2. Compliance Summary

This chapter summarizes PORTS compliance with environmental laws and regulations, DOE orders, and Executive orders. DOE and its contractors are responsible for the Decontamination and Decommissioning Program, Environmental Restoration Program, Waste Management Program, uranium operations, and maintenance of all facilities not leased to Centrus. Centrus is responsible for compliance activities directly associated with the American Centrifuge Plant.

Several federal, state, and local agencies are responsible for enforcing environmental regulations at PORTS. The primary regulatory agencies are Ohio EPA and the US Environmental Protection Agency (US EPA) Region 5. These agencies issue permits, review compliance reports, conduct joint monitoring programs, inspect facilities and operations, and oversee compliance with applicable regulations.

DOE and its contractors conduct self-assessments to identify environmental issues and consult the regulatory agencies to identify the appropriate actions necessary to achieve and maintain compliance.

2.1 Environmental Protection and Waste Management

The following sections discuss environmental protection and waste management activities and compliance with Ohio EPA and US EPA environmental laws, regulations, and permits at PORTS.

2.1.1 Comprehensive Environmental Response, Compensation, and Liability Act

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), commonly known as Superfund, was passed in 1980. Under CERCLA, a site is investigated and remediated if it poses significant risk to health or the environment. The Superfund Amendments and Reauthorization Act amended CERCLA on October 17, 1986 to reflect US EPA's experience in administering the complex Superfund program. Important changes and additions included increasing the focus on human health problems posed by hazardous waste sites and encouraging greater participation by citizens in deciding how sites should be cleaned up. Section 3.5 of this report describes DOE programs that engage citizens in cleanup decision-making at PORTS.

PORTS is not on the CERCLA National Priorities List. Decontamination and decommissioning of PORTS is proceeding in accordance with the Decontamination and Decommissioning Director's Final Findings and Orders (Ohio EPA 2012) and CERCLA. The former describes the regulatory process for decontamination and decommissioning of the gaseous diffusion process buildings and associated facilities that are no longer in use. Section 3.3 of this report provides additional information about the Decontamination and Decommissioning Program.

Environmental remediation, or the cleanup of soil, groundwater, and other contaminated environmental media at PORTS, has been conducted in accordance with the Consent Decree with the State of Ohio issued on August 29, 1989 and the US EPA Administrative Order by Consent issued on September 29, 1989 (amended in 1994 and 1997 and terminated on February 13, 2017). Ohio EPA oversees environmental remediation activities at PORTS under the Resource Conservation and Recovery Act (RCRA) Corrective Action Program and CERCLA Program. Section 3.4 of this report includes additional information on the Environmental Restoration Program.

Section 103 of CERCLA requires notifying the National Response Center if hazardous substances are released to the environment in amounts greater than or equal to the reportable quantity. Reportable quantities are listed in CERCLA and vary depending on the type of hazardous substance released. During

2021, DOE contractors had no reportable quantity releases of hazardous substances that required notification under Section 103.

2.1.2 Emergency Planning and Community Right-To-Know Act

Also referred to as Title III of the Superfund Amendments and Reauthorization Act, the Emergency Planning and Community Right-to-know Act (EPCRA) requires facilities to report emergency planning information, hazardous chemical inventories, and releases to the environment, including greenhouse gases. PORTS, as a federal facility, is subject to these reporting requirements.

EPCRA's primary purpose is to increase the public's knowledge of and access to information on chemical hazards in their communities. To ensure proper and immediate responses to potential chemical hazards, EPCRA Section 302-304 requires facilities to notify state emergency response commissions and local emergency planning committees of inventories and releases of hazardous substances and extremely hazardous substances when the inventory or release equals or exceeds the established threshold. EPCRA Section 302-303 requires notifying state and local agencies within 60 days when the amount of a substance on the list of extremely hazardous substances first exceeds its established threshold planning quantity. Notifications also are required if a revision to the list results in the facility exceeding the revised threshold planning quantity, or if changes at the facility are relevant to emergency planning. These notifications are required within 60 days and 30 days, respectively, after the facility becomes subject to the requirements. DOE and its contractors make these notifications as needed. EPCRA Section 304 requires reporting emergency or accidental releases above a specified quantity to state and local authorities**.** Fluor-BWXT Portsmouth and Mid-America Conversion Services had no off-site reportable quantity releases subject to Section 304 reporting requirements in 2021.

Sections 311 and 312 of EPCRA require businesses to report the safety data sheets, locations, and quantities of chemicals stored on site (if they exceed specific reporting thresholds) to state and local governments to help communities prepare to respond to chemical spills and similar emergencies. EPCRA Section 311 requires a one-time submittal of safety data sheets of hazardous chemicals present on site at or above the reporting threshold. Section 312 requires an annual Hazardous Chemical Inventory Report of hazardous chemicals present on site above reporting thresholds. Table 2.1 lists the chemicals reported by DOE contractors or lessees (Fluor-BWXT Portsmouth, Mid-America Conversion Services, Portsmouth Mission Alliance, and Centrus) at the PORTS site for 2021:

Table 2.1. Chemicals reported in the Hazardous Chemical Inventory Report for 2021

1,2-propanediol	diesel fuel #2 (ultralow sulfur)	perfluoro-1,3-dimethylcyclohexane
aluminum oxide	ethylene glycol	petroleum distillates
aluminum oxide hydrate	gasoline	potassium hydroxide
argon	hydrogen fluoride	sodium chloride
asbestos	lime, calcium oxide	sodium hydroxide
calcium carbonate	lubricating oils	sulfuric acid
carbon dioxide	methanol	triuranium octaoxide
calcium hydroxide	mineral oils	uranium oxide
calcium magnesium carbonate	nitric acid	uranium hexafluoride
calcium magnesium oxide	nitrogen	uranium metal
citric acid	PCBs	uranium tetrafluoride

EPCRA Section 313 requires US EPA and states to collect data annually on releases and transfers of certain toxic chemicals from industrial facilities, and to make the data available to the public. The site

submitted Section 313 Reports to the US EPA and Ohio EPA for the permitted release or off-site treatment or disposal of two chemicals in 2021:

- Hydrogen fluoride: approximately 41 pounds was transported off site for disposal or released to the air from the DUF_6 Conversion Facility.
- Nitrate compounds: approximately 28,000 pounds was released to the Scioto River through permitted National Pollutant Discharge Elimination System (NPDES) outfalls from water treatment.

