



Department of Energy

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DEC 01 2006

Mr. Courtney Seitz
KPDES Branch
Division of Water
Kentucky Department for Environmental Protection
14 Reilly Road
Frankfort, Kentucky 40601

PPPO-02-203-07

Dear Mr. Seitz:

**REVISED BAYOU CREEK AND LITTLE BAYOU CREEK WATERSHED
MONITORING PLAN, PADUCAH GASEOUS DIFFUSION PLANT, PADUCAH,
KENTUCKY, KENTUCKY POLLUTANT DISCHARGE ELIMINATION
SYSTEM NUMBER KY0004049**

Enclosed is a revised *Bayou Creek and Little Bayou Creek Watershed Monitoring Plan, Paducah Gaseous Diffusion Plant, Paducah, Kentucky*. This revised plan is being submitted for review and approval. The Kentucky Pollutant Discharge Elimination System permit, which became effective November 1, 2006, requires this plan. Sampling of the non-aquatic (benthic macroinvertebrate) community will continue. A summary of changes is presented in the executive summary of the document.

If you have any questions or require additional information, please call Reinhard Knerr at (270) 441-6825.

Sincerely,

A handwritten signature in black ink, appearing to read "W. E. Murphie", is written over a printed name.

William E. Murphie
Manager

Portsmouth/Paducah Project Office

Enclosure:

Bayou Creek and Little Bayou Creek Revised Watershed Monitoring Plan

cc w/enclosure:

G. Brewer, KDEP/Paducah
DCC/Kevil
EIC/Kevil

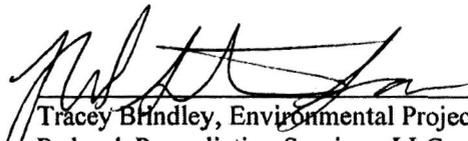
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CERTIFICATION

Document Identification: Bayou Creek and Little Bayou Creek
Revised Watershed Monitoring Plan
Paducah Gaseous Diffusion Plant,
Paducah, Kentucky, PRS-PROJ-0003

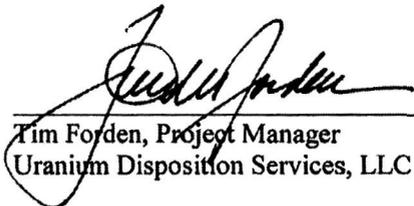
I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.



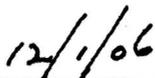
Tracey B. Hindley, Environmental Projects Manager
Paducah Remediation Services, LLC



Date Signed



Tim Foyden, Project Manager
Uranium Disposition Services, LLC



Date Signed



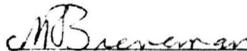
William E. Murphie, Manager
U.S. Department of Energy
Portsmouth/Paducah Project Office



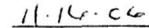
Date Signed

**Bayou Creek and Little Bayou Creek
Revised Watershed Monitoring Plan
Paducah Gaseous Diffusion Plant,
Paducah, Kentucky**

This document is approved for public release per review by:



Paducah Classification and Control Office
Swift and Staley Team



Date



PRS-PROJ-0003

**Bayou Creek and Little Bayou Creek
Revised Watershed Monitoring Plan
Paducah Gaseous Diffusion Plant,
Paducah, Kentucky**

Date Issued—November 2006

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

Prepared by
PADUCAH REMEDIATION SERVICES, LLC
managing the
Environmental Remediation Activities at the
Paducah Gaseous Diffusion Plant
under contract DE-AC30-06EW05001

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ACRONYMS

AOC	Area of Concern
BM	Bayou Creek milepoint
BMP	Biological Monitoring Program
CFR	<i>Code of Federal Regulations</i>
DOE	U.S. Department of Energy
DUF ₆	depleted uranium hexafluoride
EPA	U.S. Environmental Protection Agency
EPT	Ephemeroptera, Plecoptera, and Trichoptera
IBI	Index of Biotic Integrity
KDOW	Kentucky Division of Water
KPDES	Kentucky Pollutant Discharge Elimination System
LUM	Little Bayou Creek milepoint
MAM	Massac Creek milepoint
mHBI	Modified Hilsenhoff Biotic Index
ORNL	Oak Ridge National Laboratory
PCB	polychlorinated biphenyl
PGDP	Paducah Gaseous Diffusion Plant
PRS	Paducah Remediation Services, LLC
QA	quality assurance
QC	quality control
RCRA	Resource Conservation and Recovery Act
RGA	Regional Gravel Aquifer
SOP	standard operating procedure
SWMU	solid waste management unit
USEC	United States Enrichment Corporation
UDS	Uranium Disposition Services, LLC
USEPA	U.S. Environmental Protection Agency
USGS	U.S. Geological Survey
WFM	West Fork of Massac Creek milepoint
WKWMA	Western Kentucky Wildlife Management Area
WMP	Watershed Monitoring Plan

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EXECUTIVE SUMMARY

In March 1998, a renewed Kentucky Pollutant Discharge Elimination System (KPDES) permit was issued to the U.S. Department of Energy (DOE) for the Paducah Gaseous Diffusion Plant (PGDP). The renewed permit required that a Watershed Monitoring Program be developed within 90 days of the effective date of the renewed permit. The program was developed and the plan for it was finalized in March 1999 and implemented in September 1999. DOE developed the plan from previous monitoring efforts with guidance from "Methods for Assessing Biological Integrity of Surface Waters" published by the Kentucky Department for Environmental Protection (KDOW 1993).

In September 2006, the Kentucky Division of Water (KDOW) issued a renewed KPDES permit for PGDP to DOE, Paducah Remediation Services, LLC, and Uranium Disposition Services, LLC with an effective date of November 1, 2006 (Appendix A). The renewed permit again requires chronic toxicity monitoring, on a quarterly basis, of one continuous outfall (Outfall 001) and acute toxicity monitoring of three intermittent outfalls (Outfalls 015, 017, and 019). Chronic toxicity will be monitored at Outfall 017, at such time as Uranium Disposition Services, LLC, Conversion Facility is operational. It also requires that a revised Watershed Monitoring Plan (WMP) be submitted to KDOW by December 1, 2006, removing the fish sampling from the program due to previous extensive sampling. Further fish collection could have a deleterious effect on the aquatic community. This revised 2007 WMP removes the fish community and the fish tissue sampling (bioaccumulation) from the Watershed Monitoring Program. Benthic macroinvertebrate sampling and toxicity monitoring remain in the program.

