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WETLAND ASSESSMENT OF THE EFFECTS OF CONSTRUCTION AND OPERATION OF A DEPLETED URANIUM HEXAFLUORIDE CONVERSION FACILITY AT THE PORTSMOUTH, OHIO, SITE

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Prepared for

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FIGURES

NOTATION

The following is a list of the acronyms, initialisms, and abbreviations (including units of measure) used in this document.

ACRONYMS, INITIALISMS, AND ABBREVIATIONS

ANL	Argonne National Laboratory
CFR	*Code of Federal Regulations*
CWA	Clean Water Act
DOE	U.S. Department of Energy
DOT	U.S. Department of Transportation
DUF_6	depleted uranium hexafluoride
ETTP	East Tennessee Technology Park
GDP	gaseous diffusion plant
HF	hydrofluoric acid
LMES	Lockheed Martin Energy Systems, Inc.
MMES	Martin Marietta Energy Systems, Inc.
PEIS	programmatic environmental impact statement
USACE	U.S. Army Corps of Engineers

UNITS OF MEASURE

ft	foot(feet)
ha	hectare(s)
km	kilometer(s)
m	meter(s)
mi	mile(s)
t	metric ton(s)

WETLAND ASSESSMENT OF THE EFFECTS OF CONSTRUCTION AND OPERATION OF A DEPLETED URANIUM HEXAFLUORIDE CONVERSION FACILITY AT THE PORTSMOUTH, OHIO, SITE

1 INTRODUCTION

The U.S. Department of Energy (DOE) Depleted Uranium Hexafluoride (DUF_6) Management Program evaluated alternatives for managing its inventory of DUF_6 and issued the *Programmatic Environmental Impact Statement for Alternative Strategies for the Long-Term Management and Use of Depleted Uranium Hexafluoride* (DUF_6 PEIS) in April 1999 (DOE 1999). The DUF_6 inventory is stored in cylinders at three DOE sites: Paducah, Kentucky; Portsmouth, Ohio; and East Tennessee Technology Park (ETTP), near Oak Ridge, Tennessee. In the Record of Decision for the DUF_6 PEIS, DOE stated its decision to promptly convert the DUF_6 inventory to a more stable chemical form. Subsequently, the U.S. Congress passed, and the President signed, the *2002 Supplemental Appropriations Act for Further Recovery from and Response to Terrorist Attacks on the United States* (Public Law No. 107-206). This law stipulated in part that, within 30 days of enactment, DOE must award a contract for the design, construction, and operation of a DUF_6 conversion plant at the Department's Paducah, Kentucky, and Portsmouth, Ohio, sites, and for the shipment of DUF_6 cylinders stored at ETTP to the Portsmouth site for conversion. This wetland assessment has been prepared by DOE, pursuant to Executive Order 11990 (*Protection of Wetlands*) and DOE regulations for implementing this Executive Order as set forth in Title 10, Part 1022, of the *Code of Federal Regulations* (10 CFR Part 1022 [Compliance with Floodplain and Wetland Environmental Review Requirements]), to evaluate potential impacts to wetlands from the construction and operation of a conversion facility at the DOE Portsmouth site.

2 PROPOSED ACTION

DOE proposes to construct and operate a conversion facility at the Portsmouth site for conversion of the DUF_6 inventory stored at the Portsmouth and ETTP sites. Figure 1 shows the Portsmouth site and vicinity. The proposed action includes shipment of the ETTP cylinders to Portsmouth and construction of a new cylinder storage yard at Portsmouth for the ETTP cylinders, if required.

The proposed action also includes the preparation of cylinders for shipment from ETTP. Cylinders that are not in compliance with U.S. Department of Transportation (DOT) requirements would be placed into protective overpacks. No construction activities would be required, and no disturbance to areas outside the ETTP cylinder storage yards is expected. The only equipment required would be similar to the equipment currently used during routine cylinder handling and maintenance activities. The cylinder transfer option would involve the transfer of the DUF_6 from noncompliant cylinders to cylinders that meet all DOT requirements.