2.1.3 Resource Conservation and Recovery Act

RCRA established regulatory standards for generating, accumulating, transporting, treating, storing, and disposing of solid and hazardous wastes. Solid wastes as defined by Ohio EPA can be solids, liquids, sludges, or other materials. Hazardous wastes are a subset of solid wastes, and are designated as hazardous by Ohio EPA because of chemical properties including ignitability, corrosivity, reactivity, and toxicity. Owners and operators of hazardous waste treatment, storage, and disposal facilities must obtain operating and post-closure permits.

2.1.3.1 Hazardous Waste

DOE and Fluor-BWXT Portsmouth hold a permit to store hazardous waste at PORTS. The permit, known as a Part B Permit, was issued to DOE and the responsible DOE contractor in 1995 and renewed by Ohio EPA in 2001 and 2011. DOE and Fluor-BWXT Portsmouth submitted a permit renewal application to Ohio EPA in September 2020; however, Ohio EPA had not renewed the permit by the end of 2021. The permit governs the storage of hazardous waste and includes requirements for identifying waste, inspecting storage areas and emergency equipment, developing and implementing emergency procedures, and training, as well as other information required by Ohio EPA. Fluor-BWXT Portsmouth is also regulated as a large quantity hazardous waste generator and manages hazardous waste generated by Fluor-BWXT Portsmouth and Portsmouth Mission Alliance.

Facilities such as PORTS that generate or store hazardous waste must submit a biennial report to Ohio EPA in even-numbered years that covers waste shipped in the previous odd-numbered year (waste shipped in even-numbered years no longer requires reporting). DOE submitted the report for calendar year 2021 to Ohio EPA in February 2022. This biennial report contains the name and address of each facility that waste was shipped to during the previous calendar year, the name and address of the transporter for each waste shipment, the description and quantity of each waste stream shipped off site, and a description of waste minimization efforts.

RCRA also requires groundwater monitoring at certain hazardous waste management units. With the exception of the On-Site Waste Disposal Facility, groundwater monitoring requirements at PORTS have been combined in one document, the *Integrated Groundwater Monitoring Plan* (DOE 2021a). DOE submits to Ohio EPA an annual groundwater report that summarizes the results of monitoring completed in accordance with this plan. Section 6.3 discusses these monitoring results for 2021.

The On-Site Waste Disposal Facility meets requirements for landfills that dispose of RCRA hazardous waste, PCBs, and low-level radioactive waste. The *On-Site Waste Disposal Facility (OSWDF) Performance Standards Verification Plan* (DOE 2021b) includes the environmental monitoring requirements associated with operation of the On-Site Waste Disposal Facility. DOE submits an annual report to Ohio EPA that summarizes the results of the monitoring completed in accordance with this plan.

Mid-America Conversion Services is regulated as a small-quantity hazardous waste generator and, for one period in May, became an episodic large-quantity generator due to waste from neutralizing and inspecting a hydrogen fluoride storage tank. Small-quantity hazardous waste generators are subject to requirements for generation and accumulation of hazardous waste. These requirements include proper waste identification, use of appropriate containers, availability of emergency equipment, and specified shipment information.

2.1.3.2 Solid Waste Disposal Facilities

Groundwater monitoring may be required at closed solid waste disposal facilities such as landfills. Groundwater monitoring requirements for the closed X-734 Landfills, X-735 Industrial Solid Waste Landfill, and X-749A Classified Materials Disposal Facility are included in the *Integrated Groundwater Monitoring Plan* (DOE 2021a). Chapter 6 discusses the groundwater monitoring results for these units in 2021.

2.1.3.3 Underground Storage Tank Regulations

RCRA Subtitle I provides a comprehensive regulatory program for underground tanks that store petroleum or certain hazardous substances. The Underground Storage Tank Program in Ohio is managed in accordance with the Ohio State Fire Marshal's Bureau of Underground Storage Tank Regulations. Underground storage tanks in the former gaseous diffusion plant buildings and associated facilities are owned by DOE. Portsmouth Mission Alliance and Mid-America Conversion Services have no underground storage tanks. In 2021, Fluor-BWXT Portsmouth was responsible for four tanks and Centrus was responsible for one tank. These include four diesel fuel tanks ranging in size from 2,500 to 20,000 gallons and a 20,000 gallon gasoline tank. The registrations for these tanks are renewed annually.

2.1.4 Federal Facility Compliance Act

The Federal Facility Compliance Act, which was enacted in October 1992, waived federal facilities' immunity from fines and penalties for violations of hazardous waste management as defined by RCRA. It also provided for the development of site treatment plans for treating DOE mixed waste (low-level hazardous and radioactive waste), and for the approval of such plans. Waste that is a mixture of RCRA hazardous waste and low-level radioactive waste is currently stored at PORTS. On October 4, 1995, Ohio EPA issued a Director's Final Findings and Orders allowing mixed waste to be stored beyond one year and approving the proposed PORTS site treatment plan. An annual update to the site treatment plan is required by these Director's Final Findings and Orders. The annual update to the site treatment plan for fiscal year 2021 was submitted to Ohio EPA in December 2021. DOE and FBP are currently shipping RCRA hazardous waste within one year in accordance with RCRA regulations.

2.1.5 National Environmental Policy Act

The National Environmental Policy Act (NEPA) requires federal agencies to evaluate the potential environmental impact of certain proposed activities, and to examine alternatives to proposed actions. DOE has a formal program administered by DOE's NEPA Implementing Procedures [Title 10 of the *Code of Federal Regulations* (*CFR)* Part 1021] and the Council on Environmental Quality Regulations (40 *CFR* Parts 1500–1508) and pursuant to DOE Order 451.1B, the National Environmental Policy Act Compliance Program. Restoration actions, waste management, enrichment facilities maintenance, and other activities are examined to determine the appropriate level of evaluation and documentation. No environmental assessments or environmental impact statements were completed at PORTS in 2021.

Section II.E of the June 13, 1994 DOE Secretarial Policy Statement on NEPA states that separate NEPA documents are no longer required for environmental restoration activities conducted under CERCLA. Instead, the DOE CERCLA process incorporates NEPA values, which include environmental issues that

affect the quality of the human environment. Documenting NEPA values in CERCLA documents allows decision-makers to consider the potential effects of proposed actions on the human environment.

