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Department of Energy

Portsmouth/Paducah Project Office
1017 Majestic Drive, Suite 200
Lexington, Kentucky 40513
(859) 219-4000

October 8, 2024

Mr. David Ruckstuhl, Prime Contracts Manager
Four Rivers Nuclear Partnership, LLC
5511 Hobbs Road
Kevil, Kentucky 42053

PPPO-02-10029219-25

Dear Mr. Ruckstuhl:

DE-EM0004895: APPROVAL OF DELIVERABLE NO. 43, FINAL GROUNDWATER PROTECTION PLAN, CP2-ES-1000/FR1

Reference: Letter from M. Redfield to J. Stokes, "Four Rivers Nuclear Partnership, LLC—Deliverable No. 43—FINAL *Groundwater Protection Plan for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky,* CP2-ES-1000/FR1," (FRNP-24-8691), dated September 18, 2024

The U.S. Department of Energy (DOE) reviewed and approves the Four Rivers Nuclear Partnership, LLC final *Groundwater Protection Plan for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*, CP2-ES-1000/FR1, as submitted.

If you have any questions or require additional information, please contact Angus MacKelvey at (270) 349-7526.

Sincerely,

Jennifer A. Stokes
Contracting Officer
Portsmouth/Paducah Project Office

cc:
abigail.parish@pppo.gov, PPPO
angus.mackelvey@pppo.gov, PPPO
april.ladd@pppo.gov, PPPO
bruce.ford@pad.pppo.gov, FRNP
cory.hicks@pad.pppo.gov, FRNP
david.ruckstuhl@pad.pppo.gov, FRNP
dennis.greene@pad.pppo.gov, FRNP
frnpcorrespondence@pad.pppo.gov
jennifer.stokes@pppo.gov, PPPO
joel.bradburne@pppo.gov, PPPO
katrina.hall@pad.pppo.gov, FRNP
marie.holland@pppo.gov, ETAS
mona.dockery@pad.pppo.gov, FRNP
myrna.redfield@pad.pppo.gov, FRNP
pad.rmc@pad.pppo.gov
reinhard.knerr@pppo.gov, PPPO
tammy.stapleton@pad.pppo.gov, FRNP

CP2-ES-1000/FR1

Groundwater Protection Plan for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky

CLEARED FOR PUBLIC RELEASE

CP2-ES-1000/FR1

Groundwater Protection Plan for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky

Date Issued—September 2024

Prepared for the
U.S. DEPARTMENT OF ENERGY
Office of Environmental Management

Prepared by
FOUR RIVERS NUCLEAR PARTNERSHIP, LLC,
managing the
Deactivation and Remediation Project at the
Paducah Gaseous Diffusion Plant
under Contract DE-EM0004895

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APPROVALS

Groundwater Protection Plan
for the Paducah Gaseous Diffusion Plant,
Paducah, Kentucky

CP2-ES-1000/FR1

September 2024

Approved by:

BRUCE FORD (Affiliate) Digitally signed by BRUCE FORD (Affiliate)
Date: 2024.11.21 16:13:06 -06'00'

Bruce Ford/Date
Environmental Services Director, FRNP

MYRNA REDFIELD (Affiliate) Digitally signed by MYRNA REDFIELD (Affiliate)
Date: 2024.12.02 11:02:40 -06'00'

Myrna E. Redfield/Date
Program Manager, FRNP

DOE Approval Letter: PPPO-02-10029219-25 Date: 10/08/2024

Effective Date: 12/02/2024

Required Review Date: 10/08/2027

Nuclear Safety Documentation: N/A per CP3-NS-2001

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REVISION LOG

REVISION NUMBER	DATE	DESCRIPTION OF CHANGES	PAGES AFFECTED
FR1	10/08/2024	Changes made to update references throughout document; update figures 1, 2, 3, 4, A.1, A.2, A.3, and A.4; update Section 7 forms; and update Appendix A table.	All

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CONTENTS

FIGURES

TABLE

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ACRONYMS

AFFF	aqueous film-forming foam
AOC	area of concern
BMP	best management practices
CAT	consolidated annual training
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	*Code of Federal Regulations*
D&R	deactivation and remediation
DOE	U.S. Department of Energy
DOT	U.S. Department of Transportation
EIC	environmental information center
EM	environmental management
EMP	environmental monitoring plan
EMS	environmental management system
EPA	U.S. Environmental Protection Agency
ERH	electrical resistance heating
ERPP	environmental radiation protection program
FFA	Federal Facility Agreement
FRNP	Four Rivers Nuclear Partnership, LLC
GET	general employee training
GPP	groundwater protection plan
HAZMAT	hazardous material
IROD	interim record of decision
KAR	*Kentucky Administrative Regulations*
KDEP	Kentucky Department for Environmental Protection
KDWM	Kentucky Division of Waste Management
KPDES	Kentucky Pollutant Discharge Elimination System
KRS	*Kentucky Revised Statutes*
LCD	lower continental deposit
MW	monitoring well
N/A	not applicable
NFA	no further action
O	order
OU	operable unit
PFAS	per- and polyfluoroalkyl substances
RACR	remedial action completion report
RCRA	Resource Conservation and Recovery Act
RGA	Regional Gravel Aquifer
ROD	record of decision
SWMU	solid waste management unit
TPD	training position description
UCD	upper continental deposit
UCRS	Upper Continental Recharge System
UST	underground storage tank
VOC	volatile organic compound

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EXECUTIVE SUMMARY

The U.S. Department of Energy prepared and began implementation of a groundwater protection plan (GPP) in August 1995 for the Paducah Gaseous Diffusion Plant. This document presents the revision to the 2021 version of the GPP (FRNP 2021). Stated in 401 *KAR* 5:037 § 3(3), *Review and recertification of groundwater protection plans*, is the following requirement regarding the review of the GPP.

> Each groundwater protection plan shall be reviewed in its entirety every three (3) years, by the persons responsible for the plan, updated if necessary, and recertified. To the extent possible, the review shall include a reevaluation of the design and operation procedures for the pollution prevention practices previously selected for the plan to ensure that they are effective.

This GPP incorporates revisions resulting from the three-year review required by 401 *KAR* 5:037 § 3(3). This document addresses the following specific requirements listed in 401 *KAR* 5:037 § 2(3), *Elements of generic and site-specific groundwater protection plans*, and the guidance document *Preparing a Groundwater Protection Plan*, (KDEP 2018) relating to 401 *KAR* 5:037 § 2(3)(a) through (g): (1) general information regarding the facility and its operation; (2) identification of activities associated with the facility as identified in Section 1(1) of the regulation; (3) identification of all practices chosen for the plan to protect groundwater from pollution; (4) implementation schedules for the protection practices; (5) description of and implementation schedule for employee training necessary to ensure implementation of the plan; (6) schedule of required inspections, as applicable to ensure that all practices established are in place and properly functioning; and (7) certification of the plan by the appropriate Paducah Site representative and that the person responsible for implementing the plan has reviewed the terms of the plan and will implement its provisions.

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1. GENERAL INFORMATION

This groundwater protection plan (GPP) has been written in accordance with 401 *KAR* 5:037, *Groundwater protection plans*, to ensure protection for all current and future uses of groundwater and to prevent additional groundwater pollution at the following facility.

Name and Address of Facility
Paducah Gaseous Diffusion Plant
5600 Hobbs Road
Kevil, Kentucky 42053
McCracken County
Latitude 37°6′41.95″ and Longitude 88°48′46.09″

Person Developing GPP
Program Manager
Four Rivers Nuclear Partnership, LLC
5511 Hobbs Road
Kevil, Kentucky 42053
Phone: (270) 441-6412

Person Responsible for Implementing GPP
Manager
Portsmouth/Paducah Project Office
U.S. Department of Energy
1017 Majestic Drive, Suite 200
Lexington, Kentucky 40513
Phone: (859) 219-4010

This plan will be implemented under the direction of the U.S. Department of Energy (DOE) Manager, Portsmouth/Paducah Project Office, and is applicable to activities performed by DOE and its contractors/representatives at the Paducah Site. In support of DOE, this plan was developed by Four Rivers Nuclear Partnership, LLC, (FRNP) and is implemented by DOE and its current contractors:

- DOE, 5501 Hobbs Road, Kevil, Kentucky 42053, (270) 441-6800
- FRNP [Deactivation and Remediation (D&R) Contractor], 5511 Hobbs Road, Kevil, Kentucky 42053, (270) 441-6412
- Swift & Staley Inc. (Infrastructure Contractor), 5505 Hobbs Road, Kevil, Kentucky 42053, (270) 441-5270
- Mid-America Conversion Services, LLC, [Depleted Uranium Hexafluoride (DUF_6) Conversion Project Contractor] 1020 Monarch Street, Suite 300, Lexington, Kentucky 40513, (859) 685-9268

As required by 401 *KAR* 5:037 § 3(3), this GPP is to be reviewed every three years. Records associated with GPP implementation [e.g., Resource Conservation and Recovery Act (RCRA) facility inspections, C-404 sump integrity tests, storm water inspections, waste inspections] will be retained for a period of at least six years after their preparation. Reference documents listed herein are available through the DOE Environmental Information Center (EIC) located at 5100 Alben Barkley Drive, Emerging Technology

Center, Room 221, Paducah, Kentucky, or the Paducah EIC website (https://eic.pad.pppo.gov/). Records of GPP activities are maintained under other programs, as identified in Section 4 of this Plan.

Brief Description of Facility. The Paducah Site is located in western Kentucky and includes a former uranium enrichment facility owned by DOE. Since its initial operation in 1952, the Paducah Site's primary function was the enrichment of the fissionable isotope uranium-235 from natural assay uranium using a gaseous diffusion process with uranium hexafluoride (UF_6). Plant activities have included utility, laboratory, and maintenance support; conversion of uranium dioxide to UF_6 (to feed the diffusion process) and uranium tetrafluoride; metal production from depleted UF_6; and uranium metal processing, metals recovery, and other small operations performed for DOE and the U.S. Department of Defense such as precision machining and protective metal coating application. The Paducah Site also has an enrichment cascade housed in four large process buildings, four sets of cooling towers, phosphate reduction facility, and sanitary and potable water treatment plants.

In August 1988, volatile organic compounds (VOCs) and radionuclides were detected in private water wells north of the Paducah Site, which was placed on the National Priorities List in 1994. Since 1998, DOE, U.S. Environmental Protection Agency (EPA), and Kentucky Department for Environmental Protection (KDEP) have been operating under the Federal Facility Agreement (FFA), with DOE as the lead agency and EPA and KDEP as support agencies providing oversight. The D&R Contractor works with DOE to remove/mitigate past contamination at the Paducah Site.

Appendix A contains four maps and one table that will help the reader identify facilities/areas discussed within this document. Figure A.1 is a comprehensive Paducah Site map and site index. Figure A.2 is a Paducah Site map showing current solid waste management unit (SWMU) locations. Figure A.3 is a map depicting the 2022 trichloroethene (TCE) groundwater plume. Figure A.4 is a map depicting the 2022 technetium-99 (Tc-99) groundwater plume. Table A.1 is Appendix 4 from the *Site Management Plan, Paducah Gaseous Diffusion Plant, Paducah, Kentucky, Annual Revision—FY 2024*, DOE/LX/07-2495&D1, showing a SWMU/area of concern (AOC) by operable unit (OU) cross-reference table (DOE 2023). This table identifies each facility or AOC by OU, subproject, SWMU number, and gives a brief description of the facility. In addition, the table provides a list of SWMUs requiring no further action (NFA) and a list of Decontamination and Decommissioning OU facilities identifying current operational status.

2. PHYSICAL CHARACTERISTICS

The Paducah Site limited area is heavily industrialized; however, the area surrounding the plant is mostly agricultural and open land, with some forested areas. The West Kentucky Wildlife Management Area that borders the Paducah Site to the north, west, and south is an important recreational resource. Figures 1 and 2 illustrate the reasonably anticipated future land use and the current mixed industrial and recreational land use of the Paducah Site area, respectively. The geomorphology, geology, and hydrology of this facility and surrounding areas have undergone extensive study, review, and documentation. In-depth area descriptions may be found in numerous other DOE documents describing the DOE property at the Paducah Site.

2.1 GEOMORPHOLOGY

Located in the Jackson Purchase Region of western Kentucky, the Paducah Site lies within the northern tip of the Mississippi Embayment portion of the Gulf Coastal Plain Province (Clausen et al. 1992). The DOE property is characterized by mostly flat areas and low, gently sloped hills (< 50 ft of vertical relief). Drainage patterns are naturally dendritic, but have been modified to follow roads within the area surrounded by the Paducah Site security fence.

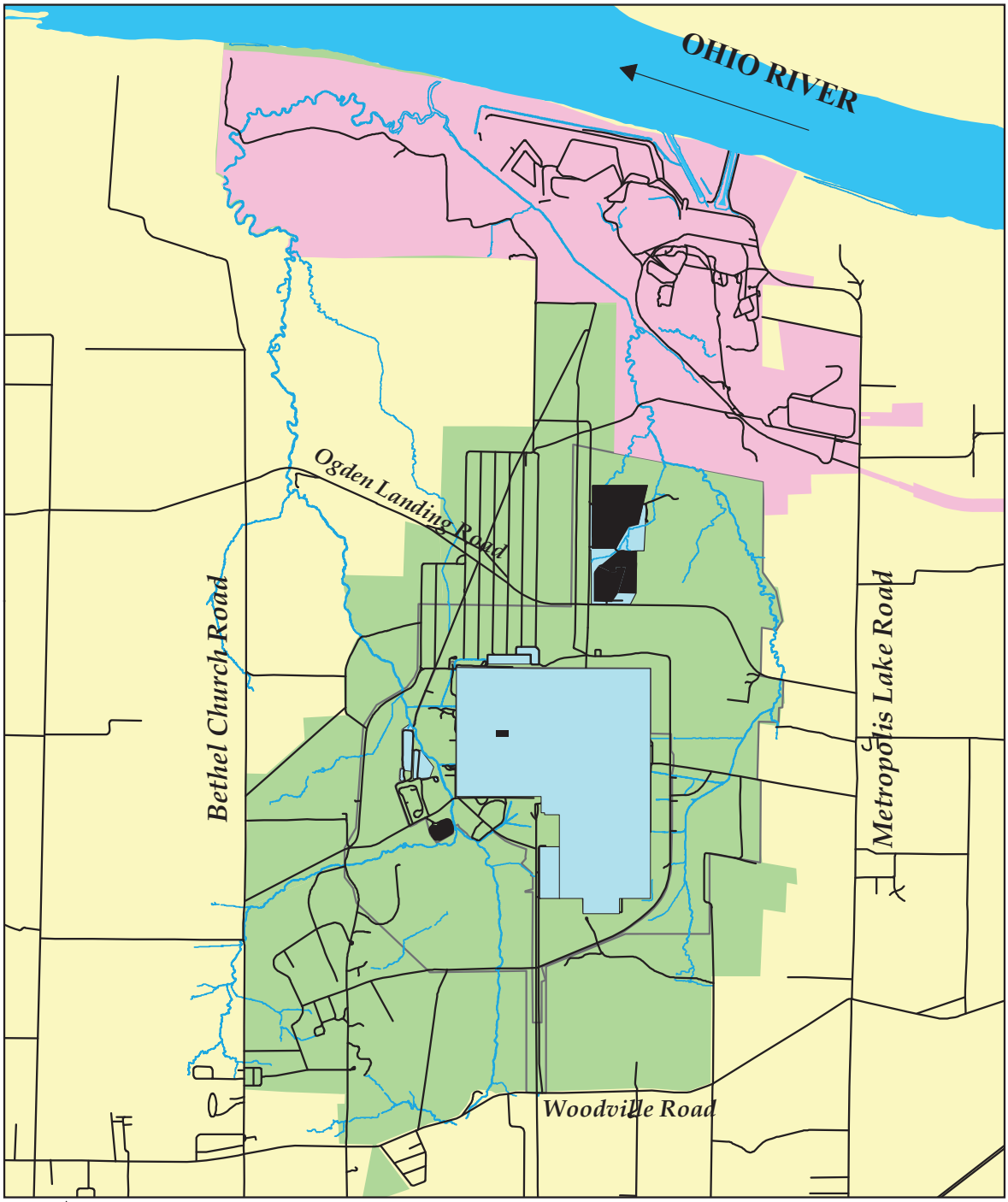
2.2 SITE GEOLOGY

The stratigraphic sequence in the region consists of Cretaceous, Tertiary, and Quaternary sediments overlying eroded Mississippian bedrock. Figure 3 shows a columnar section of the geology of the Jackson Purchase Region, and Figure 4 presents a schematic cross section that illustrates regional stratigraphic relationships near the Paducah Site.

Bedrock beneath the Paducah Site is comprised of Mississippian-age limestone. In the vicinity of the Paducah Site, the bedrock is directly overlain by interbedded and interlensing sand, silt, and clay of the Upper Cretaceous McNairy Formation. Data indicate that sand may account for 40–50% of the McNairy Formation at the Paducah Site. The Upper Cretaceous Tuscaloosa Formation, which directly overlies Paleozoic bedrock to the south, has not been encountered during drilling activities conducted at the Paducah Site.

The Paleocene Porters Creek Clay occurs in the southern portions of the site and consists of dark gray to black clay with varying amounts of silt and fine-grained micaceous, commonly glauconitic, sand. The Porters Creek Clay subcrops along a buried terrace slope that extends east-west across the site. Eocene sediments, consisting of interbedded and interlensing sand, silt, and clay, overlie the Porters Creek Clay in the extreme southern portion of the DOE Reservation.

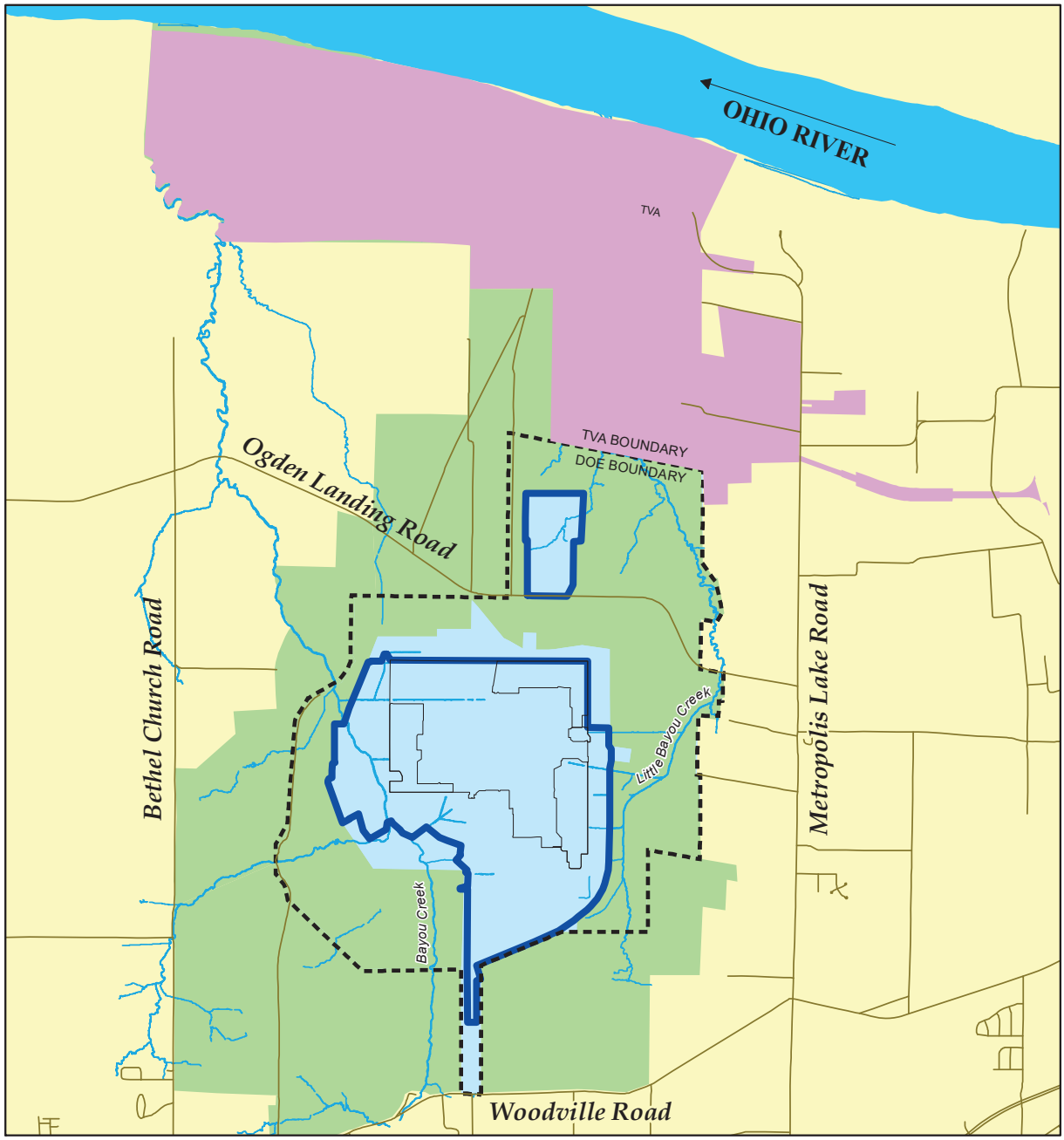
Miocene, Pliocene, and Pleistocene continental deposits unconformably overlie Cretaceous through Eocene strata at the Paducah Site. The thicker sequence of Pleistocene continental deposits represents a valley fill that comprehensively comprises a thick, fining upward sequence. The continental deposits extend from the southern end of the plant to the Ohio River and overlay an unconformity that exhibits steps, or terraces.

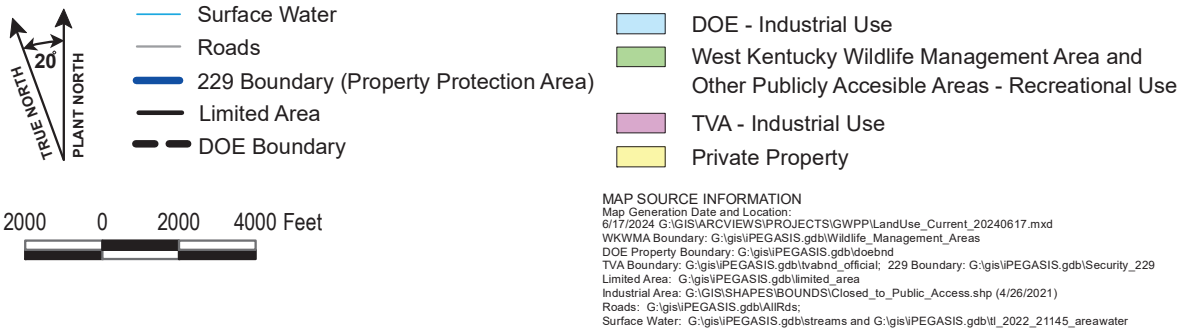


Note: These areas include landfills that are active or certified closed and under long-term custodial care (i.e., C-404, C-746 S&T, C-746-U), or that are under an Interim Remedial Action (i.e., C-746-K). As such, these areas are not amenable to unrestricted future industrial use.
As new CERCLA decision documents or permits are issued with deed restrictions/LUCs for waste management areas this map will be updated to include those units.

MAP SOURCE INFORMATION
Map Generation Date and Location: 6/17/2024 G:\GIS\ARCVIEWS\PROJECTS\GWPP\LandUse_Future_20240617.mxd
Area Water; SWMUs; Facilities; PGDP Boundary; TVA Boundary; Security 229; DOE Boundary; Wildlife Management Areas-- G:\GIS\iPEGASIS.gdb\fe_2022_21145_areawater, ...\streams, ...\SWMUs, ...\Facilities, ...\pgdpbnd, ...\tvabnd_official, ...\Security_229, ...\doebnd, ...\Wildlife_Management_Areas

Figure 1. Reasonably Anticipated Future Land Use at the Paducah Site





MAP SOURCE INFORMATION
Map Generation Date and Location:
6/17/2024 G:\GIS\ARCVIEWS\PROJECTS\GWPP\LandUse_Current_20240617.mxd
WKWMA Boundary: G:\gis\iPEGASIS.gdb\Wildlife_Management_Areas
DOE Property Boundary: G:\gis\iPEGASIS.gdb\doebnd
TVA Boundary: G:\gis\iPEGASIS.gdb\tvabnd_official; 229 Boundary: G:\gis\iPEGASIS.gdb\Security_229
Limited Area: G:\gis\iPEGASIS.gdb\limited_area
Industrial Area: G:\GIS\SHAPES\BOUNDS\Closed_to_Public_Access.shp (4/26/2021)
Roads: G:\gis\iPEGASIS.gdb\AllRds;
Surface Water: G:\gis\iPEGASIS.gdb\streams and G:\gis\iPEGASIS.gdb\tl_2022_21145_areawater

Figure 2. Current Land Use at the Paducah Site

SYSTEM	SERIES	FORMATION	THICKNESS (IN FT)	DESCRIPTION	HYDROGEOLOGIC SYSTEMS
QUATERNARY	RECENT AND PLEISTOCENE	ALLUVIUM	0-40	Brown or gray sand and silty clay or clayey silt with streaks of sand.	UPPER CONTINENTAL RECHARGE SYSTEM (UCRS)
	PLEISTOCENE	LOESS	0-43	Brown or yellowish-brown to tan unstratified silty clay	
	PLEISTOCENE	CONTINENTAL DEPOSITS	3-121	Upper Continental Deposits (Clay Facies) - mottled gray and yellowish-brown to brown clayey silt and silty clay with some very fine sand. Trace of gravel. Often micaceous.	
TERTIARY	PLIOCENE-MIOCENE (?)			Lower Continental Deposits (Gravel Facies) - reddish-brown clayey, silty, sandy chert gravel and beds of gray sand	REGIONAL GRAVEL AQUIFER (RGA)
	EOCENE	JACKSOJN, CLAIBORNE, AND WILCOX FORMATIONS	0-200+	Red, brown, or white fine-to-coarse grained sand. Beds of white to dark gray clay are distributed at random.	
			0-100+	White to gray sandy clay, clay conglomerates and boulders, scattered clay lenses and lenses of coarse red sand. Black to dark gray lignitic clay, silt or fine-grained sand.	
	PALEOCENE	PORTERS CREEK CLAY	0-200	Dark gray, slightly to very micaceous clay. Fine-grained clayey sand, commonly glauconitic in the upper part. Glauconitic sand and clay at the base.	
		CLAYTON FORMATION	Undetermined	Lithologically similar to the underlying McNairy Formation	McNAIRY FLOW SYSTEM
UPPER CRETACEOUS		McNAIRY FORMATION	200-300	Grayish-white to dark gray micaceous clay, often silty, interbedded with light gray to yellowish-brown very fine-to-medium grained sand with lignite and pyrite. The upper part is interbedded clay and sand, and the lower part is sand.	
		TUSCALOOSA FORMATION	Undetermined	White, well rounded, or broken chert gravel with clay	
MISSISSIPPIAN		MISSISSIPPIAN CARBONATES	500+	Dark gray limestone and inter-bedded chert with some shale	BEDROCK

Adapted from USGS 1980

NOTE: Historically, the geologic section used at the Paducah Site reflects the stratigraphy, as mapped by Wilds W. Olive in the United States Geological Survey publication, *Geologic Maps of the Jackson Purchase Region, Kentucky* (USGS 1980). This document was published in 1980 in cooperation with the Kentucky Geologic Society. At the Paducah Site, the probable age of the Terrace Gravel is considered to be of Miocene or Pliocene Age.

Figure 3. Lithostratigraphic Column of the Jackson Purchase Region

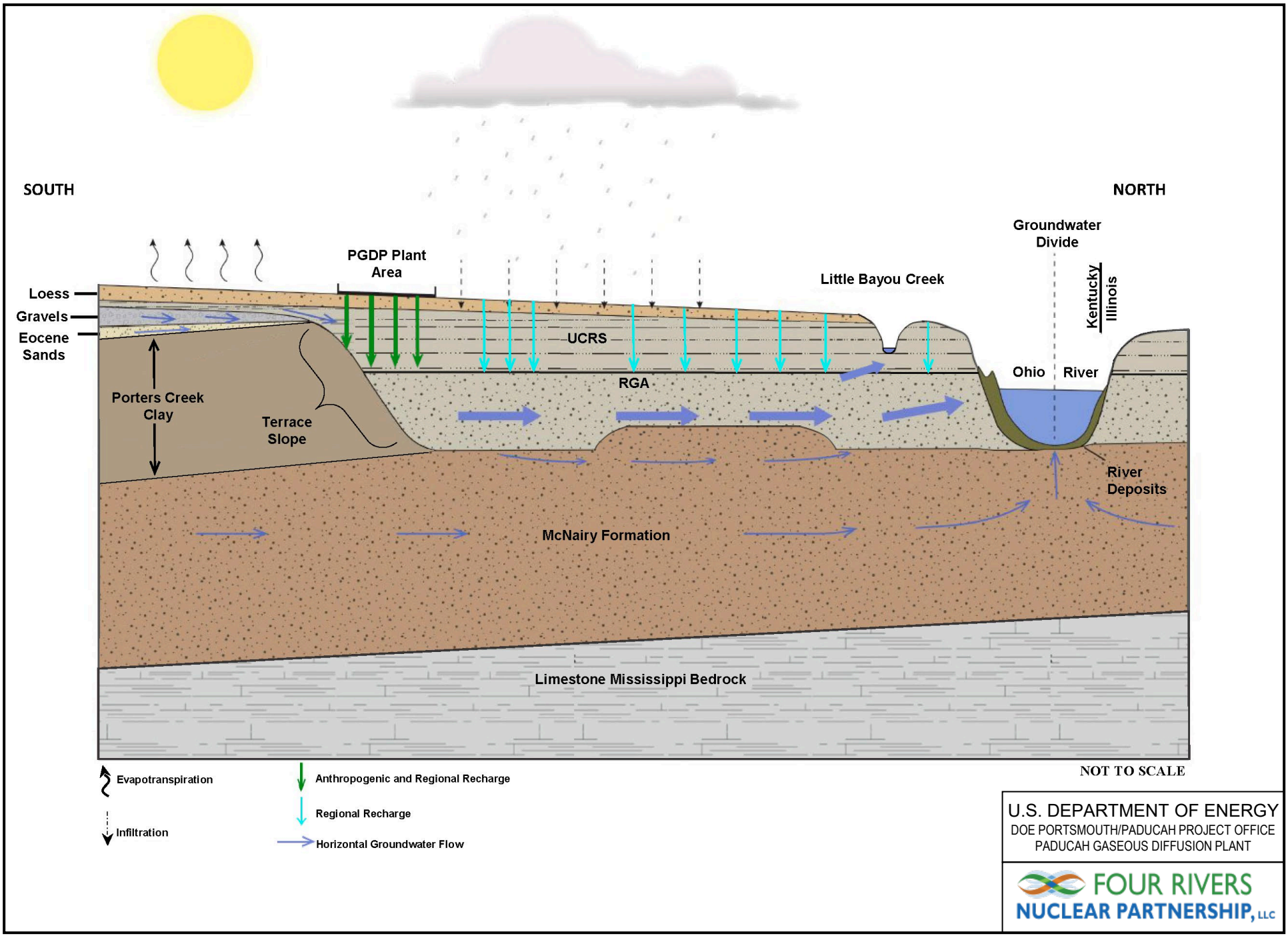


Figure 4. Schematic of Stratigraphic and Structural Relationships near the Paducah Site

These continental deposits have been divided into a basal gravel facies [lower continental deposit (LCD)] and an upper, fine-grained clastic facies [upper continental deposit (UCD)]. The LCD consists of chert gravel in a matrix of poorly sorted sand and silt. This basal gravel facies has been identified at three horizons at the Paducah Site. A Miocene-to-Pliocene-aged facies, ranging in thickness from 1 to 30 ft and averaging less than 10 ft, exists in the southern portions of the site, occurring on the upper surfaces of a buried terrace at elevations greater than 350 ft above mean sea level (amsl). A second gravel facies, ranging in thickness from 15 to 20 ft, exists in southeastern and eastern portions of the site occurring on an erosional surface at approximately 320 to 345 ft amsl. The third and most prominent of the three gravel facies beneath the site consists of Pleistocene deposits that overlie an erosional surface north of the buried Porters Creek Clay Terrace. Elevations of this facies vary from approximately 245 to 310 ft amsl. Overall the Pleistocene LCD has an average thickness of approximately 30 ft, but thicker deposits, up to 70 ft, exist in deeper scour channels that trend east-west across the site.