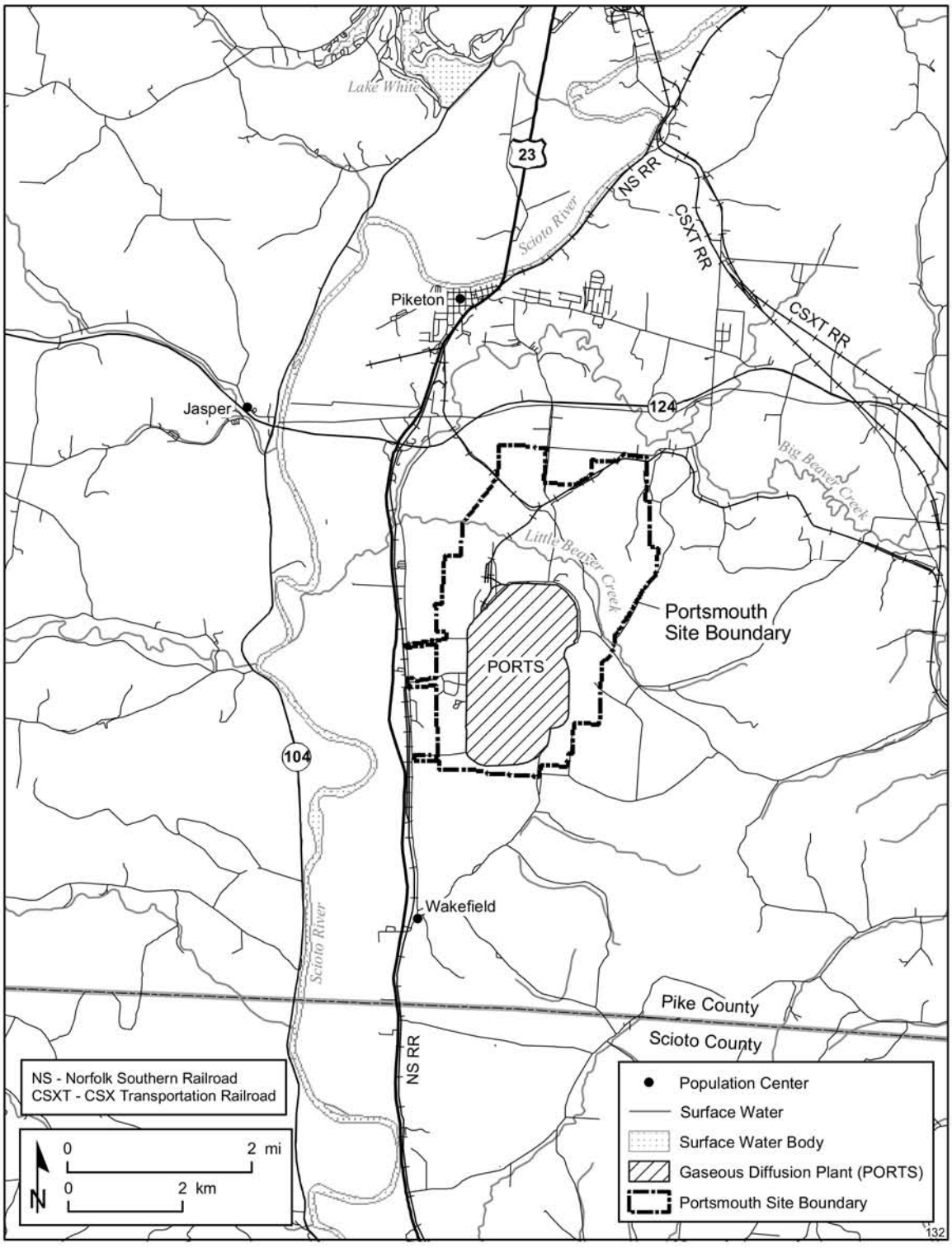

FIGURE 1 Regional Map of the Portsmouth Site Vicinity (Source: Adapted from Lockheed Martin Energy Systems, Inc. [LMES] 1996)

If selected, this option would likely require the construction of a cylinder transfer facility at ETTP. Currently, there are no plans or proposals to build or use a cylinder transfer facility to prepare DUF_6 cylinders for shipment. If a decision is made to construct a cylinder transfer facility, a separate environmental review would be conducted.

Three noncontiguous areas comprise Proposed Area 1 for the construction of a new cylinder storage yard at the Portsmouth site, if new yard construction is required. These areas are located in the northwestern portion of the developed area of the Portsmouth site, which is bounded by Perimeter Road (Figure 2). Two noncontiguous areas comprise Proposed Area 2, an alternative area for the construction of new cylinder storage yards. These areas are also located in the northwestern portion of the developed area. In addition, an existing concrete pad would be used with Proposed Area 2 for cylinder storage.

The conversion facility would convert DUF_6 into a stable chemical form, uranium oxide (U_3O_8), for beneficial use or disposal. The off-gas from the conversion process would yield hydrofluoric acid (HF), which would be processed and marketed or converted to a solid for sale or disposal. To support the conversion operations, the emptied DUF_6 cylinders would be stored, handled, and processed for disposal. The time period considered is a construction period of approximately 2 years, an operational period of 18 years, and the decontamination and decommissioning of the facility. Current plans call for the construction to begin in the summer of 2004.

The Portsmouth plant is being designed to convert 14,900 tons (13,500 metric tons [t]) of DUF_6 per year, requiring 18 years to convert the Portsmouth and ETTP inventories. The conversion facility would occupy a total of approximately 10 acres (4 ha), with up to 65 acres (26 ha) of land disturbed. Some of the disturbed areas would be areas cleared for railroad or utility access, not adjacent to the construction area.

This assessment evaluates the construction and operation of the conversion facility at one primary location within the Portsmouth site and two alternative locations. The three candidate locations, denoted as Locations A, B, and C, are shown in Figure 2. Location A is the preferred location for the conversion facility (Figure 3), and this assessment evaluates facility construction and operation at Location A as the base case analysis. Locations B and C are evaluated as alternative locations for the conversion facility within the Portsmouth site.

Under the no action alternative, DUF_6 cylinder storage would continue indefinitely at the Portsmouth and ETTP sites. DOE would continue cylinder surveillance and maintenance activities to ensure the continued safe storage of DUF_6 cylinders.