Routine operation and maintenance activities are also evaluated to assess potential environmental impacts. Activities not regulated under CERCLA may be covered under a categorical exclusion or other determination, as defined in NEPA regulations. Such activities are considered routine and have no significant individual or cumulative environmental impacts. DOE policy requires its facilities to post online specific classes of categorical exclusions listed in 10 *CFR* Part 1021, Appendix B to Subpart D. Categorical exclusions for PORTS are posted on the DOE Portsmouth/Paducah Project Office website here.

2.1.6 Toxic Substances Control Act

The Toxic Substances Control Act was enacted in 1976 with two purposes: to ensure US EPA obtains information on the production, use, and environmental and health effects of chemical substances or mixtures, and to provide the means by which US EPA can regulate chemical substances such as PCBs, asbestos, chlorofluorocarbons, and lead.

PORTS complies with PCB regulations (40 *CFR* Part 761) and the Modification to the February 20, 1992 Compliance Agreement between DOE and US EPA for the Toxic Substances Control Act. The compliance agreement was modified on September 25, 1997, then modified again on May 30, 2017. It addresses PCB management issues at PORTS including the use, management, storage, and disposal of PCBs in ventilation duct gaskets and associated collection and containment systems; a negotiated schedule for clean-up, removal, and management of PCB wastes and contaminated items; ongoing air monitoring; and management of PCB spill cleanups.

PCBs are most commonly found in older electrical power system components such as transformers and capacitors. The PCB transformers and capacitors that were present in the gaseous diffusion process buildings have been removed from service.

PORTS prepares an annual document log to meet regulatory requirements in the Toxic Substances Control Act. This log is an inventory of PCB items in use and in storage as waste, as well as shipping and disposal information for PCB items disposed of each year. The *2021 PCB Document Log for the Portsmouth Gaseous Diffusion Plant* (Fluor-BWXT Portsmouth 2022) was prepared in June 2022. Eleven pole-mounted PCB transformers were in service at the PORTS facility at the end of 2021. Approximately 51,250 tons of PCB waste (gross weight) was generated in 2021. Approximately 3.1 tons of PCB waste (gross weight) was shipped off site for disposal in 2021, and 17.5 tons of PCB waste was disposed in the On-Site Waste Disposal Facility. The remaining PCB waste generated in 2021 by decontamination and decommissioning of the X-326 Process Building is in storage for disposal at the On-Site Waste Disposal Facility. Waste contaminated with PCBs was generated during 2021 through decontamination and decommissioning activities in the process buildings and other areas. PORTS also submits annual reports of progress made toward milestones specified in the compliance agreement to US EPA. DOE met the requirements and milestones of this Toxic Substances Control Act Compliance Agreement during 2021.

The DUF_6 Conversion Facility stores and processes cylinders containing DUF_6. Paint on the outside of the cylinders may contain more than 50 parts per million of PCBs. The cylinders are stored in the X-745C, X-745E, and X-745G Cylinder Storage Yards in accordance with an agreement with US EPA, which requires monitoring PCBs in surface water and sediment in drainage basins downstream from the cylinder storage yards. See Sections 5.2.3 and 5.3.2 for the results of this surface water and sediment sampling.

2.1.7 Federal Insecticide, Fungicide, and Rodenticide Act

No restricted-use pesticides were used by DOE contractors in 2021.

2.2 Radiation Protection

PORTS is subject to radiation protection statutes, regulations, and DOE orders designed to protect the health and safety of the public, the workforce, and the environment. The following sections discuss compliance with radiation protection and radioactive waste management requirements. DOE and its contractors maintain and implement programs and procedures to ensure compliance with the relevant laws and regulations described in the following sections. See Chapter 4 for additional information about radiation protection.

2.2.1 Atomic Energy Act of 1954

To ensure proper management of radioactive materials, the Atomic Energy Act of 1954 and its amendments delegate roles and responsibilities for controlling radioactive materials and nuclear energy primarily to DOE, the US Nuclear Regulatory Commission, and US EPA. Through the Atomic Energy Act, DOE regulates the control of radioactive materials under its authority, including the treatment, storage, and disposal of low-level radioactive waste from its operations. Because sections of this Act authorize DOE to establish radiation protection standards for itself and its contractors, DOE published a series of regulations including 10 *CFR* Part 820, *Procedural Rules for DOE Nuclear Activities*; 10 *CFR* Part 830, *Nuclear Safety Management*; and 10 *CFR* Part 835, *Occupational Radiation Protection*. Other DOE directives to protect public health and the environment from potential risks associated with radioactive materials include the current revisions of DOE Order 458.1, *Radiation Protection of the Public and Environment*, and DOE Order 435.1, *Radioactive Waste Management*. DOE PORTS operations are subject to these regulations and directives.

2.2.2 DOE Order 458.1, Radiation Protection of the Public and the Environment

DOE Order 458.1 establishes requirements to protect the public and the environment against undue risk from radiation associated with radiological activities conducted under DOE's control. The objectives of this Order include the following:

- To conduct DOE radiological activities so that exposure to members of the public is maintained within the dose limits established in this Order
- To ensure that potential radiation exposures to members of the public are as low as is reasonably achievable (ALARA)
- To control the radiological clearance of DOE real and personal property
- To ensure that DOE sites have the capabilities, consistent with the types of radiological activities conducted, to monitor routine and non-routine radiological releases and to assess the radiation dose to members of the public
- To protect the environment from the effects of radiation and radioactive material

While the public dose limit of 100 millirem (mrem) per year is the primary dose limit, other regulations control the dose that may be received through specific exposure pathways. Exposure pathways are discussed in Appendix B. The air and water pathways are also regulated by US EPA and Ohio EPA, as discussed in Sections 2.3 and 2.4. DOE Order 458.1 includes dose limits to protect aquatic and terrestrial plants and animals near radiological activities. The Order also regulates the dose that could be received by a member of the public from activities such as the management, storage, disposal, or unrestricted release to the public of radioactive waste, or clearance of real and personal property.

These radiation standards are dose limits, but they do not represent DOE's expected dose to the public and the environment. DOE Order 458.1 requires the "as low as reasonably achievable" (ALARA) process be applied to all routine radiological activities to further reduce radionuclide releases and resulting doses as much as possible.