The UCD is primarily a fine-grained, clastic facies varying in thickness from 15 to 55 ft and consisting of clayey silt with lenses of sand and occasional gravel. The UCD represents fluvial and lacustrine environments (USGS 1967; Frye et al. 1972). Lacustrine sediments were deposited along the present Ohio and Tennessee River Valleys when the Mississippi River Valley and ancestral Ohio River Valley became choked from draining glaciated areas. These sediments dammed valleys of tributaries, creating slackwater lakes, and resulting in deposition of fine-grained sediments. Depending on stages of glaciation, periods of lacustrine deposition were followed by periods of erosion. As aggradation of the fluvial system continued, stream gradients in the ancestral Tennessee River and tributaries lessened. Lower gradients likely favored a transition from a braided environment to a meandering environment. A very gravelly lower sequence that becomes sandier upward identifies the transition in the Pleistocene continental deposits.

Loess, consisting of yellowish-brown silt and clayey silt, overlies the continental deposits at the site, and varies in thickness from approximately 5 to 25 ft with an average of approximately 15 ft. Holocene alluvial deposits are found at lower elevations within the Ohio River floodplain north of the plant site.

The general soil map for Ballard and McCracken counties indicates three soil associations are found in the vicinity of the Paducah Site: the Rosebloom-Wheeling-Dubbs association, the Grenada-Calloway association, and the Calloway-Henry association (USDA 1976). The predominant soil association in the vicinity of the Paducah Site is the Calloway-Henry association, which consists of nearly level, somewhat poorly drained to poorly drained, medium-textured soils on upland positions. Many of the characteristics of the original soil have been lost due to industrial activity that has occurred over the past 69 years.

2.3 SITE HYDROLOGY

Local groundwater near the Paducah Site occurs in the unconsolidated sediments of the Cretaceous McNairy Formation, Miocene-Pliocene Terrace Gravel, and Pleistocene LCD and UCD. Terms describing the hydrogeologic-flow systems that generally correspond to these lithostratigraphic units are the McNairy Formation Flow System, Terrace Gravel, Regional Gravel Aquifer (RGA), and Upper Continental Recharge System (UCRS). The following are brief descriptions of the four components of the groundwater flow system.

(1) **McNairy Flow System:** Formerly termed “the deep groundwater system,” this component consists of the interbedded and interlensing sand, silt, and clay of the McNairy Formation. Sand facies account for 40–50% of the total formation thickness of approximately 225 ft.

(2) **Terrace Gravel:** This component consists of Miocene-to-Pliocene-aged gravel deposits found at elevations higher than 350 ft amsl in the southern portion of the plant site. These deposits usually lack

sufficient thickness and saturation to constitute an aquifer and typically are characterized by an unsorted mix of sand to cobble-sized materials.

(3) **RGA:** This component consists of the Pleistocene sand and gravel facies of the LCD and Holocene alluvium found adjacent to the Ohio River. In addition, the RGA includes contiguous sands of the UCD and the McNairy Formation. The RGA is commonly thicker than the Pliocene gravel deposits, with an average thickness of 30 ft, and ranges up to 70 ft in thickness along an axis that trends east to west through the plant site. The RGA, which extends well beyond the site boundary, is the primary aquifer used locally and serves as the main conduit for groundwater flow to the north where it discharges to the Ohio River. Some of the RGA groundwater discharges in springs/boils in tributaries to the Ohio River.

(4) **UCRS:** Formerly termed "the shallow groundwater system," this component consists of the UCD, excluding sand adjacent to the LCD. The sand and gravel lithofacies are relatively discontinuous. The most prevalent sand and gravel deposits occur at an elevation of approximately 345 to 351 ft amsl, with less prevalent deposits occurring at an elevation of 337 to 341 ft amsl. Groundwater flows downward into the RGA from the UCRS in the vicinity of the Paducah Site.

The local groundwater flow system at the Paducah Site is bound by topographically controlled recharge and discharge areas to the south and north, respectively. Recharge within the Pliocene Terrace Gravel and Eocene sands has resulted in a groundwater divide located southwest of the Paducah Site. Locally, groundwater within the Terrace Gravel and Eocene sands either discharges to streams or flows northward into the RGA, which eventually discharges to the Ohio River, the regional base level for the system. The main recharge for the RGA is through flow from the UCRS.

Toward the southern part of the Paducah Site, the RGA either is truncated or thins and grades laterally into the Terrace Gravel; high hydraulic potential causes groundwater to discharge into adjoining streams. In the north-central portion of the plant site, the lower gradients are a result of the thicker LCD. The hydraulic gradient increases closer to the Ohio River as a result of a thinner section of the RGA or the low permeability of bottom sediments in the Ohio River. The primary pathway of groundwater flow at the Paducah Site is within the RGA, which dominates the flow regime.

The discontinuous nature of sands and gravels in the UCRS and the large vertical gradient within the UCRS require groundwater flow in the UCRS to be oriented predominantly downward into the RGA. Some horizontal flow in the UCRS likely occurs; however, it is insignificant near the Paducah Site due to the lateral discontinuity of shallow sand and gravel lenses. Groundwater flow in the RGA is to the north and discharges into the Ohio River and into Little Bayou Creek in the vicinity of the Tennessee Valley Authority plant. Hydraulic conductivities of the RGA range from 100 to 1,000 ft per day. Existing regional maps and borehole logs indicate the RGA is thin or absent beneath the Ohio River, suggesting that flow under the Ohio River is unlikely.

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3. ACTIVITIES THAT HAVE THE POTENTIAL TO POLLUTE GROUNDWATER

Activities for which GPPs shall be prepared and implemented are listed in 401 *KAR* 5:037 § 1(1), *Applicability*. The following activities, relevant to these requirements, are performed by DOE and its contractors/subcontractors at the Paducah Site:

(a) *Storing or related handling of bulk quantities of pesticides or fertilizers for commercial purposes*. This primarily is performed by the Infrastructure Contractor. Examples include the following:

- Storage of concentrated herbicides is at C-725. Only personnel with current state certifications for herbicide application are allowed to access, mix, and apply the chemicals.

- Fertilizers are used by the D&R Contractor to aid in sowing down landfill vegetation. Fertilizers are stored in a Poly-Overpack®, which is stored inside a wooden storage facility (i.e., C-746-U-11).

- The Infrastructure Contractor uses spike type fertilizers for targeted application to trees and ornamentals; spikes are stored at C-755.

(b) *Storing or related handling of bulk quantities of pesticides or fertilizers for the purpose of distribution to a retail sales outlet*. [Not Applicable (N/A)]

(c) *Applying of pesticides or fertilizers for commercial purposes*. (N/A)

(d) *Applying of fertilizers or pesticides for public right-of-way maintenance or institutional lawn care*. This primarily is performed by the Infrastructure Contractor.

(e) *Land treatment or land disposal of a pollutant*. (N/A)

(f) *Storing, treating, disposing, or related handling of hazardous waste, solid waste, or special waste in landfills, incinerators, surface impoundments, tanks, drums or other containers, or in piles*. This primarily is performed by the D&R Contractor.

- C-733, C-746-Q, and C-752-A are permitted hazardous waste storage and treatment units in accordance with the Hazardous Waste Facility Permit, KY8-890-008-982, issued by Kentucky Division of Waste Management (KDWM).

- C-746-U receives and disposes of solid wastes in accordance with Solid Waste Permit SW07300015, SW07300014, SW07300045 issued by KDWM. The C-746-U Landfill also has six large capacity storage tanks (two 31,000 gal, two 13,100 gal, one 16,000 gal, and one 2,500 gal) to facilitate the collection and treatment of leachate generated at the landfill and also from the C-746-S Landfill.

- C-404 Landfill is a closed landfill listed on the Hazardous Waste Facility Permit, KY8-890-008-982. The C-404 Landfill leachate collection sump is monitored monthly, at a minimum, and pumped for disposal when the leachate depth exceeds 3 ft. Leachate collection sump integrity testing is performed on an annual basis.

- C-746-S and C-746-T are Subtitle D RCRA-closed landfills listed on the Solid Waste Permit SW07300014, SW07300015, SW07300045.

- Various projects/facilities are used for the temporary staging/storage of hazardous/solid waste per applicable regulations. These areas may include Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) waste staging areas managed in accordance with an approved CERCLA decision document.

- Solid wastes are staged in covered roll-offs, trucks, and/or intermodals prior to transfer to the C-746-U Landfill for disposal to prevent accumulation of precipitation or condensation in the waste containers. Receipt/processing of waste at the landfill is performed in accordance with the solid waste landfill permit, which prohibits receipt of free liquids in the waste. Waste is disposed of within 2 hours of receipt at the landfill and covered with daily cover by the end of each day. Interim and long-term covers are used at areas of the landfill that are not used for extended periods, per the permit, to minimize infiltration of water into the waste.

(g) *Commercial or industrial storing or related handling in bulk quantities of raw materials, intermediate substances or products, finished products, substances held for recycling, or other pollutants held in tanks, drums or other containers, or in piles*. This is performed by each contractor in differing amounts and purposes.

The *Spill Prevention, Control, and Countermeasure Plan for the U.S. Department of Energy Paducah Gaseous Diffusion Plant, McCracken County, Kentucky*, CP2-RA-0016 (SPCC Plan), identifies the petroleum-based materials stored on-site (FRNP 2023a).

Select examples of bulk storage sites are discussed below.

- A 1,000 gal stationary tank used to store diesel fuel for heavy equipment and a 500 gal stationary tank that stores gasoline for vehicles are located at the C-746-U Landfill.

- Two 420,000 gal tanks (i.e., C-601-A, C-601-B) are located at the facility. Both tanks are located within a 675,000 gal capacity containment structure consisting of an earthen dike lined with a synthetic material impervious to oil. The discharge valve for the containment structure is permanently open.

- Both C-601-A and C-601-B are currently empty and have been permanently closed.

- A historical bulk coal storage area exists near the out of service C-600 Steam Plant. The bulk of the coal has been removed (facility currently is out of service).

- A 150 gal tank containing used oil is at the C-750 Garage Building.

- Six 10,000 gal aboveground, polymer-lined, carbon steel bulk storage tanks outside the DUF_6 Conversion Building (tanks C-0-HFS-550 to 555) are for the storage of aqueous hydrogen fluoride (HF).

- DUF_6 is stored in the site's cylinder storage yards east of the DUF_6 Conversion Plant in approximately 36,000 steel cylinders.

- UF_6 is stored in facilities and cylinders located in the site's cylinder storage yards and processing facilities (e.g., C-310, C-315, C-331, C-333, C-335, C-337, and C-360).

- Posi-Shell® is a clay and polymer-based alternative daily cover material that is stored in metal Sealand containers at the C-746-U Landfill.

- Flocculants are used for the treatment of suspended solids in the sedimentation pond and are stored in a metal Sealand container at the C-746-U Landfill.

(h) *Transmission in pipelines of raw materials, intermediate substances or products, finished products, or other pollutants*. This is performed by each contractor in different amounts and for different purposes. Examples include the following:

- UF_6 piping between process buildings;
- Piping for C-611, C-616, C-752-B aboveground storage tanks;
- Piping associated with C-765 and C-765-A Northeast Plume treatment systems;
- Piping associated with C-612 Northwest Plume treatment system; and
- Piping associated with former C-614 Northeast Plume treatment system (maintained in standby status).

(i) *Installation or operation of on-site sewage disposal systems*. This is performed by the D&R Contractor. Examples include the following:

- C-615 Sewage Treatment Plant;
- C-333-A and C-337-A extended aeration systems; and
- C-611, C-612, and C-746-A septic systems.

(j) *Storing or related handling of road oils, dust suppressants, or deicing agents at a central location*. This primarily is performed by the Infrastructure Contractor.

- The Infrastructure Contractor is responsible for road maintenance. Rock salt is stored in the C-734 Salt Storage Structure. C-734 is a 5,360 ft² single-story metal and fabric-covered storage building. Both structures are fully covered with open fronts for loading and/or unloading materials, and concrete floors to minimize moisture intrusion and the loss of salt material to the environment.

(k) *Application or related handling of road oils, dust suppressants or deicing materials*. This primarily is performed by the Infrastructure Contractor, although each of the contractors applies small amounts of deicing materials around facility entryways/walkways for safety when needed. This activity typically is performed around each facility.

(l) *Mining and associated activities*. (N/A)

(m) *Installation, construction, operation, or abandonment of wells, bore holes, or core holes*. The Paducah Site was placed on the National Priorities List in 1994. As a result, wells and boreholes are installed in accordance with CERCLA and as such would be exempt from administrative requirements in this plan. Rather, they are conducted in accordance with the substantive requirements of an approved CERCLA decision document. Wells installed under other programs (e.g., hazardous waste landfill, solid waste landfill) would be completed in accordance with this plan and applicable permits and subsequent regulations under 401 *KAR*.

(n) *Collection or disposal of pollutants in an industrial or commercial facility through the use of floor drains which are not connected to on-site sewage disposal systems, closed-loop collection or recovery systems, or a waste treatment system permitted under the Kentucky Pollutant Discharge Elimination System*.

Liquids from plant operations are discharged through plant effluent ditches. Groundwater protection from effluents in these discharges is under the purview of the Kentucky Pollutant Discharge Elimination System (KPDES); therefore, it is not addressed further in this GPP. Compliance with the KPDES program ensures protection of the groundwater from plant effluent discharges.

(o) *Impoundment or containment of pollutants in surface impoundments, lagoons, pits, or ditches*. This is performed by the D&R Contractor and the DUF_6 Conversion Project Contractor. Examples include the following:

- C-611-V, C-611-Y, C-611-H, and C-611-W are containment basins used for the backwash from the treatment of Ohio River water for potable uses on-site.
- C-616-E and C-616-F are a series of lagoons constructed to hold recirculating cooling water for phosphate reduction prior to discharge.
- C-617 lagoons previously collected storm water and various industrial wastewaters. Sodium thiosulfate and carbon dioxide were fed into the lagoon to dechlorinate the effluent and control pH before discharge.
- Fifteen outfall ditches convey storm water and treated industrial waste waters off-site in accordance with the KPDES Permit. Each of these ditches contains devices with the potential to impound or contain wastewaters during transport off-site (e.g., inverted pipe dams, culverts).
- C-745-G1 is a large concrete basin to collect storm water runoff from the C-746-G Cylinder Yard prior to lifting runoff to Outfall 017.

(p) *Commercial or industrial transfer, including loading and unloading, in bulk quantities of raw materials, intermediate substances or products, finished products, substances held for recycling, or other pollutants*. This is performed by each contractor in differing amounts and for different purposes. Examples include the following.

- C-760, C-759, rail lines, and the staging/receiving area along Hobbs Road (C-761-A) are used to stage wastes being shipped off-site for treatment and/or disposal.
- C-720-G shipping and receiving area is used to stage incoming bulk materials for use at the site.
- Aqueous HF is pumped from the storage tanks (tanks C-0-HFS-TK-550 to 555) into a railcar or tank truck for off-site shipment.
- Historically, C-333-A Autoclave Feed Facility, C-337-A Autoclave Feed Facility, C-360 Transfer and Sampling Facility, C-310 Product Removal Facility, and C-315 Tails Removal Facility were used to transfer UF_6 from process lines/equipment to cylinders; however, these facilities are out of services for the aforementioned activities.
- Used oil is pumped directly from the 150 gal tank at the C-750 Garage Building for off-site shipment.

Additionally, 401 *KAR* 5:037 § 1(3), *Specific exclusions*, lists several activities that are excluded from the provisions of this administrative regulation.

(a) *Normal use or consumption of products sized and packaged for personal use by individuals*. This is performed by each contractor in differing amounts and for different purposes.

(b) *Retail marketing of products sized and packaged for personal use or consumption by individuals*. (N/A)

(c) *Activities that are conducted entirely inside enclosed buildings*. Several facilities used by contractors/subcontractors qualify for this exclusion; these uses include, but are not limited to, employee training, business conferences, meetings, and general office work.

(d) *Storing, related handling, or transmission in pipelines of pollutants that are gases at standard temperature and pressure*. This exclusion applies to the storage and transfer of gases in cylinders and process piping, such as fluorine, chlorine, Freon™, and chlorine trifluoride.

(e) *Storing municipal solid waste in a container located on property where the municipal solid waste is generated and that is used solely for the purpose of collection and temporary storage of that municipal solid waste prior to off-site disposal*. This is performed by each contractor in differing amounts throughout the facility.

(f) *Installing and operating sewer lines or water lines approved by the cabinet*. This exclusion applies to the septic water lines that run from the process and operating buildings to the on-site sewage treatment plant.

(g) *Storing water in ponds, lakes, or reservoirs*. This exclusion applies to Ohio River water storage at the C-611 Water Treatment Plant.

(h) *Impounding stormwater, silt, or sediment in surface impoundments*. Several facilities used by contractors/subcontractors qualify for this exclusion, including the DUF_6 detention basin, C-613 basin, C-617 basin, etc.

(i) *Application of chloride-based deicing materials used on roads or parking lots*. This primarily is performed by the Infrastructure Contractor, although each of the contractors will keep small amounts of deicing materials near facility entryways/walkways for use in clearing ice on walkways.

(j) *Emergency response activities conducted in accordance with local, state, and federal law*. These are performed by each contractor in differing amounts and for different purposes.

(k) *Firefighting activities*. This will be performed by contractors/subcontractors.

(l) *Conveyance or related handling by motor vehicle, rolling stock, vessel, or aircraft*. These are performed by each contractor in differing amounts and for different purposes.

(m) *Agricultural activities at agriculture operations*. (N/A)

(n) *Application by commercial applicators of fertilizers or pesticides on lands used for agriculture operations*. (N/A)

Operations are conducted in numerous facilities and areas across the Paducah Site. Contractors/subcontractors control these facilities and areas to ensure established waste management practices that result in groundwater protection practices are in place and properly functioning.

4. PRACTICES SELECTED TO PROTECT GROUNDWATER FROM POLLUTION

DOE uses contractors at the Paducah Site under the Environmental Management (EM) cleanup mission. The D&R Contractor is responsible for the deactivation of the uranium enrichment facilities and the implementation of environmental restoration activities (cleanup and closure of facilities and cleanup of soil, groundwater, burial grounds, and disposal of legacy waste) at the Paducah Site. The Infrastructure Contractor is responsible for infrastructure services such as surveillance and maintenance of selected facilities, property and records management, janitorial services, and grounds and roadway maintenance. The DUF_6 Conversion Project Contractor is responsible for the operation of a DUF_6 Conversion Plant. To ensure groundwater at the Paducah Site is protected from site-based pollution, DOE, and their contractors use standardized plans and procedures to assure quality and consistency in the implementation of groundwater protection practices. The following general programs at the Paducah Site are maintained by DOE contractors.

- Environment, Safety, and Health
- Integrated Safety and Environmental Management System (ISMS)
- SPCC Plan
- Best Management Practices (BMP) Plan
- Uranium Programs
- Waste Management
- Transportation
- Radiological Controls
- Environmental Monitoring
- Data and Sampling
- Well Maintenance
- D&R

A list of relevant plans, programs, and procedures are in Appendix B.

The following sections provide brief descriptions of the groundwater protection practices that have been implemented at the Paducah Site.

4.1 INTEGRATED SAFETY MANAGEMENT SYSTEM AND ENVIRONMENTAL MANAGEMENT SYSTEMS

The Paducah Site is committed to performing work safely and ensuring the protection of its workforce, the public and the environment. To meet these goals, DOE has embraced the ISMS and expects its contractor/subcontractor to adhere to the five safety management core functions and the eight guiding principles of ISMS. In addition, DOE sites must use an environmental management system (EMS) as a platform for site sustainability plan implementation and programs with objectives and measurable targets that contribute to DOE's meeting its sustainability goals. EMS enables more effective use of natural resources, provides better protection of the environment, and achieves environmental sustainability. The EMS helps to insure consistency and rigor in existing environmental activities and drives continual improvements in environmental performance. In addition to ISMS/EMS, several other environmental based programs have been established to help foster and ensure environmental due diligence.

The environmental monitoring plan (EMP) (CP2-ES-0006) is intended to document the rationale, sampling frequency, parameters, and analytical methods for EM activities at the Paducah Site and provide information on site characteristics, environmental methodologies, and quality assurance management pathways, dose assessment methodologies, and quality assurance management (FRNP 2023b). EM at the Paducah Site consists of effluent monitoring and environmental surveillance activities and supports evaluation and assessment if an unplanned release occurs. Monitoring is conducted for a variety of media, including air, surface water, groundwater, and sediment.

The *Best Management Practices Plan, Paducah Gaseous Diffusion Plant, Paducah, Kentucky*, CP2-ES-0500, is required per Section 3 of the KPDES Permit for the Paducah Site (FRNP 2023c). The KPDES Permit states the following:

> These conditions apply to all permittees who use, manufacture, store, handle, or discharge any pollutant listed as: (1) toxic under Section 307(a)(1) of the Clean Water Act; (2) oil, as defined in Section 311(a)(1) of the Act; (3) any pollutant listed as hazardous under Section 311 of the Act; or (4) is defined as a pollutant pursuant to *KRS* 224.1-010(35) and who have operations which could result in (1) the release of a hazardous substance, pollutant, or contaminant, or (2) an environmental emergency, as defined in *KRS* 224.1-400, as amended, or any regulation promulgated pursuant thereto (hereinafter, the 'BMP pollutants"). These operations include material storage areas; plant site runoff; in-plant transfer, process and material handling areas; loading and unloading operations, and sludge and waste disposal areas.

The BMP must be maintained consistent with 401 *KAR* 5:065 § 2(4) pursuant to *KRS* 224.70-110, *General prohibition against water pollution*, which prevents or minimizes the potential for the release of BMP pollutants from ancillary activities through site runoff; spillage or leaks, sludge or waste disposal; or drainage from raw material storage at the Paducah Site. The BMP has general requirements for all operations and specific requirements for individual operations. The plan discusses a required BMP committee, the reporting of BMP incidents, and risk identification and assessment. The plan also discusses employee training, inspection records, preventative maintenance, housekeeping requirements, materials inventory, and security.

4.2 GROUNDWATER MONITORING

To ensure groundwater at the Paducah Site is protected from site-based pollution, DOE and their contractors integrate principals from the ISMS/EMS, the EMP, and BMP plans into the overall groundwater strategy.

4.2.1 RCRA Subtitle C Monitoring

Currently, the only RCRA Subtitle C permitted facility at the Paducah Site that requires groundwater monitoring is the C-404 Low-Level Radioactive Waste Burial Ground. The C-404 unit was used as a low-level waste lagoon/burial ground from the early 1950s until 1986. At that time, routine testing determined that, of the wastes disposed of there, gold-dissolver precipitate was considered a hazardous waste under RCRA. The landfill was covered with a RCRA-compliant clay cap (final cover) and was certified closed in 1991 as a hazardous waste landfill. The post-closure permit for this facility was incorporated into the Hazardous Waste Management Permit, KY8-890-008-982, in 1992.

Monitoring wells (MWs) were installed to monitor groundwater quality during the post-closure care period. The MWs were installed in the UCRS and the underlying RGA, which is considered to be the uppermost regulatory aquifer. A statistical evaluation of the indicator parameters was conducted using quarterly

sample results from the initial year of monitoring. As a result, the Commonwealth of Kentucky determined that additional information was needed to support the post-closure permit application, and subsequent MWs were installed to provide upgradient monitoring of the Lower RGA and the Upper RGA (refer to Appendix B to the EMP).

The MW network at C-404 is sampled and monitored in accordance with the requirements associated with the Hazardous Waste Facility Permit (i.e., KY8-890-008-982). The data resulting from sampling is statistically analyzed to determine if the landfill is impacting the groundwater. This analysis is supplied in semiannual reports to KDEP.

4.2.2 Underground Storage Tank Monitoring

Hazardous and Solid Waste Amendments under Subtitle I of RCRA regulation [i.e., 40 *CFR* Part 280, *Technical Standards and Corrective Action Requirements for Owners and Operators of Underground Storage Tanks (UST)*], established a comprehensive regulatory program for underground storage tanks (USTs). The Subtitle I regulations generally pertain to all USTs used to store regulated substances. Regulated substance means (a) any substance defined in section 101(14) of CERCLA (but not including any substance regulated as a hazardous waste under subtitle C); and (b) petroleum, including crude oil or any fraction thereof that is liquid at standard conditions of temperature and pressure (60°F and 14.7 pounds per square inch absolute). The term regulated substance includes, but is not limited to, petroleum and petroleum-based substances comprised of a complex blend of hydrocarbons derived from crude oil though processes of separation, conversion, upgrading, and finishing, such as motor fuels, jet fuels, distillate fuel oils, residual fuel oils, lubricants, petroleum solvents, and used oils. RCRA-regulated wastes are specifically exempt from the Subtitle I (UST) regulations, and releases from USTs that contain RCRA wastes are addressed under the regulations governing corrective action. In addition to these federal regulations, USTs at the Paducah Site also are subject to 401 *KAR* Chapter 42, *Underground Storage Tanks*.

DOE is responsible for 18 site USTs that have been reported to KDEP in accordance with regulatory notification requirements. All 18 of these USTs and associated piping runs have been closed in place permanently or physically removed and properly disposed of in accordance with KDEP regulations and KDEP NFA letters are on file for each former UST facility. Table 1 provides summary information on the former USTs at the Paducah Site. Visit the following webpage for additional information: https://pegasis.pad.pppo.gov/.

4.2.3 RCRA 3004 (u/v) and CERCLA Monitoring

Additional groundwater monitoring performed relates to RCRA 3004 (u/v) and CERCLA requirements for characterization of areas of contamination at a facility that has had releases with the potential to contaminate groundwater. Groundwater contamination currently present at the Paducah Site has been labeled as the TCE Plume and the Tc-99 Plume (see Figures A.3 and A.4). The TCE Plume is subdivided further into the Northeast Plume, Northwest Plume, and Southwest Plume. Results of monitoring are used to determine and implement remedial actions, as necessary, to protect human health and the environment. Specific actions/procedures to protect groundwater during MW installation and groundwater remediation are identified in the CERCLA response work plans. Annual, semiannual, and quarterly analytical data collected in conjunction with groundwater monitoring sampling events are posted to the Environmental Information System Portsmouth/Paducah Project Office Environmental Geographic Analytical Spatial Information System data repository.

Table 1. Summary Information on USTs

State Identification Number	Paducah Site Identification Number	SWMU Designation/Status	Regulatory Status
0001	C-750-A	142	Removed 3/91; closure complete per KDWM letter of 3/25/99.
0002	C-750-B	143	Removed 3/91; closure complete per KDWM letter of 3/25/99.
0003	C-750-C	25	Removed 10/93; not Subtitle I—clean closed under RCRA Subtitle C.
0004	C-750-D	24	Rinsed with TCE and emptied 6/79; filled with cement 10/97; closure complete per KDWM letter of 11/23/99.
0005	C-746-A1	139	Emptied 9/88; filled with cement 10/97; revised closure assessment report submitted 7/15/03; additional information requested from KDWM on 03/18/04; closure complete per KDWM letter.
0006	C-710-B	73	EXEMPT—emptied 7/85; filled with cement 10/97; closure complete per KDWM letter of 02/19/02.
0007	C-200-A	72	EXEMPT—grouted in 1977; closure complete per KDWM letter of 11/23/99.
0008	C-746-A2	140	During the Waste Area Group 15 Site Investigation, this UST was determined (and documented) to be nonexistent.
0009	C-751-W	186	Removed 2/27/2015: closure complete per KDWM NFA letter dated 10/21/15.
0010	C-751-E	186	Removed 2/27/2015: closure complete per KDWM NFA letter dated 10/21/15.
0011	C-611-1	130	Last used before 1975; clean closed per KDWM letter of 12/6/96.
0012	C-611-3	134	Last used before 1975; filled with cement 9/97; clean closed per KDWM letter of 12/6/96.
0013	C-611-2	131	This UST was determined to be nonexistent—NFA required per state correspondence of 12/6/96.
0014	C-611-4	132	Last used before 1975; filled with sand; clean closed per KDWM letter of 12/6/96.
0015	C-611-5	133	Filled with grout before 1975; clean closed per KDWM letter of 12/6/96.
0016	C-200-B	72	Filled with concrete around 1981; closure complete per KDWM letter of 2/19/02.
0017	C-745-K	490	UST discovered 8/16/01; tank and soils removed 2/02, clean closed per KDWM letter of 12/4/02.
0018	C-745-K2	534	UST discovered 4/10/02; tank removed 4/02; clean closed per KDWM letter of 12/4/02.

4.2.4 RCRA Subtitle D Landfill Groundwater Monitoring

Both C-746-S and C-746-T Landfills are closed landfills in post-closure care under the Solid Waste Permit (i.e., SW07300014, SW07300015, SW07300045) issued by KDWM on May 21, 2021. The C-746-S Residential Landfill stopped receiving solid waste and was certified closed in 1995. The groundwater monitoring system for the C-746-S Residential Landfill also encompasses the C-746-T Inert Landfill, which was certified closed in 1992.

A solid waste landfill, C-746-U, was constructed in 1996 north of C-746-S and C-746-T Landfills. The C-746-U Landfill currently operates and receives wastes as a contained landfill under Solid Waste Permit

(i.e., SW07300014, SW07300015, SW07300045). MWs for the C-746-S, C-746-T, and C-746-U Landfills are sampled quarterly for analytes dictated by the current, approved Solid Waste Permit.

The data resulting from groundwater sampling at C-746-U and C-746-S&T Landfills are statistically analyzed to determine if the landfills are impacting the groundwater. This analysis is supplied in quarterly reports to KDEP.

4.2.5 Monitoring Well Preventive Maintenance

To protect and maintain the integrity of the MW network at the Paducah Site, a preventive MW maintenance plan was implemented in 2002. A complete description of this program can be found in the current approved CP2-ES-0024, *Monitoring Well Maintenance Implementation Plan for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*. This program combines regular monitoring of each well's physical condition and performance during routine sampling activities. If problems requiring attention are identified, a schedule to repair or rehabilitate wells is developed. The maintenance monitoring program also includes, as needed, visual inspection of downhole equipment, downhole video inspection, evaluation of water quality data, microbial sampling and analysis, and assessment of well performance indicators. Typical efforts to rehabilitate MWs involve the use of physical treatment methods, such as brushing and surging. The Paducah Site solid waste and hazardous waste management facility permits require notification to KDWM prior to MW maintenance or abandonment activities.

4.2.6 Evaluation of Floor Drains

An evaluation of floor drains before groundwater protection practices are selected is required by 401 *KAR* 5:037 § 2(5)(c), *Floor drains*. Floor drains must be connected to an on-site sewage disposal system, to a closed-loop collection or recovery system, a waste treatment system permitted under KPDES, or be terminated.

Historically, floor drains with a potential for oil spills and/or leaks to discharge directly to the environment have been plugged in the process buildings. Currently, as floor drains are encountered that have a potential to discharge contaminants to the storm water system, the facility evaluates whether the floor drains should be plugged. If plugging is needed, it is accomplished as a work request through the FRNP work planning process.

Liquid discharges from plant operations are discharged through the plant effluent ditches, and groundwater protection from effluents in these discharges are under purview of the KPDES program. Compliance with the KPDES program provides protection of the groundwater from plant effluent discharges.