The objectives of the watershed monitoring program are as follows:

- (1) Determine whether discharges from PGDP and solid waste management units (SWMUs) associated with PGDP are adversely affecting instream fauna,
- (2) Assess the ecological health of Bayou and Little Bayou Creeks,
- (3) Assess the degree to which abatement actions ecologically benefit Bayou and Little Bayou Creeks,
- (4) Provide guidance for remediation,
- (5) Provide an evaluation of changes in potential human health concerns, and
- (6) Provide data that could be used to assess the impact of inadvertent spills or fish kills.

Bayou Creek and Little Bayou Creek are receiving streams for the PGDP effluents. Data collection activities are performed annually to meet the objectives of the watershed program. These activities include toxicity monitoring and obtaining data and other pertinent information on the benthic macroinvertebrate community.

Benthic macroinvertebrates from Bayou Creek, Little Bayou Creek, Massac Creek, and West Fork of Massac Creek are sampled to assess the ecological health of the streams. Results from the annual sampling event are reported in the Watershed Monitoring Report and issued the next calendar year after sampling.

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1. INTRODUCTION

1.1 BACKGROUND INFORMATION

Bayou Creek (also known as Big Bayou Creek) and Little Bayou Creek are receiving streams that border the Paducah Gaseous Diffusion Plant (PGDP). The U.S. Department of Energy (DOE) has conducted biological monitoring of Bayou and Little Bayou Creeks since 1987. The Commonwealth of Kentucky Natural Resources and Environmental Protection Cabinet issued a Kentucky Pollutant Discharge Elimination System (KPDES) Agreed Order on September 24, 1987. The University of Kentucky developed the first biological monitoring plan (BMP) for the PGDP. PGDP and Oak Ridge National Laboratory (ORNL) reviewed the PGDP BMP. Then the DOE submitted the PGDP BMP to the Kentucky Division of Water (KDOW). The PGDP BMP was implemented in 1987.

The PGDP BMP consisted of ecological surveys, toxicity monitoring of effluents and receiving streams, evaluation of bioaccumulation of trace contaminants in biota, and supplemental chemical characterization of effluents. The PGDP BMPs for calendar years 1991 through 1997 consisted of three major tasks: (1) effluent toxicity monitoring, (2) bioaccumulation studies, and (3) ecological surveys of fish communities. In the previous KPDES permit issued to DOE, effluent toxicity monitoring requirements were separate from the watershed plan.

In March 1998, KDOW issued renewed permits to DOE for PGDP with an effective date of April 1, 1998. The renewed DOE permit required chronic toxicity monitoring, on a quarterly basis, of one continuous outfall (Outfall 001) and acute toxicity monitoring of three intermittent outfalls (Outfalls 015, 017, and 019). A Watershed Monitoring Plan (WMP) was submitted to KDOW during the summer of 1998. This plan was developed from previous monitoring efforts with guidance from "Methods for Assessing Biological Integrity of Surface Waters" published by the Kentucky Department for Environmental Protection (KDOW 1993). The WMP, which replaced the PGDP BMP, was approved by KDOW in October 1998 and became effective January 1999. The plan was finalized in March 1999 and was implemented beginning in September 1999. In 2001, the WMP was revised with sampling being conducted in June 2002. In February 2003, KDOW requested additional changes to the WMP. The changes requested included relocating several sites and sampling parameters, reducing the sampling of fish for bioaccumulation to every other year, and eliminating one sampling location. These changes were incorporated into a revised 2003 WMP, which was implemented in June 2003.

In September 2006, KDOW issued a renewed KPDES permit to DOE, Paducah Remediation Services, LLC (PRS), and Uranium Disposition Services, LLC (UDS) for PGDP with an effective date of November 1, 2006 (Appendix A). The renewed permit again requires chronic toxicity monitoring, on a quarterly basis, of one continuous outfall (Outfall 001) and acute toxicity monitoring of three intermittent outfalls (Outfalls 015, 017, and 019). It also requires a revised WMP be submitted to KDOW by December 1, 2006, removing the fish sampling from the program due to previous extensive sampling. Further fish collection could have a deleterious effect on the aquatic community. This revised 2007 WMP removes the fish community and the fish tissue sampling (bioaccumulation) from the Watershed Monitoring Program. Benthic macroinvertebrate sampling and toxicity monitoring remain in the program.

In addition to watershed monitoring, DOE conducts extensive environmental monitoring of sediment, terrestrial wildlife, and water at PGDP. The various monitoring program sampling plans are revised annually and results are summarized in annual site environmental reports.

1.2 SITE DESCRIPTION

PGDP is located in Western Kentucky and owned by DOE. PGDP is an active uranium enrichment facility consisting of a diffusion cascade and extensive support facilities. Support facilities include a steam plant, four electrical switchyards, four sets of cooling towers, a chemical cleaning and decontamination facility, water and wastewater treatment plants, and maintenance and laboratory facilities. In July 1993, DOE leased the gaseous diffusion plant production facilities to the United States Enrichment Corporation (USEC). PRS is the remediation contractor for DOE environmental restoration and waste management responsibilities at the site. UDS is the contractor for DOE that is responsible for cylinder management; cylinder yard maintenance; design, construction, and operation of the depleted uranium hexafluoride conversion facility.

PGDP is located in the western part of the Ohio River basin (see Figure 1). The confluence of the Ohio River with the Tennessee River is approximately 24 kilometers (km) (14.9 miles) upstream of the site. The confluence of the Ohio River with the Mississippi River is approximately 90 km (55.9 miles) downstream of the site. Surface drainage from PGDP enters Bayou Creek and Little Bayou Creek, two small tributaries to the Ohio River. These streams converge approximately 4.8 km (3 miles) north of the site and discharge to the Ohio River at km 1524. Bayou Creek is a perennial stream with a drainage basin extending from approximately 4 km (2.5 miles) south of PGDP to the Ohio River. Part of its 14.5 km (9 mile) course flows along the western boundary of the plant. Little Bayou Creek originates in the Western Kentucky Wildlife Management Area (WKWMA) and flows for 10.5 km (6.5 miles) north toward the Ohio River; its course includes part of the eastern boundary of PGDP where up to 100% of the flow can be attributed to PGDP effluent discharges during the drier seasons of the year. The watershed areas for Bayou Creek and Little Bayou Creek are about 4,819 and 2,428 hectares (11,908 and 6,000 acres), respectively.