DOE Order 458.1 includes the following dose limits for members of the general public:

- 100 mrem/year from all radiological releases from a facility and all potential exposure pathways that could contribute significantly to the dose
- 25 mrem/year from radiological releases associated with management, storage, and disposal of radioactive waste (such as operation of the On-Site Waste Disposal Facility) except for transportation, and excluding radon and its decay products
- 25 mrem/year from exposure to real property (land and buildings) released by DOE
- 1 mrem/year from exposure to personal property released by DOE

2.2.2.1 Authorized Limits at PORTS

DOE uses Authorized Limits to establish concentrations or quantities of residual radioactive material that protect human health and the environment. Authorized Limits ensure that doses to the public meet DOE standards and are ALARA, groundwater is protected, no future remediation is needed, and no radiological protection requirements are violated.

In 2021, FBP used the following pre-approved Authorized Limits as documented in the *Environmental Radiation Protection Program* (FBP 2019):

- For radium-226 and radium-228 in soil—5 pCi/gram (0.2 Bq/gram) in excess of background levels, averaged over 100 m^2, in the first 15 cm depth of the surface layer of soil; and 15 pCi/gram (0.56 Bq/gram) in excess of background levels, averaged over any subsequent 15 cm subsurface layer of soil, plus an ALARA assessment. If both thorium-230 and radium-226 or both thorium-232 and radium-228 are present and not in secular equilibrium, the appropriate pre-approved Authorized Limit must be applied to the radionuclide with the higher concentration.
- Previously approved guidelines and limits [such as the surface activity guidelines (DOE Order 5400.5 Chg 2)] may continue to be applied and used as pre-approved Authorized Limits until they are replaced or revised by pre-approved Authorized Limits issued by DOE.

In addition to pre-approved Authorized Limits, the following Authorized Limits were in use in 2021 as documented in the *Environmental Radiation Protection Program* (FBP 2019):

- Authorized Limits for disposition of DOE waste containing low levels of radioactivity in the Waste Control Specialists RCRA landfill
- Authorized Limits for lubricating oil from the process buildings for disposal by incineration
- Authorized Limits for waste disposal at the Carter Valley Landfill in Tennessee

DOE has approved authorized limits for real property release at PORTS. These authorized limits are ALARA and allow DOE to transfer land intended for industrial use. These limits are also approved under CERCLA. Table 2.2 provides the approved authorized limits.

Table 2.2. Approved authorized limits for real property transfer at PORTS

Nuclide	Outdoor Worker[a]
Americium-241	54
Neptunium-237+D[b]	2
Plutonium-238	164
Plutonium-239	143
Plutonium-240	144
Technetium-99	885
Uranium-234	329
Uranium-235	3
Uranium-238+D[b]	16

Notes:
[a]Source: Authorized limits letter (Bradburne May 2, 2018). Limits are shown in picocuries per gram.
[b]"+D" indicates consideration of short-lived decay products of a principal radionuclide down to, but not including, the next principal radionuclide or the final nonradioactive nuclide in the chain.

2.2.3 DOE Order 435.1, Radioactive Waste Management

DOE Order 435.1 establishes requirements for managing high-level waste, transuranic waste, and low-level waste, including the radioactive component of mixed waste (high-level waste, transuranic waste, and low-level waste containing chemically hazardous constituents) in a safe manner that protects the worker, public health, and the environment. Appendix A provides definitions of the waste types. DOE Order 435.1 is a cradle-to-grave approach for managing waste that includes requirements for generating, storing, treating, and disposing of waste and for monitoring facilities after closure.

PORTS manages only low-level radioactive waste and mixed low-level radioactive waste, and operates an On-Site Waste Disposal Facility for waste generated by decontamination and decommissioning that meets criteria for on-site disposal.

The DOE Low-level Waste Disposal Facility Review Group independently reviews the design and operation of the On-Site Waste Disposal Facility to evaluate its compliance with performance objectives in DOE Order 435.1. PORTS received an Operating Disposal Authorization Statement for design, construction, operation, and subsequent closure of the On-Site Waste Disposal Facility in 2019, which was revised in May 2021 to remove or revise conditions that were part of the original Operating Disposal Authorization Statement.

The DOE Low-level Waste Disposal Facility Review Group continues to oversee the operation and ongoing construction of the On-Site Waste Disposal Facility. An annual report documenting the operation of the On-Site Waste Disposal Facility and how the On-Site Waste Disposal Facility meets performance requirements in the Disposal Authorization Statement is provided to the DOE Low-level Waste Disposal Facility Review Group.

2.3 Air Quality and Protection

PORTS is subject to air quality and protection statutes, regulations, and rules designed to protect the health and safety of the public and the environment. The following sections discuss the Site's compliance with US EPA and Ohio EPA requirements. Chapters 4 and 5 include additional information about ambient air monitoring for radionuclides and non-radionuclides, respectively.

2.3.1 Clean Air Act

PORTS complies with the Clean Air Act and its amendments, subsequent federal regulations, and Ohio EPA codes by implementing programs, procedures, and permit requirements. Authority for enforcing compliance with the Clean Air Act and its amendments resides with US EPA Region 5, the Ohio EPA, or both.

Fluor-BWXT Portsmouth is responsible for numerous air emission sources associated with the former gaseous diffusion production and support facilities. These sources, which included the boilers at the X-600 Steam Plant Complex prior to their demolition in 2013, emitted more than 100 tons per year of non-radiological air pollutants specified by Ohio EPA. This caused DOE to become a major source of air pollutants as defined in Title 40 *CFR* Part 70. Ohio EPA issued the final Title V Air Permit to Fluor-BWXT Portsmouth in 2014. Fluor-BWXT Portsmouth submitted a permit renewal application to Ohio EPA in November 2018; however, Ohio EPA had not renewed the permit by the end of 2021. The X-600 Steam Plant Complex has been demolished and is no longer operating.

Fluor-BWXT Portsmouth is required to submit quarterly Title V deviation reports that document any conditions that do not conform to the requirements of the Title V permit. These quarterly reports are summarized in an annual Title V Compliance Certification. Fluor-BWXT Portsmouth had no deviations from the Title V Permit requirements in 2021.

Ohio EPA requires an annual Ohio EPA Fee Emissions Report to document emissions of selected non-radiological air pollutants. US EPA requires an annual report of greenhouse gas emissions. Section 5.1.1 provides more information about these reports and the reported emissions for Fluor-BWXT Portsmouth in 2021.