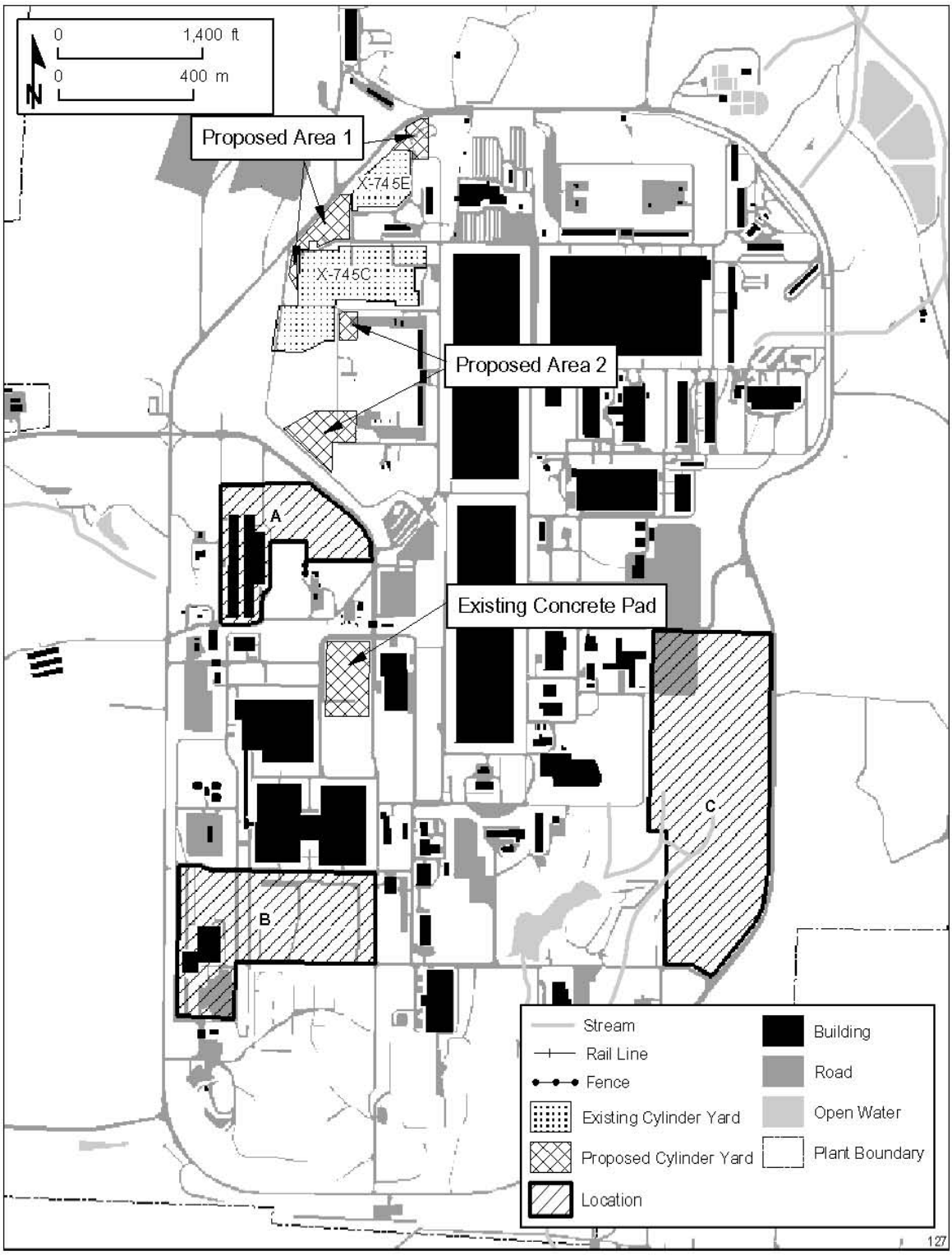

FIGURE 2 Conversion Facility Candidate Locations and Proposed Cylinder Yards at the Portsmouth Site (Source: Adapted from DOE 1996; MMES 1992a)