1.3 WATERBODY DESCRIPTION

Stream Names

Bayou Creek, Little Bayou Creek, Massac Creek (reference site), and the West Fork of Massac Creek (reference site)

Major River Basin

Ohio River

Stream Order (At Mouth)

Little Bayou Creek is third order. Bayou Creek is fourth order.

County or Counties in the Survey

McCracken County

U.S. Geologic Survey 7.5 Min or Mi Quadrangle Names

Bayou Creek and Little Bayou Creek are located in the Heath (N3700-W8845) and Joppa (N3707.5-W8845) U.S. Geological Survey (USGS) quadrangles. Massac Creek (a reference site) is located in the Paducah West (N3700-W8837.5) USGS quadrangle. West Fork of Massac Creek is also located in the Paducah West USGS quadrangle.

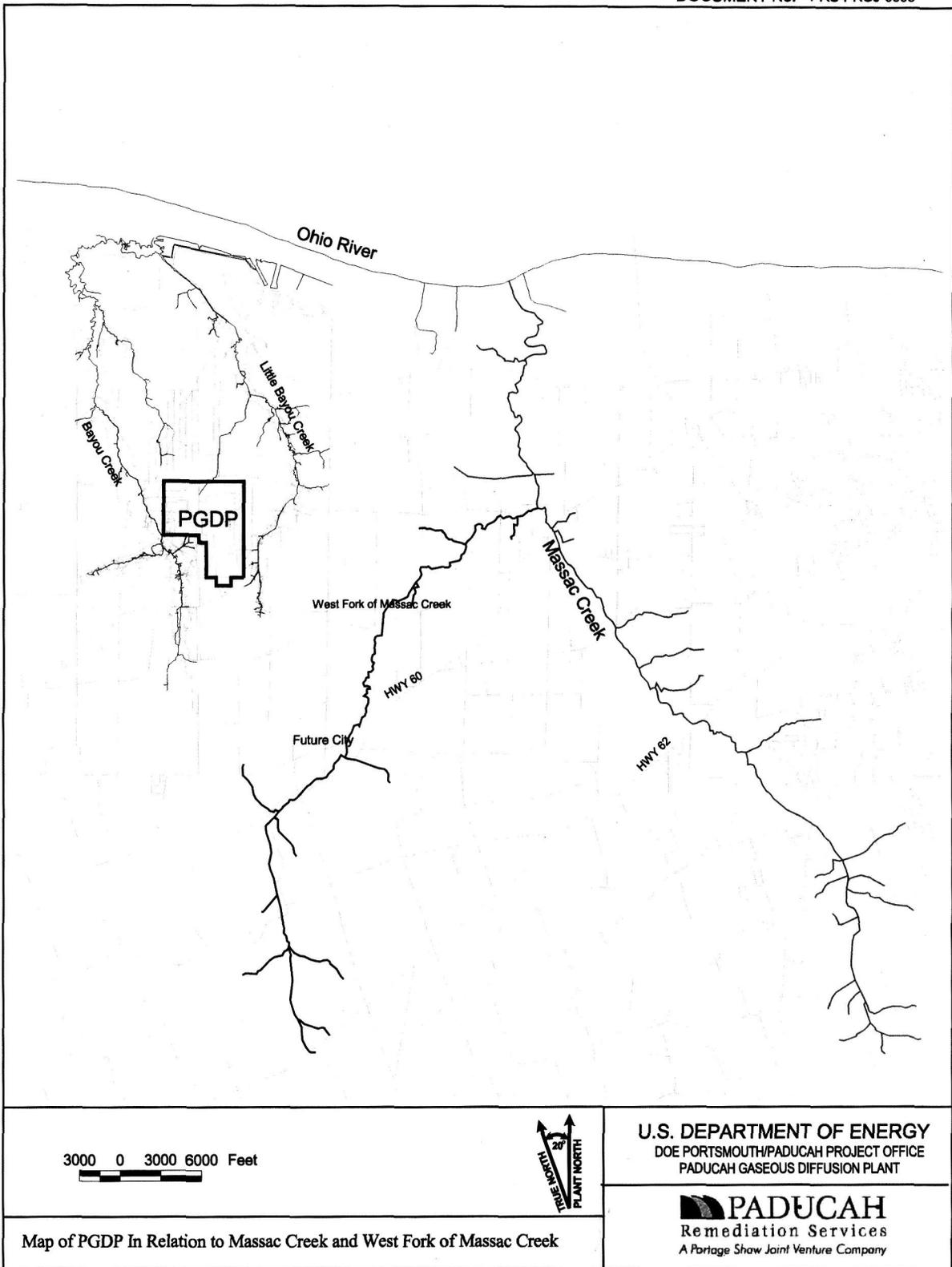


Figure 1. Map of Paducah Site in Relation to the Geographic Region. The Reference Sites for Watershed Monitoring Activities are Located on Massac Creek and West Fork of Massac Creek

2. OBJECTIVES

The objectives of the watershed monitoring are as follows:

- (1) Determine whether discharges from PGDP and Solid Waste Management Units (SWMUs) associated with PGDP are adversely affecting instream fauna,
- (2) Assess the ecological health of Bayou Creek and Little Bayou Creek,
- (3) Assess the degree to which abatement actions ecologically benefit Bayou Creek and Little Bayou Creek,
- (4) Provide guidance for remediation,
- (5) Provide an evaluation of changes in potential human health concerns, and
- (6) Provide data that could be used to assess the impact of inadvertent spills or fish kills.

As described in the DOE KPDES permit, the goal of the watershed monitoring program is to ensure that the DOE cleanup will result in the Bayou and Little Bayou creek watersheds achieving compliance with the applicable water quality criteria (Appendix A).

3. STUDY AREA DESCRIPTIONS

3.1 STUDY AREA

PGDP is owned by the DOE. Effective July 1, 1993, DOE leased the plant production operation facilities and portions of the real property to USEC. Under the terms of the lease, USEC has assumed responsibility for compliance activities directly associated with uranium enrichment operations. PRS is the environmental management contractor for DOE responsibilities at the site. These responsibilities include the site Environmental Restoration Program; the bulk of the Waste Management Program, including waste inventories predating July 1, 1993; wastes generated by current DOE activities; wastes containing "legacy" constituents, such as asbestos, polychlorinated biphenyls (PCBs), and transuranics; and KPDES compliance at outfalls not leased to USEC. Uranium Disposition Services, LLC is responsible for the Depleted Uranium Hexafluoride (DUF₆) Cylinder Program. DOE also retained the Resource Conservation and Recovery Act (RCRA) limited storage facilities. DOE and USEC have negotiated the lease of specific site facilities, prepared memorandums of agreement to define their respective roles and responsibilities under the lease, and developed organizations and budgets to support their respective functions.