In 2021, Mid-America Conversion Services was responsible for four permitted sources associated with the DUF_6 Conversion Facility. The annual permit evaluation report for the Mid-America Conversion Services air emission sources did not include any deviations from applicable emission limits or control requirements. Section 5.1.1 provides more information about air emissions from Mid-America Conversion Services in 2021.

2.3.2 National Emission Standards for Hazardous Air Pollutants

Airborne emissions of radionuclides from PORTS are regulated under the National Emission Standards for Hazardous Air Pollutants (NESHAP), Subpart H, National Emission Standards for Emissions of Radionuclides Other Than Radon from DOE Facilities, which requires DOE to submit an annual report of radiological emissions from DOE air emission sources. DOE contractors Fluor-BWXT Portsmouth and Mid-America Conversion Services were both responsible for radiological air emission sources. Section 4.3.2 provides the radiological dose calculations from these emissions.

In 2021, Fluor-BWXT Portsmouth was responsible for numerous air emission sources including continuously monitored vents in the X-330 Process Building and the X-344A Uranium Hexafluoride Sampling Building; room ventilation exhausts and pressure relief vents associated with the X-710 Technical Services Building, X-705 Decontamination Facility, and the XT-847 Glove Box; wastewater treatment facilities that support on-site remedial actions, and the X-622, X-623, X-624, and X-627 Groundwater Treatment Facilities. Radiological emissions from the vents in the X-330 Process Building and the X-344A Uranium Hexafluoride Sampling Building were measured by continuous monitoring if in use. Emissions from the room ventilation exhausts and vents, if in use, were estimated based on operating data and US EPA emission factors. Emissions from the groundwater and wastewater treatment facilities were estimated based on influent and effluent sampling and throughput. Total radiological airborne emissions from Fluor-BWXT Portsmouth sources in 2021 were 0.209 curie (Ci).

In 2021, Mid-America Conversion Services was responsible for emissions from the DUF_6 Conversion Facility. The DUF_6 Conversion Facility did not operate in 2021 due to the COVID-19 pandemic. Emissions from the DUF_6 Conversion Facility were based on continuous monitoring of the conversion building stack. Total radiological airborne emissions from the DUF_6 Conversion Facility in 2021 were 0.0000284 Ci.

Radionuclide emission sources at PORTS also include fugitive and diffuse sources such as demolition of the X-326 Process Building, soil excavation, and operation of the On-Site Waste Disposal Facility. The ambient air monitoring program (Sections 4.3.3 and 4.3.4) assesses non-point source emissions of radionuclides from these activities.

2.3.3 Hydrofluorocarbon Phasedown

Hydrofluorocarbons are greenhouse gases with very high global warming potentials and are used as refrigerants, in fire suppression systems, and certain scientific and electrical equipment. As of October 1, 2021, US EPA began the implementation of hydrofluorocarbons phasedown requirements.

PORTS does not use hydrofluorocarbons for industrial processes. Hydrofluorocarbons are only used for comfort cooling/heating. Hydrofluorocarbon refrigerants used at PORTS are compliant with current regulations in 40 *CFR* Part 82. Hydrofluorocarbons removed as a result of maintenance activities are logged, properly contained, and recycled or disposed. One hundred-fifty pounds (six 25-pound cylinders) of hydrofluorocarbon refrigerants were purchased by PORTS in 2021. Future purchases of refrigerants will consider acceptable alternatives that have lower global warming potentials.

2.4 Water Quality and Protection

PORTS is subject to water quality and protection statutes, regulations, and rules designed to protect the health and safety of the public and the environment. The following sections discuss DOE and its contractors' compliance with US EPA and Ohio EPA requirements.

2.4.1 Clean Water Act

The Clean Water Act was established primarily through passage of the Federal Water Pollution Control Act Amendments of 1972. The Clean Water Act set up four major programs for controlling water pollution: regulating point-source and storm water discharges into waters of the United States, controlling and preventing spills of oil and hazardous substances, regulating discharges of dredge and fill materials into waters of the United States, and providing financial assistance to construct publicly owned sewage treatment works. DOE contractors Fluor-BWXT Portsmouth and Mid-America Conversion Services held NPDES permits during 2021 that allowed discharges of water to surface streams.

Fluor-BWXT Portsmouth was responsible for 18 monitoring locations identified in the Fluor-BWXT Portsmouth NPDES permit. Nine outfalls discharge directly to surface water, six outfalls discharge to another outfall before leaving the site, and three other locations that are not outfalls were also monitored. Section 4.4.1.1 and Section 5.2.1.1 provide additional information on the Fluor-BWXT Portsmouth NPDES outfalls. Figure 4.2 shows the locations of PORTS NPDES outfalls.

The Mid-America Conversion Services NPDES permit allows the discharge of process wastewaters from the DUF_6 Conversion Facility. The Mid-America Conversion Services NPDES permit specifies monitoring requirements for Mid-America Conversion Services Outfall 001 that are only effective when process wastewater is being discharged through the outfall. The permit also includes requirements for Mid-America Conversion Services Outfall 602, which are effective when process wastewater is being discharged to the sanitary sewer system that flows to the X-6619 Sewage Treatment Plant (Fluor-BWXT

Portsmouth NPDES Outfall 003). No process wastewater was discharged through Mid-America Conversion Services Outfall 001 in 2021. Section 4.4.1.1 and Section 5.2.1.2 include additional information on the Mid-America Conversion Services NPDES outfalls.

Fluor-BWXT Portsmouth and Mid-America Conversion Services submit monthly discharge monitoring reports to Ohio EPA that include the data required to demonstrate compliance with the NPDES permits. Table 2.3 summarizes the permit exceedances identified by Fluor-BWXT Portsmouth in 2021. The overall Fluor-BWXT Portsmouth NPDES compliance rate for 2021 was 99 percent. There were no exceedances of Mid-America Conversion Services permit limitations in 2021; therefore, the overall Mid-America Conversion Services NPDES compliance rate for 2021 was 100 percent.

