFR* 761.71; or • Scrap metal recovery oven or smelter under 40 *CFR* 761.72.	Disposal of large capacitors that contain ≥ 50 ppm but < 500 ppm PCBs—**applicable**	40 *CFR* 761.60(b)(4)(ii)
	May dispose of in municipal solid waste landfill.	Generation of PCB small capacitors (as defined in 40 *CFR* 761.3) for disposal—**applicable**	40 *CFR* 761.60(b)(2)(ii)

Table B.2 Action-specific ARARs for Plant Support Buildings and Structures at the Portsmouth Gaseous Diffusion Plant, Portsmouth, Ohio (continued)

Action	Requirements[a]	Prerequisite	Citation
Disposal of PCB-contaminated articles	Must remove all free-flowing liquid from the article, disposing of the liquid in compliance with the requirements of 40 *CFR* 761.60(a)(2) or (a)(3), and	Generation of PCB-contaminated articles (as defined in 40 *CFR* 761.3) for disposal—**applicable**	40 *CFR* 761.60(b)(6)(ii)
	Dispose by one of the following methods: • In accordance with the decontamination provisions at 40 *CFR* 761.79; • In a facility managed as a municipal solid waste or non-municipal nonhazardous waste; • In an industrial furnace operating in compliance with 40 *CFR* 761.72; or • In a disposal facility under 40 *CFR* 761.60.	Disposal of PCB-contaminated articles with no free-flowing liquid—**applicable**	40 *CFR* 761.60(b)(6)(ii)(A) thru (D)
	Closure		
Closure performance standard for RCRA hazardous waste management units	Must close the facility in a manner that: • Minimizes the need for further maintenance; and • Controls, minimizes or eliminates, to the extent necessary to protect human health and environment, post-closure escape of hazardous waste, hazardous constituents, contaminated run off or hazardous waste decomposition products to ground or surface waters or to the atmosphere.	Closure of a RCRA hazardous waste management unit—**applicable**	40 *CFR* 264.111(a) *OAC* 3745-55-11(A) 40 *CFR* 264.111(b) *OAC* 3745-55-11(B)
	• Complies with the substantive closure requirements of 40 *CFR* 264 [*OAC* 3745-54 to 3745-57 and 3745-205] for the particular type of facility, including but not limited to the requirements of Sects. 264.178 (container storage area) [*OAC* 3745-55-78], 264.197 (tanks) [*OAC* 3745-55-97], 264.310 (landfills) [*OAC* 3745-57-10], and 264.554 (remediation waste piles) [*OAC* 3745-56-58].		40 *CFR* 264.111(c) *OAC* 3745-55-11(C)
	During closure periods, all contaminated equipment, structures, and soils must be properly disposed or decontaminated.		40 *CFR* 264.114 *OAC* 3745-55-14

Table B.2 Action-specific ARARs for Plant Support Buildings and Structures at the Portsmouth Gaseous Diffusion Plant, Portsmouth, Ohio (continued)

Action	Requirements[a]	Prerequisite	Citation
Postclosure care of RCRA hazardous waste management unit	Postclosure care in accordance with the substantive requirements of *OAC* 3745-55-17 (A)(1) must begin after closure and continue for at least 30 years after that date. The Director may shorten or extend the postclosure period as indicated to protect human health and the environment.	Closure of a RCRA hazardous waste disposal unit—**applicable**	40 *CFR* 264.117(a)(1) and (2) *OAC* 3745-55-17(A)(1) and (2)
Closure of a RCRA remediation waste staging pile	Must be closed by removing or decontaminating all remediation waste, contaminated containment system components, and structures and equipment contaminated with waste and leachate.	Closure of a remediation waste staging pile located in a previously contaminated area—**applicable**	40 *CFR* 264.554(j)(1) *OAC* 3745-57-74(J)(1)
	Must decontaminate contaminated subsoils in a manner that will protect human health and the environment.		40 *CFR* 264.554(j)(2) *OAC* 3745-57-74(J)(2)
	Must be closed according to substantive requirements in 40 *CFR* 264.258(a) and 264.111 or 265.258(a) and 265.111 [*OAC* 3745-56-58(A) and 3745-55-11 or 3745-67-58 and 3745-66-11].	Closure of a remediation waste staging pile located in an uncontaminated area—**applicable**	40 *CFR* 264.554(k) *OAC* 3745-57-74(K)
Closure of RCRA hazardous waste tanks	At closure, remove all hazardous waste and hazardous waste residues from tanks, discharge control equipment, and discharge confinement structures.	Management of RCRA hazardous waste in tanks—**applicable**	40 *CFR* 264.197(a) *OAC* 3745-55-97(A)
	If all contaminated contents cannot be removed, must consider the tank system a landfill and close the facility and perform postclosure care in accordance with the landfill closure requirements of 40 *CFR* 264.310 (*OAC* 3745-57-10).		40 *CFR* 264.197(b) *OAC* 3745-55-97(B)
Closure of TSCA storage facility (i.e., storage areas established under this action)	Must close in a manner that eliminates the potential for post-closure releases of PCBs that may present an unreasonable risk to human health or the environment.	Closure of a TSCA storage facility—**applicable**	40 *CFR* 761.65(e)(1)
	Must remove or decontaminate PCB waste residues and contaminated containment system components, equipment, structures, and soils during closure in accordance with the levels specified in the PCB Spills Cleanup Policy in subpart G of 40 *CFR* 761.		40 *CFR* 761.65(e)(1)(iv)