4.2.7 Evaluation of Loading and Unloading Areas

401 *KAR* 5:037 § 2(5)(a), *Loading and unloading areas*, states the following:

> Loading and unloading areas shall have spill prevention and control procedures and operation procedures designed to prevent groundwater pollution. Spill containment and cleanup equipment shall be readily accessible.

Loading and unloading areas have emergency response procedures, spill containment, and cleanup equipment. The plant emergency squad provides continuous emergency response to spills 24-hours-a-day.

4.3 ENVIRONMENTAL SURVEILLANCE MONITORING

Groundwater surveillance monitoring, as required by DOE Order (O) 436.1A, *Departmental Sustainability*, is implemented at the Paducah Site. The approved EMP discusses this program and its components including MWs, sample parameters, and sampling frequencies. The plan is maintained as a living document that will be modified to meet new requirements and needs. Any changes in MW status, locations, or sampling frequency will be documented in the annual EMP. The EMP also describes other environmental monitoring activities, such as surface water monitoring at the C-746-S/T/U Landfills, KPDES outfall monitoring, and in-stream monitoring of Bayou Creek and Little Bayou Creek.

4.4 KENTUCKY POLLUTANT DISCHARGE ELIMINATION SYSTEM OUTFALLS

The KPDES Permit (KY0004049) requires the Paducah Site to monitor effluent discharges through permitted Outfalls 001, 002, 004, 006, 008, 009, 010, 011, 012, 013, 015, 016, 017, 019, and 020 (See Figure 5).

Sample parameters include both physical and chemical constituents. Results are assessed and submitted to the proper regulatory agencies. Activities include field testing (e.g., pH, conductivity, temperature), field measurements (e.g., flow measurements), and laboratory analysis for pollutants identified in the KPDES Permit. If data indicate increasing contaminant levels, information pertaining to upstream operations is reviewed to identify the potential cause and implement appropriate BMP to minimize pollutants per Section 3 of the KPDES Permit. General conditions and general requirements of Section 3 of the KPDES Permit are discussed in the FRNP BMP plan, CP2-ES-0500, as they pertain to the remediation, deactivation, and infrastructure contractors and in *Paducah Storm Water Pollution Prevention and Best Management*, DUF6-PLN-079, for the DUF_6 Conversion Project Contractor (MCS 2024a).

4.5 SAMPLE COLLECTION

Surface water bodies (e.g., streams, the Ohio River, lagoons, ponds), surface and subsurface soil, and groundwater (from MWs) are sampled as part of environmental assessment and possible remediation efforts conducted at the Paducah Site. To provide protection of groundwater during the performance of these activities, task-specific procedures are utilized that allow quantification of site conditions without degradation of the sampling site. These procedures, maintained and implemented by DOE contractors, are specified and described in project-specific sampling and analysis plans that are reviewed and approved prior to sampling. The following sections in this report provide generic information on the types of procedures that are applicable to sampling surface water, surface and subsurface soil, and groundwater at the Paducah Site.

Appendix B provides a partial list of the most current version of plans, programs, and procedures that are implemented for specific tasks at the Paducah Site.

4.5.1 Surface Water

Surface water sampling activities can be divided into two types: observation and water sampling. Observations include presampling visual assessment and determination of flow rates or volumes using flow meters and calibrated flumes. The sampling protocol is designed to allow representative samples to be taken from a location and protect sampling personnel, while preventing the spread of contamination. Collected samples then are tested for specific constituents using either field measurement methods or laboratory analysis. Hydrogeologic evidence has demonstrated that Bayou Creek and Little Bayou Creek are losing streams over some intervals; therefore, sampling and protecting surface water aid in ensuring groundwater protection.

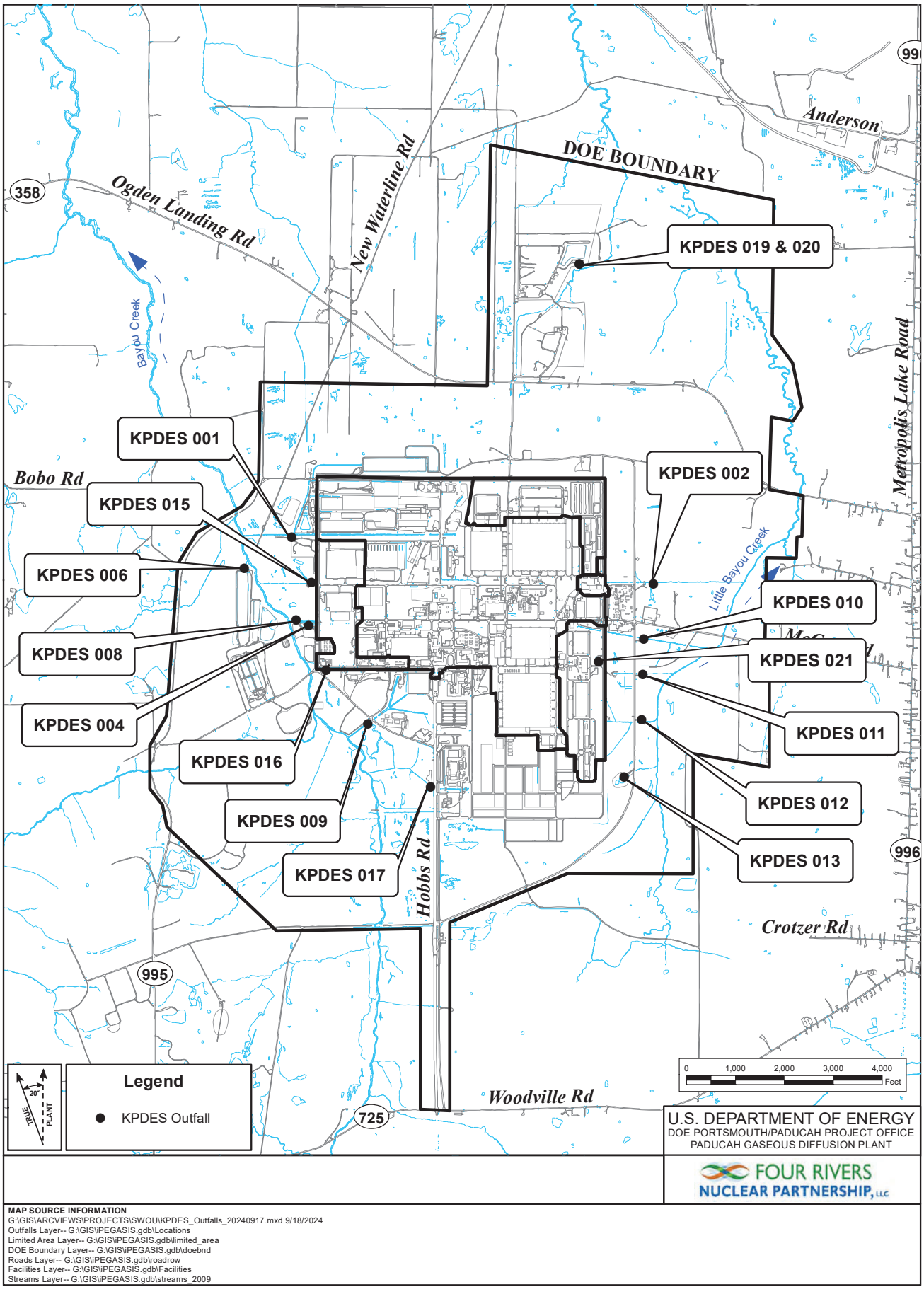

Figure 5. KPDES-Permitted Outfall Locations at the Paducah Site

Several SWMUs at the Paducah Site are located in areas without an outfall and are grass covered and under normal conditions would not have discharges. The BMP states that during extreme rainfall events these areas may become saturated, which may allow storm water to flow over or through the SWMU increasing the potential for surface water discharge. If the soils covering the SWMU become saturated, the SWMUs will be checked for signs of erosion and releases. Storm water runoff periodically will be inspected visually to look for signs of contamination (e.g., an oily sheen, cloudy, discolored water, etc.) and, if necessary, sampled.

The following types of activities are used during surface water sampling as appropriate to the specific task.

- Collection of surface water samples
- Field measurement of water temperature
- Field measurement of pH
- Field measurement of dissolved oxygen
- Field measurement of residual chlorine
- Field measurement of specific conductance
- Field measurement of alkalinity

4.5.2 Surface and Subsurface Soil

Surface and subsurface soil samples may be taken prior to or during construction, excavation, and remediation activities or as part of environmental characterization activities. Procedures for soil sampling enable characterization while protecting sampling personnel and reducing the risk of increasing contaminant migration and are identified in project specific work instructions and/or CERCLA work plans.

The following activities may be used during surface and subsurface soil sampling as appropriate to the requirement of the specific task.

- Surface soil sampling
- Subsurface soil sampling
- Soil gas sampling
- Lithologic logging

4.5.3 Well Sampling

Numerous MWs and residential wells are sampled on a regular basis (see Appendix B of the EMP). This sampling is conducted to monitor the existing groundwater contamination plumes and to detect any additional releases of contamination into the RGA. The procedures that guide these activities help ensure that analytical results are representative of aquifer conditions. In addition to chemical and physical conditions, aquifer parameters such as transmissivity and conductivity are determined as needed. Additional information on the well sampling program at the Paducah Site is available in the current approved EMP.

The following types of activities may be used during well sampling, as appropriate to the specific task.

- Groundwater sampling
- Water level measurements
- MW purging

4.6 SUBSURFACE PENETRATIONS

To characterize subsurface conditions, numerous subsoil penetrations have been made under various investigation and remedial activities. These penetrations have been in the form of MWs, production/extraction wells, piezometers, and sample borings (including shallow direct push holes and drilled borings to the McNairy Formation and deeper). Installation/drilling techniques are selected specifically to prevent undesirable contaminant migration while providing the maximum information required for characterization of the geological and hydrogeological conditions. Excavation permits are required by facility procedure CP3-EN-0227, *Trenching, Excavation and Penetration Permit*, prior to any installation/drilling activity anywhere on-site in order to satisfy ISMS/EMS principles. Completed sample borings and MWs no longer required for sampling are properly abandoned per 401 *KAR* 6:350 § 11, *Monitoring Well Abandonment*, (as appropriate) to prevent downward migration of contaminants.

4.7 STORAGE OF BULK QUANTITIES OF MATERIALS, RECYCLABLES, AND WASTES

4.7.1 Fuel Storage Tanks

Fuel storage tanks located at the Paducah Site, including C-600, C-746-U, C-752-B, C-333, and C-337 are subject to the SPCC Plan. Each of the tanks is equipped with appropriate containment (secondary or double-walled) and is inspected at least monthly. Collected storm water is inspected for sheen prior to discharge. For a comprehensive overview of the Paducah Site aboveground storage tanks, refer to Appendix B to the SPCC Plan (FRNP 2023a). Additionally, spill control and cleanup equipment is located near each facility to allow for prompt cleanup of spills.

4.7.2 Used Oil

Used oil is collected for disposal at the C-750 Garage Building in 150 gal and 300 gal double-walled tanks and 55 gal drums. Containers are inspected monthly in accordance with SP001, *Standard for the Inspection of Aboveground Storage Tanks*. Once the containers are full, the Infrastructure Contractor schedules the pickup of the used oil. Used oil storage for DUF_6 is addressed by the DUF_6 Conversion Project Contractor GPP, *Paducah Groundwater Protection Plan*, DUF6-PLN-117 (MCS 2024b).

4.7.3 Storage of UF_6

Bulk UF_6 is stored in on-site cylinders and various facilities around the Paducah Site.

DUF_6 cylinders are stored on gravel and concrete pads in the cylinder yards. Storm water runoff from the cylinder yards is channeled to Outfalls 001, 002, 008, 010, 012, 013, 015, and 017 for discharge/monitoring under the KPDES Permit (i.e., KY0004049).

4.7.4 Storage of Aqueous Hydrogen Fluoride

HF is stored in six aboveground, outdoor, carbon steel 10,000 gal tanks (tanks C-0-HFS-TK-550 through C-0-HFS-TK-555) and each tank has the following:

- Polymer lining;
- Remote level monitoring;
- High-level and high-high level alarms to warn operators of potential overfill; and
- Concrete secondary containment (i.e., 21,166 ft^2 × 3.5-ft high, 11,729 gal capacity).

4.7.5 Storage of Posi-Shell® Chemical

Posi-Shell® is an alternative daily cover material that is stored at the C-746-U Landfill in metal Sealand containers.

4.7.6 Storage of Flocculants

Flocculants are used for the treatment of suspended solids in the sedimentation pond and are stored in a metal Sealand container at C-746-U Landfill.

4.7.7 Storage of Road Oils and Deicing Materials

The Infrastructure Contractor is responsible for road maintenance. Rock salt is stored in the C-734 Salt Storage Structure. C-734 is a 5,360 ft² single-story metal and fabric-covered storage building. Both structures are fully covered with open fronts for loading and/or unloading materials, and concrete floors to minimize moisture intrusion and the loss of salt material to the environment. Deicers are used during winter months on sidewalks, deck, and steps to improve personal safety. Rock salt is dissolved into a high-salinity solution (i.e., brine) at the C-755-A-1 Storage Shed, and it is suitable for roads and parking lot pretreatment. If weather is too severe for pretreatment, then rock salt is applied directly to the road and parking lot surfaces. By using pretreatment, the Infrastructure Contractor minimizes the amount of rock salt used and, therefore, the amount of runoff to site ditches and outfalls.

4.7.8 Storage of Pesticides

The Infrastructure Contractor utilizes herbicide as one form of weed control and plant management. A minimum amount of concentrate is purchased for use in a one-year period. Storage of concentrate is at C-725. Access to the chemical is restricted by use of a lock and key. Only personnel with current state certifications for herbicide application are allowed to access the chemicals, mix, and apply the chemicals. The herbicide is stored, applied and the container disposed of in accordance with the manufacturer's instructions and Commonwealth of Kentucky law.

4.7.9 Storage of Aqueous Film-Forming Foam

Aqueous film-forming foam (AFFF) belongs to a class of chemicals known as per- and polyfluoroalkyl substances (PFAS). These man-made chemicals have been manufactured by and used by a variety of industries since 1940. PFAS are persistent in the environment and have become emerging contaminants of concern in surface water and groundwater in recent years. AFFF was used in the past at the Paducah Site for fire training activities. AFFF has been detected in monitoring wells near the fire training area (C-207).

On March 22, 2019, the governor of Kentucky signed S.B. 104, banning the use of AFFF containing PFAS for training and testing purposes. This law went into effect on July 2020. In August 2021, the Paducah Site replaced all AFFF that contained PFAS with a new biodegradable nonhazardous foam. The former supply of AFFF (600 gal) has been declared waste and is being properly stored until suitable treatment and disposal methods are identified.

4.8 WASTE MANAGEMENT

DOE and its contractors/subcontractors generate, handle, and store a significant quantity of waste materials. Activities that deal with waste are addressed in procedures established to ensure proper storage, maintain

accountability, and eliminate the possibility of a release to the environment. At each area of generation, facilities are provided for the proper containerization of waste materials.

Waste handling activities include segregation, transportation, sampling, storage, and treatment and/or disposal. Beginning at generation, wastes are segregated (i.e., liquid from solid) and similar materials are consolidated in containers. To the extent practical, waste is containerized in accordance with 49 *CFR* § 172.101, *Purpose and use of the hazardous material table*, and 49 *CFR* Part 173, *Shippers—General Requirements for Shipments and Packagings*, at the point of generation. This step ensures proper storage and handling until treatment and/or disposal. After wastes are containerized and secured, they are transported to a waste staging or storage area for further processing, transfer to another container, or storage pending treatment and/or disposal. Temporary storage of wastes at the generating project is conducted in accordance with applicable regulations based upon the type of waste [e.g., 40 *CFR* Subpart C, *Characteristics of Hazardous Waste*, for hazardous wastes, DOE Manual 435.1-1 Chg 3 (LtdChg), *Radioactive Waste Management Manual*, for radioactive wastes, and/or 40 *CFR* § 761.65, *Storage for disposal*, for wastes containing polychlorinated biphenyls (PCBs)]. Long-term storage of hazardous waste is done in accordance with the hazardous waste facility permit in a facility constructed with concrete secondary containment basins and structures to prevent rain from contacting waste. Long-term storage of other industrial wastes (e.g., radioactive, PCBs) is conducted in the same facilities to the extent practical.

4.8.1 Release Prevention and Control

One of the first steps in preventing groundwater contamination is release prevention. To this end, DOE operates under DOE O 435.1 Chg 2 (AdminChg), *Radioactive Waste Management*, and DOE O 458.1 Chg 4 (LtdChg), *Radiation Protection of the Public and the Environment*, which direct the acceptable conditions for treatment, storage, and disposal of DOE-generated waste. In addition, each project task is required to have a Waste Management Plan, which specifically relates to the expected waste stream, the quantities of waste generated, and also includes, but is not limited to, information on required container inspection, diking, repackaging of waste, and transferring of liquid wastes.

The Environmental Radiation Protection Program (ERPP) is designed to meet the requirements in DOE O 458.1 Chg 4 (LtdChg), *Radiation Protection of the Public and the Environment.* The purpose of the order is to minimize radiation exposure to the public, control the radiological clearance of property, ensure that any exposure to the public is as low as reasonably possible, monitor routine and nonroutine radiological releases, and to provide protection of the environment from effects of radiation. The ERPP provides an overview of the measures implemented by DOE and its contractors/subcontractors at the Paducah Site.

4.8.2 Release Control

Because the potential for release to the environment exists at all facilities that handle hazardous substances, DOE has developed and continues to update the SPCC Plan and the Hazardous Waste Permit Contingency Plan. In addition, all spills and/or releases are required to be reported per CP3-ES-0003, *Environmental Incident Reporting*. These documents stipulate the procedures to be followed and the equipment to be used in the event of a liquid release. They also maintain a record of these releases.

4.9 MATERIAL TRANSFERS

Loading of wastes and/or materials into containers is performed inside of structures to the extent practical. Any spills are promptly cleaned up. Containers are loaded in a manner to avoid/prevent damage to containers during loading/transfer.

CP2-WM-0025, *Four Rivers Nuclear Partnership, LLC Paducah Deactivation and Remediation Project Transportation Security Plan for the Transport of Hazardous Materials in Commerce*, has been prepared for waste to be shipped off-site from the D&R Contractor. Procedure DUF6-U-WMP-2001, *Shipping* (MCS 2024c), has been prepared for off-site shipments of U.S. Department of Transportation (DOT)-regulated hazardous material (HAZMAT), with the exception of HF. Procedure DUF6-C-WMP-2003, *HF Shipping*, has been prepared for off-site shipments of HF (MCS 2024d). These plans/procedures describe the process to ensure compliance with applicable DOT HAZMAT Regulations. A hazard classification is assigned to waste/material being shipped in accordance with 49 *CFR* § 172.101 and 49 *CFR* § 173.2a, *Classification of a material having more than one hazard*. Waste/material is containerized in accordance with 49 *CFR* § 172.101 and 49 *CFR* Part 173. Radiation levels are not allowed to exceed the threshold values provided in 49 *CFR* § 173.441, *Radiation level limitations and exclusive use provisions*, and 49 *CFR* § 173.443, *Contamination control*. Shipping papers are prepared for each shipment in accordance with 49 *CFR* § 172.200, *Applicability*, and/or 40 *CFR* Part 262, *Standards Applicable to Generators of Hazardous Waste*. Additional information/shipping papers are provided to comply with applicable requirements of the Nuclear Regulatory Commission, National Emission Standards for Hazardous Air Pollutants, and Toxic Substances Control Act. All marking, labeling, and placarding of waste materials and waste containers are completed in accordance with 40 *CFR* § 172.300, *Applicability*, 49 *CFR* § 172.400, *General labeling requirements*, and 49 *CFR* § 172.500, *Applicability of placarding requirements*, respectively. An emergency response plan is completed and provided for the carrier to use to comply with 49 *CFR* § 171.15, *Immediate notice of certain hazardous materials incidents*, 49 *CFR* § 171.16, *Detailed hazardous materials incident reports*, and 49 *CFR* § 390.15, *Assistance in investigations and special studies*.

4.10 TREATMENT

4.10.1 Groundwater

The Paducah Site currently operates two groundwater pump-and-treat systems. The Northwest Plume Pump-and-Treat System involves the use of an air stripper, ion exchange units, and a vapor-phase activated carbon exchange unit. The Northeast Plume Containment System uses air strippers. Additionally, projects have been started and/or completed to remediate source contamination at SWMU 1, SWMU 91, C-400, and the Southwest Plume.

4.10.1.1 Northwest Plume Pump-and-Treat System and Northeast Plume Containment System

The groundwater pump-and-treat systems were constructed and are operated in accordance with two separate CERCLA interim records of decision (IRODs) approved by EPA. These IRODs are the *Record of Decision for Interim Remedial Action of the Northwest Plume at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky* (DOE 1993), and the *Record of Decision for Interim Remedial Action at the Northeast Plume, Paducah Gaseous Diffusion Plant, Paducah, Kentucky* (DOE 1995). The purpose of these facilities is to retard further migration of the northwest and northeast groundwater contaminant plumes. Prior to the implementation of the IRODs, a water policy was implemented for residences located within the affected areas. This policy was established in an Administrative Consent Order between DOE and EPA, pursuant to Sections 104 and 106 of CERCLA.

Beginning in August 2010, the Northwest Plume Pump-and-Treat System switched from withdrawal from the original four extraction wells to withdrawal from two new extraction wells located at the north boundary of the industrial area of the Paducah Site (in the vicinity of the original south wellfield). The location of these extraction wells was optimized to capture the core and the lateral extent of the Northwest Plume in the area of the north plant boundary. DOE issued an *Explanation of Significant Differences to the Record*

of Decision for the Interim Remedial Action of the Northwest Plume at the Paducah Gaseous Diffusion Plant Paducah, Kentucky, for this action in December 2010 (DOE 2010).

In 2011, the FFA managers identified optimization of the Northeast Plume Containment System as a priority, consistent with the sitewide strategy that includes a series of sequenced activities consisting of source actions and control of off-site groundwater migration followed by a final action for the overall dissolved-phased plume. Subsequently, an explanation of significant differences was finalized in 2015, and a Remedial Action Work Plan was prepared (DOE 2016). Northeast Plume Optimization construction activities commenced in July 2016, and the optimized system was operational in October 2017. The optimized system consists of two new extraction wells moved closer to the known VOC source zones near the east Paducah Site security fence in the two centroids of the Northeast Plume. Two new modular air stripper treatment units were installed to treat extracted groundwater from the Northeast Plume.

4.10.1.2 SWMU 91 source remediation

In July 1998, DOE issued the CERCLA *Record of Decision for Remedial Action at Solid Waste Management Unit 91 of Waste Area Group 27 at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky* (DOE 1998). This ROD designated LASAGNA™ as the selected remedial alternative for reducing the concentration of TCE in SWMU 91 to levels that would decrease the potential groundwater risk to human health and the environment at the point of exposure. Installed on the south side of the C-745-B cylinder yard in 1999, the electroosmosis system was operated for two years and reduced the concentration of TCE in SWMU 91 soil from an average of 84 mg/kg to an average of less than 5.6 mg/kg. This was verified in sample results taken in the spring of 2002 and 2003. Additional information about the LASAGNA™ technology and its development can be found in the *Final Soil Characterization Work Plan for the Paducah Gaseous Diffusion Plant LASAGNA Pilot Test in the Cylinder Drop Test Area* (MMES 1994), and the *DNAPL Site Characterization and LASAGNA™ Technology Demonstration at Solid Waste Management Unit 91 of the Paducah Gaseous Diffusion Plant, Paducah, Kentucky* (MMES 1996).

4.10.1.3 C-400 source remediation

DOE issued the *Record of Decision for Interim Remedial Action for the Groundwater Operable Unit for the Volatile Organic Compound Contamination at the C-400 Cleaning Building at the Paducah Gaseous Diffusion Plant Paducah, Kentucky*, in August 2005 (DOE 2005). This interim remedial action included the design, installation, operation, and subsequent decommissioning of an electrical resistance heating (ERH) system to heat discrete intervals of the subsurface TCE source zone resulting in volatilization, removal, and recovery of VOCs from the southern end of the C-400 Cleaning Building. The system became operational in 2010.

The first phase of the ERH was completed in December 2010. Based on the evaluation and the lessons learned from Phase I, it was determined that the ERH base design was successful in reaching target temperatures in the subsurface and removing contaminants in the UCRS and upper RGA. The evaluation of Phase I also indicated that target temperatures were not achieved in the lower RGA, which resulted in the split of the Phase II interim remedial action for the southeast source areas into two separate actions: (1) UCRS and Upper RGA action (Phase IIa) and (2) Lower RGA action (Phase IIb) (DOE 2011a). The *Remedial Action Completion Report for the Interim Remedial Action for the Groundwater Operable Unit for the Volatile Organic Compound Contamination at the C-400 Cleaning Building at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*, (RACR) reported a 95.0% reduction in VOCs in the Phase I east treatment area soils and a 76.0% reduction in VOCs in groundwater within the boundaries of the Phase I east treatment area (DOE 2018). The RACR reported a 99.0% reduction in VOCs in the Phase I southwest treatment area soils and a 99.0% reduction in VOCs in groundwater within the boundaries of the Phase I southwest treatment area.

Construction of the Phase IIa ERH system was completed in April 2013; remedial ERH operations were initiated in July 2013; and ERH electrodes were turned off in October 2014 to allow the subsurface to cool down, after the FFA parties agreed that asymptosis had been achieved. The soil vapor groundwater treatment system continued to operate through November 2014, at which time operations were ceased, and the remedial action portion of Phase IIa was considered complete. The RACR reported a 99.8% reduction in VOCs in the Phase IIa treatment area soils and a 99.3% reduction in VOCs in groundwater within the boundaries of the Phase IIa treatment area.

The FFA parties signed the *Memorandum of Agreement on the C-400 Complex under the Federal Facility Agreement for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*, in August 2017 (DOE 2017a). The memorandum accelerates the investigation and cleanup of the C-400 Cleaning Building area for all sources of contamination associated with and underlying the C-400 Cleaning Building and integrating the Phase IIb source area into the final action for the C-400 Complex OU.

The remedial investigation of the C-400 Complex was completed in 2021 with the report issued in 2023. A follow-on investigation of the area north of the C-400 Complex is scheduled for the fourth quarter of 2024.

4.10.1.4 Southwest Plume source remediation

DOE conducted a site investigation of the Southwest Plume and four potential source areas in 2004, *Site Investigation Report for the Southwest Groundwater Plume at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky* (DOE 2007). As a result, a focused feasibility study for the Southwest Groundwater Plume VOC Sources (i.e., oil landfarm and C-720 northeast and southeast sites) was conducted (DOE 2011b). Sources to the Southwest Plume included in this action were the SWMU 1 Oil Landfarm, SWMU 211-A C-720 Building TCE Northeast Spill Site, and the SWMU 211-B C-720 Building Southeast Spill Site.

DOE completed a ROD for these Southwest Plume sources in March 2012 (DOE 2012). The ROD for these SWMUs implements deep soil mixing to treat the VOC source zone at SWMU 1. Deep soil mixing at SWMU 1 commenced in March 2015 and concluded in April 2016. The *Remedial Action Completion Report for In Situ Source Treatment by Deep Soil Mixing of the Southwest Groundwater Plume Volatile Organic Source at the C-747-C Oil Landfarm (Solid Waste Management Unit 1), at Paducah Gaseous Diffusion Plant, Paducah, Kentucky* (SWMU 1 RACR), reported a 99.0% reduction in VOCs in the treatment area soils (DOE 2017b). The SWMU 1 RACR was approved by EPA and Kentucky in February 2017. The Final Characterization Report Addendum and Letter Notification proposing remedy for 211-A and 211-B were evaluated by the FFA parties. The FFA parties agreed to move forward with 211-A and will determine an appropriate remedial action for 211-B, based on a revised conceptual site model consistent with the data in the Final Characterization Report.

Field implementation for enhanced *in situ* bioremediation at 211-A was completed in October 2022. Maintenance and monitoring of the remedial action continues.

4.10.2 Decontamination, Well Development, and Well Purge Wastewater

C-752-C is a large concrete containment pad covered by a roof. This facility is used to decontaminate equipment and to treat wastewaters to remove suspended solids in accordance with the KPDES Permit. This treatment usually serves as pretreatment for water that is further treated in the C-612 facility.

4.10.3 C-746-S and C-746-U Landfill Leachate

The C-746-U-15 leachate treatment system has a large concrete secondary containment pad covered by a permanent structure. Wet wells in this facility are designed to automatically pump any releases back into the influent tank. This facility treats C-746-S Landfill and C-746-U Landfill leachate using treatment media prior to discharge in accordance with the solid waste landfill permit. The leachate discharge is regulated under the KPDES Permit.

4.10.4 Miscellaneous Wastewater

The C-752-A permitted hazardous waste treatment facility has a large concrete secondary containment pad covered by a permanent structure. This facility also is used to treat miscellaneous wastewaters generated at the Paducah Site such as decontamination solutions, contamination storm waters, leachate from C-404 or C-746-U, etc., in accordance with the KPDES Permit. Treatment in this facility includes chemical precipitation, photocatalytic reaction, particulate filtration, and/or carbon filtration. The treated wastewaters are appropriately disposed of by discharge, in accordance with the KPDES Permit, or off-site disposal.

4.10.5 Noncontact Cooling Water

The DUF_6 Conversion Facility cooling tower blowdown contains a biocide and deposit control agent and is discharged through the effluent treatment system in accordance with the KPDES Permit.

4.10.6 C-613 Storm Water Control Basin

C-613 collects storm water from the northwest part of the Paducah Site limited area. This facility originally was constructed to contain contaminated runoff from the scrap metal yards under CERCLA. The basin is lined to minimize migration of contaminants to groundwater. The basin is approved under the KPDES Permit (i.e., KY0004049) to treat wastewater with high levels of suspended contaminants prior to discharge through Outfall 001.

4.10.7 Use of Surface Impoundments, Lagoons, Ditches in CERCLA Projects

Many of the remediation projects require the holding/collecting of storm waters to prevent/minimize contaminated runoff. Specific control measures and technologies are addressed in the project specific CERCLA work plan.

5. IMPLEMENTATION SCHEDULE

The controls and measures described in this plan have been established in accordance with regulatory requirements and, as a result, already have been implemented.

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6. EMPLOYEE TRAINING

DOE ensures that contractor personnel are trained and qualified for their functional positions. Each contractor employee has an individualized training position description (TPD). Each contractor employee is required to complete his/her assigned training prior to implementing any work associated with their respective TPD. This training complies with state and federal regulations, DOE orders, contractor policies and procedures, Paducah Site, site-specific requirements, and ISMS/EMS as applicable. This training ensures that all employees implement proper practices for protection of the environment, including groundwater protection. Applicable training courses include the following:

- **General Employee Training (GET):** This training session covers general topics for performing work at a DOE facility, including the Quality Assurance Program, classification security, the Industrial Hygiene Program, emergency preparedness, fire protection, Radiological Program, criticality safety, and hazard communication. Training includes elements on storage and use of HAZMAT. Many of these topics incorporate the requirements for groundwater protection measures required for work conducted at the Paducah Site. Personnel who require access to the Paducah Site, except escorted visitors, must complete this course. Testing is required to complete the course and it must be renewed every two years. GET consists of Web-based training.

- **Consolidated Annual Training (CAT):** This training session covers general topics for performing work at a DOE facility, including the ISMS/EMS, Quality Assurance Program, SPCC Plan, use of fire extinguishers, and waste minimization/management. These are key components for the overall EM activities conducted at the Paducah Site in support of groundwater and other environmental protection programs. Testing is required to complete the course, and it must be renewed every year. CAT consists of Web-based training.