3.2 GEOHYDROLOGY

PGDP is located in the Jackson Purchase region of Western Kentucky. It lies in the northern margin of the Mississippi Embayment of the Gulf Coastal Plain Province. The Mississippi Embayment is a large sedimentary trough, oriented roughly north-south, that has been in existence since the Cretaceous and Tertiary periods. The sedimentary sequence overlying the Mississippian age bedrock in the vicinity of PGDP consists mainly of fine to medium grained clastic materials, including (from youngest to oldest) a

basal gravel (i.e., Tuscaloosa Formation) or rubble zone, McNairy Formation, Porters Creek Clay, and undifferentiated Eocene Sands (Olive 1980).

Following deposition of the embayment sediments, the embayment either was uplifted and/or sea level lowered, resulting in the development of an erosional surface that truncated the sediments. Subsequently, during the late Tertiary and Quaternary periods, a unit designated as the Continental Deposits was laid down in the region. The Continental Deposits originally were deposited in an alluvial fan that covered most of the Jackson Purchase region (Olive 1980). The Continental Deposits have been informally divided into a lower gravel region and an upper silt or clay unit; each unit varies in thickness from 0 to 32 m (0 to 105 feet) (LMES, Inc. 1997). Immediately overlying the Continental Deposits, Pleistocene loess (originating as windblown material generated by glacial activity) was deposited in a layer of variable thickness (from 3 to 10 m [9.8 to 32.8 feet]). Recent Ohio River alluvial deposits occur at lower elevations along the river's floodplain.

Current understanding of local groundwater hydrology in the vicinity of PGDP is dominated by the recognized importance of the Continental Deposits. Groundwater flow in the loess and the upper member of the Continental Deposits is downward to the Regional Gravel Aquifer (RGA). The RGA exists in the lower gravel member of the Continental Deposits and is the uppermost aquifer underlying most of PGDP and the contiguous area north of PGDP. This groundwater flow system contains Pleistocene sands and gravels of the lower member of the Continental Deposits. Flow within the RGA is north to the Ohio River. The Continental Deposits rest upon terraces cut by the ancestral Tennessee and Tennessee-Ohio Rivers. Terrace escarpments occurring under the south end of PGDP form the southern limit of the RGA.

Groundwater flow in the loess and the upper member of the Continental Deposits primarily is oriented downward because of the interbedded sand and gravel lenses and the significantly lower potentiometric surface of the RGA. Within the RGA, flow is directed primarily north, discharging into the Ohio River. The USGS in the mid-1960s first investigated the hydrology of the RGA. Results of these studies indicated that the gravel is saturated over most of its areal extent in the region of the plant and wells completed within it are reported to be capable of producing yields of up to 3,790 L/min. For a more detailed description of the geohydrology of the area, see GeoTrans 1990, TERRAN 1990, and CH2M HILL 1991.

3.3 STREAM LENGTH, DRAINAGE BASIN, AND MAJOR TRIBUTARIES

PGDP is located in the western part of the Ohio River basin. The confluence of the Ohio River with the Tennessee River is 24 km (14.9 miles) upstream of the site, and the confluence of the Ohio River with the Mississippi River is 90 km (55.9 miles) downstream of the site. Surface drainage from PGDP goes to two small tributaries of the Ohio River, Bayou Creek and Little Bayou Creek (Figure 1). These streams meet 4.8 km (3 miles) north of the site and discharge to the Ohio River at kilometer 1524, which is 56 km (34.8 miles) upstream of the confluence of the Ohio and Mississippi Rivers. PGDP is located on a local drainage divide; surface flow is east-northeast toward Little Bayou Creek and west-northwest toward Bayou Creek. Bayou Creek is a perennial stream with a drainage basin extending from 4 km (2.5 miles) south of PGDP to the Ohio River; part of its 14.5-km (9-mile) course flows along the western boundary of the plant. Little Bayou Creek originates in WKWMA and flows for 10.5-km (6.5 miles) north toward the Ohio River. Little Bayou Creek's course includes part of the eastern boundary of the plant. The watershed areas for Bayou Creek and Little Bayou Creek are about 4,819 and 2,428 hectares (11,908 and 6,000 acres), respectively. These streams exhibit widely fluctuating discharge characteristics that are closely tied to local precipitation and facility effluent discharge rates. Precipitation in the region averages about 120 cm (47.24 inches) per year. Natural runoff makes up a small portion of the flow. During dry weather, effluents from PGDP operations can constitute about 85% of the normal base flow in Bayou Creek and 100% in Little Bayou Creek. During the dry season, which extends from summer to early fall, no-flow conditions may occur in the upper section of Little Bayou Creek.

The lower Bayou Creek and Little Bayou Creek drainage has a low to moderate gradient. The lower reaches are within the flood plain of the Ohio River. The drainage basin is included in ecoregion 72 (Interior River Lowland) of the contiguous United States (Omenik 1987). Vegetation is a mosaic of forest, woodland, pasture, and cropland. Additional information on vegetative cover, bank structure, channel morphology, substrate and cover variables, and flow conditions obtained during a 1991 survey are published in Kszos (1994).

3.4 FLOW CHARACTERISTICS

Flow data were provided by the USGS, Water Resources Division, for two USGS gauging stations: one on Little Bayou Creek, located 0.6 km (0.4 mi) downstream of PGDP (USGS gauging station 03611900), and one on Bayou Creek at South Acid Road upstream of PGDP (USGS gauging station 03611850). There are no active USGS gauging stations on Bayou Creek downstream of PGDP. For both locations, the period of record is October 1990 to November 1991, and June 1993 through 1997. The drainage areas of the stations on Little Bayou Creek and Bayou Creek are 5.78 mi² and 14.9 mi² respectively. The water stage recorder at the Little Bayou Creek station is 324.8 ft above National Geodetic Vertical Datum of 1929 (level by DOE) and at Bayou Creek is 330 ft above sea level (from topographic map).

3.5 LAND USE

The area surrounding PGDP is mostly rural, with residences and farms surrounding the plant. Immediately adjacent to PGDP is WKWMA, 2,760 hectares (6,817 acres) of managed habitat either deeded or licensed to the Commonwealth of Kentucky.