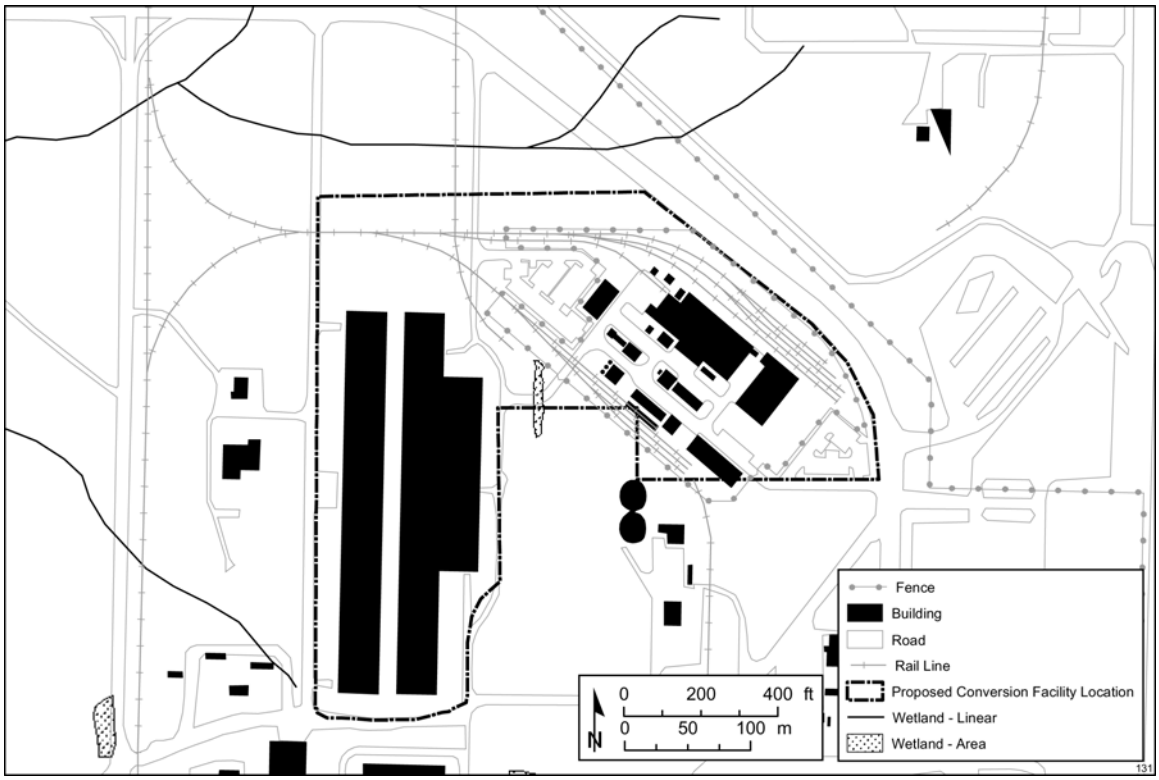

FIGURE 3 Proposed Facility Design at Location A

3 DESCRIPTIONS OF THE PORTSMOUTH SITE, CANDIDATE LOCATIONS AT THE PORTSMOUTH SITE, AND THE ETTP SITE

The Portsmouth site is located in Pike County, Ohio, approximately 22 mi (35 km) north of the Ohio River and 3 mi (5 km) southeast of the town of Piketon. The Portsmouth site includes the Portsmouth Gaseous Diffusion Plant (GDP), previously operated first by DOE and then by the U.S. Enrichment Corporation. Uranium enrichment operations at the Portsmouth site were discontinued in May 2001, and the plant has been placed in cold standby, a nonoperational condition in which the plant retains the ability to resume operations within 18 to 24 months (DOE 2001).

The Portsmouth site occupies 3,714 acres (1,500 ha) of land, with an 800-acre (320-ha) fenced core area that contains the former production facilities. The 2,914 acres (1,180 ha) outside the core area includes restricted buffers, waste management areas, plant management and administrative facilities, gaseous diffusion plant support facilities, and vacant land (Martin Marietta Energy Systems, Inc. [(MMES] 1992b). Wayne National Forest borders the plant site on the east and southeast, and Brush Creek State Forest is located slightly more than 1 mi (1.6 km) southwest of the site boundary.

The DOE-managed cylinders containing DUF_6 at the Portsmouth site are stored in two cylinder yards. These storage yards have concrete bases. The cylinders are stacked two high to comply with Defense Nuclear Facilities Safety Board requirements. All 10- and 14-ton (9- and 12-t) cylinders stored in these yards have been or are being inspected and repositioned. They have been placed on new concrete saddles with sufficient room between cylinders and cylinder rows to permit adequate visual inspection of the cylinders.

The most common type of vegetation on the Portsmouth site is managed grassland, which makes up 30% of the site (about 1,100 acres [445 ha]) (DOE 2001). These grassland communities are maintained by periodic mowing. Oak-hickory forest (covering 17% of the site) occurs on well-drained upland areas, and old-field communities (11%) occur in disturbed areas. Upland mixed hardwood forest also covers 11% of the site (400 acres [162 ha]). Riparian forest occurs in low, periodically flooded areas near streams, making up 4% of the site (153 acres [62 ha]). The dominant species in riparian forest communities are cottonwood, sycamore, willows, silver maple, and black walnut. Within the area bounded by Perimeter Road, the Portsmouth site consists primarily of open grassland (including areas maintained as lawns) and developed areas consisting of buildings, paved areas, and storage yards.

Location A is approximately 26 acres (11 ha) in size and includes previously disturbed as well as undisturbed areas. Except for the northern portion, Location A is relatively level and has been graded. The northeastern portion of Location A and a smaller area directly north of the existing buildings support an old-field habitat. A drainage ditch bordering an old railroad bed in the east area supports sapling sycamore and black locust trees as well as mature black locust. Vegetation near the buildings is a managed grassland community. The area immediately adjacent to the buildings is frequently mowed. At the northern boundary of Location A, the land surface slopes down to a small intermittent stream that runs along the northern margin of the location, approximately 100 ft (30 m) from the location boundary. This stream is bordered by a riparian woodland community of willow, mature sycamore, black locust, and maple. This woodland community is classified as riparian forest; however, the tree canopy is fairly open and narrow, less than 100 ft (30 m) in width. The downstream portion of this riparian area, west of Location A, supports scattered trees. Small upland wooded areas lie northeast and northwest of the buildings, continuous with the riparian woodland community bordering the stream to the north.