- **Radiological Worker Training I and II:** Radiological Worker Training is required for all unescorted personnel who work in, or require access to, radiological areas. Radiological areas, as defined by the site Radiological Control Program procedures, include contamination areas, high contamination areas, radiation areas, high radiation areas, very high radiation areas, airborne radioactivity areas, radioactive material areas, fixed contamination areas, underground radioactive material areas, and radiological buffer areas. Training focuses on preventing the spread of contaminants, which minimizes the potential for contaminant discharge to groundwater. This training is designed to be accomplished in approximately 16 hours; however, the core material may be reviewed as self-study followed by a Web-based examination. This training must be recertified every two years.

- **Waste Generator Training:** Specific training in accordance with the TPD is required for personnel who generate, package, and handle RCRA-hazardous waste, including personnel who work in areas that generate hazardous waste and who manage satellite or 90-day accumulation areas. This training gives instruction on the proper identification, management, and temporary storage of wastes generated during the performance of hazardous waste activities at the Paducah Site. Proper waste management minimizes the risk of a release of contaminants to groundwater at the Paducah Site.

- **Hazard Communication Training:** Hazard Communication Training is required for personnel who use or might come in contact with HAZMAT defined under the Occupational Safety and Health Act. The course covers appropriate identification, storage, use, and labeling. This is a one-time course with refresher training required annually, with additional requirements for supervisory personnel. Proper HAZMAT management minimizes the risk of a release of HAZMAT to groundwater at the Paducah Site.

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7. INSPECTION SCHEDULE

Inspections of each system for control of groundwater pollution are unique to each type of activity. Inspection forms are driven by the SPCC Plan; the Hazardous Waste Facility Permit; and the Solid Waste Permit. Pursuant to each of those requirements, the checklists include the date, name of operator and supervisor, what the inspection pertains to, observations, and any actions taken. Example inspection forms for tanks, containers, and equipment are shown on the following pages.

CP3-EP-1004-F11 C-410-L Monthly Mobile Emergency Equipment Inspection

Month:_____ Year:_____

SUPPLIES	MINIMUM REQUIRED	MINIMUM AVAILABLE	
		YES	NO
Sandbags	50 each		
Absorbent Media	50 bags, 40 lbs. each, or equivalent		
Absorbent Rolls	2 rolls, approximately 38" X 100 ft. each, or equivalent		
Absorbent Pillows	24 each, approximately 15" x 15"		
Absorbent Pads	200 each, approximately 16" x 20"		
Oil Booms – 8" by 10'	20 each		
Oil Booms – 5" by 10'	12 each		
Face Shields	8 each		
Splash Suits	4 each		
Tyvek Coveralls	20 each		
Gloves	20 pair		
Booties	20 pair		
EQUIPMENT	**MINIMUM REQUIRED (IN WORKING CONDITION)**	**MINIMUM AVAILABLE**	
		YES	**NO**
Oil Skimmer	1		
2" Pump	1		
4" Pump	1		

Comments:_____

_____

_____

_____

_____

_____

_____

_____

Inspected by:_____Badge Number:_____Date: _____

Supervisor Review:_____Badge Number:_____Date: _____

CP3-ES-1035-F01 – Environmental Checklist

PADUCAH GASEOUS DIFFUSION PLANT

DIRECTIONS: Responsible Managers, Project Environmental Lead, and Environmental Compliance personnel complete this form by following the instructions in CP3-ES-1035, Section 6.0, Instructions.

SECTION A. **Descriptive Information:** Provide additional project or contact information on Environmental Checklist Attachments, Supplemental Information for Section A.

Charge Number: _____

Project Title: _____

Performing Organization: _____ Date: _____

Contact	Name	Telephone No.	E-mail Address
Facility Operations/Facility Manager:			
Program/Project Manager:			
Project/Technical Contact:			
Alternative Project/Technical Contact:			
Project Environmental Contact:			

SECTION B. **Project Description:** Provide a brief and accurate description of the project or activity on Environmental Checklist Attachments, Supplemental Information for Section B. Select all of the applicable work activities listed in Section G.

SECTION C. **Significant Environmental Aspects / Potential Sources of Impact:** Check the appropriate box and provide explanation for any aspect checked 'Yes' on Environmental Checklist Attachments, Supplemental Information for Section C.

Source	Yes	No	Source	Yes	No
1. Air Pollutants/Greenhouse Gases/Vapor Intrusion (New Structure)	☐	☐	11. Interaction with Wildlife/Habitat/Wetlands/Floodplains	☐	☐
2. Asbestos Emissions	☐	☐	12. PCB Contamination	☐	☐
3. Radionuclide Release/Protection of the Public and the Environment	☐	☐	13. Radioactive Materials Use and Storage	☐	☐
4. Chemical Use and Storage	☐	☐	14. Storage of Regulated, Hazardous, RAD Materials or Waste in Tanks/Containers	☐	☐
5. Contaminated Sites Disturbance (SWMU)	☐	☐	15. Use, Reuse, and Recycling of Resources (Consumables/Paper)	☐	☐
6. Cultural/Historical Resource Disturbance	☐	☐	16. Sustainability (Energy, Water, Petroleum)	☐	☐
7. Discharge to Wastewater Systems or Groundwater	☐	☐	17. Storm Water Affects from Equipment, Runoff, or Spills	☐	☐
8. Drinking Water Contamination	☐	☐	18. Managing Surplus Property and Materials	☐	☐
9. Waste Generation and Management [Regulated, Hazardous, Radiological (RAD), Solid]	☐	☐	19. Structural Fires, Wild Fires, Open Burning, Hotwork	☐	☐
10. Material or Waste Packaging and Transportation	☐	☐	20. Other:	☐	☐

SECTION D. **Work Activities and Environmental Checklist Submittal Determination:** Determine whether to submit the CP3-ES-1035-F01 to Regulatory Compliance for review and approval and check one of the following:

☐ Required to submit the CP3-ES-1035-F01 to Regulatory Compliance.

☐ Not required to submit CP3-ES-1035-F01.

SECTION E. **Conditions:** (If Yes, see attachment for instructions.) Are conditions required before starting project? If yes, provide a description of the condition on Environmental Checklist Attachments, Supplemental Information for Section E.

Yes ☐ No ☐

SECTION F. **Determine the Level of Environmental Review (or Documentation) and Reference(s):** such as categorical exclusion number (CX), Environmental Assessment (EA) or Environmental Impact Statement (EIS) Document Number, CERCLA Record of Decision, or Environmental Checklist Number. Provide justification for selecting the level of review on Environmental Checklist Attachments, Supplemental Information for Section F.

☐ CX ☐ EA ☐ EIS ☐CERCLA ☐Previously Approved NEPA Document ☐ Cultural Resource Management Plan Exclusion

Reference(s):

Note: For projects checked above as "CX" (Categorical Exclusion) the proposed action must not: 1) threaten a violation of applicable statutory, regulatory, or permit requirements for environmental, safety, and health, including requirements of DOE orders; 2) require siting and construction or major expansion of waste storage, disposal, recovery, or treatment facilities; 3) disturb hazardous substances, pollutants, contaminants, or CERCLA-excluded petroleum and natural gas products that pre-exist in the environment such that there would be uncontrolled or unpermitted releases; 4) adversely affect environmentally sensitive resources. In addition, no extraordinary circumstances related to the proposal exist which would affect the significance of the action, and the action is not "connected" or "related" (40 CFR 1508.25(a)(1) and (2), respectively) to other actions with potentially or cumulatively significant impacts. Note: The above paragraph does not apply to EA, EIS, or CERCLA related activities.

SIGNATURE BLOCK. Signature indicates that this form is accurate and complete

Print/Type Name	Signature	Date

Section G – Work Activities					
☐	Constructing or modifying stationary air emission sources	☐	Modifying drinking water systems	☐	Cleaning up spills and releases (non PCB)
☐	Constructing or modifying tanks	☐	Operating facilities, equipment, or processes	☐	Cleaning up spills and releases of PCBs
☐	Decontaminating equipment contaminated with PCBs, radionuclides, hazardous substances	☐	Performing activities that may break up, dislodge, or block access to regulated asbestos-containing material	☐	Excavation of soil and sediment not in a solid waste management unit (SWMU)
☐	Discontinuing use of, closing, relocating, and/or removing tanks	☐	Preparing buildings or facilities for transfer to surplus, or placed into standby (inactive) status	☐	Excavation of soil and sediment in SWMU
☐	Maintaining equipment contaminated with PCBs, radionuclides, hazardous substances	☐	Removing asbestos-containing material	☐	General earth-moving activities
☐	Maintaining, servicing, or repairing HVAC equipment	☐	Transfer R114 to ISO or rail	☐	Impacts/alters stream channels
☐	Maintaining, servicing, or repairing motor vehicle air conditioners	☐	Tours and inspections	☐	Mowing, weed eating, and/or brush removal
☐	Operating and repairing tanks (petroleum,volatile organic compound, hazardous materials, etc.)	☐	Environmental remediation	☐	Performing activities with the potential for fugitive dust or fugitive emissions
☐	Operating stationary facilities and equipment that emit air pollutants	☐	Operation of groundwater treatment facilities	☐	Releases, leaks, spills or unusual operating conditions from tanks
☐	Operating stationary facilities and equipment that emit radionuclides	☐	Closing and/or abandoning groundwater wells	☐	Working in SWMUs, areas of contamination, or Radiological Contamination Areas
☐	Operating portable or mobile equipment that store petroleum	☐	Collecting samples for analysis	☐	Cylinder transfer
☐	Operation of mobile emergency generators and/or pumps	☐	Conducting open burning	☐	Transfer UF6 cylinder contents to new cylinders
☐	Relocating portable air emissions sources or bringing portable or stationary air emissions sources onto the site	☐	Constructing or modifying groundwater wells	☐	Characterization of potentially asbestos containing material
☐	Starting up, shutting down, or performing scheduled maintenance on stationary air emissions sources	☐	Packaging and temporarily storing samples collected to obtain environmental data	☐	Constructing or modifying wastewater systems
☐	Use of heavy equipment (fork trucks, cranes, loaders, trucks, etc.)	☐	Procuring goods and services	☐	Discharging wastewaters
☐	Maintenance of heavy equipment	☐	Pumping Ohio River water to C-611	☐	Disposing of samples
☐	Vehicle and cart operations	☐	Purchasing chemical products/chemicals/hazardous agents	☐	Dispositioning excess materials
☐	Constructing or modifying facilities that store petroleum	☐	Purchasing diesel fuel or natural gas	☐	Distributing, excessing, or disposing of appliances containing refrigerants
☐	Constructing or modifying facilities, equipment, or processes	☐	Purchasing refrigerants, appliances containing refrigerants, system components that operate using refrigerants, or refrigerant recovery or recycling equipment	☐	Planning to generate or generating waste
☐	Constructing or modifying facilities, equipment, or processes at permitted or interim status RCRA facilities	☐	Purging, pumping and/or maintaining groundwater wells	☐	Land disposal of Solid Wastes— operating C-746-U Landfill
☐	Deactivating, decontaminating, dismantling, or closing facilities (including trailers), equipment, and processes	☐	Storing and maintaining samples	☐	Monitoring wastewaters discharges
☐	Demolition removal of inactive facilities	☐	Transferring gas cylinder contents to new cylinders	☐	Operating solid waste management facilities and accumulation areas
☐	Discontinuing use of or closing facilities, equipment, or processes	☐	Transferring samples to a laboratory	☐	Operation of wastewater and groundwater treatment plants
☐	Emergency response to spills, fires, and/or explosions	☐	Treating water for drinking	☐	Storage/disposal of asbestos containing materials
☐	Maintaining and repairing facilities, processes, and equipment. Making modifications to facilities as part of routine maintenance	☐	Using, storing and dispositioning chemical products/hazardous agents	☐	Transportation/shipment of wastes for treatment/disposal
☐	Metal cutting or welding	☐	Warehouse/shipping and receiving	☐	Waste storage, management, disposal

Supplemental Information for Section A, Project Description Information: Provide any additional contact information.

Supplemental Information for Section B, Project Description: Provide a brief and accurate description of the project/action, including the type of action (e.g., new activity or facility, construction, process or facility modification, maintenance); description of activities; work phases; location of work activity (e.g., facility, building, room, laboratory, emission points); purpose and need (what is the activity and why is it being performed); and projected start and end dates.

Supplemental Information for Section C, Significant Environmental Aspects: For each item checked 'Yes', provide specific information such as types and amounts of chemicals, waste, effluent, or emissions; size of modification or soil disturbance; type of tank, equipment, or process; and pollution prevention measures. Refer to CP2-ES-0101, "*Environmental Management System for the Deactivation and Remediation Project, Paducah Gaseous Diffusion Plant, Paducah, Kentucky*," Appendix B to determine if the environmental aspect is applicable to the proposed activity.

Supplemental Information for Section D, Work Activities: Identify appropriate environmental instructions to be given to the project team based on the applicable work activities identified on page 2 of this form. Include any facility or project-specific environmental instructions not found in page 2 of this form.

Supplemental Information for Section E, Conditions: Identify any conditions (such as permits modifications or notifications) required before the project can begin. Have the required permit modification or notifications been completed? YES ☐ NO ☐ NA ☐

Identify which documents listed below pertain to this project or change. Include the document number(s).

TSCA/ PCB ☐	**SWMU Notification** ☐	**Asbestos Removal Notification** ☐	**Drawing Change*** ☐	**Site Management Plan** ☐	**Water Withdrawal Permit** ☐
HWMFP/RCRA Permit ☐	**KPDES Permit** ☐	**Air Permit** ☐	**Landfill Permit** ☐	**Drinking Water Permit** ☐	**Other** ☐

*For a drawing to be affected, it must be listed in an applicable permit or environmental document.

Supplemental Information for Section F, Level of Environmental Review (or Documentation) and Reference(s): Provide justification and reference for level of environmental review.

CP3-WM-0023-F02 - C-733 RCRA General Inspection Form
Month/Year _____

DAY/TIME		A	B	C	D	E	F	G	H	I	J	K	L	M	NAME	SIGNATURE
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Status: A=Acceptable U=Unacceptable

Management Review Date:_____ Initials_____

NOTES: (1) The original forms will be kept on file by the Waste Management Department.
(2) If any item is found to be unacceptable, the inspector must identify the specific observation and nature of the problem on the following page.

CP3-WM-0023-F02 - C-733 RCRA General Inspection Form

Month/Year _____

DAY/TIME		A	B	C	D	E	F	G	H	I	J	K	L	M	NAME	SIGNATURE
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Status: A=Acceptable U=Unacceptable

Management Review Date:_____ Initials_____

NOTES: (1) The original forms will be kept on file by the Waste Management Department.
(2) If any item is found to be unacceptable, the inspector must identify the specific observation and nature of the problem on the following page.

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CP2-ES-1000/FR1

CP3-WM-0023-F02 - C-733 RCRA General Inspection Form

Month/Year

Item (A-M)	DATE	OBSERVATION	ACTION	DATE COMPLETED	DATE VERIFIED

NOTE: If the verification is made by someone other than the inspector, that person should sign the observation as corrected on the day the required corrective action (repairs, repackaging, etc.) is verified complete. Verification can be visible inspection or receipt of documentation, such as closed work orders or ESOs.

Letter Block	Inspection Item	Frequency
A	Aisle Spacing	Weekly
B	Container Stacking	Weekly
C	Container Condition	Weekly
D	Container Sealing	Weekly
E	Labels	Weekly
F	Containment/Facility Condition	Weekly
G	Unacceptable/Unpermitted Waste	Weekly
H	Safety and Emergency Equipment	Weekly
I	General Appearance/Unacceptable Material	Weekly
J	Spill Containment/Sump (including pump)	Daily/Weekly*
K	Cylinder Condition	Weekly
L	Security Devices	Weekly
M	Unloading Areas	When in use

NOTE: Operating day is defined as any 24-hour period (when in use).

POTENTIAL PROBLEMS ASSOCIATED WITH INSPECTION ITEM

Letter Block

A. Aisle space is less than adequate distance between rows of pallets.
B. Containers stacked more than two high or not on pallets; containers not correctly supported on pallets.
C. Corroded or rusted or leaking drums; containers leaking from expansion of contents; or containers swelling.
D. Containers not stored closed, without lids or bungs. Container gaskets not present in bungs or liquid drums.
E. Labels and markings identifying generator, contents, accumulation date, missing or illegible.
F. No severe cracks in floor/coating; floor/roofing/walls have no visible cracks or leaks.
G. No unacceptable/unpermitted wastes in facility.
H. Fire extinguishers in need of recharging or inspection more than two months past due; eye washes not present or working or in need of recharging; overpacks, absorbents, safety/spill response equipment cabinet not stocked per Contingency Plan requirements; radios or telephone inoperable. [Eyewash station solution not changed quarterly].
I. Housekeeping; trash present; presence of standing water; presence of equipment or materials not authorized to be in area.
J. Dike or sump damaged; sump pump inoperable and/or liquid present in sump.
K. Cylinder not secured in upright position; placed in wrong hazard class bay; cylinder leaking, presence of odors or noise, damaged.
L. Fence or gates damaged; facility boundary and warning signs missing, fading, not visible for distance of 25 feet and visible from all angles of approach.
M. Leaks/spills in loading and unloading areas.

CP3-WM-0023-F02 - C-733 RCRA General Inspection Form

I. Operational Equipment

a. Containers

II. Spill Containers

a. Dike
b. Sump (including sump pump)
c. Floor

III. Safety and Emergency Equipment

a. Fire extinguishers
b. Emergency equipment cabinet
c. Absorbent material
d. Cleanup equipment (Shovels/brooms)
e. Overpacks
f. Radio

IV. Security Equipment

a. Fence
b. Gates
c. Signs

NOTE: Fire alarms are tested by the FRNP Fire Department.

CP3-WM-0023-F02 - C-733 RCRA General Inspection Form

RCRA Storage and Treatment Facilities
Emergency Response and Spill Control Equipment
Weekly Inventory/Inspection Checklist

Area: C-733		**Month:**						**Year:**			
		WEEK 1		**WEEK 2**		**WEEK 3**		**WEEK 4**		**WEEK 5**	
EQUIPMENT	**AMOUNT**	**YES**	**NO**	**YES**	**NO**	**YES**	**NO**	**YES**	**NO**	**YES**	**NO**
Absorbent (loose)	50 lbs										
Tyvek Coveralls	4 each										
Gloves	8 pair										
Booties	4 pair										
Overpack Drums	4										
Brooms	2										
Shovels	2										
Sprinkler Systems (C-733, C-752A, C-746-A)	FRNP does not test/inspect										
Fire Extinguishers	2										
Eyewashes	Min. 1 each										
Radios	Testing not documented										
Spill Storage Tanks	S-21 at C-752-A										

	WEEK 1	**WEEK 2**	**WEEK 3**	**WEEK 4**	**WEEK 5**
All shortages replaced at time of inspection?	**Yes:** _____ **No:** _____	**Yes:** _____ **No:** _____	**Yes:** _____ **No:** _____	**Yes:** _____ **No:** _____	**Yes:** _____ **No:** _____
Actions taken to correct Shortages?					

	WEEK 1	**WEEK 2**	**WEEK 3**	**WEEK 4**	**WEEK 5**
Signature					
Date					
Time					

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8. CERTIFICATION STATEMENT

DOCUMENTATION IDENTIFICATION: *Groundwater Protection Plan for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky,* CP2-ES-1000/FR1

I, Myrna E. Redfield, Four Rivers Nuclear Partnership, LLC, Program Manager, certify that this Groundwater Protection Plan complies with the requirements of 401 *KAR* 5:037. I have read the terms of the plan and will implement its provisions.

Signature/Date: _____

Myrna E. Redfield, Program Manager
Four Rivers Nuclear Partnership, LLC

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9. REVIEW LOCATION FOR GROUNDWATER PROTECTION PLAN

Public inspection of GPPs is a provision of 401 *KAR* 5:037 § 3(7), *Public inspection of groundwater protection plans*. This plan is made available for access at the following website: https://pubdocs.pad.pppo.gov/. Hard copies may be requested through the Paducah Environmental Information Center at the address listed below.

5100 Alben Barkley Drive
Emerging Technology Center, Room 221,
Paducah, Kentucky 42001
Phone: (270) 554-3004
Hours: Monday through Friday from 8 a.m. to 12 p.m.

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10. REFERENCES

Clausen, J. L. et al.,1992. *Report of the Paducah Gaseous Diffusion Plant Groundwater Investigation Phase III*, KY/E-150, Paducah, KY, November.

DOE (U.S. Department of Energy) 1993. *Record of Decision for Interim Remedial Action of the Northwest Plume at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*, DOE/OR/06-1143&D4, U.S. Department of Energy, Paducah, KY, July.

DOE 1995. *Record of Decision for Interim Remedial Action at the Northeast Plume, Paducah Gaseous Diffusion Plant, Paducah, Kentucky*, DOE/OR/06-1356&D2, U.S. Department of Energy, Paducah, KY, June.

DOE 1998. *Record of Decision for Remedial Action at Solid Waste Management Unit 91 of Waste Area Group 27 at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*, DOE/OR/06-1527&D2, U.S. Department of Energy, Paducah, KY, July.

DOE 2005. *Record of Decision for Interim Remedial Action for the Groundwater Operable Unit for the Volatile Organic Compound Contamination at the C-400 Cleaning Building at the Paducah Gaseous Diffusion Plant Paducah Kentucky*, DOE/OR/07-2150&D2/R2, U.S. Department of Energy, Paducah, KY, July.

DOE 2007. *Site Investigation Report for the Southwest Groundwater Plume at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*, DOE/OR/07-2180&D2/R1, U.S. Department of Energy, Paducah, KY, June.

DOE 2010. *Explanation of Significant Differences to the Record of Decision for the Interim Remedial Action of the Northwest Plume at the Paducah Gaseous Diffusion Plant Paducah, Kentucky*, DOE/LX/07-0343&D2, U.S. Department of Energy, Paducah, KY, December.

DOE 2011a. *Technical Performance Evaluation for Phase I of the C-400 Interim Remedial Action at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*, DOE/LX/07-1260&D1, U.S. Department of Energy, Paducah, KY, August.

DOE 2011b. *Revised Focused Feasibility Study for Solid Waste Management Units 1, 211A, and 211B Volatile Organic Compound Sources for the Southwest Groundwater Plume at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*, DOE/LX/07-0362&D2, U.S. Department of Energy, Paducah, KY, May.

DOE 2012. *Record of Decision for Solid Waste Management Units 1, 211-A, 211-B, and Part of 102 Volatile Organic Compound Sources for the Southwest Groundwater Plume at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*, DOE/LX/07-0365&D2/R1, U.S. Department of Energy, Paducah, KY, March.

DOE 2016. *Remedial Action Work Plan for Optimization of the Northeast Plume Interim Remedial Action at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*, DOE/LX/07-1280&D2/R3, U.S. Department of Energy, Paducah, KY, April.

DOE 2017a. *Memorandum of Agreement on the C-400 Complex under the Federal Facility Agreement for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*, U.S. Department of Energy, Paducah, KY, August.

DOE 2017b. *Remedial Action Completion Report for In Situ Source Treatment by Deep Soil Mixing of the Southwest Groundwater Plume Volatile Organic Source at the C-747-C Oil Landfarm (Solid Waste Management Unit 1), at Paducah Gaseous Diffusion Plant, Paducah, Kentucky*, DOE/LX/07-2405&D2, U.S. Department of Energy, Paducah, KY, January.

DOE 2018. *Remedial Action Completion Report for the Interim Remedial Action for the Groundwater Operable Unit for the Volatile Organic Compound Contamination at the C-400 Cleaning Building at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*, DOE/LX/07-2417&D2, U.S. Department of Energy, Paducah, KY, June.

DOE 2023. *Site Management Plan, Paducah Gaseous Diffusion Plant, Paducah, Kentucky, Annual Revision—FY 2024*, DOE/LX/07-2495&D1, U.S. Department of Energy, Paducah, KY, November.

FRNP (Four Rivers Nuclear Partnership, LLC) 2023a. *Spill Prevention, Control, and Countermeasure Plan for the U.S. Department of Energy Paducah Gaseous Diffusion Plant, McCracken County, Kentucky*, CP2-RA-0016/FR1, Four Rivers Nuclear Partnership, LLC, Paducah, KY, November.

FRNP 2023b. *Environmental Monitoring Plan Fiscal Year 2024 Paducah Gaseous Diffusion Plant, Paducah, Kentucky*, CP2-ES-0006/FR10, Four Rivers Nuclear Partnership, LLC, Paducah, KY, November.

FRNP 2023c. *Best Management Practices Plan, Paducah Gaseous Diffusion Plant, Paducah, Kentucky*, CP2-ES-0500/FR1, Four Rivers Nuclear Partnership, LLC, Paducah, KY, June.

Frye, J. C. et al. 1972. *Geology and Paleontology of Late Pleistocene Lake Saline, Southeastern Illinois*, Circular 471, Illinois State Geological Survey, Urbana, IL, June.

KDEP (Kentucky Department for Environmental Protection) 2018. *Preparing a Groundwater Protection Plan*, Kentucky Department for Environmental Protection, Frankfort, KY, (accessed June 17, 2024), https://eec.ky.gov/Environmental-Protection/Water/GW/GPPDocs/GPPGuide.pdf.

MCS (Mid-America Conversion Services, LLC) 2024a. *Paducah Storm Water Pollution Prevention and Best Management*, DUF6-PLN-079, Revision 4, Mid-America Conversion Services, LLC, Paducah, KY, July.

MCS 2024b. *Paducah Groundwater Protection Plan*, DUF6-PLN-117, Revision 2, Mid-America Conversion Services, LLC, Paducah, KY, July.

MCS 2024c. *Shipping*, DUF6-U-WMP-2001, Revision 9, Mid-America Conversion Services, LLC, Paducah, KY, July

MCS 2024d. *HF Shipping*, DUF6-C-WMP-2003, Revision 2, Mid-America Conversion Services, LLC, Paducah, KY, February.

MMES (Martin Marietta Energy Systems, Inc.) 1994. *Final Soil Characterization Work Plan for the Paducah Gaseous Diffusion Plant LASAGNA Pilot Test in the Cylinder Drop Test Area,* KY/ER-57, Martin Marietta Energy Systems, Inc., Paducah, KY, May.

MMES 1996. *DNAPL Site Characterization and LASAGNA™ Technology Demonstration at Solid Waste Management Unit 91 of the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*, KY/EM-128, Martin Marietta Energy Systems, Inc., Paducah, KY, March.

USDA (U.S. Department of Agriculture) 1976. *Soil Survey of Ballard and McCracken Counties, Kentucky*. U.S. Department of Agriculture Soil Conservation Service in cooperation with the Kentucky Agricultural Experiment Station, Washington, DC, February.

USGS (United States Geological Survey) 1967. *Geologic Map of Part of the Joppa Quadrangle McCracken County, Kentucky*, GQ-652, U.S. Department of the Interior, U.S. Geological Survey, Washington, DC.

USGS 1980. *Geologic Maps of the Jackson Purchase Region, Kentucky*, Miscellaneous Investigations Series, MAP I-1217, U.S. Department of the Interior, U.S. Geological Survey.

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APPENDIX A

DOE PADUCAH SITE FIGURES AND TABLE

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FIGURES

TABLE

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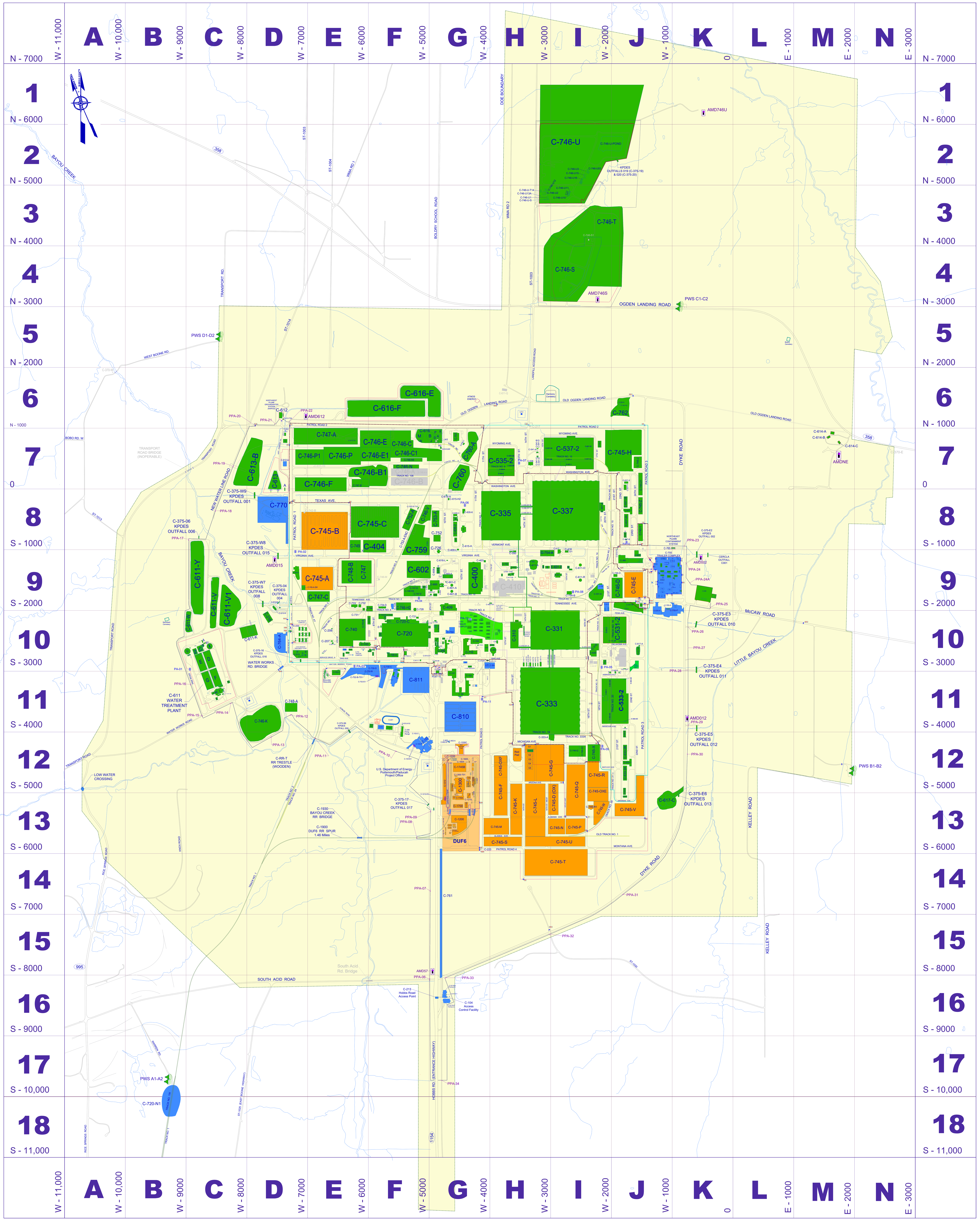
PADUCAH GASEOUS DIFFUSION PLANT SITE MAP