The population within an 80-km (49.7-mile) radius of the plant is about 300,000 people. The incorporated communities of Grahamville and Heath are within 2 and 3 km (1.2 and 1.9 miles) and are located east of the facility. The largest cities in the region are Paducah, Kentucky, and Cape Girardeau, Missouri, located about 16 and 64-air km (9.9 and 39.8 miles) away, respectively (U.S. Department of Commerce 1991).

3.6 LOCATION OF POINT SOURCES OF POLLUTION

The majority of effluents discharged to Bayou Creek and Little Bayou Creek are from USEC outfalls and consist primarily of once-through cooling water, although a variety of effluents (uranium-contaminated as well as noncontaminated) result from activities associated with uranium precipitation and facility-cleaning operations. Conventional liquid discharges such as domestic sewage, steamplant wastewaters, and coalpile runoff also occur. Routine monitoring activities provide data to quantify total discharges to surface water in order to demonstrate compliance with federal, state, and DOE requirements. Biological and chemical monitoring also assist with evaluating the effectiveness of effluent treatment and control programs at PGDP. Toxicity monitoring of the outfalls is conducted in accordance with the KPDES Permit for the PGDP (attached as Appendix A). Refer to Part IV of the permit for the description of the chronic and acute toxicity monitoring methodologies.

Monitoring of the outfalls is conducted in accordance with a KPDES permit. Table 1 lists the outfalls in the currently issued KPDES permits and their contributing processes. Per the KPDES permit, DOE, PRS, and UDS have responsibility for monitoring four outfalls (Outfalls 001, 015, 017, and 019) at PGDP. USEC has responsibility for monitoring all of the remaining outfalls. Figure 2 shows the location of the DOE- operated outfalls. Six of the 14 outfalls discharge continuously to the receiving streams. Outfalls

Table 1. KPDES-Permitted Outfalls at the Paducah Gaseous Diffusion Plant

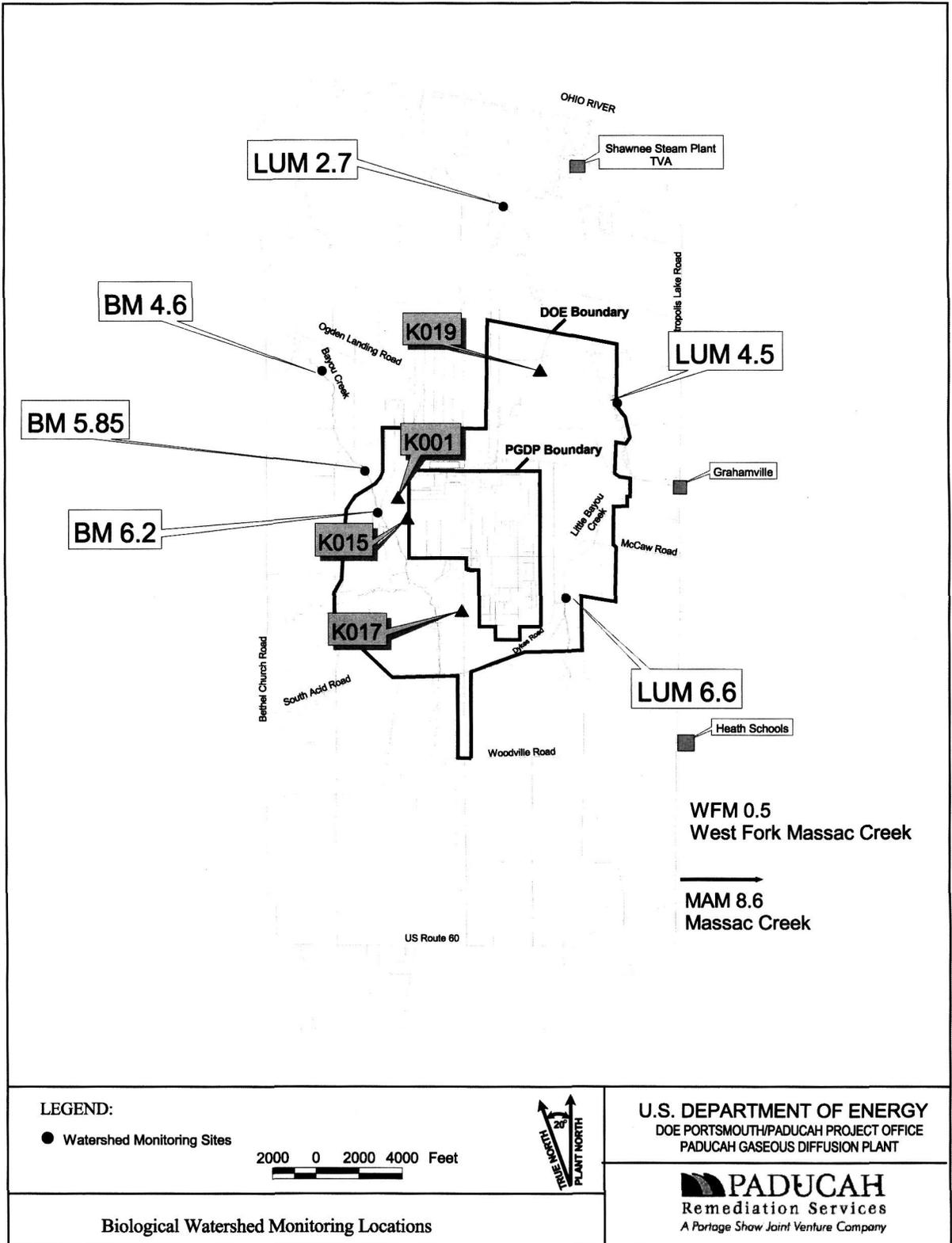
Location ^a	Discharge Source	Flow ^b	Contributing Processes
001	C-600, C-612, C-613, C-614, C-616, C-752-A, C-752-C, North-South Diversion Ditch, C-335, C-337, C-535, C-537	8.8±1.7	Miscellaneous blowdown and runoff, wastewater treatment effluent, coalpile runoff, once-through cooling water, switchyard and ground surface runoff, roof and floor drains, and discharge from the Northwest Plume and Northeast Plume Pump-and-Treat Facilities.
002	C-360, C-637, C-337-C	1.6±3.9	Once-through cooling water, roof and floor drains, sink drains, and extended aeration sewage treatment system.
004	C-615 sewage treatment plant, C-710, C-728m C-750m C-100m C-620, C-400	3.3±0.8	Domestic sewage, laboratory sink drains, motor cleaning, garage drains, laundry, machine coolant treatment filtrate, condensate blowdown, and once-through cooling water.
006	C-611 secondary lagoon	3.3±0.8	Water treatment plant sludge, sand filter backwash, and laboratory sink drains from Outfall 005.
008	C-743, C-742, C-741, C-723, C-721, C-728, C-729, C-400, C-420, C-410, C-727, C-411, C-331, C-310, C-724, C-744, C-600, C-405, C-409, C-631, C-720	2.8±2.1	Surface drainage, roof and floor drains, once-through cooling water, paint shop discharge, condensate, instrument shop cleaning area, metal cleaning rinse water, and sink drains.
009	C-810, C811, C-331, C-333, C310, C-100, C-102, C-101, C-212, C-200, C-300, C-320, C-302, C-750, C-710, C-720	1.5±2.5	Surface drainage, roof and floor drains, condensate, once-through cooling water, and sink drains.
010	C-531, C-331	2.3±0.7	Switchyard runoff, roof and floor drains, and condensate sink drains.
011	C-340, C-533, C-532, C-315, C-333, C-331	0.3±0.4	Previously through cooling water, roof and floor drains, switchyard runoff, condensate, and sink drain; currently rainfall runoff.
012	C-633, C-533, C-333-A	4.1±12.1	Roof, floor, and sink drains, condensate, surface runoff, and extended aeration sewage treatment system.
013	Southeast corner of the plant	3.4±7.0	Storm water.
015	West central plant areas	1.0±1.3	Storm water.
016	Southwest corner of the plant	0.2±0.3	Storm water.
017*	Extreme south area of the plant	1.4±3.2	Storm water.
019	Landfill north of plant (C-746-U)	0.11	Storm water and treated leachate.
^a Numerical indicates outfall designation. ^b Mean discharge in millions of liters per day ± 1 standard deviation. Mean value based on KPDES measurements for 1995. * Outfall 017 is controlled by Uranium Disposition Services, LLC. Outfalls in large bold print indicate outfalls regulated by the KPDES permit issued to DOE, PRS, and UDS.			