Location B is approximately 50 acres (20 ha) in size. It has been disturbed by past grading and construction activities and has a level ground surface. The vegetation at this location is composed entirely of a managed grassland community and generally remains unmowed.

Location C is approximately 78 acres (32 ha) in size and has also been disturbed by past grading activities. This location is relatively level to gently sloping throughout and supports an open, managed grassland vegetation community that generally remains unmowed. Two intermittent drainages in the southwestern portion of this location are bordered by narrow deciduous woodland communities (approximately 60 ft [18 m] in width) with open tree canopies. These woodland communities are classified as upland mixed hardwood forest communities.

Proposed Area 1 for the construction of a new cylinder storage yard consists of three noncontiguous areas. The vegetation of these areas consists of previously disturbed managed grassland. Proposed Area 2 consists of two noncontiguous areas for new yard construction that also support previously disturbed managed grassland. In addition, two small drainages are located within Proposed Area 2 and drain to the southwest. These drainages combine to form the intermittent stream north of Location A.

ETTP is located in eastern Roane County about 25 mi (40 km) west of Knoxville, Tennessee. ETTP is part of the Oak Ridge Reservation in the City of Oak Ridge, Tennessee. Uranium enrichment was the site's mission until the mid-1980s, when gaseous diffusion operations ceased. About 65% of the land within a 5-mi (8-km) radius of the ETTP site is forested, although most of the ETTP site consists of mowed grasses. There are 4,798 DUF_6 storage cylinders located in three cylinder yards at the ETTP site. All activities related to cylinder preparation would take place at the cylinder storage yards.

A wetland survey of the Portsmouth site was conducted in 1995. Approximately 34 acres (14 ha) of wetlands occurs on the site, excluding retention ponds. Forty-one wetlands are jurisdictional wetlands while four wetlands are nonjurisdictional (Chandler 1996). Jurisdictional wetlands are waters of the United States that are protected under Section 404 of the Clean Water Act (CWA). They meet the three criteria described in the federal guidelines for wetland delineation (Environmental Laboratory 1987): hydrophytic vegetation, hydric soils, and wetland hydrology. These wetlands are under the jurisdiction of the U.S. Army Corps of Engineers (USACE), which regulates activities affecting jurisdictional wetlands. Executive Order 11990, *Protection of Wetlands*, requires DOE to minimize the destruction, loss, or degradation of wetlands, including jurisdictional, as well as many nonjurisdictional wetlands. DOE guidelines for implementing Executive Order 11990 are set forth in 10 CFR Part 1022.

Wetlands on the Portsmouth site primarily support emergent vegetation that includes cattail, great bulrush, and rush. Palustrine forested wetlands occur on the site along Little Beaver Creek (ANL 1991). Palustrine wetlands are small nontidal wetlands in shallow still water or variably flooded areas (Cowardin et al. 1979). The Ohio State Division of Natural Areas and Preserves has listed two wetland areas near the site as significant wetland communities: (1) a palustrine forested wetland, about 5 mi (8 km) east of the site, and (2) Givens Marsh, a palustrine wetland with persistent emergent vegetation, about 2.5 mi (4 km) northeast of the site (ANL 1991).

The drainage channel in the east portion of Location A supports a palustrine wetland with an emergent vegetation community of fox sedge, green bulrush, drooping bulrush, narrow-leaf cattail, and rush. This wetland is 0.08 acre (0.03 ha) in size; however, only 0.05 acre (0.02 ha) of this wetland lies within the boundary of Location A (Figure 4). The steep slopes of the channel are vegetated with upland species. The drainage channel conveys surface water runoff to an intermittent stream that borders the north margin of Location A and likely also receives groundwater discharge. The wetland functions to provide some attenuation of stormwater flows, retention of sediments and other materials, and production of detritus exported to the intermittent stream. The wetland also provides habitat for wetland-dependent wildlife and plants and