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C-337-A	FEED VAPORIZATION FACILITY	I-8
C-350	DRYING AGENT STORAGE BUILDING	H-9
C-350-A	EMERGENCY SHOWER	H-9
C-360	TOLL TRANSFER AND SAMPLING BUILDING	J-9
C-360-A	TOLL TRANSFER AND SAMPLING BUILDING ANNEX	J-9
C-400	CLEANING BUILDING	G-9
C-400-L	STORM WATER LIFT STATION	G-8
C-400-T01	OFFICE TRAILER	G-9
C-403	NEUTRALIZING PIT	G-9
C-404	LOW-LEVEL RADIOACTIVE WASTE BURIAL AREA	F-8
C-404-A	SUMP	F-8
C-409	STABILIZATION BUILDING	G-9
C-409 Annex	LARGE ITEM NEUTRON ASSAY SYSTEM (LINAS)	G-10
C-410-D	FLUORINE STORAGE BUILDING	H-9
C-410-K	FLUORINE FACILITY BUILDING	H-9
C-410-L	QUONSET HUT	H-9
C-411-A	STAGING AREA	H-9
C-411-T01	EQUIPMENT STORAGE (CARPORT)	H-9
C-412	TRAILER COMPLEX	G-10
C-412-A	ABOVE GROUND STORM SHELTER	G-10
C-412-B	ABOVE GROUND STORM SHELTER	G-10
C-412-C	ABOVE GROUND STORM SHELTER	H-10
C-412-D	ABOVE GROUND STORM SHELTER	H-10
C-412-R	SEALAND STORAGE CONTAINER	H-10
C-412-S	SEALAND STORAGE CONTAINER	H-10
C-412-T01	OFFICE TRAILER	G-10
C-412-T02	OFFICE TRAILER	G-10
C-412-T03	OFFICE TRAILER	G-10
C-412-T04	OFFICE TRAILER	G-10
C-412-T05	OFFICE TRAILER	G-10
C-412-T07	SHOWER AND CHANGE TRAILER	G-10
C-412-T08	OFFICE TRAILER	G-10
C-412-T09	OFFICE TRAILER	G-10
C-412-T11A	SHOWER TRAILER	G-10
C-412-T12	SHOWER AND CHANGE TRAILER	G-10
C-412-T13	OFFICE TRAILER	G-10
C-412-T14	OFFICE TRAILER	G-10
C-412-T15	OFFICE TRAILER	G-10
C-412-T16	BREAKROOM TRAILER	G-10
C-412-T17	BREAKROOM TRAILER	G-10
C-412-T19	STORAGE SHED	G-10
C-412-T20	SHOWER TRAILER	G-10
C-415	FEED PLANT STORAGE BUILDING	H-9
C-415-T01	SEALAND STORAGE CONTAINER	H-9
C-416	EQUIPMENT CLEANING PAD/STAGING AREA	I-9
C-416-T01	SEALAND STORAGE CONTAINER	I-9
C-417	EQUIPMENT CLEANING PAD /STAGING AREA	I-9
C-531-1	SWITCH HOUSE	J-10
C-531-2	SWITCHYARD	J-10
C-531-3A	FIRE VALVE HOUSE NO. 1	J-11
C-531-3B	FIRE VALVE HOUSE NO. 2	J-11
C-532	RELAY HOUSE	I-10
C-533-1	SWITCH HOUSE	J-11
C-533-2	SWITCHYARD	J-11
C-533-3A	FIRE VALVE HOUSE NO. 1	J-11
C-533-3B	FIRE VALVE HOUSE NO. 2	J-11
C-533-3C	FIRE VALVE HOUSE NO. 3	J-11
C-533-3D	FIRE VALVE HOUSE NO. 4	J-11
C-535-1	SWITCH HOUSE	H-7
C-535-2	SWITCHYARD	H-7
C-535-3A	FIRE VALVE HOUSE NO. 1	H-7
C-535-3B	FIRE VALVE HOUSE NO. 2	H-7
C-535-4	TEST SHOP (MAINTENANCE OFFICE)	H-7
C-536	RELAY HOUSE	H-7
C-537-1	SWITCH HOUSE	I-7
C-537-2	SWITCHYARD	I-7
C-537-3A	FIRE VALVE HOUSE NO. 1	H-7
C-537-3B	FIRE VALVE HOUSE NO. 2	H-7
C-537-3C	FIRE VALVE HOUSE NO. 3	I-7
C-537-3D	FIRE VALVE HOUSE NO. 4	I-7
C-537-4	TEST SHOP	I-7
C-538	TVA SUBSTATION	K-9
C-540-A	OIL PUMP HOUSE	J-10
C-540-B	OIL STORAGE TANK (NORTHWEST)	I-11
C-540-C	OIL STORAGE TANK (SOUTHWEST)	I-11
C-540-D	OIL STORAGE TANK (NORTHEAST)	J-11
C-540-E	OIL STORAGE TANK (SOUTHEAST)	J-11
C-541-A	OIL PUMP HOUSE	H-7
C-541-B	OIL STORAGE TANK (NORTHWEST)	H-7
C-541-C	OIL STORAGE TANK (SOUTHWEST)	H-7
C-541-D	OIL STORAGE TANK (NORTHEAST)	H-7
C-541-E	OIL STORAGE TANK (SOUTHEAST)	H-7
C-600	UTILITY PLANT	G-9
C-600-A	C-600 STEAM PKG BOILERS - PB-01 and PB-05	G-9
C-600-T01	EQUIPMENT STORAGE (CARPORT)	G-9
C-600-1	COOLING TOWER	G-9
C-601	NITROGEN GENERATOR BUILDING ADDITION	G-9
C-601-A	STEAM PLANT FUEL STORAGE TANK (CENTER)	G-9
C-601-B	STEAM PLANT FUEL STORAGE TANK (SOUTH)	G-9
C-601-C	STEAM PLANT FUEL OIL PUMP HOUSE	G-9
C-602	COAL STORAGE YARD	F-9
C-604	UTILITIES MAINTENANCE BUILDING	G-9
C-605	SUBSTATION BUILDING	G-9
C-606	COAL CRUSHER BUILDING	G-9
C-607	EMERGENCY AIR COMPRESSOR GENERATOR BUILDING	F-9
C-611-A	BUILDING AND SHOP STORAGE	C-10
C-611-A1	ACTIVATED CARBON STORAGE BUILDING	C-11
C-611-B	HEAD HOUSE	C-10
C-611-B1	POLYMER FEED SYSTEM ENCLOSURE	C-10
C-611-C	FLOCCULATOR BASIN	C-10
C-611-D	SETTLING BASIN (NORTHEAST)	C-10
C-611-E	SETTLING BASIN (NORTHWEST)	C-10
C-611-F	SETTLING BASIN (SOUTHEAST)	C-10
C-611-F1	SECONDARY COAGULATION BASIN	C-11
C-611-F2	CHEMICAL FEED BUILDING FOR C-611-F1	C-11
C-611-F3	ACTIVATED CARBON FEED FACILITY	C-11
C-611-G	SETTLING BASIN (SOUTHWEST)	C-11
C-611-H	FILTER BUILDING AND PUMP STATION	C-11
C-611-I	CLEAR WELL	C-11
C-611-J	PUMP HOUSE (SETTLED WATER)	C-11
C-611-K	LAGOON NO. 4	C-10
C-611-O	SANITARY WATER STORAGE TANK	I-9
C-611-P	PUMP HOUSE	G-9
C-611-R	HIGH PRESSURE FIRE WATER TANK	I-9
C-611-S	STORAGE AND CHLORINE FACILITY	C-11
C-611-T	BOOSTER PUMP STATION (PLANT WATER)	F-10
C-611-T02	EQUIPMENT STORAGE (CARPORT)	F-10
C-611-U	SOFTENING FACILITY (WEST)	C-10
C-611-V	SLUDGE LAGOON	C-9
C-611-V1	SLUDGE LAGOON	C-9
C-611-W	SLUDGE LAGOON	C-10
C-611-X	SOFTENING FACILITY (EAST)	C-10
C-611-Y	RECYCLE LAGOON	C-9
C-611-Z	FLOCCULATOR BASIN	C-10
C-612	NORTHWEST PLUME GROUNDWATER SYSTEM	D-6
C-612-A PAD	STORAGE PAD	D-7
C-612-B1	ABOVE GROUND STORM SHELTER	D-7
C-612-T04	WOODEN STORAGE BUILDING	D-7

FACILITY NUMBER	DESCRIPTION	LOCATION
C-612 -T05 - T08	SEALAND STORAGE CONTAINERS	D-7
C-612 -T09 - T12	SEALAND STORAGE CONTAINERS	D-7
C-613	SCRAP YARD SEDIMENTATION BASIN	D-7
C-613-A	SEDIMENTATION BASIN PROCESS TRAILER	D-7
C-613-B	SOIL BORROW STOCKPILE	D-7
C-613-01	BASIN PUMP STATION	D-8
C-613-02	BASIN PUMP STATION	D-8
C-614	NORTHEAST PLUME TREATMENT SYSTEM	M-7
C-614-A	NORTHEAST PLUME EQUIPMENT PAD	M-7
C-614-B	NORTHEAST PLUME EXTRACTION WELL AREA	M-7
C-614-C	NORTHEAST PLUME EXTRACTION WELL AREA	M-7
C-615	SEWAGE TREATMENT PLANT	D-10
C-615-A	PRIMARY SETTLING TANK /CATCH BASIN	D-10
C-615-B	FINAL SETTLING TANK /CATCH BASIN	D-10
C-615-C	SEWAGE PLANT MONITORING BUILDING	D-10
C-615-C1	SODIUM HYPOCHLORITE CONVERSION CHEMICAL STORAGE BUILDING	D-10
C-615-D	DIGESTER	D-10
C-615-E	TRICKLING FILTER	D-10
C-615-F	DRY BED FOR TRICKLING FILTER	D-10
C-615-G	SEWAGE LIFT STATION	G-10
C-615-H	SEWAGE LIFT STATION	G-8
C-615-H1	SEWAGE LIFT STATION	J-9
C-615-H2	SEWAGE LIFT STATION	G-8
C-615-H3	SEWAGE LIFT STATION	J-9
C-615-H5	SEWAGE LIFT STATION	J-9
C-615-H8	SEWAGE LIFT STATION	J-9
C-615-H10	SEWAGE LIFT STATION	F-11
C-615-H11	SEWAGE LIFT STATION	G-16
C-615-H12	SEWAGE LIFT STATION	H-10
C-615-L	OIL CONTROL MONITORING STATION	D-9
C-615-M	OIL CONTROL STRUCTURE	D-9
C-615-N	OIL CONTAINMENT LAGOON	D-9
C-616	LIQUID POLLUTION ABATEMENT FACILITY	F-7
C-616-A	CHEMICAL FEED BUILDING	G-7
C-616-B	CLARIFIER (EAST)	G-7
C-616-C	LIFT STATION	G-7
C-616-D	SLUDGE VAULT AND VALVE PIT	G-7
C-616-E	SLUDGE LAGOON	F-6
C-616-F	FULL FLOW LAGOON	F-6
C-616-H	EAST-WEST DITCH LIFT STATION	G-8
C-616-H1	FERROUS SULFATE STORAGE TANK (EAST)	G-7
C-616-H2	FERROUS SULFATE STORAGE TANK (WEST)	G-7
C-616-J	REDUCTION TANK (EAST)	G-7
C-616-K	SERVICE BUILDING	G-7
C-616-L	EFFLUENT CONTROL VAULT	G-9
C-616-M	CLARIFIER (WEST)	F-7
C-616-N	REDUCTION TANK (WEST)	F-7
C-616-P	SLUDGE VAULT AND VALVE PIT	G-7
C-616-Sump	SUMP	G-7
C-616-Q	FLYASH SETTLING LAGOON	G-9
C-617-A	EFFLUENT CONTROL STATION	J-10
C-617-B	EFFLUENT CONTROL LAGOON	J-10
C-617-C	WETLAND AND POND FOR OUTFALL 013	J-13
C-620	AIR COMPRESSOR ROOM	I-10
C-631-1	PUMP HOUSE	I-9
C-631-2	COOLING TOWER	I-9
C-631-3	PUMP HOUSE (FIREWATER)	I-9
C-631-4	BLENDING PUMP HOUSE	H-9
C-631-5	BLENDING COOLING TOWER (WEST)	H-9
C-631-6	BLENDING COOLING TOWER (EAST)	I-9
C-633-1	PUMP HOUSE	J-12
C-633-2A	COOLING TOWER (SOUTH)	J-12
C-633-2B	COOLING TOWER (NORTH)	J-12
C-633-3	BLENDING PUMP HOUSE	J-13
C-633-4	BLENDING COOLING TOWER (NORTH)	J-12
C-633-5	BLENDING COOLING TOWER (SOUTH)	J-12
C-633-6	SAND FILTER BUILDING	J-11
C-635-1	PUMP HOUSE	G-8
C-635-2	COOLING TOWER	G-8
C-635-3	BLENDING PUMP HOUSE	G-8
C-635-4	BLENDING COOLING TOWER (NORTH)	G-8
C-635-5	BLENDING COOLING TOWER (SOUTH)	G-8
C-635-6	RECIRCULATING HEAT UTILIZATION PUMP HOUSE	G-8
C-637-1	PUMP HOUSE	J-8
C-637-2A	COOLING TOWER (SOUTH)	J-8
C-637-2B	COOLING TOWER (NORTH)	J-8
C-637-3	BLENDING PUMP HOUSE	J-7
C-637-4	BLENDING COOLING TOWER (NORTH)	J-7
C-637-5	BLENDING COOLING TOWER (SOUTH)	J-8
C-637-6	SAND FILTER BUILDING	J-8
C-709	PLANT LABORATORY ANNEX	G-10
C-709-A	ACID NEUTRALIZATION VAULT	G-10
C-710	TECHNICAL SERVICES BUILDING	G-10
C-712	ACID NEUTRALIZATION PIT	G-10
C-720	MAINTENANCE AND STORAGE BUILDING	F-10
C-720-A	COMPRESSOR SHOP	F-10
C-720-B	MACHINE SHOP ADDITION	F-10
C-720-C	CONVERTOR SHOP ADDITION	F-10
C-720-C1	PAINT SHOP	F-10
C-720-D	TRANSFORMER BUILDING	F-10
C-720-E	CHANGE HOUSE ADDITION	F-10
C-720-G	WAREHOUSE	F-10
C-720-G1	TOX ROOM	F-10
C-720-G2	TOX ROOM	F-10
C-720-H	WAREHOUSE	F-10
C-720-J	AIR LOCK	G-10
C-720-K	INSTRUMENT SHOP ADDITION	G-10
C-720-N1	RAILROAD CLASSIFICATION YARD	B-18
C-720-T09	EQUIPMENT STORAGE (CARPORT)	F-10
C-721	GAS MANIFOLD STORAGE	F-10
C-722	ACID NEUTRALIZATION PIT	F-10
C-724-A	CARPENTER SHOP ANNEX	F-10
C-724-B	CARPENTER SHOP	F-10
C-724-C	PAINT SHOP	F-10
C-724-D	LUMBER STORAGE BUILDING	F-9
C-725	JANITORIAL STORAGE	F-9
C-726	SANDBLAST BUILDING	G-9
C-728	MOTOR CLEANING FACILITY	F-9
C-729	ACETYLENE BUILDING	G-10
C-730	MAINTENANCE SERVICE BUILDING	F-10
C-730-A1	ABOVE GROUND STORM SHELTER	F-11
C-730-C	GRAVEL PARKING AREA (EAST)	F-11
C-730-D	GRAVEL PARKING AREA (WEST)	E-11
C-730-T05	OFFICE TRAILER	F-11
C-730-T06	OFFICE TRAILER	F-11
C-731	RAILROAD REPAIR EQUIPMENT STORAGE BUILDING	E-9
C-732	MAINTENANCE MATERIALS STORAGE	E-9
C-733	WASTE OIL AND CHEMICAL STORAGE FACILITY	E-9
C-734	SALT STORAGE STRUCTURE	I-9
C-740	MATERIAL YARD	E-10
C-740-A	SEMI-TRAILER UNLOADING FACILITY	E-10
C-740-B	OIL DRUM STORAGE SHELTER	E-10
C-741	MOBILE EQUIPMENT SHED	F-10
C-743	OFFICE BUILDING	E-10
C-743-B1	ABOVE GROUND STORM SHELTER	E-10
C-743-C1	ABOVE GROUND STORM SHELTER	E-10
C-743-T01	OFFICE TRAILER	F-10
C-743-T02	OFFICE TRAILER	F-10
C-743-T13	OFFICE TRAILER	E-10
C-743-T14	INSTRUMENT SHOP TRAILER	E-10
C-743-T15	OFFICE TRAILER	E-10
C-743-T16	OFFICE TRAILER	E-10
C-744	MATERIAL HANDLING BUILDING	F-9
C-745-A	CYLINDER STORAGE YARD	E-9
C-745-A1	FLUORINE STORAGE YARD	D-9
C-745-A-SW	CYLINDER STORAGE YARD	D-9
C-745-B	CYLINDER STORAGE YARD	E-8
C-745-C	EQUIPMENT STORAGE PAD	F-8
C-745-D(OX)	CYLINDER AND OXIDE STORAGE YARD	I-13
C-745-E	CYLINDER STORAGE YARD	J-9
C-745-F	CYLINDER STORAGE YARD	H-12
C-745-G	CYLINDER STORAGE YARD	H-12
C-745-G1	CYLINDER YARD BASIN AND LIFT STATION	H-12
C-745-G2	STORAGE BUILDING	H-12
C-745-G3	STORAGE BUILDING	H-12
C-745-G4	STORAGE BUILDING	H-12
C-745-G5	STORAGE BUILDING	H-12
C-745-H	CYLINDER STORAGE YARD	J-7
C-745-J	RADIOACTIVE MATERIAL STORAGE YARD	J-7
C-745-K	CYLINDER STORAGE YARD	H-13
C-745-L	CYLINDER STORAGE YARD	H-13
C-745-M	CYLINDER STORAGE YARD	H-13
C-745-N	CYLINDER STORAGE YARD	I-13
C-745-OXE	OXIDE STORAGE YARD	I-13
C-745-OXF	NEW OXIDE STORAGE AREA	H-12
C-745-P	CYLINDER STORAGE YARD	I-13
C-745-Q	CYLINDER STORAGE YARD	I-12
C-745-R	CYLINDER STORAGE YARD	I-12
C-745-R1	CYLINDER CHANGEOUT BUILDING	I-13
C-745-S	CYLINDER STORAGE YARD	H-13
C-745-T	CYLINDER STORAGE YARD	I-14
C-745-U	CYLINDER STORAGE YARD	I-13
C-745-V	CYLINDER STORAGE YARD	J-13
C-745-W	CYLINDER YARD HIGH ACTIVITY RAILROAD PAD	I-13
C-745-X	EQUIPMENT STORAGE YARD	I-12
C-745-Y	EQUIPMENT STORAGE YARD	J-8
C-745-Z	EQUIPMENT STORAGE PAD	J-8
C-745-Z1	EQUIPMENT STORAGE PAD	J-7
C-746-B1	STAGING AREA	F-7
C-746-C	CLEAN SCRAP YARD (NORTH)	F-7
C-746-C1	CLEAN SCRAP YARD (SOUTH)	F-7
C-746-D	CLASSIFIED SCRAP YARD	J-9
C-746-E	CONTAMINATED SCRAP YARD (NORTH)	F-7
C-746-E1	CONTAMINATED SCRAP YARD (SOUTH)	F-7
C-746-F	SCRAP BURIAL YARD	E-7
C-746-G	ELECTRICAL EQUIPMENT STORAGE	J-9
C-746-H1	PEM STORAGE SLAB	F-9
C-746-H2	PEM STORAGE SLAB	F-9
C-746-H2 -T01	EQUIPMENT STORAGE (CARPORT)	F-9
C-746-H3	PEM STORAGE PAD	F-9
C-746-H4	NICKEL INGOT STORAGE PAD	F-7
C-746-K	CLOSED SANITARY LANDFILL	D-11
C-746-N	PAD NORTH OF C-746-A	F-7
C-746-P	SCRAP METAL YARD (EAST)	E-7
C-746-P1	SCRAP METAL YARD (WEST)	E-7
C-746-Q	HAZARDOUS AND LLW STORAGE FACILITY	I-12
C-746-Q1	HIGH ASSAY WASTE STORAGE BUILDING	I-12
C-746-R	ORGANIC WASTE STORAGE AREA	H-12
C-746-S	RESIDENTIAL LANDFILL	I-4
C-746-T	INERT LANDFILL	I-4
C-746-U	CONTAINED LANDFILL	I&J-1&2
C-746-U1	LANDFILL OFFICE BUILDING	H-3
C-746-U2	LANDFILL EQUIPMENT BUILDING	H-3
C-746-U3	LANDFILL LEACHATE FACILITY	I-2
C-746 -U4 to -U9	SEALAND STORAGE CONTAINERS	I-3

FACILITY NUMBER	DESCRIPTION	LOCATION
C-746-U10	STORAGE BUILDING	I-3
C-746-U11	STORAGE BUILDING	I-3
C-746-U12	STORAGE BUILDING	H-3
C-746-U13A	ABOVE GROUND STORM SHELTER	H-3
C-746-U-T14	SHOWER TRAILER	H-3
C-746-U15	LEACHATE TREATMENT FACILITY	I-2
C-746-U16	LEACHATE STORAGE FACILITY	I-2
C-746-U-POND	LANDFILL HOLDING POND	J-2
C-746-U-S	TRUCK SCALE AT LANDFILL	H-3
C-746-V	WASTE STAGING PAD	F-8
C-746-X	ELECTRICAL EQUIPMENT STORAGE BUILDING	I-7
C-747	CONTAMINATED BURIAL AREA	E-9
C-747-A	BURIAL AREA	E-7
C-747-A-T04	SCALE HOUSE SHED	E-7
C-747-B	BURIAL AREA	E-7
C-747-C	OIL LANDFARM AREA	E-9
C-747-D	H3 PAD CLAMSHELL (NORTH)	F-9
C-747-E	H3 PAD CLAMSHELL (SOUTH)	F-9
C-748-A	KOW DISPOSAL AREA	D-11
C-748-B	BURIAL GROUND	E-9
C-749	BURIAL YARD	E-8
C-750	GARAGE BUILDING	G-10
C-752	WASTE HOLDING PAD	G-8
C-752-A	WASTE STORAGE FACILITY	F-8
C-752-A-ENC	WASTE CONTAINMENT ENCLOSURE	F-8
C-752-A-T10	OFFICE/BREAKROOM TRAILER	F-8
C-752-B	REFUELING STATION	E-11
C-752-B-T01	REFUELING STATION TRAILER	E-11
C-752-C	DECONTAMINATION FACILITY	E-11
C-752-C -T01-A	LAB/BREAKROOM TRAILER	E-10
C-752-C -T01-T08	SEALAND STORAGE TRAILERS	E-11
C-752-EV	ELECTRIC VEHICLE CHARGING STATION	F-11
C-753-A	TSCA WASTE STORAGE FACILITY	G-8
C-754	LOW LEVEL WASTE STORAGE	H-9
C-754-A	WASTE MANAGEMENT STAGING AREA	H-9
C-754-B	GUARD TRAINING FACILITY	I-9
C-755	C-755 TRAILER COMPLEX	J-9
C-755-A	MAINTENANCE SHOP	J-9
C-755-A1	STORAGE SHED	J-9
C-755-B	CHANGE HOUSE BUILDING	K-9
C-755-C	STORAGE FACILITY	J-9
C-755-D	ELECTRICAL STORAGE	K-9
C-755-E1	ABOVE GROUND STORM SHELTER	J-9
C-755-F1	ABOVE GROUND STORM SHELTER	J-9
C-755-G1	ABOVE GROUND STORM SHELTER	J-9
C-755-H1	ABOVE GROUND STORM SHELTER	J-9
C-755-J	SEALAND STORAGE CONTAINERS (3)	K-9
C-755-K	SEALAND STORAGE CONTAINER	K-9
C-755-M	WOODEN STORAGE SHED	K-9
C-755-M1	WOODEN STORAGE SHED	J-9
C-755-M2	WOODEN STORAGE SHED	J-9
C-755-M3	WOODEN STORAGE SHED	J-9
C-755-M4	WOODEN STORAGE SHED	K-9
C-755-P	GRAVEL PARKING LOT	J-9
C-755-P1	WOODEN STORAGE SHED	J-9
C-755-P2	WOODEN STORAGE SHED	J-9
C-755-Q	SEALAND STORAGE CONTAINER	G-10
C-755-S	OFFICE TRAILER	K-9
C-755-T	WOODEN STORAGE SHED	K-9
C-755-T01	OFFICE TRAILER	J-9
C-755-T02	OFFICE TRAILER	K-9
C-755-T03	OFFICE TRAILER	J-9
C-755-T04	OFFICE TRAILER	K-9
C-755-T05	OFFICE TRAILER	J-9
C-755-T07	BREAKROOM TRAILER	K-9
C-755-T08B	SHOWER AND CHANGEROOM TRAILER	K-9
C-755-T09	OFFICE TRAILER	J-9
C-755-T10	STORAGE TRAILER	K-9
C-755-T13	SEALAND STORAGE CONTAINER	J-9
C-755-T14	SEALAND STORAGE CONTAINER	J-9
C-755-T16	SHOWER AND CHANGEROOM TRAILER	J-9
C-755-T17A	SHOWER TRAILER	J-9
C-755-T19	OFFICE/BREAKROOM TRAILER	J-9
C-755-T20	OFFICE/BREAKROOM TRAILER	J-9
C-755-T22A	OFFICE/BREAKROOM TRAILER	J-9
C-755-T23	OFFICE TRAILER	J-9
C-755-T24	STORAGE SHED	K-9
C-755-T26	OFFICE/BREAKROOM TRAILER	J-9
C-755-T27	OFFICE TRAILER	J-9
C-755-T28	OFFICE TRAILER	J-9
C-755-T29	STORAGE SHED	J-9
C-755-T30	STORAGE SHED	J-9
C-755-U	METAL CARPORTS/ EQUIPMENT SHEDS (6)	J-9
C-755-V	FORMER SALT STORAGE	K-9
C-755-W	SMALL MAINTENANCE SHOP	K-9
C-755-X	STORAGE SHED	K-9
C-755-Y	SEALAND STORAGE CONTAINER	J-9
C-757	SOLID AND LOW-LEVEL WASTE PROCESS FACILITY	G-7
C-759	STAGING AREA	F-8
C-759-A	CARPORT - FORMERLY ISOCS	F-8
C-760	WASTE DISPOSITION STORAGE AREA	G-7
C-760-A	NSDD SURGE BASIN	G-7
C-761	WASTE DISPOSITION STAGING	G-14
C-762	GRAVEL LAYDOWN AREA WITH METAL SHED	J-6
C-762-A	EQUIPMENT STORAGE (CARPORT)	J-6
C-762-T02	STORAGE SHED	J-6
C-764-A	PARKING AREA	D-10
C-764-B	SANITARY WATER VAULT	E-10
C-764-C1	SANITARY WATER VAULT	E-10
C-764-D1	ABOVE GROUND STORM SHELTER	D-10
C-764-D2	ABOVE GROUND STORM SHELTER	D-10
C-764-T01	OFFICE TRAILER	D-10
C-764-T02	CONFERENCE/OFFICE TRAILER	D-10
C-764-T03	OFFICE TRAILER	D-10
C-764-T04	OFFICE TRAILER	D-10
C-764-T05	OFFICE TRAILER	D-10
C-764-T06	OFFICE TRAILER	D-10
C-764-T07	OFFICE TRAILER	D-10
C-764-T08	OFFICE TRAILER	D-10
C-764-T09	OFFICE TRAILER	D-10
C-764-T10	OFFICE TRAILER	E-10
C-765	NORTHEAST PLUME CONTAINMENT SYSTEM	K-8
C-765-A	NORTHEAST PLUME CONTAINMENT SYSTEM	J-9
C-770	STAGING AREA - FORMER VORTEC DEMONSTRATION PLANT	D-8
C-802	METEOROLOGICAL TOWER	G-12
C-802-A	COMMUNICATIONS BUILDING	G-12
C-802-B	METEOROLOGICAL EQUIPMENT BUILDING	G-12
C-810	PARKING AREA (C-100)	G-11
C-811	PARKING AREA (C-720)	F-11
C900057 (Bridge 1)	SOUTH ACID ROAD BRIDGE	F-16
C900057 (Bridge 2)	TRANSPORT ROAD BRIDGE	C-7

DUF_6	Depleted Uranium Hexafluoride (DUF_6) Conversion	G-12
FACILITY NUMBER	DESCRIPTION	LOCATION
C-223	POST 49 BUILDING	G-13
C-1100	ADMINISTRATION BUILDING	G-13
C-1100-SS01	STORM SHELTER A	G-13
C-1100-SS02	STORM SHELTER B	G-13
C-1100-T01	QUALITY ASSURANCE TRAILER	G-13
C-1100-T02	DOCUMENT CONTROL TRAILER	G-13
C-1100-T03	RESTROOM TRAILER	G-13
C-1100-T04	TRAINING TRAILER	G-13
C-1100-T05	SHOWER TRAILER	G-12
C-1100-T06	UNION OFFICE TRAILER	G-13
C-1100-T08	CBT/OFFICE TRAILER	G-13
C-1100-T09	PRODUCTION SUPPORT TRAILER	G-12
C-1200	PARKING AREA	G-13
C-1210	VEHICLE BRIDGE	G-13
C-1212	WEST PARKING AREA	G-12
C-1212-EV	ELECTRIC VEHICLE CHARGING STATION	G-13
C-1215	VEHICLE ACCESS HOUSE "A"	G-13
C-1220	VEHICLE ACCESS HOUSE "B"	G-12
C-1220-M	MAC PORTAL ACCESS	G-12
C-1300	CONVERSION BUILDING	G-12
C-1300A	AIR COMPRESSOR BUILDING	G-12
C-1300-T01	CONVERSION BUILDING TRAILER	G-12
C-1305	HF STORAGE AREA	G-12
C-1305A	HF TANKER CAR CONTAINMENT PIT	G-12
C-1305B	HF AREA CHANGE HOUSE	G-12
C-1310	NITROGEN SUPPLY SYSTEM AREA	G-12
C-1320	KOH REGENERATION BUILDING	G-13
C-1330	HYDROGEN SUPPLY AREA	G-12
C-1330B	HYDROGEN GENERATION SYSTEM	G-12
C-1330C	BULK HYDROGEN SYSTEM PAD	G-12
C-1604	FIREWATER HEATED ENCLOSURE	G-12
C-1605	SERVICE WATER PUMP HOUSE	G-12
C-1700	WAREHOUSE / MAINTENANCE BUILDING	G-13
C-1745A	FULL CYLINDER STAGING AREA	G-13
C-1745B	EMPTY AND HEEL CYLINDER STAGING YARD	G-12
C-1745C	OXIDE CYLINDER STAGING AREA	G-12
C-1900	DUF_6 RAILROAD SPUR	E-13
C-1910	DUF_6 RAILROAD BRIDGE - EAST	G-13
C-1920	DUF_6 RAILROAD BRIDGE - WEST	G-13
C-1930	BAYOU CREEK RAILROAD BRIDGE (DUF_6)	E-13

OUTFALLS

OUTFALL NUMBER	FACILITY NUMBER	DESCRIPTION	LOCATION
001	C-375-W9	OIL CONTROL DAM (KPDES OUTFALL 001)	D-8
002	C-375-E2	OIL CONTROL DAM (EAST DRAIN DITCH) (KPDES OUTFALL 002)	K-9
004	C-375-04	C-615 SEC. BASIN EFFLUENT (KPDES OUTFALL 004)	D-9
006	C-375-06	C-611 No. 2 LAGOON (KPDES OUTFALL 006)	C-8
008	C-375-W7	OIL CONTROL DAM (WEST DRAIN DITCH) (KPDES OUTFALL 008)	D-9
009	C-375-S6	OIL CONTROL DAM (SOUTH DRAIN DITCH) (KPDES OUTFALL 009)	F-11
010	C-375-E3	OIL CONTROL DAM (EAST DRAIN DITCH) (KPDES OUTFALL 010)	K-10
011	C-375-E4	STANDBY - OIL CONTROL DAM (EAST DRAIN DITCH) (KPDES OUTFALL 011)	K-10
012	C-375-E5	STANDBY - OIL CONTROL DAM (EAST DRAIN DITCH) (KPDES OUTFALL 012)	K-11
013	C-375-E6	PLANT SURFACE RUNOFF (KPDES OUTFALL 013)	K-13
015	C-375-W8	OIL CONTROL DAM (KPDES OUTFALL 015)	D-9
016	C-375-16	PLANT SURFACE RUNOFF FLUME (KPDES OUTFALL 016)	D-10
017	C-375-17	PLANT SURFACE RUNOFF FLUME (KPDES OUTFALL 017)	G-13
019	C-375-19	PLANT SURFACE RUNOFF (KPDES OUTFALL 019)	J-2
020	C-375-20	TREATED LEACHATE RUNOFF (KPDES OUTFALL 020)	J-2
C001	C001	CERCLA OUTFALL C001	K-9

LZ NUMBER	AIR EVACUATION AMBULANCE LANDING ZONE	LOCATION
LZ-1	LANDING ZONE 1	F-12
LZ-2	LANDING ZONE 2	D-11
LZ-3	LANDING ZONE 3	H-6

LEGEND

- 49A GATE SYMBOL & NUMBER
- PWS A1-A2 PUBLIC WARNING SYSTEM SIREN
- AMDNE AIR MONITORING STATION
- PA-05 PUBLIC ADDRESS SPEAKER/POLE
- CHARGING STATION
- TUNNEL
- DOE BOUNDARY
- 229 BOUNDARY
- LIMITED AREA FENCE
- FLEX LIMITED AREA/ PROPERTY PROTECTION AREA
- INDEPENDENT PROPERTY PROTECTION AREA
- FENCE
- 1154 STATE HIGHWAY
- NEW CONSTRUCTION
- STREAMS
- EMERGENCY MANAGEMENT AIR AMBULANCE LANDING ZONE

RAILROAD TRACK STATUS

- ACTIVE
- INACTIVE
- ACTIVE-OUT-OF-SERVICE
- ABANDONED

PGDP Site Responsibilities

- DEACTIVATION & REMEDIATION CONTRACTOR
- INFRASTRUCTURE CONTRACTOR
- DOE BOUNDARY (INFRASTRUCTURE - GROUNDS)
- DUF6 CONTRACTOR
- SLAB or DEMOLISHED*

* Facilities shown in gray indicate slab or other material, from a previously demolished structure, which may contain a partial foundation, tank supports, or other remnants from the previous structure.