001, 004, 006, 008, and 009 discharge continuously to Bayou Creek, and Outfalls 002, 010, and 012 are combined at the C-617 pond and discharge through Outfall 010 continuously to Little Bayou Creek. The remaining outfalls discharge only during rainfalls.

Outfall 001 discharge consists of combined treated wastewaters from the C-752-A Waste Storage and Treatment Building, C-752-C Decontamination Pad, C-616 Wastewater Treatment Facility, C-612 Northwest Groundwater Treatment System, miscellaneous untreated nonprocess wastewaters associated with the C-335, C-337, C-535, C-537, C-746-A, C-616 buildings and ancillary areas, C-600 Steam Plant, C-613 Stormwater Collection Basin, and the C-614 Pump-and-Treat Facility.

Outfall 015 discharges rainfall runoff from SWMUs, burial grounds, and cylinder yards.

Outfall 017 discharges rainfall runoff only from the cylinder yards.



LEGEND:
 ● Watershed Monitoring Sites

2000 0 2000 4000 Feet



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

PADUCAH
 Remediation Services
 A Portage Shaw Joint Venture Company

Biological Watershed Monitoring Locations

FIGURE No. c5ac90002sk143.apr
 DATE 7/31/06

Figure 2. Location of Watershed Monitoring Sites and KPDES Permitted Outfalls for PGDP for 2007

Outfall 019 discharges runoff and treated leachate from the C-746-U Contained Landfill. Surface water runoff is collected in the landfill-settling pond. The water is settled and discharged when suspended solids and pH meet KPDES discharge criteria.

3.7 LOCATION OF AREA SOURCES OF POLLUTION

One of the objectives of the program is to determine whether discharges from PGDP and SWMUs associated with PGDP are adversely affecting instream fauna. At the end of October 2006, DOE identified 560 SWMUs/Areas of Concern (AOCs) that were known as areas in current use or previously used for the management of solid waste or potentially were contaminated releases. Portions of the SWMUs/AOCs have been investigated and have been classified as "No Further Action." Some of the SWMUs/AOCs are located inside buildings and do not have the potential to affect runoff. Appendix B describes the SWMUs/AOCs and gives the contaminants of concern along with the discharge location and the receiving stream. Drainage from some of the SWMUs does not flow through a KPDES outfall; therefore, one goal of the instream watershed monitoring program is to identify any adverse effects from these SWMUs, which could be used to benefit future cleanup efforts.

Located upstream of Little Bayou Creek Milepoint (LUM) 2.7 are seep locations where upwelling of groundwater occurs in the surface water of Little Bayou Creek. These areas are sampled routinely for trichloroethene and technetium-99. The seep locations of Little Bayou Creek may be a possible contaminant source for benthic macroinvertebrates.

3.8 PARAMETER COVERAGE

The benthic macroinvertebrate and fish communities in Bayou and Little Bayou Creeks were monitored at least annually from 1991 to 2002. These sampling events provide 11 years of historical data. Based on the strength of this historical data, monitoring of the macroinvertebrate will be conducted annually on these creeks.

The bioaccumulation of PCBs in longear sunfish (*Lepomis megalotis*) has been evaluated and reported for 11 years at three sites on Little Bayou Creek. The bioaccumulation of mercury and PCBs in spotted bass (*Micropterus punctulatus*) has been evaluated annually since 1996 at one site on Bayou Creek. These evaluations were presented in the annually published Watershed Monitoring Reports. Due to low numbers of fish available in the Bayou and Little Bayou Creeks, the sampling has been eliminated in this revised WMP.

3.9 DESCRIPTION OF SAMPLING SITES

A summary of the site locations to be sampled starting in 2007 is given in Table 2, and locations are mapped in Figure 2.