Table B.2 Action-specific ARARs for Plant Support Buildings and Structures at the Portsmouth Gaseous Diffusion Plant, Portsmouth, Ohio (continued)

Action	Requirements[a]	Prerequisite	Citation
Closure of TSCA storage facility (i.e., storage areas established under this action) (continued)	A TSCA/RCRA storage facility closed under RCRA is exempt from the TSCA closure requirements of 40 *CFR* 761.65(e).	Closure of TSCA/RCRA storage facility—**applicable**	40 *CFR* 761.65(e)(3)
	Transportation[b]		
Transportation of hazardous waste on site	The generator manifesting requirements of 40 *CFR* 262.20 to 262.32(b) [*OAC* 3745-52-20 to -23 and 3745-52-32(B)] do not apply. Generator or transporter must comply with the requirements set forth in 40 *CFR* 263.30 and 263.31 [*OAC* 3745-53-30 and 3745-53-31] in the event of a discharge of hazardous waste on a private or public right-of-way.	Transportation of hazardous wastes on a public or private right-of-way within or along the border of contiguous property under the control of the same person, even if such contiguous property is divided by a public or private right-of-way—**applicable**	40 *CFR* 262.20(f) *OAC* 3745-52-20(F)
Transportation of hazardous materials on site	Must meet the substantive requirements of 49 *CFR* Parts 171 – 174, 177, and 178 or the site or facility specific Transportation Safety Document [i.e., *Transportation Safety Document for the On-Site Transfer of Hazardous Material at the Portsmouth Gaseous Diffusion Plant, Piketon, Ohio,* LPP-0021/R3].	Transport of hazardous materials on the Portsmouth site—**TBC**	DOE Order 460.1C(4)(b)
Transportation of radioactive waste	Shall be packed and transported in accordance with the substantive requirements of DOE Order 460.1C (*Packaging and Transportation Safety*) and DOE Order 460.2A (*Departmental Materials Transportation and Packaging Management*). To the extent practicable, the volume of waste and number of shipments shall be minimized.	Preparation of shipment of radioactive waste—**TBC**	DOE M 435.1-1(I)(1)(E)(11) DOE M 435.1-1(III)(L)(2) DOE M 435.1-1(IV)(L)(2)
Transportation of PCB wastes off site	Must comply with the manifesting provisions at 40 *CFR* 761.207 through 218.	Relinquishment of control over PCB wastes by transporting or offering for transport—**applicable**	40 *CFR* 761.207(a)

Table B.2 Action-specific ARARs for Plant Support Buildings and Structures at the Portsmouth Gaseous Diffusion Plant, Portsmouth, Ohio (continued)