REV.	DATE	DESCRIPTION	DRAWN BY	TECHNICAL REVIEW	QUALITY REVIEW
28	4/25/24	SITE MAP UPDATE	SRD		
27	1/26/24	SITE MAP UPDATE	SRD	JD	BA
26	10/4/23	SITE MAP UPDATE	SRD	JD	BA
25	7/26/23	SITE MAP UPDATE	SRD	TH	BA
24	4/24/2023	SITE MAP UPDATE	SRD	JD	BA
23	1/28/2023	SITE MAP UPDATE	SRD	JD	BA
22	10/25/2022	SITE MAP UPDATE	SRD	JD	BA
21	7/26/2022	SITE MAP UPDATE	SRD	JD	NM
20	4/28/2022	SITE MAP UPDATE	SRD	JD	BA

U.S. DEPARTMENT OF ENERGY
PADUCAH GASEOUS DIFFUSION PLANT

PADUCAH SITE MAP

Paducah, KY	Drawn by S.R. Durbin, ETAS	REV. NO.
	PAD-P2S-15-GIS-0001	28

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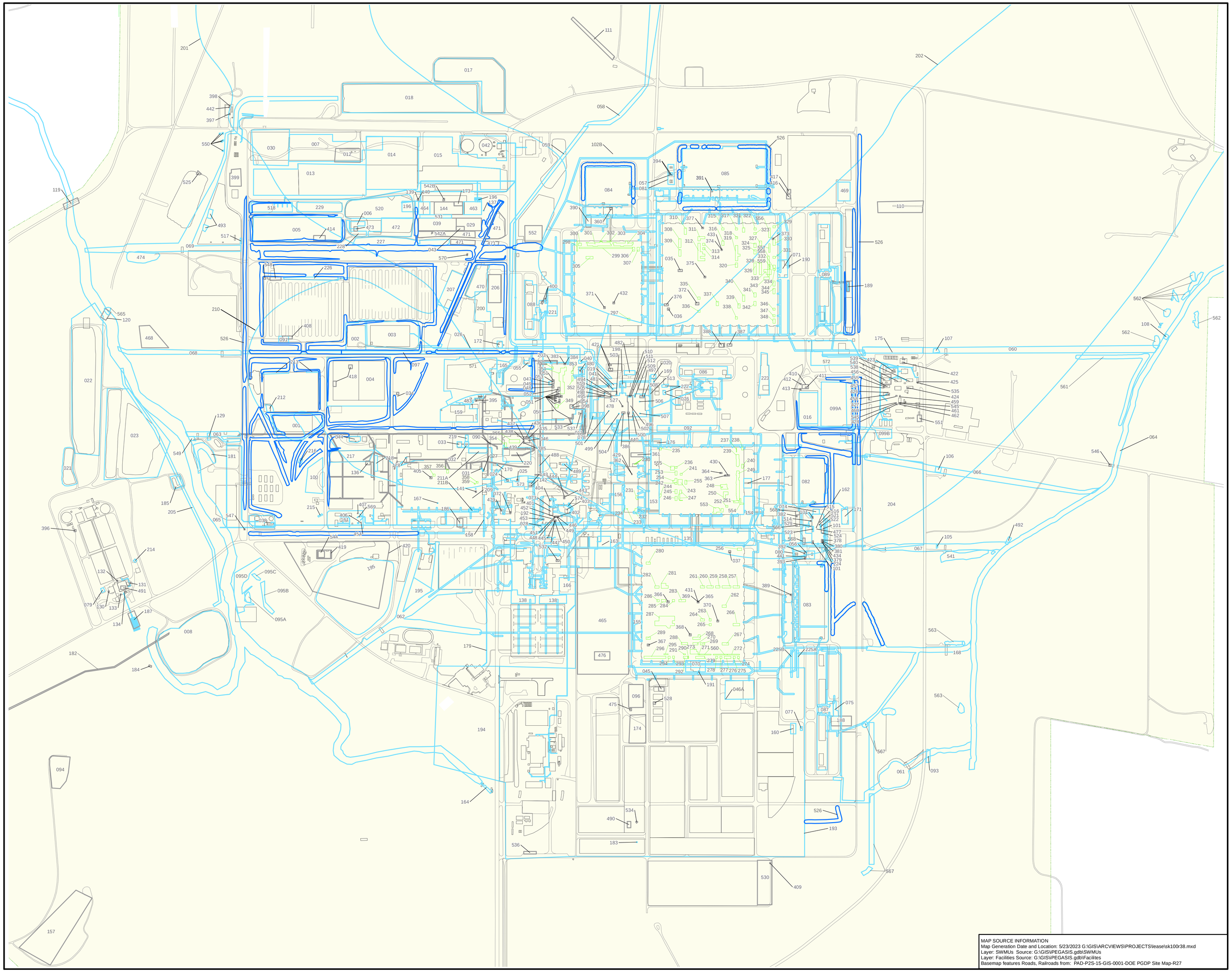
Paducah Site Map Showing Current SWMU Locations



Active

No Further Action

Inside DMSAs (No Further Action):
SWMUs - 230-359 and 553-560

SWMU 526 - Internal Plant Drainage Ditches (Active)

SWMUs 058, 064, 065 and 182 extend beyond the map limits

SWMUs not shown:
009,010,103,104,109,
112-118,121-128,145-152,
180,197,199,208,415,466,
467, and 484-487,543,564
(outside of map boundary)

SWMUs 201 & 202 extend beyond map limits

TRUE NORTH 20 PLANT NORTH

0 250 500 1,000 1,500 2,000 Feet

MAP SOURCE INFORMATION
Map Generation Date and Location: 5/23/2023 G:\GIS\ARCVIEWS\PROJECTS\lease\sk100r38.mxd
Layer: SWMUs Source: G:\GIS\PEGASIS.gdb\SWMUs
Layer: Facilities Source: G:\GIS\PEGASIS.gdb\Facilites
Basemap features Roads, Railroads from: PAD-P2S-15-GIS-0001-DOE PGDP Site Map-R27

U.S. DEPARTMENT OF ENERGY
DOE PORTSMOUTH/PADUCAH PROJECT OFFICE
PADUCAH GASEOUS DIFFUSION PLANT

FOUR RIVERS NUCLEAR PARTNERSHIP, LLC

FIGURE No. sk100r38.mxd
DATE 5-21-24

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The table shown on pages A-9 through A-25 of Appendix A is from Appendix 4 of the *Site Management Plan, Paducah Gaseous Diffusion Plant, Paducah, Kentucky, Annual Revision—FY 2024*, DOE/LX/07-2495&D1.

Solid Waste Management Units/Areas of Concern by Operable Unit

C-400 COMPLEX				
Operable Unit	**Subproject**		**SWMU No.**	**Description**
C-400 Complex OU	C-400 Final Remedial Action		11	C-400 TCE Leak Site
			40	C-403 Neutralization Tank slab and underlying soils
			47	C-400 Technetium Storage Tank Area
			98	C-400 Basement Sump
			203	C-400 Discard Waste System slab and underlying soils
			480	C-402 Lime House building slab and underlying soils
			533	TCE Spill Site from TCE Unloading Operations at C-400
			Five SWMUs (349, 350, 351, 352, and 353) within the C-400 Building are DMSAs that were designated as SWMUs under the Kentucky Hazardous Waste Management Permit pursuant to a DOE-KDEP Agreed Order (October 2003) and were not identified for action under the FFA. Ten other SWMUs within the C-400 Building (48, 49, 50, 51, 52, 53, 54, 383, 384, and 537) have been designated as no further action (NFA) and are listed in the NFA section of Appendix 4.	
GROUNDWATER				
GWOU	C-400 Interim Remedial Action		11	C-400 TCE Leak Site
			533	TCE Spill Site from TCE Unloading Operations at C-400
	Southwest Plume Sources		1	C-747-C Oil Land Farm
			211 A	C-720 TCE Spill Site Northeast
			211 B	C-720 TCE Spill Site Southeast
	Dissolved-Phase Plumes		201	Northwest Groundwater Plume
			202	Northeast Groundwater Plume
			210	Southwest Groundwater Plume
	Potential Additional Groundwater Sources		NA	This operable unit is being reserved for remaining sources to groundwater contamination that may be identified in the future
SURFACE WATER				
SWOU	SWOU Remedial Action	Removal Action	58	North-South Diversion Ditch (NSDD) (Outside) (includes KPDES 003)
			60	C-375-E2 Effluent Ditch (KPDES 002)[8]
			61	C-375-E5 Effluent Ditch (KPDES 013)[8]
			62	C-375-S6 SW Ditch (KPDES 009)[8]
			63	C-375-W7 Oil Skimmer Ditch (KPDES 008 and KPDES 004)
			66	C-375-E3 Effluent Ditch (KPDES 010)
			67	C-375-E4 Effluent Ditch (C-340 Ditch) (KPDES 011)
			68	C-375-W8 Effluent Ditch (KPDES 015)
			69	C-375-W9 Effluent Ditch (KPDES 001)
			92	Fill Area for Dirt from the C-420 PCB Spill Site

[8] The results of the Surface Water Operable Unit (SWOU) (On-Site) Site Investigation determined that there were no unacceptable levels of risk to current and anticipated future receptors that warranted inclusion of Solid Waste Management Unit (SWMU) 60 (Outfall 002), SWMU 168 (Outfall 012), or SWMU 102 (Paducah Gaseous Diffusion Plant storm sewer systems associated with C-333-A, C-337-A, C-340, C-535, and C-537). As a result, no action will be taken for these SWMUs as originally planned under the SWOU removal action. These SWMUs will be evaluated further as part of the SWOU remedial action. It also should be noted that during development of the Sampling and Analysis Plan for SWOU (On-Site) Removal Action, Outfall 009 and Outfall 013 were evaluated. This assessment of the outfalls, which included a review of historical data, indicated that Outfall 009 and Outfall 013 did not require an early action, and further assessment of Outfall 009 and Outfall 013 would be addressed during the Comprehensive Site Operable Unit (CSOU). Based upon current site strategy, Outfall 009 and Outfall 013 also will be addressed as part of the SWOU remedial action.

Solid Waste Management Units/Areas of Concern by Operable Unit (Continued)

SURFACE WATER (CONTINUED)			
Operable Unit	**Subproject**	**SWMU No.**	**Description**
SWOU	SWOU Remedial Action / Removal Action	97	C-601 Diesel Spill
		102 B	Plant Storm Sewer associated with C-333-A, C-337-A, C-340, C-535, and C-537[9]
		168	KPDES Outfall Ditch 012[9]
		526	Internal Plant Drainage Ditches (includes KPDES 016)[10]
	SWOU Remedial Action	64	Little Bayou Creek
		65	Bayou Creek
		93	Concrete Disposal Area East of Plant Security Area
		105	Concrete Rubble Pile (3)
		106	Concrete Rubble Pile (4)
		107	Concrete Rubble Pile (5)
		108	Concrete Rubble Pile (6)
		109	Concrete Rubble Pile (7)
		113	Concrete Rubble Pile (11)
		129	Concrete Rubble Pile (27)
		175	Concrete Rubble Pile (28)
		185	C-611-4 Horseshoe Lagoon (includes KPDES 014)
		199	Big Bayou Creek Monitoring Station
		205	Eastern Portion of Yellow Water Line
		549	Dirt/Concrete Rubble Pile near Outfall 008
		550	Concrete Culvert Sections Located on the West Bank of the Ditch Leading to Outfall 001
		Others	Outfalls 017, 018, 019/020, and 526 and associated ditches
LAGOONS			
Lagoons OU	Process Lagoons	17	C-616-E Sludge Lagoon
		18	C-616-F Full-Flow Lagoon
		171	C-617-B Lagoon (formerly identified as C-617-A in the 10/12/1992 SAR)
	Water Treatment System Lagoons	21	C-611-W Sludge Lagoon
		22	C-611-Y Overflow Lagoon (includes KPDES 006)
		23	C-611-V Lagoon (includes KPDES 005)
BURIAL GROUNDS			
BGOU	BGOU Remedial (10 SWMUs)	2	C-749 Uranium Burial Ground
		3	C-404 Low-Level Radioactive Waste Burial Ground
		4	C-747 Contaminated Burial Ground
		5	C-746-F Classified Burial Ground
		6	C-747-B Burial Area
		7	C-747-A Burial Ground
		9	C-746-S Residential Landfill
		10	C-746-T Inert Landfill
		30	C-747-A Burn Area
		145	Residential/Inert Landfill Borrow Area (P-Landfill)
	Additional Burial Grounds	472	C-746-B Pad
		520	Scrap Material West of C-746-A

[9] See footnote #8.
[10] Kentucky Pollutant Discharge Elimination System (KPDES) Outfall 016, in its entirety, will be addressed as part of the SWOU Remedial Investigation.

Solid Waste Management Units/Areas of Concern by Operable Unit (Continued)

SOILS			
Operable Unit	**Subproject**	**SWMU No.**	**Description**
Soils OU	Soils Remedial	1	C-747-C Oil Land Farm
		13	C-746-P Clean Scrap Yard[11]
		14	C-746-E Contaminated Scrap Yard
		15	C-746-C Scrap Yard[11]
		19	C-410-B HF Neutralization Lagoon
		26	C-400 to C-404 Underground Transfer Line[11]
		56	C-540-A PCB Waste Staging Area[11, 12]
		57	C-541-A PCB Waste Staging Area[11]
		76	C-632-B Sulfuric Acid Storage Tank
		77	C-634-B Sulfuric Acid Storage Tank[11, 13]
		80	C-540-A PCB Spill Site[11]
		81	C-541-A PCB Spill Site
		99 B	C-745 Kellogg Bldg. Site—Septic Tank/Leach Field
		138	C-100 Southside Berm
		153	C-331 PCB Soil Contamination (West)
		156	C-310 PCB Soil Contamination (West Side)
		158	Chilled-Water System Leak Site
		160	C-745 Cylinder Yard Spoils (PCB Soils)
		163	C-304 Bldg./HVAC Piping System (Soil Backfill)
		165	C-616-L Pipeline & Vault Soil Contamination
		169	C-410-E HF Vent Surge Protection Tank
		170	C-729 Acetylene Bldg. Drain Pits
		180	Outdoor Firing Range (WKWMA)
		181	Outdoor Firing Range (PGDP)
		194	McGraw Construction Facilities (South Side Leach Field Area)
		195	Curlee Road Contaminated Soil Mounds
		196	C-746-A Septic System
		200	Soil Contamination South of TSCA Waste Storage Facility
		204	Dykes Road Historical Staging Area[11]
		211 A	C-720 TCE Spill Site Northeast[11]
		212	C-745-A Radiological Contamination Area
		213	OS-02
		214	OS-03
		215	OS-04
		216	OS-05[14]
		217	OS-06
		219	OS-08
		221	OS-10
		222	OS-11
		224	OS-13[11]
		225 A	OS-14[11]

[11] These SWMUs/areas of concern (AOCs) were evaluated under Soils OU RI 2 and will be addressed by a subsequent Soils OU feasibility study.
[12] SWMUs 56 and 57 are located within, and will be addressed as part of, SWMUs 80 and 81, respectively.
[13] This SWMU was evaluated as part of the Soils Operable Unit. The soils and underlying slabs associated with this SWMU will be addressed under the Soils and Slabs OU as part of post-GDP shutdown activities.
[14] The boundaries for SWMU 216 were revised after the Soils OU RI was completed; as a result, the conclusions in the Soils OU RI Report for SWMU 216 are incomplete and will need to be addressed in a subsequent action.

Solid Waste Management Units/Areas of Concern by Operable Unit (Continued)

SOILS (CONTINUED)			
Operable Unit	**Subproject**	**SWMU No.**	**Description**
Soils OU (Continued)	Soils Remedial (Continued)	225 B	Contaminated Soil Area near C-533-1 DMSA OS-14[15]
		227	OS-16
		228	OS-17
		229	OS-18[15]
		486	Rubble Pile WKWMA (approximately 116 ft off roadside)
		487	Rubble Pile WKWMA (approximately 483 ft off roadside)
		488	PCB Contamination Area by the C-410 Trailer Complex
		489	Septic Tank North of C-710 Laboratory
		492	Contaminated Soil Area Near Outfall 010
		493	Concrete Rubble Piles Near Outfall 001
		517	Rubble and Debris Erosion Control Fill Area
		518	Field South of C-746-P1 Clean Scrap Yard
		520	Scrap Material West of C-746-A
		531	Aluminum Slag Reacting Area (C-746-H4) near the C-746-A Facility
		541	Contaminated Soil Area South of Outfall 011
		561	Soil Pile I
		562	Soil Piles C, D, E, F, G, H, J, K, and P in subunit 1 north of Soil Pile I on the west bank of Little Bayou Creek
		563	Soil Piles 20, CC, and BW in subunit 4 north of outfall 012 west of Little Bayou Creek
		564	Soil Pile AT in subunit 5 that consists of three soil areas on the east side of the NSDD north of the P-, S-, and T-Landfills
		565	Rubble Area KY-19 (along Bayou Creek north of C-611 Water Treatment Plant)[15]
		567	Soil Pile K013 near Outfall 013, West of Little Bayou Creek
SOILS AND SLABS			
Soils and Slabs OU		16	C-746-D Classified Scrap Yard
		20	C-410-E HF Emergency Holding Pond slab and underlying soils
		27	C-722 Acid Neutralization Tank
		28	C-712 Laboratory Equalization Tank slab and underlying soils
		31	C-720 Compressor Pit Water Storage Tank slab and underlying soils
		32	C-728 Clean Waste Oil Tanks slab and underlying soils
		33	C-728 Motor Cleaning Facility slab and underlying soils
		38	C-615 Sewage Treatment Plant slab and underlying soils
		41	C-410-C Neutralization Tank slab and underlying soils
		42	C-616 Chromate Reduction Facility slab and underlying soils
		55	C-405 Incinerator building slab and underlying soils
		70	C-333-A Vaporizer slab and underlying soils
		71	C-337-A Vaporizer slab and underlying soils
		74	C-340 PCB Transformer Spill Site
		75	C-633 PCB Spill Site

[15] See footnote #11.

Solid Waste Management Units/Areas of Concern by Operable Unit (Continued)

SOILS AND SLABS (CONTINUED)			
Operable Unit	**Subproject**	**SWMU No.**	**Description**
Soils and Slabs OU (Continued)		77	C-634-B-Sulfuric Acid Storage Tank slab and underlying soils
		78	C-420 PCB Spill Site
		79	C-611 PCB Spill Site
		82	C-531 Switchyard slab and underlying soils
		83	C-533 Switchyard slab and underlying soils
		84	C-535 Switchyard slab and underlying soils
		85	C-537 Switchyard slab and underlying soils
		86	C-631 Pumphouse and Cooling Tower Slabs and Associated Soils
		87	C-633 Pumphouse and Cooling Tower Slabs and Associated Soils
		88	C-635 Pumphouse and Cooling Tower Slabs and Associated Soils
		89	C-637 Pumphouse and Cooling Tower slab and underlying soils
		99 A	C-745 Kellogg Bldg. Site–Cylinder Yard
		135	C-333 PCB Soil Contamination (North Side)
		137	C-746-A Inactive PCB Transformer Sump Area[16]
		154	C-331 PCB Soil Contamination (Southeast)
		155	C-333 PCB Soil Contamination (West)
		159	C-746-H3 Storage Pad slab and underlying soils
		161	C-743-T-01 Trailer Site (Soil Backfill)
		162	C-617-A Sanitary Water Line (Soil Backfill)
		166	C-100 Trailer Complex Soil Contamination (East Side)
		167	C-720 White Room Sump slab and underlying soils
		172	C-726 Sandblasting Facility slab and underlying soils
		176	C-331 RCW Leak Northwest Side
		177	C-331 RCW Leak East Side
		178	C-724-A Paint Spray Booth slab and underlying soils
		179	Plant Sanitary Sewer System
		192	C-710 Acid Interceptor Pit slab and underlying soils
		198	C-410-D Area Soil Contamination slab and underlying soils
		209	C-720 Compressor Shop Pit Sump slab and underlying soils
		211 B	C-720 TCE Spill Site Southeast
		218	OS-07 slab and underlying soils
		220	OS-09 slab and underlying soils
		223	OS-12 slab and underlying soils
		226	OS-15
		463	C-746-A East End Smelter slab and underlying soils
		464	C-746-A West End Smelter building slab and underlying soils
		469	C-745-J Yard
		470	C-746-V Yard
		474	West of Vortec Site
		477	C-340 Metals Plant building slab and underlying soils
		478	C-410/420 Feed Plant building slab and underlying soils
		482	C-415 Feed Plant Storage Building slab and underlying soils
		483	Nitrogen Generating Facilities slab and underlying soils

[16] SWMU 137 was evaluated as part of the American Recovery and Reinvestment Act and the Soils OU. SWMU 137 will be addressed as part of Soils and Slabs OU.

Solid Waste Management Units/Areas of Concern by Operable Unit (Continued)

SOILS AND SLABS (CONTINUED)			
Operable Unit	**Subproject**	**SWMU No.**	**Description**
Soils and Slabs OU (Continued)		498	C-410/420 Sump at Column D & E-1&2 slab and underlying soils
		499	C-410/420 Sump at Column H-9&10 slab and underlying soils
		500	C-410/420 Sump at Column U-10&11 slab and underlying soils
		501	C-410/420 UF_6 Scale Pit Sumps A&B slab and underlying soils
		502	C-410/420 Sump at Column U-9 slab and underlying soils
		503	C-410/420 Sump at Column G-1 slab and underlying soils
		504	C-410/420 Sump at Column L-10 slab and underlying soils
		505	C-410/420 Sump at Column A-3N slab and underlying soils
		506	C-410/420 Sump at Column Wa-9 slab and underlying soils
		507	C-410/420 Condensate Tank Pit slab and underlying soils
		508	C-410/420 Settling Basin slab and underlying soils
		509	C-410/420 Drain pit slab and underlying soils
		510	C-410/420 Sump at Column P&Q-2 slab and underlying soils
		511	C-410/420 Sump at Column Q&R-2 slab and underlying soils
		512	C-410/420 Sump at Column R-2 slab and underlying soils
		513	C-411 Cell Maintenance Room Sump slab and underlying soils
		522	C-340 Work Pit at Ground Floor Level (B-7—B-9) slab and underlying soils
		523	C-340 Metals Plant Pit at Ground Floor (F-6 to F-11) slab and underlying soils
		524	C-340 Pickling System Sump (B-10 to B-11) slab and underlying soils
		529	C-340 Powder Plant Sump at Ground Floor Level slab and underlying soils
		571	C-602 Coal Storage Yard
		572	C-360 Toll Transfer and Sampling Building Slab and Underlying Soils
		573	C-750 Garage Slab and Underlying Soils and Associated Outside Areas
		574	C-709-A Acid Neutralization Vault
DECONTAMINATION AND DECOMMISSIONING			
Facility D&D OU	Remaining D&D	The following SWMUs/AOCs or facilities may include multiple smaller facilities. A more detailed listing of facilities is included in the following table entitled “Detailed Facility D&D OU Facilities List.” *Denotes facilities that have been identified as requiring a CERCLA NTCRA.	
		33*	C-728 Motor Cleaning Facility
		38*	C-615 Sewage Treatment Plant
		42*	C-616 Chromate Reduction Facility
		70*	C-333-A Vaporizer
		71*	C-337-A Vaporizer
		82*	C-531 Switchyard
		83*	C-533 Switchyard
		84*	C-535 Switchyard
		85*	C-537 Switchyard
		172*	C-726 Sandblasting Facility
		482*	C-415 Feed Plant Storage Building
		572*	C-360 Toll Transfer and Sampling Building

Solid Waste Management Units/Areas of Concern by Operable Unit (Continued)

DECONTAMINATION AND DECOMMISSIONING (CONTINUED)			
Facility D&D OU (Continued)	Remaining D&D (Continued)	Other Buildings (non-SWMUs)	See Table "Detailed Facility D&D OU Facilities List." Process Building tie-lines and bridges will be included with the appropriate process building.
DUF_6 FOOTPRINT UNDERLYING SOILS			
DUF_6 Footprint Underlying Soils OU		164	KPDES Outfall Ditch 017 Flume—Soil Backfill
		183	McGraw UST
		193	McGraw Construction Facilities (South Side Cylinder Yard Area, East of Hobbs Road)
FINAL COMPREHENSIVE SITE OPERABLE UNIT			
CSOU[17,18,19]	**SWMU No.**		**Description**
	8		C-746-K Inactive Sanitary Landfill
	59		NSDD (Inside)
	91		UF_6 Cylinder Drop Test Area
	100		Fire Training Area
PERMITTED			
Permitted	**SWMU No.**		**Description**
	3		C-404 Low-Level Radioactive Waste Burial Ground[20]
	9		C-746-S Residential Landfill
	10		C-746-T Inert Landfill
	44		C-733 Hazardous Waste Storage Area
	46 A		C-746-Q Hazardous and Low-Level Mixed Waste Storage Facility[21]
	207		C-752-A ER Waste Storage Bldg.
	208		C-746-U Solid Waste Contained Landfill

[17] The FFA, as currently written, contemplates multiple CSOUs, consisting of those associated with integrator units (i.e., groundwater, surface water), and a final CSOU completed after issuance of all final RODs for the site. The FFA parties acknowledge that the scope description is intended to reflect a single CSOU to address all media, and a future FFA modification will be conducted to resolve any inconsistencies between the FFA and Site Management Plan strategy.

[18] Historically, once an action has been completed for a particular SWMU whereby no additional active response actions are expected, such SWMUs have been placed in the CSOU for further evaluation; however, the FFA parties recognized the need to reach consensus on the criteria for assigning units to the CSOU. As a result, placement of SWMUs 8, 59, 91, and 100 in the CSOU is provisional pending the FFA parties reaching consensus on such criteria.

[19] The scope of the GAs is sequenced to occur prior to the CSOU, and any actions taken under the GAs will be considered as part of the final CSOU.

[20] SWMU 3 was issued only a post-closure permit, was not permitted for construction and operation, and was not an engineered hazardous waste landfill.

[21] The C-746-Q Facility also includes C-746-Q1.

Solid Waste Management Units/Areas of Concern by Operable Unit (Continued)

NO FURTHER ACTION[22]		
SWMU No.	**Description**	**NFA Approval By**
12	C-747-A UF_4 Drum Yard	FFA Managers Agreement—11/17/2011; FFA Managers Meeting, 4/12/2012 (Based on information presented at these meetings and on verbal agreement, KY agreed with DOE's assessment that SWMU 12 should be granted NFA status in a letter dated 4/24/2012.)
24	C-750-D UST	KDWM (UST Branch) 11/23/1999
25	C-750 1,000-gal Waste Oil Tank (UST)	EPA HSWA Class 1 Permit Mod 3/17/1993—Regulated by RCRA Permit; KDWM (UST Branch) 6/20/1994
29	C-746-B TRU Storage Area	EPA HSWA Class 1 Permit Mod 3/17/1993
34	C-746-M PCB Waste Storage Area	EPA HSWA Class 1 Permit Mod 3/17/1993
35	C-337 PCB Waste Storage Area	EPA HSWA Class 1 Permit Mod 3/17/1993
36	C-337 PCB Waste Staging Area	EPA HSWA Class 1 Permit Mod 3/17/1993
37	C-333 PCB Waste Staging Area	EPA HSWA Class 1 Permit Mod 3/17/1993
39	C-746-B PCB Waste Storage Area	EPA HSWA Class 1 Permit Mod 3/17/1993
43	C-746-B Waste Chemical Storage Area	EPA HSWA Class 1 Permit Mod 3/17/1993; Closed after 1993
45	C-746-R Waste Solvent Storage Area	EPA HSWA Class 1 Permit Mod 3/17/1993; Closed after 1993
46	C-409 Hazardous Waste Pilot Plant[23]	EPA HSWA Class 1 Permit Mod 3/17/1993—Regulated by RCRA Permit; KDWM (Mod #13) 9/26/1997
48	Gold Dissolver Storage Tank (DMSA C400-03)	EPA HSWA Class 1 Permit Mod 3/17/1993; KDWM 7/8/2010
49	C-400-B Waste Solution Storage Tank	EPA HSWA Class 1 Permit Mod 3/17/1993—Regulated by RCRA Permit; KDWM 9/26/1997
50	C-400-C Nickel Stripper Evaporation Tank	EPA HSWA Class 1 Permit Mod 3/17/1993—Regulated by RCRA Permit; KDWM (Mod #13) 9/26/1997
51	C-400-D Lime Precipitation Tank	EPA HSWA Class 1 Permit Mod 3/17/1993—Regulated by RCRA Permit; KDWM (ROC) 8/8/1994
52	C-400 Waste Decontamination Solution Storage Tanks	EPA HSWA Class 1 Permit Mod 3/17/1993
53	C-400 NaOH Precipitation Unit	EPA HSWA Class 1 Permit Mod 3/17/1993
54	C-400 Degreaser Solvent Recovery Unit	EPA HSWA Class 1 Permit Mod 3/17/1993; KDWM 7/8/2010
72	C-200 Underground Gasoline Tanks	EPA HSWA Class 1 Permit Mod 3/17/1993; KDWM (UST C-200A; UST Branch) 11/23/1999

[22] The FFA Parties agree that KDWM will serve as the sole agency for the review and comment on all SWMU assessment reports. The FFA Parties agree that, as a standard practice for waste management units (e.g., TSDs, SWMUs, and AOCs), KDWM's determination for NFA under both the RCRA permit (i.e., Kentucky Hazardous Waste Facility Permit, EPA HSWA Permit) and the FFA are accepted by all parties.

[23] Radiological contamination associated with the sump in this unit will be addressed under the D&D program for the C-409 Stabilization Building.