Table 2. Summary of Sample Site Locations for the WMP

Current Site Name^a	Location^b
Bayou Creek	
BM 4.6	~7000 ft downstream of Outfall 001
BM 5.85	~1300 ft downstream of Outfall 001
BM 6.2	~1100 ft downstream of Outfall 015
Little Bayou Creek	
LUM 2.7	~7600 ft downstream of Outfall 018
LUM 4.5	~3500 ft downstream of bridge on Route 358
LUM 6.6	~100 ft downstream of Outfall 012
Massac Creek (Reference Site)	
MAM 8.6 ^c	~131 ft upstream of bridge on Route 62, 6.2 miles SE of PGDP
West Fork of Massac Creek (Reference Site)	
WFM 0.5 ^c	~2500 ft upstream from the confluence of West Fork of Massac Creek and Massac Creek
^a Site names are based on stream name and distance of the site from the mouth of the stream. For example, Bayou Creek Milepoint (BM) 5.85 is located approximately 5.85 miles upstream of the mouth. ^b Locations are based on approximate distances from a major landmark (e.g., bridge or outfall) to the bottom of the reach. ^c Reference site. BM = Bayou Creek Milepoint. LUM = Little Bayou Creek Milepoint. MAM = Massac Creek Milepoint. WFM = West Fork of Massac Creek Milepoint.	

4. GENERAL REQUIREMENTS FOR SAMPLING AND ANALYSIS

4.1 BENTHIC MACROINVERTEBRATE COMMUNITY

4.1.1 Introduction

Benthic macroinvertebrate community studies were conducted at PGDP according to the BMP from September 1991 through March 1997 (Kszos et al. 1998; Roy et al. 1996). Taxonomic richness and richness of the pollution sensitive mayflies, stoneflies, and caddisflies [Ephemeroptera, Plecoptera, and Trichoptera (EPT) richness] generally were comparable at study and reference sites. Total densities and densities of mayflies at the study sites generally were similar to and often greater than at reference sites. Although these results indicated no major stress, there were some characteristics suggestive of a low-level stress. Sampling and analysis of the benthic macroinvertebrate communities under the BMP was discontinued in 1998 because there was no indication of major stress on the community. The annual sampling in this plan recognizes the KDOW position that monitoring of multiple types of organisms provides a more complete evaluation of the aquatic ecosystem (KDOW 1993). Historical data utilized for reference in this report was obtained from previous biological monitoring reports issued for the WMP.

4.1.2 History

Benthic macroinvertebrate samples were not obtained at PGDP as part of the BMP during calendar year 1998. The decision was made during the 1998 sampling to discontinue benthic macroinvertebrate sampling as part of the former BMP. This WMP requires the sampling of benthic macroinvertebrates and interpretation of the data. Benthic macroinvertebrates were sampled as part of the BMP from 1991 to 1997 and again, as part of the WMP, in 1999, 2000, 2001, and 2002.

4.1.3 Sample Collection and Analysis

Benthic macroinvertebrate samples will be collected with a Surber square-foot bottom sampler from randomly selected locations within a designated riffle at each site. Benthic macroinvertebrate sampling locations are provided in Table 2. Samplers will select locations within random reaches of each stream. Instream and riparian habitat and water quality will be assessed at each site following standard procedures outlined by the U.S. Environmental Protection Agency (USEPA). An analysis of the data will include general descriptive and parametric statistics to evaluate trends in temporal and spatial changes that could be associated with abatement activities or remedial actions. Metrics of the benthic macroinvertebrate community such as total density, total taxonomic richness, taxonomic richness of the pollution-sensitive EPT, percent community similarity index, and dominants in common will be included in the analysis of the data. The Modified Hilsenhoff Biotic Index will be used to evaluate the water quality of the sample sites.

Quantitative benthic macroinvertebrate samples historically have been collected with a Surber square-foot bottom sampler since 1991 (Smith 1997). One of the most beneficial outcomes of continuously monitoring biota is that it provides a long-term record of changes in the composition and structure of the community. Such a long-term record is useful for distinguishing natural temporal changes from changes associated with unusual events, such as those associated with a disruption or remedial action. Many sampling techniques exist for collecting macroinvertebrates (Merritt and Cummins 1996), but each technique generates unique results (Turner and Trexler 1997). Thus, continued monitoring using techniques previously used at PGDP ensures comparability with, and maximum benefit from, historical data, while a change in technique would either greatly limit or negate the usefulness of these data.

In addition, a multihabitat sample will be collected at each of the sites. A multihabitat sample consisted of three jabs with a kick net from all available habitats. The different types of habitats may include leaf packs, root wads, wood, sand/silt areas and aquatic vegetation. All available habitats will be sampled using a D frame net and a rectangular kick net. Both nets have an 800 x 900- μ m mesh size. Samples will be preserved using 95% ethanol in the field. The ethanol will be replaced with fresh 80% ethanol after one week to ensure a proper level of preservative until the samples are processed.

Surber samples will be processed in the laboratory following EPA methods (EPA 1990) and standard operating procedures (Smith and Smith 1995). Briefly, each sample will be placed in a U.S. Standard No. 60-mesh sieve (250- μ m openings) and gently rinsed with tap water. Small aliquots then will be placed in a white tray partially filled with water, and the organisms will be removed from the sample debris with forceps; sorting will be facilitated with an illuminated magnifying lamp. This process will be repeated with the remaining sample material until the entire sample is sorted. Finally, organisms will be identified to the lowest practical taxon and enumerated.

4.1.4 Data Analysis and Metrics

Analyses will include, but not necessarily be limited to, general descriptive statistics to evaluate trends in temporal and spatial changes that could be associated with abatement activities or remedial actions. Metrics that have been routinely included in Paducah Site BMP benthic macroinvertebrate community assessments will continue to be included, along with other metrics commonly used by KDOW (e.g., percent community similarity index, dominants in common) (KDOW 1993). Metrics from reference locations [Massac Creek Milepoint (MAM) 8.6 and West Fork of Massac Creek Milepoint (WFM) 0.5] will be compared to the sampling sites along Bayou Creek and Little Bayou Creek. Metrics that will be assessed are as follows:

Mean density	Average number of organisms per ft ² .
Taxonomic richness	Total number of distinct taxa within the sample.
EPT richness	Total number of distinct EPT taxa within the sample.
% Ephemeroptera	Percentage of the sample made up by members of the order Ephemeroptera.
% EPT per sample	Percentage of the sample made up of EPTs.
% Hydropsychidae	Percent of Trichoptera made up by the family Hydropsychidae.
Modified % EPT	Percentage of EPTs excluding the genus <i>Cheumatopsyche</i> sp.
% Chironomidae per sample	Percent of the family Chironomidae related to the total sample.
% <i>Cricotopus/Orthocladius</i>	Percent of the genera <i>Cricotopus/Orthocladius</i> related to the family Chironomidae.
% Tanytarsini	Percentage of the family Chironomidae constituted by the tribe <i>Tantarsini</i> .
% Chironomidae + % Oligochaeta	Percentage of the sample made up by members of the family Chironomidae and the class Oligochaeta.
% Other taxa	Percentage of the sample made up by members of the orders other than EPTs and the family Chironomidae.
% Primary Clingers	Percentage of organisms within the sample that need silt-free and hard substrate to be present.
Modified Hilsenhoff Biotic Index (mHBI)	Value denoting the overall water quality of a study site based upon the numbers of organisms and their associated tolerance values. The formula is as follows: $mHBI = \frac{\sum (n_i \times t_i)}{N}$ where: N = total number of organisms in the sample n _i = number of individuals within a taxa t _i = tolerance value of the taxa as per the KDOW

Evaluation of water quality based on the Taxa-level Biotic Index (Table 3).