Table 2.3. Fluor-BWXT Portsmouth NPDES exceedances in 2021

Outfall	Parameter	Number of permit exceedances[a]	Number of samples collected	Number of compliant samples	Percent compliance	Month exceeded[b]
002	Oil and grease	1	48	47	98	November
003	E. coli	1	24	23	96	July
003	Mercury	[c]	19	-	-	
004	Copper	1[d]	14	13	93	January
004	Total suspended solids	5[d]	48	43	90	January February June (3)
005	pH	2	48	46	96	April (2)
005	Total suspended solids	3[e]	48	45	94	April December(2)
009	Total suspended solids	1	48	47	98	March

Notes:
[a]Daily exceedances only. Monthly exceedances, if any, are listed in these footnotes.
[b]This column identifies the month that the daily exceedance or exceedances occurred. If there was more than one exceedance during the month, the number of exceedances is provided in parentheses.
[c]The monthly concentration limit for mercury was exceeded in January, February, and August. The monthly loading limit for mercury was exceeded in January, February, May, and August. There were no daily exceedances.
[d]The monthly concentration limit for copper was exceeded in January. The monthly concentration limit for total suspended solids was exceeded in June.
[e]The monthly concentration limit for total suspended solids was exceeded in April and December.

Exceedances of the discharge limitations for total suspended solids, copper, and pH were generally caused by a combination of excessive rainfall and operational issues at the outfall. The exceedance of oil and grease at Outfall 002 may have been caused by a discarded tube of grease, which was immediately removed and secured for proper disposal. Exceedances of the monthly limits for mercury at Outfall 003 are being addressed in accordance with the compliance schedule in the Fluor-BWXT Portsmouth NPDES permit that became effective on July 1, 2020. The overall Fluor-BWXT Portsmouth NPDES compliance rate for 2021 was 99 percent.

Most of the Fluor-BWXT Portsmouth NPDES outfalls are also monitored for radionuclides (see Section 4.4.1.1). The Mid-America Conversion Services outfalls are not monitored for radionuclides. Section 4.4.1.1 and Section 5.2.1.3 provide information about NPDES monitoring completed by Centrus.

Storm water runoff, defined as water from precipitation that flows over land and is not absorbed into the ground, is regulated under the Clean Water Act because it can accumulate debris, chemicals, or other

pollutants that affect water quality. Storm water pollution prevention plans are prepared for industrial activities at the PORTS site under the Fluor-BWXT Portsmouth NPDES permit. Construction activities are covered by the NPDES Construction Storm Water General Permit. The storm water pollution prevention plans describe the activities and the controls to be used to minimize impacts to storm water runoff. Storm water management and drainage design will be part of site redevelopment after decontamination, decommissioning, and remediation are completed.

2.4.2 Safe Drinking Water Act

PORTS supplies its facilities with on-site drinking water. Drinking water systems are regulated by the Safe Drinking Water Act, which sets requirements for testing, treating, and disinfecting water as well as maintaining distribution systems and training operators. Fluor-BWXT Portsmouth operated and managed the PORTS drinking water system in accordance with the Safe Drinking Water Act in 2021. The Safe Drinking Water Act also sets health-based standards for naturally-occurring and man-made contaminants that may be found in drinking water. PORTS obtains its drinking water from two water supply well fields west of PORTS in the Scioto River Valley buried aquifer near the Scioto River.

Ohio EPA stipulates the parameters and schedule for sampling drinking water for nitrate, lead, disinfection byproducts, total coliform, chlorine, and other potential contaminants. Sampling results are submitted to Ohio EPA in a monthly report.

Ohio EPA sampled the PORTS drinking water supply in June 2020 for perfluoroalkyl and polyfluoroalkyl substances (PFAS), a group of manmade chemicals used in non-stick products such as Teflon, water- and stain-repellant fabrics, and firefighting foam, among many other uses. No PFAS were detected in PORTS treated drinking water. One type of PFAS, perfluorooctane sulfonate, was detected in the PORTS raw water supply at 5.4 nanograms per liter (ng/L), or parts per trillion. This detection is below the Ohio EPA action limit of 70 ng/L.

DOE is currently planning additional assessment of PFAS at all DOE sites.

2.5 Other Environmental Statutes

This section discusses compliance with other applicable environmental statutes, regulations, and Executive Orders.

2.5.1 Endangered Species Act

The Endangered Species Act of 1973, as amended, provides for the designation and protection of endangered and threatened wildlife and plants and the habitat on which such species depend. When appropriate, formal consultations are made with the US Fish and Wildlife Service and the Ohio Department of Natural Resources.

A 2013 study identified the potential presence of the federally-endangered Indiana bat (*Myotis sodalis*) and the northern long-eared bat (*Myotis septentrionalis*) in the northeastern area of PORTS near the On-Site Waste Disposal Facility (see Section 3.3.2). The study did not detect the Indiana bat in the study area, but did identify both foraging and roosting activities for the northern long-eared bat, which is listed as a threatened species. The US Fish and Wildlife Service issued a biological opinion in 2015 that the On-Site Waste Disposal Facility is not likely to jeopardize the continued existence of the northern long-eared bat.

An additional study in 2019 assessed the potential presence of the Indiana bat and the northern long-eared bat in areas where tree clearing was proposed. No Indiana bats and one northern long-eared bat were identified during the study. Measures to minimize potential impacts to bats continue to be implemented

during construction and operation of the On-Site Waste Disposal Facility and other decontamination and decommissioning activities.

2.5.2 Impacts of Invasive Species

Executive Order 13751, Safeguarding the Nation from the Impacts of Invasive Species, calls on government agencies to take steps to prevent the introduction and spread of invasive species, and to support efforts to eradicate and control invasive species that are established. DOE takes steps to minimize the spread of invasive species at PORTS through routine site maintenance such as mowing and spraying for weeds.

2.5.3 Migratory Bird Treaty Act

The 2013 Memorandum of Understanding on Migratory Birds between DOE and the US Fish and Wildlife Service and Executive Order 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*, direct federal agencies to take certain actions to further implement the Migratory Bird Treaty Act of 1918, which is applicable to PORTS. DOE takes measures to minimize impacts to migratory birds by avoiding disturbance of active nests.

2.5.4 Floodplain Management and Protection of Wetlands

Title 10 *CFR* Part 1022 establishes procedures for complying with Executive Order 11988, *Floodplain Management*, and Executive Order 11990, *Protection of Wetlands*. A site-wide wetland survey report was completed and submitted to the US Army Corps of Engineers in 1996. The 1996 survey identified 41 jurisdictional wetlands and four non-jurisdictional wetlands at PORTS totaling 34.36 acres. A wetland and stream assessment was completed in 2013 for the northeast area of PORTS where the On-Site Waste Disposal Facility is located. DOE has developed mitigation strategies for wetlands and streams impacted by the construction of the On-Site Waste Disposal Facility in accordance with CERCLA requirements.