Solid Waste Management Units/Areas of Concern by Operable Unit (Continued)

NO FURTHER ACTION (CONTINUED)		
SWMU No.	**Description**	**NFA Approval By**
73	C-710 Underground Gasoline Tanks	EPA HSWA Class 1 Permit Mod 3/17/1993; KDWM (UST C-200A; UST C-710; UST Branch) 2/19/2002
90	C-728 Petroleum Naphtha Pipe (formerly identified as the C-720 Petroleum Naphtha Pipe or C-720 Underground Petroleum Naphtha Pipe in historical documents)	KDWM 1/14/2015
94	KOW Trickling Filter and Leach Field	KDWM Superfund Branch 1/15/2020
96	C-333 Cooling Tower Scrap Wood Pile	EPA HSWA Class 1 Permit Mod 3/17/1993
101	C-340 Hydraulic System	EPA and KDWM 4/2/2015
102 A	Plant Storm Sewer—between the south side of the C-400 Building and Outfall 008	EPA and KY via SW Plume ROD 3/16/2012; KDWM 1/14/2015
103	Concrete Rubble Pile (1)	EPA and KY via WAG 17 ROD 9/29/1997
104	Concrete Rubble Pile (2)	EPA and KY via WAG 17 ROD 9/29/1997
110	Concrete Rubble Pile (8)	EPA and KY via WAG 17 ROD 9/29/1997
111	Concrete Rubble Pile (9)	EPA and KY via WAG 17 ROD 9/29/1997
112	Concrete Rubble Pile (10)	EPA and KY via WAG 17 ROD 9/29/1997
114	Concrete Rubble Pile (12)	EPA and KY via WAG 17 ROD 9/29/1997
115	Concrete Rubble Pile (13)	EPA and KY via WAG 17 ROD 9/29/1997
116	Concrete Rubble Pile (14)	EPA and KY via WAG 17 ROD 9/29/1997
117	Concrete Rubble Pile (15)	EPA and KY via WAG 17 ROD 9/29/1997
118	Concrete Rubble Pile (16)	EPA and KY via WAG 17 ROD 9/29/1997
119	Concrete Rubble Pile (17)	EPA and KY via WAG 17 ROD 9/29/1997
120	Concrete Rubble Pile (18)	EPA and KY via WAG 17 ROD 9/29/1997
121	Concrete Rubble Pile (19)	EPA and KY via WAG 17 ROD 9/29/1997
122	Concrete Rubble Pile (20)	WAG 17 RI Work Plan
123	Concrete Rubble Pile (21)	EPA and KY via WAG 17 ROD 9/29/1997
124	Concrete Rubble Pile (22)	EPA and KY via WAG 17 ROD 9/29/1997
125	Concrete Rubble Pile (23)	EPA and KY via WAG 17 ROD 9/29/1997
126	Concrete Rubble Pile (24)	EPA and KY via WAG 17 ROD 9/29/1997
127	Concrete Rubble Pile (25)	EPA and KY via WAG 17 ROD 9/29/1997
128	Concrete Rubble Pile (26)	EPA and KY via WAG 17 ROD 9/29/1997

Solid Waste Management Units/Areas of Concern by Operable Unit (Continued)

NO FURTHER ACTION (CONTINUED)		
SWMU No.	**Description**	**NFA Approval By**
130	C-611 550-gal Gasoline UST	KDWM 12/6/1996 EPA and KY via WAG 1&7 ROD
131	C-611 50-gal Gasoline UST	KDWM 12/6/1996 EPA and KY via WAG 1&7 ROD 8/10/1998
132	C-611 2,000-gal Oil UST	KDWM 12/6/1996 EPA and KY via WAG 1&7 ROD 8/10/1998
133	C-611 (unknown size) Grouted UST	KDWM 12/6/1996 EPA and KY via WAG 1&7 ROD 8/10/1998
134	C-611 1,000-gal Diesel/Gasoline Tank	KDWM 12/6/1996 EPA and KY via WAG 1&7 ROD 8/10/1998
136	C-740 TCE Spill Site	EPA and KY via WAG 1&7 ROD 8/10/1998
139	C-746-A1 UST	KDWM 12/9/2005
140	C-746-A2 UST	KDWM 12/19/1996
141	C-720 Inactive TCE Degreaser	KDWM 8/11/1992; EPA HSWA Class 1 Permit Mod 3/17/1993—Regulated by RCRA Permit
142	C-750-A 10,000-gal Gasoline Tank (UST)	EPA HSWA Class 1 Permit Mod 3/17/1993—Regulated by RCRA Permit; KDWM 3/25/1999
143	C-750-B 10,000-gal Diesel Tank (UST)	EPA HSWA Class 1 Permit Mod 3/17/1993; KDWM 3/25/1999
144	C-746-A Hazardous and Mixed Waste Storage Facility	EPA HSWA Class 1 Permit Mod 3/17/1993—Regulated by RCRA Permit; KDWM 10/10/2011
146	Concrete Rubble Pile (40)	EPA and KY via WAG 17 ROD 9/29/1997
147	Concrete Rubble Pile (41)	EPA and KY via WAG 17 ROD 9/29/1997
148	Concrete Rubble Pile (42)	EPA and KY via WAG 17 ROD 9/29/1997
149	Concrete Rubble Pile (43)	EPA and KY via WAG 17 ROD 9/29/1997
150	Concrete Rubble Pile (44)	EPA and KY via WAG 17 ROD 9/29/1997
151	Concrete Rubble Pile (45)	EPA and KY via WAG 17 ROD 9/29/1997
152	Concrete Rubble Pile (46)	EPA and KY via WAG 17 ROD 9/29/1997
157	KOW Toluene Spill Area	KDWM Superfund Branch 1/15/2020
173	C-746-A Trash-Sorting Facility	EPA HSWA Class 1 Permit Mod 3/17/1993; KDWM 12/18/1992
174	C-745-K Low-Level Storage Area	EPA HSWA Class 1 Permit Mod 3/17/1993; KDWM 2/22/1993
182	Western Portion of Yellow Water Line	KDWM Superfund Branch 1/15/2020

Solid Waste Management Units/Areas of Concern by Operable Unit (Continued)

NO FURTHER ACTION (CONTINUED)		
SWMU No.	**Description**	**NFA Approval By**
184	Concrete Rubble Pile (29)	EPA and KY via WAG 17 ROD 9/29/1997
186	C-751 Fuel Facility	KDWM 10/20/1993
187	C-611 Septic System	KDWM 10/20/1993
188	C-633 Septic System	KDWM 10/20/1993
189	C-637 Septic System	KDWM 10/20/1993
190	C-337A Sewage Treatment Aeration Tank	KDWM 10/20/1993
191	C-333-A Sewage Treatment Aeration Tank	KDWM 10/20/1993
197	Concrete Rubble Pile (30)	EPA and KY via WAG 17 ROD 9/29/1997
206	C-753-A Toxic Substances Control Act Waste Storage Bldg.	KDWM 3/7/1997
208	C-746-U Solid Waste Contained Landfill	KDWM 3/7/1997
360	C-535	KDWM 1/4/2006
361	C-727–90 day	KDWM 8/28/2007
362	G-310-04	KDWM 8/28/2007
363	G-331-03	KDWM 6/29/2004
364	G-331-05	KDWM 6/29/2004
365	G-333-02	KDWM 5/12/2003
366	G-333-03	KDWM 5/12/2003
367	G-333-04	KDWM 5/12/2003
368	G-333-08	KDWM 6/29/2004
369	G-333-10	KDWM 5/12/2003
370	G-333-20	KDWM 5/12/2003
371	G-335-01	KDWM 1/4/2006
372	G-337-02	KDWM 9/11/2003
373	G-337-03	KDWM 9/11/2003
374	G-337-13	KDWM 9/11/2003
375	G-337-14	KDWM 9/11/2003
376	G-337-15	KDWM 9/11/2003
377	G-337-22	KDWM 1/4/2006
378	G-340-01	EPA and KDWM 4/02/2015
379	G-340-03	EPA and KDWM 4/02/2015
380	G-340-04	EPA and KDWM 4/02/2015
381	G-340-05	EPA and KDWM 4/02/2015
382	G-340-06	KDWM 8/28/2007
383	G-400-01	KDWM 5/12/2003
384	G-400-02	KDWM 5/12/2003
385	G-409-25	KDWM 5/12/2003
386	G-410-01	KDWM 8/28/2007
387	C-416-01	KDWM 8/28/2007
388	C-416 Decontamination Pad	KDWM 4/12/2004
389	G-533-01	KDWM 6/29/2004
390	G-535-02	KDWM 6/29/2004
391	G-537-01	KDWM 1/4/2006
392	G-540-A-01	KDWM 2/14/2006
393	G-540-A-1-02	KDWM 2/14/2006
394	G-541-A-01	KDWM 4/12/2004
395	G-600-01	KDWM 3/8/2007
396	G-611-U-01	KDWM 3/8/2007
397	G-612-01	KDWM 3/8/2007
398	G-612-02	KDWM 3/8/2007

Solid Waste Management Units/Areas of Concern by Operable Unit (Continued)

NO FURTHER ACTION (CONTINUED)		
SWMU No.	**Description**	**NFA Approval By**
399	G-612-A-01	KDWM 3/8/2007
400	G-635-01	KDWM 3/8/2007
401	G-710	KDWM 1/4/2006
402	G-710-04	KDWM 9/11/2003
403	G-710-20	KDWM 1/4/2006
404	G-710-24	KDWM 9/11/2003
405	G-720-22	KDWM 2/14/2006
406	G-743-T-17-01	KDWM 6/29/2004
407	G-743-T-17-02	KDWM 3/8/2007
408	G-745-B-01	KDWM 3/8/2007
409	G-745-T-01	KDWM 2/14/2006
410	G-746-G-01	KDWM 6/29/2004
411	G-746-G-1-01	KDWM 3/8/2007
412	G-746-G-2-01	KDWM 11/1/2004
413	G-746-G-3-01	KDWM 11/1/2004
414	G-746-F-01	KDWM 1/4/2006
415	G-746-S-01	KDWM 8/28/2007
416	G-746-X-01 (PCBs)	KDWM 3/8/2007
417	G-746-X-01 (Asbestos)	KDWM 3/8/2007
418	G-748-B-01	KDWM 6/29/2004
419	C-752-C Decontamination Facility	KDWM 8/28/2007; KDWM 4/22/2022
420	G-752-C-02	KDWM 3/8/2007
421	G-754-01	KDWM 1/4/2006
422	G-755-A-01, G-755-A-02, and G-755-A-03	KDWM 1/28/2004
423	G-755-C-01	KDWM 1/28/2004
424	G-755-T-07-01	KDWM 1/28/2004
425	G-755-T-08	KDWM 1/28/2004
426	G-755-T-2-3-01	KDWM 1/28/2004
427	G-755-T-3-1-01	KDWM 1/28/2004
428	G-755-T-3-2-01	KDWM 1/28/2004
429	S-310-04	KDWM 8/28/2007
430	S-331-02	KDWM 1/4/2006
431	S-333-12	KDWM 5/12/2003
432	S-335-09	KDWM 1/4/2006
433	S-337-11	KDWM 9/11/2003
434	S-340-01	EPA and KY 4/2/2015
435	S-409-100	KDWM 5/12/2003
436	S-409-20	KDWM 5/12/2003
437	S-409-40	KDWM 5/12/2003
438	S-409-60	KDWM 5/12/2003
439	S-409-80	KDWM 5/12/2003
440	S-410-05	KDWM 8/28/2007
441	S-540-A-2-01	KDWM 6/29/2004
442	S-612-01	KDWM 2/14/2006
443	S-709-01	KDWM 6/29/2004
444	S-709-02	KDWM 6/29/2004
445	S-710-05	KDWM 2/14/2006
446	S-710-06	KDWM 9/11/2003
447	S-710-09	KDWM 1/4/2006
448	S-710-16	KDWM 9/11/2003
449	S-710-18	KDWM 9/11/2003
450	S-710-32	KDWM 1/4/2006

Solid Waste Management Units/Areas of Concern by Operable Unit (Continued)

NO FURTHER ACTION (CONTINUED)		
SWMU No.	**Description**	**NFA Approval By**
451	S-710-41	KDWM 9/11/2003
452	S-710-44	KDWM 1/4/2006
453	S-710-46	KDWM 9/11/2003
454	S-743-T-17-01	KDWM 2/14/2006
455	S-755-T-16-01	KDWM 1/28/2004
456	S-755-T-16-02	KDWM 1/28/2004
457	S-755-T-16-03	KDWM 1/28/2004
458	S-755-T-2-3-01	KDWM 1/28/2004
459	S-755-T-3-1-01	KDWM 1/28/2004
460	S-755-T-3-2-01	KDWM 1/28/2004
461	S-755-T-3-2-02	KDWM 1/28/2004
462	S-755-T-3-2-03	KDWM 1/28/2004
465	Yard Rubble Pile and Crushate Storage Area (G-Yard)	KDWM 10/13/2009
466	South of Dyke Road, Pond Area	KDWM 8/17/2009
467	Concrete Cylinder Holders Storage Area on Western Kentucky Wildlife Management Area	KDWM 8/17/2009
468	Area Northwest of Outfall 015	KDWM 2/14/2006
471	Outside C-746-B South Storage Area	KDWM 8/17/2009
473	C-746-B Pad, West	KDWM 8/28/2007
475	C-745-G5-01 (Paint Enclosure)	KDWM 2/14/2006
476	Concrete Crusher	KDWM 2/14/2006
479	C-204 Disintegrator Building	KDWM 6/3/2002
481	C-410-A Hydrogen Holder	KDWM 4/2/2002
484	C-611-M Storage Tank	KDWM 8/30/2002
485	C-611-N Sanitary Water Storage	KDWM 2/18/2002
490	McGraw Fuel Facility Waste Oil Storage Tank	KDWM 12/21/2001
491	Mercury Spill at the C-611 Water Treatment Plant Vault	KDWM 3/22/2004
494	Ash Receiver Area in C-410/420	KDWM 6/3/2016; EPA 6/9/2016
495	C-410-I Ash Receiver Shed	KDWM 6/3/2016; EPA 6/9/2016
496	C-410 Fluorine/Hydrogen Filters (Northeast Mezzanine)	KDWM 6/3/2016; EPA 6/9/2016
497	C-410/420 F_2 Cell Neutralization Room Vats	KDWM 6/3/2016; EPA 6/9/2016
514	C-340 Magnesium Fluoride Reject Silo	EPA and KY 4/2/2015
515	C-340 “Dirty” Dust Collection System	EPA and KY 4/2/2015
516	C-340 Derby Preparation Area Sludge Collection System	EPA and KY 4/2/2015
519	C-410 Sulfuric Acid Tank (C-634-B)	KDWM 1/10/2003
521	C-340 Saw System Degreaser	EPA and KY 4/2/2015
525	Concrete Water Tower Supports (KOW)	KDWM 8/28/2007
527	C-410 GSA/SAA at Column J-6	KDWM 8/28/2007
528	GSA/SAA at the Northwest corner of C-745-G3 Paint Enclosure	KDWM 2/14/2006
530	Soil and Debris Storage Area by C-745-T Yard	KDWM 3/8/2007
532	Photographic Solution Treatment Area in the C-102 Building	KDWM 5/21/2003
534	UST #18, within SWMU 193	KDWM (UST Branch) 12/4/2002
535	S-755-T08-01 (Satellite Accumulation Area at C-755, Trailer 8)	KDWM 2/14/2006
536	Concrete Truck Washout Area	KDWM 6/27/2002
537	S-400-001 (SAA Located Outside at the Southeast Corner of the C-400 Building)	KDWM 2/14/2006
538	S-MST-01-01 & S-MST-01-02 (Mobile Trailer 01)	KDWM 2/14/2006
539	S-MST-02-01 & S-MST-02-02 (Mobile Trailer 02)	KDWM 2/14/2006
540	S-MST-03-01 & S-MST-03-02 (Mobile Trailer 03)	KDWM 2/14/2006
542 A	G-746-B-01; S-746-B-01; S-746-B-02 (GSA/SAAs located outside C-746-A)	KDWM 1/28/2004

Solid Waste Management Units/Areas of Concern by Operable Unit (Continued)

NO FURTHER ACTION (CONTINUED)		
SWMU No.	**Description**	**NFA Approval By**
542 B	G-746-A-01; S-746-A-01; S-746-A-02 (GSA/SAAs located outside C-746-A)	KDWM 1/28/2004
543	T-746-S-01 (90-Day Storage Area)	KDWM 1/28/2004
544	T-752-C-01 (90-Day Storage Area)	KDWM 1/28/2004
545	C-755-T-22-01 and G-755-T-22	KDWM 1/28/2004
546	PGDP Post 67 Diesel Fuel Spill Area	KDWM 2/14/2006
547	PGDP Post 38 Diesel Spill Area	KDWM 2/14/2006
548	Staging Area for Concrete Piers, Wood and Rubble North Side of C-745-B Cylinder Yard	KDWM 8/28/2007
551	C-755-GSA-23 Located at C-755 near the East Fence Line	KDWM 8/28/2007
552	C-760 90-Day Accumulation Area	KDWM 3/8/2007
566	H-340-01	KDWM 12/02/2010
568	C-340 ST-90 Boxes	KDWM 12/02/2010
569	C-743-T-17 Sample Return Refrigerator	KDWM 5/24/2012
570	Sample Return Sealand	KDWM 5/24/2012

PENDING NO FURTHER ACTION DECISION	
SWMU No.	**Description**
	Reserved
SWMUs THAT WILL BE INVESTIGATED AND REMEDIATED BY THE U.S. ARMY CORPS OF ENGINEERS[24]	
95	KOW Burn Area

CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act
CSOU = Comprehensive Site Operable Unit
D&D = decontamination and decommissioning
EPA = U.S. Environmental Protection Agency
ER = environmental remediation
FFA = Federal Facility Agreement
GDP = gaseous diffusion plant
GSA= generator staging area
HSWA = Hazardous and Solid Waste Amendments
HVAC = heating, ventilating, and air-conditioning
KDWM = Kentucky Division of Waste Management
KOW = Kentucky Ordinance Works
KPDES = Kentucky Pollutant Discharge Elimination System
KY = Kentucky
NFA = no further action
NSDD = North-South Diversion Ditch
NTCRA = non-time-critical removal action
OU = operable unit
PCB = polychlorinated biphenyl
PGDP = Paducah Gaseous Diffusion Plant
RCW = recirculating cooling water
RI = remedial investigation
ROD = Record of Decision
SAA = satellite accumulation area
SAP = Sampling and Analysis Plan
SAR = SWMU assessment report
SWMU = solid waste management unit
SWOU = Surface Water Operable Unit
TBD = to be determined
TCE = trichloroethene
TSCA = Toxic Substances Control Act
UST = underground storage tank
WAG = waste area group
WKWMA = West Kentucky Wildlife Management Area

[24] The Corps of Engineers accepted responsibility for the investigation/remediation of this SWMU in a letter dated March 13, 1996. EPA and Kentucky review/approval of the CERCLA documentation (not yet available) associated with this SWMU has not occurred.

Detailed Facility D&D OU Facilities List

Facility Number	Description	SWMU/AOC Number	Facility Status	Integrated Site Evaluation (SE) Complete	CERCLA NTCRA Required
Gaseous Diffusion Process Facilities and Process Building Tie Lines and Bridges					
C-310	Purge and Product Building	--	Deactivating	No	Pending SE
C-310-A	Product Withdrawal Building	--	Deactivating	No	Pending SE
C-315	Surge and Waste Building	--	Shutdown	No	Pending SE
C-331	Process Building	--	Shutdown	No	Pending SE
C-333	Process Building	--	Deactivating	No	Pending SE
C-333-A	Feed Vaporization Facility	70	Deactivating	8/24/1987	Yes
C-335	Process Building	--	Deactivating	No	Pending SE
C-337	Process Building	--	Deactivating	No	Pending SE
C-337-A	Feed Vaporization Facility	71	Shutdown	8/24/1987	Yes
C-310-335[25]	Tie-Line	--	Deactivating	No	Pending SE
C-310-331-A	Bridge (Enclosed)	--	Deactivating	No	Pending SE
C-310-331-B	Tie-Line	--	Deactivating	No	Pending SE
C-315-331	Tie-Line	--	Deactivating	No	Pending SE
C-331-333-A	Bridge (Enclosed—300 ft)	--	Deactivating	No	Pending SE
C-331-333-B	Tie-Line (East)	--	Deactivating	No	Pending SE
C-331-333-C	Tie-Line (West)	--	Deactivating	No	Pending SE
C-331-335	Tie-Line	--	Deactivating	No	Pending SE
C-335-337-A	Bridge (Enclosed)	--	Deactivating	No	Pending SE
C-335-337-B	Tie-Line (North)	--	Deactivating	No	Pending SE
C-335-337-C	Tie-Line (South)	--	Deactivating	No	Pending SE
Process Support Facilities					
C-409	Stabilization Building	--	Operating	No	Pending SE
C-415	Feed Plant Storage	482	Operating	7/18/2001; under development	Re-evaluating SE
C-600	Steam Plant	--	Standby	No	Pending SE
Switchyards					
C-531-1	Switch House	82	Shutdown	8/24/1987	Yes
C-531-3A	Fire Valve House No. 1	82	Shutdown	8/24/1987	Yes
C-531-3B	Fire Valve House No. 2	82	Shutdown	8/24/1987	Yes
C-532	Relay House[26]	82	Standby	8/24/1987	Yes
C-533-1	Switch House[26]	83	Standby	8/24/1987	Yes
C-533-3A	Fire Valve House No. 1	83	Shutdown	8/24/1987	Yes
C-533-3B	Fire Valve House No. 2	83	Shutdown	8/24/1987	Yes
C-533-3C	Fire Valve House No. 3	83	Shutdown	8/24/1987	Yes
C-533-3D	Fire Valve House No. 4	83	Shutdown	8/24/1987	Yes
C-535-1	Switch House	84	Deactivating	8/24/1987	Yes
C-535-3A	Fire Valve House No. 1	84	Shutdown	8/24/1987	Yes
C-535-3B	Fire Valve House No. 2	84	Shutdown	8/24/1987	Yes
C-535-4	Test Shop (Maintenance Office)	84	Shutdown	8/24/1987	Yes
C-536	Relay House	84	Shutdown	8/24/1987	Yes

[25] The C-310-335 Tie-Line intersects with the C-331-335 Tie-Line and, as a result, the C-310-335 Tie-Line is not listed separately in the facilities information management system.

[26] These facilities have "Standby" status designation until the DOE Excess Screening process is complete. Once approval is received, these facilities will receive a status of "Deactivating" or "Shutdown" because the facility no longer will be maintained for future use.

Detailed Facility D&D OU Facilities List (Continued)

Facility Number	Description	SWMU/AOC Number	Facility Status	Integrated Site Evaluation (SE) Complete	CERCLA NTCRA Required
Switchyards (Continued)					
C-537-1	Switch House	85	Deactivating	8/24/1987	Yes
C-537-3A	Fire Valve House No. 1	85	Shutdown	8/24/1987	Yes
C-537-3B	Fire Valve House No. 2	85	Shutdown	8/24/1987	Yes
C-537-3C	Fire Valve House No. 3	85	Shutdown	8/24/1987	Yes
C-537-3D	Fire Valve House No. 4	85	Shutdown	8/24/1987	Yes
C-537-4	Test Shop	85	Shutdown	8/24/1987	Yes
C-540-A	Oil Pump House	83	Shutdown	8/24/1987	Yes
C-541-A	Oil Pump House	84	Shutdown	8/24/1987	Yes
Cooling Towers[27]					
Phosphate (Former Chromate) Reduction System Facilities					
C-616-A	Chemical Feed Building	42	Standby	12/18/1991	Yes
C-616-B	Clarifier-East	42	Standby	12/18/1991	Yes
C-616-C	Lift Station	42	Operating	12/18/1991	Yes
C-616-D	Sludge Vault and Valve Pit	42	Operating	12/18/1991	Yes
C-616-H1	Ferrous Sulfate Storage Tank (East)	42	Standby	12/18/1991	Yes
C-616-H2	Ferrous Sulfate Storage Tank (West)	42	Standby	12/18/1991	Yes
C-616-J	Reduction Tank (East)	42	Standby	12/18/1991	Yes
C-616-K	Service Building	42	Standby	12/18/1991	Yes
C-616-L	Effluent Control Vault	42	Standby	12/18/1991; under development	Re-evaluating SE
C-616-M	Clarifier (West)	42	Standby	12/18/1991	Yes
C-616-N	Reduction Tank (West)	42	Standby	12/18/1991	Yes
C-616-P	Sludge Vault and Valve Pit	42	Operating	12/18/1991	Yes
Sewage System and Water Treatment Ancillary Facilities					
C-611-A	Building and Shop Storage	--	Operating	12/1/2021	No[28]
C-611-A1	Activated Carbon Storage Facility		Operating	12/1/2021	No
C-611-B	Head House	--	Operating	12/1/2021	No[28]
C-611-B1	Polymer Feed System Enclosure	--	Operating	12/1/2021	No[28]
C-611-C	Flocculator Basin	--	Operating	12/1/2021	No[28]
C-611-F1	Secondary Coagulation Basin	--	Operating	12/1/2021	No[28]
C-611-F2	Chemical Feed Building for C-611-F1		Operating	12/1/2021	No[28]
C-611-F3	Feed Facility		Operating	12/1/2021	No[28]
C-611-H	Filter Building and Pump Station	--	Operating	12/1/2021	No[28]
C-611-J	Pump House (Settled Water)	--	Operating	12/1/2021	No[28]
C-611-P	Building–Pump House	--	Standby	8/26/2021	No
C-611-S	Storage and Chlorine Facility		Operating	12/1/2021	No[28]

[27] Facilities associated with the cooling towers have undergone consultation. Consultation for the C-631, C-633, C-635, and C-637 pumphouses and cooling towers was completed 1/9/2023, 4/3/2023, 8/29/2022, and 6/22/2023, respectively, and concurrence received 1/24/2023, 4/4/2023, 8/31/2022, 6/22/2023, respectively. The aboveground structures of the facilities associated with the C-631, C-633, C-635, and C-637 pumphouses and cooling towers were agreed to be demolished outside of CERCLA; the concrete pad and/or soils associated with those facilities (SWMUs 86, 87, 88, and 89) will be evaluated as part of the Soils and Slabs OU. The C-631, C-633, C-635, and C-637 facilities were removed from the Facilities D&D OU List and have been listed in Table 3.1.

[28] SE requires investigation of slab and underlying soils, prior to AOC/SWMU determination. Timing of the SE will be incorporated into baseline and will be conducted as part of the GA.

Detailed Facility D&D OU Facilities List (Continued)

Sewage System and Water Treatment Ancillary Facilities (Continued)					
C-611-T	Booster Pump Station Plant Water[29]	--	Shutdown	8/26/2021	No
C-611-U	Softening Facility (West)	--	Operating	12/1/2021	No[30]
C-611-X	Softening Facility (East)	--	Operating	12/1/2021	No[30]
C-611-Z	Flocculator Basin	--	Operating	12/1/2021	No[30]
C-615-A	Primary Settling Tank/Catch Basin	38	Operating	8/24/1987	Yes
C-615-B	Final Settling Tank/Catch Basin	38	Operating	8/24/1987	Yes
C-615-C	Sewage Plant Monitoring Building	38	Operating	8/24/1987	Yes
C-615-D	Digester	38	Operating	8/24/1987	Yes
C-615-E	Trickling Filter	38	Operating	8/24/1987	Yes
C-615-F	Dry Bed for Trickling Filter	38	Operating	8/24/1987	Yes
Process Laboratory and Maintenance Facilities					
C-709	Plant Laboratory Annex	--	Operating	No	Pending SE
C-710	Technical Services Building/Lab	--	Operating	No	Pending SE
C-720	Maintenance and Storage Building	--	Operating	No	Pending SE
C-720-A	Compressor Shop Addition	--	Standby	No	Pending SE
C-720-B	Machine Shop Addition	--	Standby	No	Pending SE
C-720-C	Converter Shop Addition	--	Operating	No	Pending SE
C-720-C1	Paint Shop	--	Operating	No	Pending SE
C-720-E	Change House Addition	--	Operating	No	Pending SE
C-720-K	Instrument Shop Addition	--	Operating	No	Pending SE
C-724-A	Carpenter Shop Annex	--	Operating	No	Pending SE
C-724-B	Carpenter Shop	--	Operating	3/18/2021	No
C-724-C	Paint Shop	178	Operating	1/25/1993; 3/18/2021	No
C-725	Paint Shop	--	Operating	7/13/2021	No[30]
C-726	Sandblast Building	172	Shutdown	10/29/1992; under development	Re-evaluating SE
C-728	Motor Cleaning Facility	33	Standby	6/2/2015; under development	Re-evaluating SE
Gaseous Diffusion Plant Support Facilities					
C-350	Drying Agent Storage Building	--	Deactivating	2/18/2021	No
C-360	Toll Transfer and Sampling Building	572	Shutdown	6/2/2021	Yes
C-360-A	Toll Transfer and Sampling Building Annex	--	Operating	No	Pending SE
C-606	Coal Crusher Building	--	Shutdown	3/18/2021	Yes
C-620	Air Compressor Room	--	Standby	No	Pending SE
C-729	Acetylene Building	--	Shutdown	2/18/2021	No
C-744	Material Handling Building	--	Operating	2/18/2021	No
C-750	Garage	573	Operating	8/4/2021	No

AOC = area of concern
D&D = Decontamination and Decommissioning
CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act
NTCRA = non-time-critical removal action
SE = site evaluation
SWMU = solid waste management unit
Operating—Facility is currently in use supporting U.S. Department of Energy mission activities.
Standby—Facility is currently not in use but may be utilized to support future U.S. Department of Energy mission activities.
Shutdown—Facility is not being maintained for future use and is awaiting disposition (excess property determination is pending).
Deactivating—Interim process where stabilization and deactivation activities have been initiated and are ongoing.

[29] This facility will no longer be used for pumping water; however, it may be used by Fire Services in an emergency situation to fill the C-631 Basin.
[30] SE requires investigation of slab and underlying soils, prior to AOC/SWMU determination. Timing of the SE will be incorporated into baseline and will be conducted as part of the GA.

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Notes:
1. Data from the most recent 2022 sampling event used except where noted.
2a. For well clusters completed as multiple depths, all wells are labeled with their most recent sampling result. The maximum of the values for the well cluster was used for contouring.
2b. For multiport wells with multiple sampling depths within the same well, the most recent result from each of the sampled ports was compared (even if the most recent port samples were collected on different days) and the maximum result from the comparison was used for contouring and labeling. This selection criterion may result in different ports selected for TCE or Tc-99.