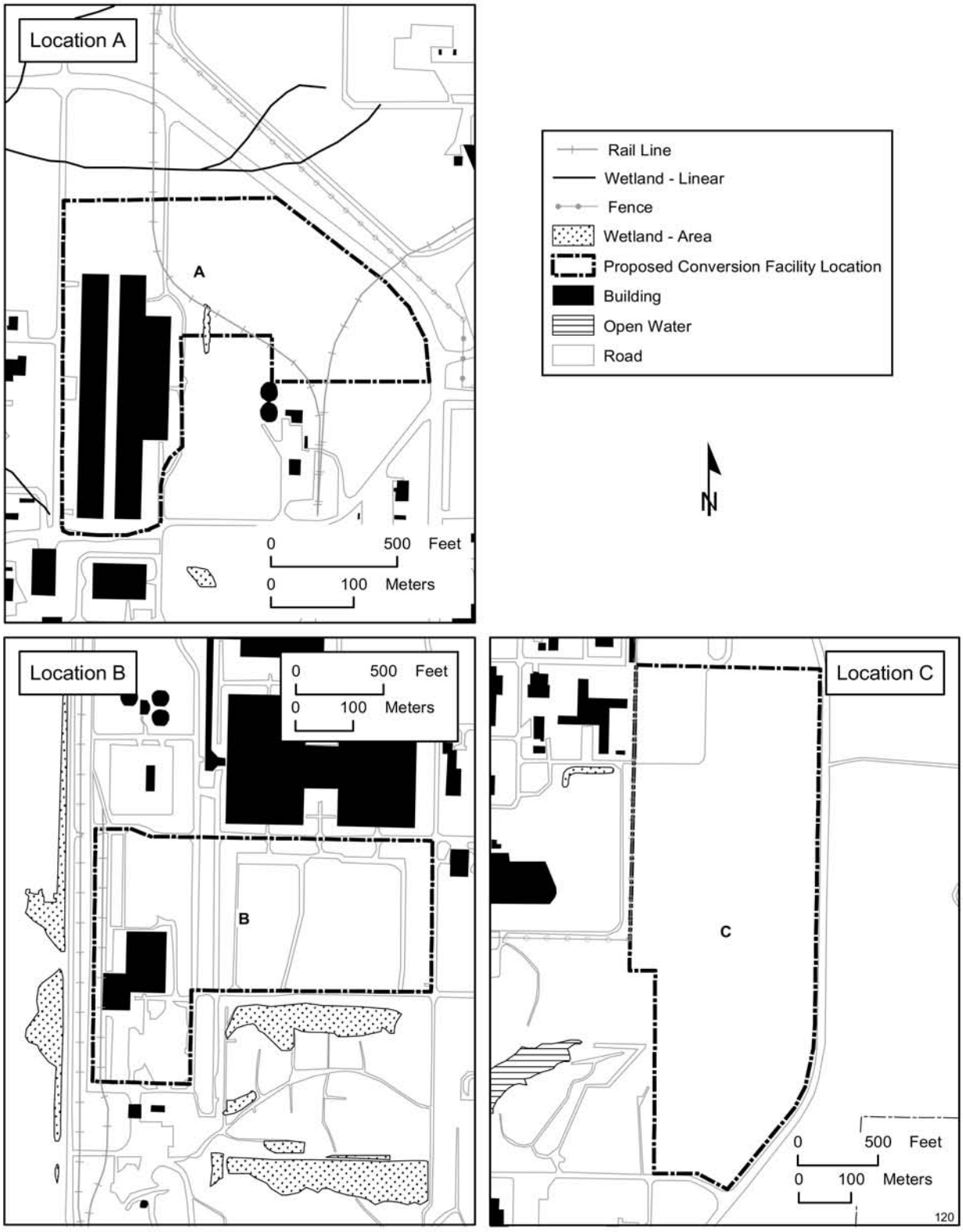

FIGURE 4 Wetlands in the Vicinity of the Three Candidate Locations for the DUF_6 Conversion Facility

contributes to local biodiversity, although the plant community is composed of species commonly found in artificial drainages and other disturbed areas. The small size of the wetland would be expected to limit its function within the landscape, including its habitat value. The stream, which lies in a low floodplain, supports a riparian woodland community of willow, maple, sycamore, and black locust north of Location A. Other portions of the stream support a predominantly herbaceous community. The stream and adjacent riparian area lie outside the boundary of Location A. Another small stream originates near the southwest corner of this location and enters a small holding pond west of Perimeter Road, a short distance above the confluence with the northern stream.

Wetlands do not occur within Location B. However, a number of wetlands occur in the vicinity of Location B in areas previously disturbed by industrial development (Figure 4). These wetlands receive surface runoff from the surrounding landscape and support wetland plant communities commonly found in disturbed areas. Surface outflow from these wetlands is generally limited. Soils in these areas are poorly drained as a result of previous grading activities. A large palustrine emergent wetland (3.2 acres [1.3 ha]), supporting a vegetation community composed primarily of cattails, lies immediately to the south of the eastern portion of Location B and receives surface runoff from Location B, as well as other portions of the immediate vicinity. A smaller wetland (0.3 acre [0.12 ha]) lies just outside the southeast corner boundary of Location B and also receives runoff from Location B and vicinity. Several additional wetland areas are located within the open area to the south of Location B. These wetlands provide habitat for wetland-dependent wildlife and plants and contribute to local biodiversity. They also function to provide short-term surface water storage of runoff. Streams receiving drainage from Location B lie to the south and southwest and support riparian forest communities. Drainage flows into a holding pond southwest of Perimeter Road.

Although no wetlands are identified at Location C, two small intermittent drainages in the southwestern portion of the area (Figure 4) direct surface water flows from Location C to a holding pond that discharges into Big Run Creek. These drainages are bordered by narrow deciduous woodland communities (approximately 60 ft [18 m] in width) with open tree canopies. These woodland communities are classified as upland mixed hardwood forest communities. The upper segment of the holding pond is located downstream, immediately west of this location. Another drainage ditch along the south margin of the parking area in the northwest portion of Location C directs surface flows into a small wetland area to the west, beyond the location boundary. This wetland receives surface runoff from the parking lot and surrounding landscape and supports a wetland plant community composed primarily of cattails. The wetland functions to provide some attenuation of storm water flows, short-term surface water storage of runoff, retention of sediments and other materials, and downstream export of detritus. The wetland also provides habitat for wetland-dependent wildlife and plants and contributes to local biodiversity, although the plant community is composed of species commonly found in artificial drainages and other disturbed areas. A drainage ditch exiting this wetland joins the upper segment of the holding pond.