2.5.5 National Historic Preservation Act

The National Historic Preservation Act of 1966 is the primary law governing a federal agency's responsibility to identify and protect historic properties, defined as cultural resources included in or eligible for inclusion in the National Register of Historic Places. Historic properties include buildings of historic significance and archeological sites. National Historic Preservation Act reviews consider both architectural and archeological properties. Coordination and consultation with the State Historic Preservation Office and other stakeholders occurs as a part of these reviews. The cultural resources of three broad time periods of occupation of the PORTS property have been assessed: the prehistoric era (occupation by Native Americans until approximately 1650), the historic era (occupation by Native Americans and early settlers from 1650 through 1952), and the DOE era (from 1952 to the present).

Fifty-four prehistoric archaeological sites have been identified on PORTS property. Each site was investigated, and four of the sites included sufficient artifacts such as tools, earth ovens, and pottery to be determined eligible for inclusion on the National Register of Historic Places. One of the sites eligible for inclusion on the National Register of Historic Places was in the northeast corner of PORTS in the support area for the On-Site Waste Disposal Facility. DOE worked with the State Historic Preservation Office and Tribal Nations to develop an approach for this approximately one-acre area to recover artifacts and other information prior to the start of construction activities. Field work, including hand excavation of selected areas, was completed in 2015. No significant artifacts were found. A technical report documenting the data recovery process and results was submitted to the State Historic Preservation Office in 2017. A summary report intended for a general audience was submitted to the State Historic Preservation Office in 2019.

Sixty-one historic era sites have been identified on PORTS property. Most of these were farmstead or residential sites, and investigations of the farmstead and residential sites determined they were not eligible for inclusion on the National Register of Historic Places. Two sites, the Holt Cemetery and Mount Gilead Church and Cemetery, are treated as if they are eligible for the National Register.

DOE has worked with the State Historic Preservation Office, Advisory Council on Historic Preservation, Tribal Nations, and individual members of the public interested in historic preservation to determine how best to document the DOE era of site history—that is, the history associated with the buildings and other areas that are part of the decontamination and decommissioning effort. The National Historic Preservation Act review for site decontamination and decommissioning was performed as a part of the CERCLA process. The PORTS Virtual Museum (here) preserves photos, video, oral histories, and other information associated with operation, remediation, and decontamination and decommissioning of PORTS. The records of decision for process buildings and waste disposition (see Section 3.3) list the activities selected to preserve the history associated with the PORTS site. Of these activities, the following have been completed:

- A Comprehensive Summary Report summarizing all investigations related to the National Historic Preservation Act, entitled the *Comprehensive Summary Report of Cultural Resource Investigations Conducted at the Portsmouth Gaseous Diffusion Plant (PORTS Facility), Scioto and Seal Townships, Pike County, Ohio* (Fluor-BWXT Portsmouth 2014)
- A Historic Context Report entitled *The Role of the Portsmouth Gaseous Diffusion Plant in Cold War History* that documents the history of operations and facilities at PORTS from 1952 through the end of the Cold War (DOE 2017a)
- Expansion of the PORTS virtual museum in 2017 to include information on prehistoric activities

Activities selected to preserve the history of the PORTS site and document ongoing activities include collecting and evaluating items recovered from PORTS facilities for potential future display, reaching out to local school districts and others, and taking panoramic and aerial photographs at regular intervals.

2.5.6 Archaeological and Historic Preservation Act and Archaeological Resources Protection Act

The Archaeological and Historic Preservation Act and the Archaeological Resources Protection Act require the Secretary of the Department of Interior to report to Congress on federal archaeological activities. The Archaeological Resources Protection Act requires federal land managers to provide archaeology program information to the Secretary of the Interior for this report; information for PORTS is included in the overall DOE headquarters report.

2.6 Sustainability

DOE and its contractors implement numerous sustainability requirements including Executive Order 13423, *Strengthening Federal Environmental, Energy, and Transportation Management*; Executive Order 13514, *Federal Leadership in Environmental, Energy, and Economic Performance*; the National Energy Conservation Policy Act; the Energy Policy Acts of 1992 and 2005; and the Energy Independence and Security Act of 2007, largely through DOE Order 436.1, *Departmental Sustainability*.

2.6.1 Departmental Sustainability

DOE Order 436.1 requires that sites develop and implement an environmental management system to protect air, water, land, and other natural or cultural resources potentially impacted by DOE operations. Sections 3.1 and 3.2 discuss the DOE PORTS Environmental Management System and Site Sustainability

Program. DOE is committed to reducing potential environmental risks, costs, wastes, and future liability by effectively integrating environmental sustainability principles in DOE activities at PORTS in a cost-effective and environmentally conscious manner.

2.6.2 Federal Leadership in Environmental, Energy, and Economic Performance

On December 8, 2021 the President signed Executive Order 14057, *Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability*, which requires that federal agencies lead by example to achieve a carbon-pollution-free electricity sector by 2035 and net-zero emissions economy-wide by no later than 2050. The *Fiscal Year 2022 Site Sustainability Plan for the Portsmouth Gaseous Diffusion Plant* (DOE 2021c) provides goals and progress through fiscal year 2021 for reducing greenhouse gas emissions and water consumption, recycling and diverting wastes, improving electronic stewardship, and other areas. Chapter 3 details the objectives of the Site Sustainability Plan.

2.7 Other Major Environmental Issues and Actions

The following sections summarize environmental release reporting and permits for PORTS.

2.7.1 Enforcement and Compliance History Online

US EPA's Enforcement and Compliance History Online web tool provides environmental regulatory compliance and enforcement information for regulated facilities nationwide. Three facilities in the web tool represent PORTS. The facility names are listed in the web tool as Fluor-BWXT Portsmouth LLC, Mid-America Conversion Services, LLC, and US DOE Portsmouth Gaseous Diffusion Plant – BWCS DUF6. The Facility Registry Service identification numbers are 110046552930, 110030994468, and 110000395260, respectively. The addresses for the facilities are identified as 3930 US Rte 23S, Piketon, Ohio; 3930 US 23, Perimeter Rd, Piketon, Ohio; and 3930 US Route 23 South, Piketon, Ohio; respectively.