Ohio River

MW146 11/1/2022 (1U)
MW439 5/20/2021 (0.88J)
MW433 11/1/2022 (1U)
MW441 11/1/2022 (1.39)
MW435 11/1/2022 (0.96J)
LBCSP5 4/28/2022 (0.4J)
MW443 5/21/2021 (0.91J)
MW442 5/21/2021 (2.52)
MW444 5/21/2021 (1.03)
MW450 5/21/2021 (7.73)
MW445 5/20/2021 (0.65J)
MW448 5/21/2021 (1.33)
MW447 5/20/2021 (0.67J)
R245 11/2/2022 (1U)
R83 11/2/2022 (1U)
R21 11/2/2022 (1U)
MW474 5/24/2021 (1U)
MW473 5/24/2021 (1U)
MW475 5/24/2021 (1U)
MW476 5/24/2021 (1U)
MW199 11/1/2022 (1U)
MW201 11/1/2022 (0.84J)
MW135 9/21/2022 (0.4J)
MW463 5/17/2022 (0.85J)
MW464 5/17/2022 (0.71J)
MW465 5/27/2021 (0.92J)
MW467 5/25/2021 (3.13)
MW466 5/25/2021 (0.69J)
MW468 5/25/2021 (6.53)
MW469 5/17/2022 (1U)
MW470 5/17/2022 (1U)
MW471 5/17/2022 (1U)
MW472 5/17/2022 (1U)
MW411 9/26/2022 (0.41J)
R14 11/3/2022 (1U)
MW236 5/2/2022 (4.53)
MW489 9/15/2021 (41.8)
MW490 9/15/2021 (33.3)
MW492 5/20/2021 (13)
MW491 5/20/2021 (6.38)
MW202 11/1/2022 (1U)
MW240 5/2/2022 (1.69)
MW98 9/20/2022 (1.27)
MW493 5/27/2021 (1.05J)
R13 11/3/2022 (1U)
MW494 5/27/2021 (1.22J)
MW361 11/17/2022 (1U)
MW360 10/6/2022 (0.61J)
MW357 10/6/2022 (2.84)
MW364 10/10/2022 (3.01)
MW358 10/6/2022 (0.63J)
MW363 10/10/2022 (1U)
MW139 5/9/2022 (1.44)
MW477 5/25/2021 (0.59J)
MW99 5/17/2022 (0.36J)
MW100 5/9/2022 (1U)
MW125 5/2/2022 (24.4)
MW367 10/10/2022 (1U)
MW366 10/10/2022 (2.03)
MW486A 5/21/2021 (40.9)
MW485 5/25/2021 (78.7)
MW148 5/21/2021 (7.51)
R20 11/2/2022 (1U)
MW483 5/2/2022 (31.5)
MW484 5/2/2022 (2.93)
MW487 5/21/2021 (5.08)
MW488 5/2/2022 (0.34J)
MW252 5/2/2022 (1U)
MW410 9/19/2022 (0.62J)
MW373 10/11/2022 (4.13)
MW370 10/11/2022 (1.68)
MW372 10/11/2022 (2.78)
MW392 10/17/2022 (12.2)
MW369 10/11/2022 (1.02)
MW200 5/24/2021 (1.04)
MW391 10/17/2022 (3.44)
MW419 5/9/2022 (27.5)
MW388 10/13/2022 (1U)
MW418 5/9/2022 (6.53)
MW387 10/13/2022 (0.63J)
MW452 11/1/2022 (1U)
R2 11/2/2022 (3.98)
MW451 5/24/2021 (0.37J)
MW221 10/12/2022 (1U)
MW384 10/13/2022 (0.53J)
MW253A 5/3/2022 (1.03)
MW409 9/19/2022 (1.3)
MW385 10/13/2022 (1U)
MW134 11/1/2022 (1U)
MW454 5/2/2022 (42.5)
MW223 10/12/2022 (1U)
MW395 10/17/2022 (5.62)
MW453 5/2/2022 (28.9)
MW222 10/12/2022 (1U)
MW394 10/17/2022 (7)
MW224 10/18/2022 (1U)
MW220 10/18/2022 (1U)
MW193 5/27/2021 (1U)
MW197 9/20/2022 (32.5)
MW397 10/18/2022 (1U)
MW150 5/3/2022 (1U)
MW456 12/13/2022 (8.56)
MW455 12/13/2022 (1.61)
MW458 9/7/2022 (2.62)
MW459 9/8/2022 (3.75)
MW501 9/8/2022 (1U)
MW457 9/7/2022 (1.37)
MW460 12/13/2022 (1.94)
MW502 9/8/2022 (1.94)
MW461 9/7/2022 (14.9)
MW194 11/1/2022 (1U)
MW243 9/7/2022 (15.4)
MW462 9/7/2022 (31.8)
MW242 9/7/2022 (3.44)
MW244 9/7/2022 (2.14)
MW498 9/6/2022 (658)
MW500 9/6/2022 (477)
MW248 9/7/2022 (1.94)
MW499 9/6/2022 (638)
MW481 5/12/2021 (1U)
MW250 9/7/2022 (2.52)
MW504 9/6/2022 (2.02)
MW482 5/12/2021 (66.5)
MW106A 11/1/2022 (3.42)
HV217/EW232 10/4/2022 (388)
MW165A 9/7/2022 (0.56J)
MW291 10/5/2022 (3.19)
MW293A 10/5/2022 (18.4)
MW245 9/7/2022 (2.91)
MW503 9/6/2022 (11)
MW496 10/3/2022 (121)
MW283 10/5/2022 (6.97)
MW497 9/6/2022 (88.7)
MW173 9/8/2022 (1U)
MW126 10/5/2022 (30)
R53 11/2/2022 (1U)
MW63 9/6/2022 (13.6)
HV222/EW233 10/4/2022 (1290)
MW355 9/6/2022 (7.01)
MW124 10/5/2022 (67.3)
MW432 11/1/2022 (1.45)
MW65 9/6/2022 (7.35)
MW145 10/3/2022 (29.3)
MW191 5/9/2022 (1U)
MW66 9/19/2022 (314)
MW144 10/3/2022 (95.4)
MW288 10/5/2022 (151)
MW339 12/12/2022 (667)
MW531 10/4/2022 (89.6)
MW495 10/3/2022 (46.1)
MW292 10/5/2022 (163)
MW426 11/1/2022 (1U)
MW340 12/12/2022 (3650)
MW169 5/21/2021 (224J)
MW427 11/1/2022 (0.48J)
MW431 12/13/2022 (2.38)
MW262 12/28/2021 (540)
MW261 5/10/2022 (2070)
MW205 5/26/2021 (1.69J)
MW429A 9/6/2022 (3.41)
MW480 10/3/2022 (166)
MW428 9/8/2022 (2.58)
MW430 9/6/2022 (2.76)
MW524 10/3/2022 (8.12)
MW260 10/4/2022 (38.9)
MW354 12/13/2022 (3.6)
MW533 10/4/2022 (848)
MW479 10/3/2022 (1.16)
MW403-PRT3 12/13/2022 (1.93)
MW525 10/5/2022 (377)
SP234/EW234 12/12/2022 (313)
MW404-PRT4 5/27/2021 (5.42)
MW526 10/5/2022 (1720)
MW556 10/3/2022 (59.2)
MW329 5/12/2021 (1.15)
MW542 12/12/2022 (1.84)
MW527 10/4/2022 (7.96)
MW163 10/4/2022 (58.9)
MW161 12/12/2022 (77.9)
MW528 10/4/2022 (14)
MW536 10/4/2022 (22.1)
SP235/EW235 12/12/2022 (106)
MW478 10/3/2022 (241)
MW545 12/12/2022 (1.49)
MW549 5/19/2021 (4130J)
MW537 10/4/2022 (42.3)
MW258 10/3/2022 (169)
MW547 12/12/2022 (914)
MW529 10/3/2022 (791)
MW543 12/12/2022 (1.68)
MW539 10/4/2022 (21.9)
MW256 10/4/2022 (108)
MW544 12/12/2022 (15.8)
MW530 10/4/2022 (42.9)
MW538 10/4/2022 (64.2)
MW328 5/12/2021 (0.77J)
MW546 12/12/2022 (82.8)
MW582 7/6/2022 (76)
MW68 6/8/2022 (64.5J)
MW255 10/4/2022 (134)
MW576 7/6/2022 (3760)
MW586 7/6/2022 (900)
MW71 6/8/2022 (2.12J)
MW575 7/6/2022 (1100)
MW203 7/11/2022 (51.6)
MW579 7/6/2022 (22.3)
MW581 7/6/2022 (14.9)
MW580 7/6/2022 (14.7)
MW578 7/6/2022 (80.8)
MW577 7/6/2022 (138)
MW103 12/27/2021 (1.7)
R9 11/2/2022 (1U)

See Inset A
See Inset B

Inset A
MW67 7/25/2022 (1030)
MW84A 7/11/2022 (6570)
MW86 7/25/2022 (7440)
MW338 7/25/2022 (647)
MW87A 8/15/2022 (1400)
MW337 7/25/2022 (1780)
MW89 7/25/2022 (244)
MW90A 8/15/2022 (222)
MW92 7/25/2022 (28.2J)
MW333 7/21/2022 (2210)
MW420 8/15/2022 (1620)
MW548 7/21/2022 (4990)
MW93A 8/15/2022 (1630)
MW76 7/21/2022 (254)
MW95A 7/21/2022 (2180)
MW415 5/19/2021 (1910)
MW414 5/19/2021 (695)
MW227 7/21/2022 (196)
MW551 5/26/2021 (1320)
MW226 7/21/2022 (166)
MW550 5/26/2021 (7260J)
MW417 5/19/2021 (883)
MW416 12/27/2021 (320)

Inset B
MW168 5/21/2021 (54.6)
MW422-PRT3 9/14/2022 (18900)
MW341 12/6/2022 (3720)
MW423-PRT3 9/13/2022 (14900)
MW343 9/13/2022 (8480)
MW421-PRT3 9/14/2022 (38500)
MW178 12/7/2022 (67.5)
MW424-PRT3 9/14/2022 (5530)
MW573 12/7/2022 (7000)
MW425-PRT2 9/13/2022 (2050)
MW569 12/5/2022 (329)
MW570 12/5/2022 (4250)
MW574 12/7/2022 (1590)
MW342 9/14/2022 (2450)
MW571 12/5/2022 (3380)
MW567 12/6/2022 (1460)
MW568 12/6/2022 (8110)
MW175 9/14/2022 (3180)
MW566 12/6/2022 (173)
MW572 12/7/2022 (943)
MW563 12/5/2022 (23600)
MW406-PRT2 1/19/2022 (7820)
MW564 12/5/2022 (4840)
MW155 12/6/2022 (3320)
MW565 12/5/2022 (1370)
MW156 12/6/2022 (3640)
MW560 12/6/2022 (43.4)
MW561 12/6/2022 (3050)
MW407-PRT2 1/18/2022 (272000)
MW562 12/6/2022 (1460)
MW408-PRT5 1/19/2022 (2560)
MW557 12/5/2022 (10400)
MW405-PRT4 1/19/2022 (638)
MW558 12/5/2022 (2310)
MW505 12/6/2022 (16.6)
MW559 12/5/2022 (1100)
MW506 12/6/2022 (2910)
MW507 12/6/2022 (170)

N
TRUE
20°
PLANT
Feet
600 300 0 600 1,200 1,800

2022 TCE Plume Concentration Fields
- 5 - 100 µg/L
- 100 - 1,000 µg/L
- 1,000 - 10,000 µg/L
- 10,000 - 100,000 µg/L
- ≥ 100,000 µg/L

- Upper RGA Well
- Middle RGA Well
- Lower RGA Well
- Multizone RGA Well
- Extraction Well
- Seep Monitoring Location

- RGA Well outside Plume Concentration Field showing TCE > 1 µg/L
- Surface Water Course Centerline
- DOE Property Boundary
- Roadways
- 229 Boundary

- Limited
- Water Policy

MW100 5/9/2022 (1U) - Monitoring Well Identification
Date of Sample and Sample Value (TCE Concentration in µg/L)
U = Compound analyzed for, but not detected at or below, the lowest concentration reported
J = Concentration is estimated

Note: Contours defining >10,000 µg/L used historical records in addition to recent groundwater monitoring results.

MAP SOURCE INFORMATION
Map Generation Date and Location - 4/18/2023 Geosyntec\\fedprojects-01\paducah$\Knoxville\GW Strategy\2022 PLUME MAP UPDATE\05 GIS\MXD\Fig_C01_2022PlumesTCER1.mxd
Monitoring and Extraction Well, RGA Well outside Plume Concentration Field showing TCE > 1 µg/L, and Seep Monitoring Layer Location: Geosyntec\\fedprojects-01\paducah$\Knoxville\GW Strategy\2022 PLUME MAP UPDATE\05 GIS\SHP\2021-2022_TCE_Most_Recent.shp
2022 TCE Plume Concentration Fields: Geosyntec\\fedprojects-01\paducah$\Knoxville\GW Strategy\2022 PLUME MAP UPDATE\05 GIS\SHP\2022_TCE_100000.shp\2022_TCE_10000_100000.shp\2022_TCE_1000_10000.shp\2022_TCE_100_1000.shp\2022_TCE_5_100.shp
DOE Property Boundary and Surface Water Course Centerline provided by FRNP on 2/4/2021 and 11/8/2022, respectively.
Roadways, 229 Boundary, and Water Policy Area downloaded from PEGASIS on 3/16/2021.
Limited Area shapefile provided by FRNP on 2/4/2021 and external limits confirmed by FRNP on 3/21/2022.

U.S. DEPARTMENT OF ENERGY
PORTSMOUTH / PADUCAH PROJECT OFFICE
PADUCAH GASEOUS DIFFUSION PLANT

FOUR RIVERS NUCLEAR PARTNERSHIP, LLC

\\geosyntec-01\paducah$\Knoxville\GW Strategy\2022 PLUME MAP UPDATE\05 GIS\MXD\Fig_C01_2022PlumesTCER1.mxd 4/18/2023

Figure A.3. 2022 TCE Plume—Regional Gravel Aquifer

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Notes:
1. Data from the most recent 2022 sampling event used except where noted.
2a. For well clusters completed as multiple depths, all wells are labeled with their most recent sampling result. The maximum of the values for the well cluster was used for contouring.
2b. For multiport wells with multiple sampling depths within the same well, the most recent result from each of the sampled ports was compared (even if the most recent port samples were collected on different days) and the maximum result from the comparison was used for contouring and labeling. This selection criterion may result in different ports selected for TCE or Tc-99.

Ohio River

MW146 11/1/2022 (-2.41U)
MW441 11/1/2022 (4.23U)
MW433 11/1/2022 (1.46U)
MW435 11/1/2022 (3.67U)
MW444 5/21/2021 (3.32U)
MW443 5/21/2021 (5.9U)
MW442 5/21/2021 (4.77U)
MW450 5/21/2021 (13.6U)
MW445 5/20/2021 (-0.0544U)
MW448 5/21/2021 (10.3U)
MW447 5/20/2021 (2.83U)
R245 11/2/2022 (-2.75U)
MW199 11/1/2022 (-3.46U)
MW201 11/1/2022 (-1.15U)
MW135 9/21/2022 (58.4)
R14 11/3/2022 (7.99U)
MW489 5/24/2021 (10.3U)
MW202 11/1/2022 (0.216U)
MW236 5/2/2022 (4.67U)
MW490 5/24/2021 (19U)
MW492 5/20/2021 (56)
MW240 5/2/2022 (-5.62U)
MW491 5/20/2021 (58.7)
MW98 9/20/2022 (36.7)
MW493 5/27/2021 (21U)
MW360 10/6/2022 (3.53U)
MW494 5/27/2021 (32.6)
MW361 10/6/2022 (45.1)
MW364 10/10/2022 (35)
MW357 10/6/2022 (35.2)
MW363 10/10/2022 (-7.61U)
R13 11/3/2022 (4.59U)
MW358 10/6/2022 (17.5)
MW367 10/10/2022 (-14.3U)
MW139 5/9/2022 (3.15U)
MW366 10/10/2022 (54.9)
MW125 5/2/2022 (25.5)
MW488 5/2/2022 (-10.5U)
MW67 7/25/2022 (86.5)
MW84A 11/7/2022 (64)
MW86 7/25/2022 (16.6U)
MW87A 11/7/2022 (8.59U)
MW338 7/25/2022 (21.6)
MW337 7/25/2022 (219)
MW89 7/25/2022 (6.61U)
MW90A 11/7/2022 (22.3)
MW92 7/25/2022 (9.48U)
MW333 7/21/2022 (61.2)
MW420 11/7/2022 (-4.28U)
MW95A 7/21/2022 (-0.876U)
MW548 7/21/2022 (57.1)
MW76 7/21/2022 (10.9U)
MW415 5/19/2021 (33.5)
MW93A 11/7/2022 (15U)
MW414 5/19/2021 (58.7)
MW227 7/21/2022 (5.62U)
MW226 7/21/2022 (-0.81U)
MW417 5/19/2021 (29.2)
MW551 5/26/2021 (-0.634U)
MW550 5/26/2021 (0.439U)
MW416 5/19/2021 (30.2)
Inset A
MW373 10/11/2022 (-1.78U)
MW372 10/11/2022 (69.7)
MW370 10/11/2022 (20.9)
MW369 10/11/2022 (56.4)
MW391 10/17/2022 (11.4U)
MW200 5/24/2021 (19.4)
MW387 10/13/2022 (14.5U)
MW392 10/17/2022 (4.19U)
MW419 5/9/2022 (-2.51U)
MW388 10/13/2022 (90.5)
MW221 10/12/2022 (12.1U)
MW418 5/9/2022 (-11.8U)
MW384 10/13/2022 (49.9)
MW222 10/12/2022 (10.8U)
MW451 5/24/2021 (2.99U)
R2 11/2/2022 (5.43U)
MW452 11/1/2022 (-0.67U)
MW224 10/18/2022 (0.623U)
MW385 10/13/2022 (47.5)
MW134 11/1/2022 (2.22U)
MW454 5/2/2022 (8.09U)
MW453 5/2/2022 (13.8U)
MW223 10/12/2022 (11.2U)
MW395 10/17/2022 (8.43U)
MW394 10/17/2022 (11.1U)
MW220 10/18/2022 (21.3U)
MW397 10/18/2022 (23)
MW197 9/20/2022 (39)
MW150 5/3/2022 (-10.1U)
MW456 12/13/2022 (38.9)
MW457 9/7/2022 (10.6U)
MW455 12/13/2022 (-3.5U)
MW458 9/7/2022 (15.6)
MW459 9/8/2022 (30.9)
MW460 12/13/2022 (121)
MW194 11/1/2022 (-9.9U)
MW502 9/8/2022 (-1.46U)
MW461 9/7/2022 (5.52U)
MW501 9/8/2022 (-2.71U)
MW462 9/7/2022 (28.2)
MW242 9/7/2022 (28.1)
MW243 9/7/2022 (18)
MW500 9/6/2022 (318)
MW244 9/7/2022 (-0.0314U)
MW248 9/7/2022 (11.1U)
MW499 9/6/2022 (320)
MW250 9/7/2022 (3.94U)
HV217/EW232 10/4/2022 (184)
MW481 5/12/2021 (-2.36U)
MW245 9/7/2022 (-0.421U)
MW504 9/6/2022 (8.47U)
MW482 5/12/2021 (11.8U)
MW291 10/5/2022 (3.8U)
MW106A 11/1/2022 (3.08U)
MW497 9/6/2022 (62.8)
MW503 9/6/2022 (247)
MW165A 9/7/2022 (5.3U)
MW355 9/6/2022 (34.4)
MW496 10/3/2022 (20.7)
MW293A 10/5/2022 (5.46U)
MW283 10/5/2022 (3.34U)
MW63 9/6/2022 (15.2)
HV222/EW233 10/4/2022 (451)
MW498 9/6/2022 (332)
MW65 9/6/2022 (21.8)
MW173 9/8/2022 (-2.7U)
R53 11/2/2022 (0.543U)
MW66 9/6/2022 (233)
MW339 12/12/2022 (32.5)
MW145 10/3/2022 (31.9)
MW288 10/5/2022 (25.2)
MW126 10/5/2022 (2.22U)
MW124 10/5/2022 (3.78U)
MW432 11/1/2022 (0.56U)
MW340 12/12/2022 (2230)
MW144 10/3/2022 (55)
MW426 11/1/2022 (5.5U)
MW427 11/1/2022 (-0.519U)
MW261 5/10/2022 (1110)
MW495 10/3/2022 (49.9)
MW292 10/5/2022 (9.77)
MW205 5/26/2021 (-5.45U)
MW531 10/4/2022 (72)
MW428 9/8/2022 (-0.651U)
MW429A 9/6/2022 (5.66U)
MW169 5/21/2021 (68.2)
MW480 10/3/2022 (33.7)
MW354 12/13/2022 (19U)
MW430 9/6/2022 (7.48U)
MW262 5/19/2021 (218)
MW524 10/3/2022 (6.05U)
MW260 10/4/2022 (28.4)
MW479 10/3/2022 (-2.13U)
MW525 10/5/2022 (129)
MW533 10/4/2022 (43.5)
SP234/EW234 12/12/2022 (55.3)
MW403-PRT3 12/13/2022 (-3.68U)
MW526 10/5/2022 (176)
MW556 10/3/2022 (23)
MW404-PRT4 5/27/2021 (-2.52U)
MW329 5/12/2021 (-3.73U)
MW163 10/4/2022 (62.2)
See Inset A
MW527 10/4/2022 (18.7)
MW536 10/4/2022 (136)
MW478 10/3/2022 (6.75U)
SP235/EW235 12/12/2022 (25)
MW528 10/4/2022 (90.4)
MW256 10/4/2022 (12.2)
MW258 10/3/2022 (2.92U)
MW537 10/4/2022 (132)
See Inset B
MW161 5/10/2022 (-4.8U)
MW549 5/19/2021 (3.49U)
MW529 10/3/2022 (196)
MW538 10/4/2022 (24.8)
MW255 10/4/2022 (-0.316U)
MW530 10/4/2022 (32.4)
MW539 10/4/2022 (24.6)
MW328 5/12/2021 (-2.1U)
MW203 7/11/2022 (54.1)
MW71 6/8/2022 (-1.01U)
MW68 6/8/2022 (18.6U)
MW103 5/12/2021 (-5.08U)
MW168 5/21/2021 (1340)
MW422-PRT1 9/14/2022 (21200)
MW423-PRT1 9/13/2022 (16400)
MW421-PRT1 9/14/2022 (2270)
MW341 12/6/2022 (1540)
MW343 9/13/2022 (11900)
MW178 12/7/2022 (91.4)
MW424-PRT2 9/14/2022 (20500)
MW573 12/7/2022 (84.1)
MW425-PRT3 9/13/2022 (14300)
MW569 12/5/2022 (527)
MW574 12/7/2022 (974)
MW566 12/6/2022 (63.6)
MW570 12/5/2022 (2440)
MW342 9/14/2022 (807)
MW571 12/5/2022 (1190)
MW567 12/6/2022 (51.5)
MW572 12/7/2022 (124)
MW568 12/6/2022 (45.9)
MW175 9/14/2022 (294)
MW563 12/5/2022 (189)
MW405-PRT5 12/7/2022 (58.1)
MW564 12/5/2022 (65.1)
MW155 12/6/2022 (90.9)
MW560 12/6/2022 (5.92U)
MW565 12/5/2022 (125)
MW561 12/6/2022 (181)
MW156 12/6/2022 (-1.76U)
MW562 12/6/2022 (139)
MW406-PRT5 12/8/2022 (6.29U)
MW557 12/5/2022 (15.1U)
MW407-PRT2 1/18/2022 (53.4)
MW558 12/5/2022 (42.3)
MW408-PRT5 12/8/2022 (12.1U)
MW505 12/6/2022 (38.3)
MW559 12/5/2022 (67.2)
MW506 12/6/2022 (50.2)
MW507 12/6/2022 (28.6)
Inset B

N
600 300 0 600 1,200 1,800 Feet

2022 Tc-99 Plume Concentration Fields
- 900 - 1,930 pCi/L
- 1,930 - 3790 pCi/L
- ≥ 3790 pCi/L

- Upper RGA Well
- Middle RGA Well
- Lower RGA Well
- Multizone RGA Well
- Extraction Well

- Surface Water Course Centerline
- DOE Property Boundary
- Roadways
- 229 Boundary

- Limited Area
- Water Policy Area

MW242 9/7/2022 (28.1) - Monitoring Well Identification; Date of Sample and Sample Value (Tc-99 Concentration in pCi/L); U = Compound analyzed for but not detected at or below the lowest concentration reported; UJ = Not detected and result estimated

MAP SOURCE INFORMATION
Map Generation Date and Location - 3/2/2023 Geosyntec\\fedprojects-01\paducah$\Knoxville\GW Strategy\2022 PLUME MAP UPDATE\05 GIS\MXD\Fig_C02_2022PlumesTc99R1.mxd
Monitoring and Extraction Well Layer Location: Geosyntecfedprojects-01\paducah$\Knoxville\GW Strategy\2022 PLUME MAP UPDATE\05 GIS\SHP\2021-2022_Tc-99_Most_Recent.shp
2022 Tc-99 Plume Concentration Fields : Geosyntec\\fedprojects-01\paducah$\Knoxville\GW Strategy\2022 PLUME MAP UPDATE\05 GIS\SHP\2022_Tc99_Above_3790.shp\2022_Tc99_1930_3790.shp\2022_Tc99_900_1930.shp
DOE Property Boundary and Surface Water Course Centerline provided by FRNP on 2/4/2021 and 11/8/2022, respectively.
Roadways, 229 Boundary, and Water Policy Area downloaded from PEGASIS on 3/16/2021.
Limited Area shapefile provided by FRNP on 2/4/2021 and external limits confirmed by FRNP on 3/21/2022.

U.S. DEPARTMENT OF ENERGY
PORTSMOUTH / PADUCAH PROJECT OFFICE
PADUCAH GASEOUS DIFFUSION PLANT

FOUR RIVERS NUCLEAR PARTNERSHIP, LLC

Figure A.4. 2022 Tc-99 Plume—Regional Gravel Aquifer

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APPENDIX B

U.S. DEPARTMENT OF ENERGY CONTRACTOR PLANS, PROGRAMS, AND PROCEDURES

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Table B.1. U.S. Department of Energy Contractor Procedures

Project-Wide Procedures		
Procedure Number	**Procedure Title**	**Comments**
CP2-RA-0016/FR1	*Spill Prevention, Control, and Countermeasure Plan for the U.S. Department of Energy Paducah Gaseous Diffusion Plant, McCracken County, Kentucky*	D&R Contractor Program
CP2-RA-0014/FR4A	*Environmental Compliance and Protection Program Description at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*	D&R Contractor Program
CP2-ES-0005/FR5	*Pollution Prevention/Waste Minimization Plan for the Deactivation and Remediation Project, Paducah Gaseous Diffusion Plant, Paducah, Kentucky*	D&R Contractor Program
CP2-HS-2000/FR6B	*Worker Safety and Health Program for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*	D&R Contractor Plan
CP2-QA-1000/FR4A	*Quality Assurance Program Description for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*	D&R Contractor Plan
CP2-SM-1000/FR7	*Activity Level Work Planning and Control Program for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*	D&R Contractor Program
ISSC-PM-PR-003	*Work Planning and Control*	Infrastructure Contractor Procedure
CP2-EN-0201/FR5	*Configuration Management Program Description at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*	D&R Contractor Program
CP3-OP-1118/FR3C	*Facility Management*	D&R Contractor Procedure
CP3-QA-1006/FR3C	*Suspect/Counterfeit Items*	D&R Contractor Procedure
Environment, Safety, and Health Procedures		
Procedure Number	**Procedure Title**	**Comments**
CP3-ES-0003/FR3A	*Environmental Incident Reporting*	D&R Contractor Procedure
CP2-HS-1000/FR5	*Integrated Safety Management System Description for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*	D&R Contractor Policy
ISSC-PM-PL-001	*Integrated Management System Plan*	Infrastructure Contractor Plan
CP2-HS-2000/FR6B	*Worker Safety and Health Program for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*	D&R Contractor Program
ISSC-ESH-PL-004	*Worker Safety and Health Plan*	Infrastructure Contractor Plan
CP3-EN-0227/FR4C	*Trenching, Excavation and Penetration Permit*	D&R Contractor Procedure
CP3-HS-2003/FR2	*Hazard Communication*	D&R Contractor Procedure
ISSC-ESH-PR-002	*Hazard Communication*	Infrastructure Contractor Procedure
CP3-FP-2006/FR4	*Fire Safety Inspection, Facility Assessment, and Fire Hazard Analysis*	D&R Contractor Procedure
CP3-FP-2005/FR3	*Welding, Burning and Hotwork*	D&R Contractor Procedure
ISSC-ESH-PR-016	*Welding, Burning, and Hotwork*	Infrastructure Contractor Procedure
ISSC-ESH-PR-017	*Defective Equipment Tags*	Infrastructure Contractor Procedure
ISSC-ESH-PR-019	*Confined Space Program*	Infrastructure Contractor Procedure

Table B.1. U.S. Department of Energy Contractor Procedures (Continued)

Environment, Safety, and Health Procedures		
Procedure Number	**Procedure Title**	**Comments**
ISSC-PM-PR-006	*Excavation-Penetration Activities*	Infrastructure Contractor Procedure
CP3-HS-2010/FR6	*Instructions for Lockout/Tagout*	D&R Contractor Procedure
ISSC-ESH-PR-007	*Instructions for Lockout/Tagout*	Infrastructure Contractor Procedure
CP3-HS-2008/FR3B	*Accident Prevention/Equipment Control Tags*	D&R Contractor Procedure
Uranium Program Procedures		
Procedure Number	**Procedure Title**	**Comments**
DUF6-PLN-117	*Paducah Groundwater Protection Plan*	DUF_6 Plan
DUF6-PLN-079	*Paducah Storm Water Pollution Prevention and Best Management Practices Plan*	DUF_6 Plan
Transportation Procedures		
Procedure Number	**Procedure Title**	**Comments**
DUF6-U-WMP-2001	*Shipping*	DUF_6 Procedure
DUF6-U-WMP-2003	*HF Shipping*	DUF_6 Procedure
CP2-WM-0025/FR2D	*Four Rivers Nuclear Partnership, LLC Paducah Deactivation and Remediation Project Transportation Security Plan for the Transport of Hazardous Materials in Commerce*	D&R Contractor Program
CP2-WM-0661/FR0E	*Four Rivers Nuclear Partnership, LLC, Paducah Deactivation and Remediation Project Transportation Safety Document for On-Site Transport*	D&R Contractor Plan
Waste Management Procedures		
Procedure Number	**Procedure Title**	**Comments**
CP2-WM-0001/FR3	*Four Rivers Nuclear Partnership, LLC, Paducah Deactivation and Remediation Project Waste Management Plan*	D&R Contractor Plan
CP3-WM-1017/FR2C	*Safe Handling and Opening of Sealed Containers*	D&R Contractor Procedure
CP3-WM-1037/FR3	*Generation and Temporary Storage of Waste Materials*	D&R Contractor Procedure
CP3-QA-2501/FR3	*Waste Certification*	D&R Contractor Procedure
CP3-QA-2500/FR2C	*Procurement, Inspection, and Management of Items Critical for Paducah Off-Site Waste Shipments*	D&R Contractor Procedure
ISSC-ESH-PR-005	*Storage and Disposition of Spent Materials*	Infrastructure Contractor Procedure
CP3-WM-3015/FR4A	*Waste Packaging*	D&R Contractor Procedure
Data and Sampling Procedures		
Procedure Number	**Procedure Title**	**Comments**
CP2-ES-0811/FR1A	*Pesticide and PCB Analyses Data Verification and Validation Paducah Gaseous Diffusion Plant, Paducah, Kentucky*	D&R Contractor Program
CP3-ES-2708/FR0A	*Chain-of-Custody Forms, Field Sample Logs, Sample Labels, and Custody Seals*	D&R Contractor Procedure
CP3-ES-5003/FR4	*Quality Assured Data*	D&R Contractor Procedure
CP3-ES-5004/FR0B	*Sample Tracking, Lab Coordination, and Sample Handling*	D&R Contractor Procedure

Table B.1. U.S. Department of Energy Contractor Procedures (Continued)

Data and Sampling Procedures		
Procedure Number	**Procedure Title**	**Comments**
CP4-ES-5007/FR2A	*Data Management Coordination*	D&R Contractor Procedure
CP2-ES-5102/FR1A	*Radiochemical Analysis Data Verification and Validation Paducah Gaseous Diffusion Plant, Paducah, Kentucky*	D&R Contractor Program
CP2-ES-5103/FR1A	*Polychlorinated Dibenzodioxins/Polychlorinated Dibenzofurans Analyses Data Verification and Validation Paducah Gaseous Diffusion Plant, Paducah, Kentucky*	D&R Contractor Program
CP2-ES-5105/FR2A	*Volatile and Semivolatile Analyses Data Verification and Validation Paducah Gaseous Diffusion Plant, Paducah, Kentucky*	D&R Contractor Program
CP2-ES-5107/FR1A	*Inorganic Analyses Data Verification and Validation Paducah Gaseous Diffusion Plant, Paducah, Kentucky*	D&R Contractor Program

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