4 EFFECTS OF THE PROPOSED ACTION ON WETLANDS

Three noncontiguous areas comprise Proposed Area 1 for the construction of a new cylinder storage yard at the Portsmouth site. Construction of the yards would result in the disturbance of approximately 6.1 acres (2.5 ha) of land, due to construction-related activities, and in the loss of previously disturbed managed grassland vegetation. The yards would not replace undisturbed natural communities.

Wetlands do not occur within the areas that would be disturbed by storage yard construction at Proposed Area 1. Therefore construction would not directly impact wetlands. Wetlands downgradient of the construction sites could be impacted by storm water runoff; however, the implementation of good construction practices, including erosion and sediment controls, would minimize impacts. Because surface water impacts from breached cylinders during use of the storage yards would not be measurable, impacts to wetlands from cylinder storage would not be expected. The increase in impervious surface and discharge of storm water runoff from the yards could result in a greater fluctuation in flows within the stream northeast of the yards, across Perimeter Road. However, because the yards would not be located adjacent to the stream and the increased impervious area would represent only a small portion of the watershed (about 0.2% of the total site area), such effects would likely be very small.

Two noncontiguous areas comprise Proposed Area 2 for the construction of new cylinder storage yards. Construction of the yards would result in the disturbance of approximately 6.9 acres (2.8 ha) of land. Two intermittent streams originate in the area northeast of Location A and flow to the west, converging to form the stream immediately north of Location A. Storage yard construction would result in the elimination of the northernmost of these streams and partial filling of the other. Placement of a storage yard in this area could also result in a greater fluctuation in flows in downstream areas and reduced water quality.

Constructing a conversion facility at Location A would result in the loss of about 10 acres (4 ha) of previously disturbed managed grassland and old-field vegetation within the facility footprint. The facility would not eliminate undisturbed natural communities. Wetlands could potentially be affected by filling or draining during construction. Impacts to wetlands due to alteration of surface water runoff patterns, soil compaction, or groundwater flow could occur if the conversion facility was located immediately adjacent to wetland areas. Impacts to wetlands would be minimized, however, by maintaining a buffer area around them during facility construction.

Surface water sources are not expected to be used to meet water requirements during construction. Changes in groundwater as a result of withdrawing water for construction and the increase in the impermeable surface related to facility construction, would be small to negligible. Therefore, except for the potential local indirect impacts noted above, impacts to regional wetlands due to groundwater or surface water levels or flow patterns are not expected to occur.

Direct impacts to the intermittent stream north of Location A from facility construction would be avoided by positioning of the northern boundary of Location A approximately 100 ft

(30 m) to the south of the stream. The proposed location for the conversion facility within Location A would be in the northeastern portion of the location, to minimize wetland impacts within the facility footprint. However, facility construction at Location A would result in impacts to the small wetland located within the drainage channel in the east-central portion of this location (Figures 3 and 4). Construction of the conversion facility south access road would eliminate much of this wetland. Approximately 0.02 acre (0.009 ha) of palustrine emergent wetland would likely be eliminated by direct placement of fill material. In addition, portions of the facility fence line cross this wetland and a small building would be located adjacent to the wetland. Portions of this wetland that are not filled may be indirectly affected by an altered hydrologic regime because of the proximity of construction, possibly resulting in a decreased frequency or duration of inundation or soil saturation, and potential loss of hydrology necessary to sustain wetland conditions, which would result in likely changes to the wetland plant and animal communities. However, the impact may potentially be avoided by an alternative routing of the entrance road, or mitigation may be developed in coordination with the appropriate regulatory agencies. Placement of temporary construction areas outside Location A may be necessary to avoid additional impacts to this wetland. Construction impacts would likely reduce the functioning of the impacted wetland for wildlife habitat, attenuation of storm water flows, retention of sediments and other materials, and export of detritus. However, because of the previous disturbance of Location A, including the wetland and drainage ditch, and small area of wetland affected, the reduction in these functions would not be expected to measurably affect local wildlife populations, flood flows, or downstream biotic communities.

Construction of a conversion facility could also affect the hydrology of the intermittent stream along the northern margin of Location A. The increase in impervious surface and discharge of storm water runoff could result in a greater fluctuation in flows, with a greater amplitude in high flows and extended low flows within the stream. However, because the facility would not be located adjacent to the stream and only a small portion of the watershed would be involved, impacts would likely be small. Downstream wetlands could be affected by sedimentation during construction; however, the implementation of erosion control measures would reduce the likelihood of impacts. Direct impacts to the stream would occur if a storm water outfall structure was located within the streambed.

Construction of a facility at Location B would not result in direct impacts to wetlands. However, the hydrologic characteristics of wetlands in areas next to and south of this location (Figure 4) could be indirectly affected by adjacent construction, possibly resulting in a decreased frequency or duration of inundation or soil saturation. Indirect impacts could be minimized by maintaining a buffer near adjacent wetlands. Downstream wetlands could be affected by sedimentation during construction; however, the implementation of erosion control measures would reduce the likelihood of sediment impacts.