Action	Requirements[a]	Prerequisite	Citation
Transportation of hazardous waste off site	Must comply with the generator requirements of 40 *CFR* 262.20 to 262.23 [*OAC* 3745-52-20 to 3745-52-23] for manifesting, Section 262.30 [*OAC* 3745-52-30] for packaging, Section 262.31 [*OAC* 3745-52-31] for labeling, Section 262.32 [*OAC* 3745-52-32] for marking, Section 262.33 [*OAC* 3745-52-33] for placarding, Section 262.40 and 262.41(a) [*OAC* 3745-52-40 and 3745-52-41(A)] for record keeping requirements, and Section 262.12 [*OAC* 3745-52-12] to obtain EPA ID number.	Preparation of RCRA hazardous waste for transport off site—**applicable**	40 *CFR* 262.10(h) *OAC* 3745-52-10(H) 40 *CFR* 262.20 to .23 *OAC* 3745-52-20 to -23 40 *CFR* 262.30 to .33 *OAC* 3745-52-30 to -33
Transportation of universal waste off site	Off-site shipments of universal waste by a large quantity handler of universal waste shall be made in accordance with 40 *CFR* 273.38 [*OAC* 3745-273-38].	Preparation of universal waste for transport off site—**applicable**	40 *CFR* 273.38(c) *OAC* 3745-273-38(C)
	Off-site shipments to a foreign destination must comply with requirements applicable to a primary exporter in *OAC* 3745-52-10, 3745-52-53, 3745-52-56 and 3745-52-57 and export waste only upon consent of the receiving country and in conformance with the EPA "Acknowledgement of Consent" as defined in *OAC* 3745-52-50 to 3745-52-57. A copy of the consent must be provided to the transporter.		40 *CFR* 273.40 *OAC* 3745-273.40
Transportation of used oil off site	Except as provided in paragraphs (a) to (c) of 40 *CFR* 279.24 [*OAC* 3745-279-24(A) to (C)], generators must ensure that their used oil is transported by transporters who have obtained U.S. EPA ID numbers.	Preparation of used oil for transport off site—**applicable**	40 *CFR* 279.24 *OAC* 3745-279-24
Transportation of asbestos-containing waste materials off site	For asbestos-containing waste material to be transported off the facility site, label containers or wrapped materials with the name of the waste generator and location at which the waste was generated.	Preparation for transport of asbestos-containing waste materials off site—**applicable**	40 *CFR* 61.150(a)(1)(v) *OAC* 3745-20-05(C)(1)
	Mark vehicles used to transport asbestos-containing waste material during the loading and unloading of waste so that the signs are visible. The markings must conform to the requirements of 40 *CFR* 61.149(d)(1)(i), (ii), and (iii).		40 *CFR* 61.150(c) *OAC* 3745-20-05(E)

Table B.2 Action-specific ARARs for Plant Support Buildings and Structures at the Portsmouth Gaseous Diffusion Plant, Portsmouth, Ohio (continued)

Action	Requirements[a]	Prerequisite	Citation
Transportation of hazardous materials on site	Any person who, under contract with a department or agency of the Federal government, transports "in commerce," or causes to be transported or shipped, a hazardous material, shall be subject to and must comply with all applicable provisions of the HMTA and HMR at 49 *CFR* 171 – 180 related to marking, labeling, placarding, etc.	Any person who, under contract with an department or agency of the federal government, transports "in Preparation for transport or shipment "in commerce" of a hazardous material— **applicable**	49 *CFR* 171.1(c)

[a]The requirements portion of the ARARs table is intended to provide a summary of the cited ARAR. The omission of any particular requirement does not limit the scope of the cited ARARs.
[b]Off-site transportation, by definition, is not an on-site response action and is subject to all substantive, procedural, and administrative requirements of all legally applicable laws but not to any requirements that might be relevant and appropriate under the ARARs process.

ACM = asbestos-containing materials
ALARA = as low as reasonably achievable
ARAR = applicable or relevant and appropriate requirement
CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act
CFR = Code of Federal Regulations
CMBST = combustion
CWA = Clean Water Act
DFF&O = Director's Final Findings & Orders
DEACT = deactivation
DOE M = Radioactive Waste Management Manual
DOT = U.S. Department of Transportation
EDE = effective dose equivalent
EPA = U.S. Environmental Protection Agency
HMR = Hazardous Materials Regulations
HMTA = Hazardous Materials Transportation Act of 1975 (Amendments of 1976)
ID = identification number
LDR = land disposal restriction
LLW = low-level (radioactive) waste
LPP = LATA/Parallax Portsmouth, LLC
MVAC = motor vehicle air conditioning
NACE = National Association of Corrosion Engineers
NPDES = National Pollutant Discharge Elimination System
OAC = Ohio Administrative Code
Ohio EPA = Ohio Environmental Protection Agency
PCB = polychlorinated biphenyl
POLYM = polymerization
POTW = publicly owned treatment works
RACM = regulated asbestos-containing material
RC = Ohio Revised Code
RCRA = Resource Conservation and Recovery Act of 1976
RORGS = recovery of organics
TBC = to-be-considered
TSCA = Toxic Substances Control Act of 1976
USC = United States Code
UTS = universal treatment standard
WAC = waste acceptance criteria

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