2.7.2 Environmental Program Inspections

Federal, state, and local agencies conducted four inspections of DOE activities at PORTS in 2021. Table 2.4 lists these inspections.

Table 2.4. Environmental inspections of DOE activities at PORTS for 2021

Date	DOE contractor	Agency	Type	Notices of Violation
August 26	FBP	Ohio EPA	RCRA compliance (virtual site visit)	Yes
August 26	FBP	Ohio EPA	Closed solid waste management units (virtual site visit)	None
October 19-20	FBP	US EPA	RCRA compliance evaluation	None
November 16	FBP	Pike County Health District	Closed solid waste landfills	None

Acronyms:
FBP = Fluor-BWXT Portsmouth
US EPA = US Environmental Protection Agency

DOE received a Notice of Violation from Ohio EPA on June 6, 2022 based on information evaluated during the RCRA compliance inspection conducted on August 26, 2021. Ohio EPA determined that DOE had not distributed a Quick Reference Guide for Hazardous Waste Contingency Plan (a type of

emergency response plan) to local emergency responders. Local emergency responders had previously received copies of the Hazardous Waste Contingency Plan; the quick reference guide was a new Ohio EPA requirement. The violation was resolved when DOE distributed the Hazardous Waste Contingency Plan Quick Reference Guide to emergency responders and provided proof of distribution to Ohio EPA. No additional activities were required.

2.7.3 Unplanned Releases

No unplanned releases from DOE activities at PORTS occurred in 2021.

2.7.4 Summary of Permits

Table 2.5 lists the permits held by DOE and DOE contractors (Fluor-BWXT Portsmouth and Mid-America Conversion Services) in 2021. Portsmouth Mission Alliance does not hold any environmental permits.

Table 2.5. DOE environmental permits and registrations at PORTS

Permit/registered source	Source no.	Issue date	Expiration date	Status
Fluor-BWXT Portsmouth – Clean Air Act Permits				
Title V Permit	P0109662	4/28/2014	5/19/2019	Active (renewal submitted 11/13/2018)
Permit to Install X-627 Groundwater Treatment Facility (06-07283)	P474, T104, T105	3/15/2005	None	Active
Permit to Install and Operate X-735 Landfill Cap and Venting System (northern portion) (P0104170)	P023	11/12/2008	None	Active
Permit to Install X-670A Cooling Tower (P0106292)	P539	07/29/2010	None	Active
Permit to Install X-333 Low Assay Withdrawal Seal Exhaust System (06-07984)	P117	01/10/2006	None	Inactive
Permit to Install Biodenitrification Vent #1 (06-07928)	P040	11/03/2005	None	Active
Permit to Install Biodenitrification Vent #2 (06-07928)	P041	11/03/2005	None	Active
Permit to Install Biodenitrification Vent #3 (06-07928)	P042	11/03/2005	None	Active
Permit to Install X-700 Radiation Calibration Lab Fume Hood (06-07928)	P045	11/03/2005	None	Active
Permit to Install X-705 Calciners (B Area) (06-07928)	P053	11/03/2005	None	Active
Permit to Install X-344 Pigtail Gulper (06-07760)	P430	05/17/2005	None	Active
Permit to Install X-705 8-inch, 12-inch, and 2.5-ton Uranium Cylinders, Cleaned for Reuse or Disposal (06-06703)	P470	04/11/2002	None	Active
Permit to Install X-344 Toll Transfer Facility (06-06303)	P469	12/12/2000	None	Active
Permit to Install X-343 Feed Vaporization and Sampling (06-06302)	P468	12/12/2000	None	Inactive
Permit to Install 85 Horsepower Trash Pump (06-06170)	P467	05/24/2000	None	Active
Permit to Install X-847 Glove Box (06-5682)	P466	07/21/1999	None	Active
X-624 Groundwater Treatment Facility (now considered a *de minimis* source)	P019	10/28/1992	None	Active
Permit to Install X-623 Groundwater Treatment Facility (06-4613)	P018	01/08/1992	None	Active
Permit to Install X-749 Contaminated Materials Disposal Facility (06-2999)	P027	04/17/1991	None	Active
Permit to Install Gasoline Dispensing Facility (06-02906)	G001	10/31/1990	None	Active

Table 2.5. DOE environmental permits and registrations at PORTS (continued)

Permit/registered source	Source no.	Issue date	Expiration date	Status
Mid-America Conversion Services – Clean Air Act Permits				
Permit No. P0109511 to Install and Operate Process Line 1 (DUF_6 Conversion Facility)	P001	3/23/2012	3/23/2022	Active (renewal submitted September 2021 –all air permits)
Permit No. P0109511 to Install and Operate Process Line 2 (DUF_6 Conversion Facility)	P002	3/23/2012	3/23/2022	
Permit No. P0109511 to Install and Operate Process Line 3 (DUF_6 Conversion Facility)	P003	3/23/2012	3/23/2022	
Permit No. P0109511 to Install and Operate HVAC System (DUF_6 Conversion Facility)	P004	3/23/2012	3/23/2022	
Fluor-BWXT Portsmouth – Clean Water Act/Safe Drinking Water Act Permits				
NPDES Permit	0IO00000*OD	7/1/2020 (effective date)	6/30/2025	Active
Safe Drinking Water Act – License to Operate a Public Water System	OH6632414		Renewed annually	Active
Permit to Install X-622 Groundwater Treatment Facility	06-2951	11/20/1990	None	Active
Permit to Install X-623 Groundwater Treatment Facility	06-3528	1/9/1996	None	Active
Permit to Install X-624 Groundwater Treatment Facility	06-3556	10/28/1992	None	Active
Permit to Install X-627 Groundwater Treatment Facility	06-07283	1/13/2004	None	Active
Mid-America Conversion Services – Clean Water Act Permit				
NPDES Permit	0IS00034*CD	10/1/2019 (effective date)	9/30/2024	Active
Fluor-BWXT Portsmouth – Hazardous Waste Permit				
RCRA Part B Permit (with DOE)	Ohio Permit No. 04-66-0680	3/25/2011	3/25/2021	Active (renewal submitted 9/23/2020)
Fluor-BWXT Portsmouth – Registrations				
Underground Storage Tank Registration	66005107		Renewed annually	Active