Construction of a facility at Location C would not result in direct impacts to wetlands. However, the hydrologic characteristics of the wetland next to the northwest boundary of this location (Figure 4) could be indirectly affected by adjacent construction, possibly resulting in a decreased frequency or duration of inundation or soil saturation. Indirect impacts could be minimized by maintaining a buffer near adjacent wetlands. Placement of a conversion facility next to the drainages along the western margin of Location C could alter the hydrology,

including the holding pond, causing greater fluctuations in high and low flows. However, because only a small portion of the watershed would be involved, impacts would likely be small. Downstream wetlands could be affected by sedimentation during construction; however, the implementation of erosion control measures would reduce the likelihood of impacts.

Liquid process effluents would not be directly discharged to surface waters during the operation of a conversion facility. Surface water sources are also not expected to be used to meet water requirements during operations. Changes in groundwater as a result of the withdrawal of groundwater for facility operations would be small to negligible. Therefore, except for potential local indirect impacts near the facility, impacts to regional wetlands due to changes in groundwater or surface water levels or flow patterns are not expected to occur. As a result, adverse effects on wetlands or aquatic communities from effluent discharges or water use would not be expected.

Storm water runoff from conversion facility parking areas and other paved surfaces may carry contaminants commonly found on these surfaces to local streams. Biota in receiving streams may be affected by these contaminants, resulting in reduced species diversity or changes in community composition. However, the streams near Locations A, B, and C currently receive runoff and associated contaminants from various roadways on the Portsmouth site, and their biotic communities are likely indicative of developed areas.

During operations, atmospheric emissions from the facility stacks would occur, although emission levels would be extremely low. Facility emissions would include trace amounts of uranium; however, impacts to wildlife in wetlands on or near the Portsmouth site due to radiation effects are expected to be negligible. Toxic effect levels of chronic inhalation of uranium are many orders of magnitude greater than expected emissions. Therefore, toxic effects on wetland wildlife from uranium compounds would also be expected to be negligible. Toxic effect levels of chronic inhalation of HF are also many orders of magnitude greater than expected emissions from conversion facility operations. Therefore, toxic effects on wetland wildlife from HF emissions are also expected to be negligible.

No impacts to wetlands would occur from the preparation of cylinders for shipment from ETTP. The potential on-site impacts from preparing DOT compliant cylinders and from placing noncompliant cylinders into overpacks would be small and limited to involved workers. No impacts to the off-site public or the environment would occur because no releases would be expected and no construction activities would be required. The only equipment required would be similar to the equipment currently used during routine cylinder handling and maintenance activities. The cylinder transfer option would involve the transfer of the DUF_6 from noncompliant cylinders to cylinders that meet all DOT requirements. If selected, this option would likely require the construction of a cylinder transfer facility at ETTP. Currently, there are no plans or proposals to build or use a cylinder transfer facility to prepare DUF_6 cylinders for shipment.

Under no action, a DUF_6 conversion facility would not be constructed and ETTP cylinders would not be transported to the Portsmouth site. DUF_6 cylinder storage would continue indefinitely at these sites, along with cylinder surveillance and maintenance activities. Continued

cylinder storage would have a negligible impact on wetlands in the vicinity of the Portsmouth or ETTP sites. Surface water uranium concentrations from hypothetical cylinder breaches would be below levels harmful to biota. Cylinder painting activities at the DOE Paducah site have been associated with increased toxicity in runoff. The occurrence of a similar impact at the Portsmouth or ETTP sites might require mitigating actions, such as treating runoff.

5 CONCLUSION

Approximately 0.02 acre (0.009 ha) of a 0.08-acre (0.03-ha) palustrine emergent wetland would likely be eliminated by direct placement of fill material during facility construction at Location A. Portions of this wetland that are not filled may be indirectly affected by an altered hydrologic regime because of the proximity of construction, possibly resulting in a decreased frequency or duration of inundation or soil saturation, and potential loss of hydrology necessary to sustain wetland conditions. Construction at Locations B or C would not result in direct impacts to wetlands. However, the hydrologic characteristics of nearby wetlands could be indirectly affected by adjacent construction.

Executive Order 11990, *Protection of Wetlands*, requires federal agencies to minimize the destruction, loss, or degradation of wetlands, and to preserve and enhance the natural and beneficial uses of wetlands. DOE regulations for implementing Executive Order 11990 are set forth in 10 CFR Part 1022. The impacts at Location A may potentially be avoided by an alternative routing of the entrance road, or mitigation may be developed in coordination with the appropriate regulatory agencies. Unavoidable impacts to wetlands that are within the jurisdiction of the USACE may require a CWA Section 404 Permit, which would trigger the requirement for a CWA Section 401 Water Quality Certification from the State of Ohio. Unavoidable impacts to isolated wetlands may require an Isolated Wetlands Permit from the Ohio Environmental Protection Agency. A mitigation plan may be required prior to the initiation of construction.

Cumulative impacts to wetlands are anticipated to be negligible to minor for the proposed action, in conjunction with the effects of existing conditions and other activities. Habitat disturbance would involve settings commonly found in this part of Ohio, which in many cases involve previously disturbed habitats.

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