Table 3. Taxa-Level Biotic Index

Site mHBI Value	Water Quality	Degree of Organic Pollution
0.00-3.75	Excellent	Organic pollution unlikely
3.76-4.25	Very Good	Possible slight organic pollution
4.26-5.00	Good	Some organic pollution probable
5.01-5.75	Fair	Fairly substantial pollution likely
5.76-6.50	Fairly Poor	Substantial pollution likely
6.51-7.25	Poor	Very substantial pollution likely
7.26-10.0	Very Poor	Severe organic pollution likely

Percent community similarity index

Percentage of similarity between site communities based on the relative abundance of organisms found.

The formula is as follows: $PSc = \sum \min(a,b)$

where: a = percentage of taxa in sample a
b = percentage of taxa in sample b

Dominants in common

Provides an overview of similarity between a reference station and a station of comparison by comparing the five most abundant taxa at each station.

5. QUALITY ASSURANCE STATEMENT

The quality of the data and analysis for each parameter listed in this section is assured by use of the project quality assurance (QA) plans. The QA plan identifies requirements, assigns responsibilities for ensuring achievement of program objectives, and describes guidelines to be followed during sampling activities. The QA program was developed based on the structure of 10 *CFR* 830.120 and DOE O 414.1, *Quality Assurance*.

QA/quality control (QC) activities for the benthic macroinvertebrate community sampling and analysis include, but are not limited to, the following:

- A QC check will be conducted of one randomly chosen sample replicate to assess processing efficiency and taxonomic accuracy by the contract laboratory. The outcome of this QC check is supplemented by the outcome of similar checks on other projects.
- The quality of data and its accuracy will be verified through a series of checks (e.g., visual screening and analyses with standard computer programs) to identify data errors.
- Samples will be collected and processed according to project-specific procedures.

6. REFERENCES

- CH2M HILL 1991, *Results of the Site Investigation, Phase I at the Paducah Gaseous Diffusion Plant, Kentucky*, KY/ER-4, Paducah Gaseous Diffusion Plant, Paducah, KY.
- GeoTrans, Inc. 1990. *Numerical Modeling of Groundwater Flow at the Paducah Gaseous Diffusion Plant*, Phase I and II, Sterling, KY.
- KDOW 1993. *Methods for Assessing Biological Integrity of Surface Waters*, Kentucky Department for Environmental Protection, Division of Water, Frankfort, KY.
- Kszos, L. A. (ed.) 1994. *Report on the Biological Monitoring Program at the Paducah Gaseous Diffusion Plant, December 1990 to November 1992*, ORNL/TM-12338/R1, Oak Ridge National Laboratory, Oak Ridge, TN.
- Kszos, L. A., et al. 1998. *Report on the Biological Monitoring Program at the Paducah Gaseous Diffusion Plant, January to December 1997*, ORNL/TM-13592, Oak Ridge National Laboratory, Oak Ridge, TN.
- LMES (Lockheed Martin Energy Systems, Inc.) 1997. *Paducah Site 1995 Environmental Report*, KY/EM-117, Lockheed Martin Energy Systems, Inc., Paducah Site, Paducah, KY.
- Merritt, R.W., and K.W. Cummins (eds.) 1996. *An introduction to the aquatic insects of North America*, 3rd Edition, Kendall/Hunt, Dubuque, IA.
- Olive, W. W. 1980. *Geologic Maps of the Jackson Purchase Region, Kentucky*. U.S. Geological Survey Miscellaneous Investigations Series, Map I-1217. U.S. Geological Survey, Reston, VA.
- Omernik, J. M. 1987. *Annals of the Association of American Geographers*, "Ecoregions of the Conterminous United States," 77:118-125.
- Roy, W.K., M.G. Ryon, R.L. Hinzman, J.G. Smith, J.J. Beauchamp, M.R. Smith, B.A. Carrico, R.P. Hoffmeister, M.K. McCracken, and R.A. Norman 1996. *Thermal Discharges from Paducah Gaseous Diffusion Plant Outfalls: Impacts on Stream Temperatures and Fauna of Little Bayou and Big Bayou Creeks*, ORNL/TM-13183, Oak Ridge National Laboratory, Oak Ridge, TN.
- Smith, J.G. 1997. "Benthic Macroinvertebrates." *Report on the Biological Monitoring Program at Paducah Gaseous Diffusion Plant, January-December 1996*, ORNL/TM-13377, Oak Ridge National Laboratory, Oak Ridge, TN.
- Smith, M.R., and J.G. Smith, 1995. "Biological Monitoring and Abatement Program," *Benthic Macroinvertebrate Community Studies, Quality Assurance Plan*, QAP-90-ES-068, Rev. 01. Oak Ridge National Laboratory, Oak Ridge, TN.
- TERRAN 1990. "Aquifer Assessment Report-Groundwater Monitoring Phase II." C-404 Aquifer Testing Program. ESO 16749. Kettering, OH.
- Turner, A.M., and J.C. Trexler, 1997. "Sampling aquatic invertebrates from marshes: evaluating the options," *J.N. Am. Benthol. Soc.* 16:694-709.

U.S. Department of Commerce, Bureau of Census, 1991. *1990 Census of Population and Housing Public Law 94-171 Data*, Washington, DC.

U.S. Environmental Protection Agency, Office of Research and Development, Nov. 1990. *Macroinvertebrate Field and Laboratory Methods for Evaluating the Biological Integrity of Surface Waters*, EPA/600/4-90-030. Washington, DC.

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APPENDIX A

**KENTUCKY POLLUTANT DISCHARGE ELIMINATION SYSTEM
PERMIT FOR THE PADUCAH GASEOUS DIFFUSION PLANT**

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KPDES



KENTUCKY POLLUTANT DISCHARGE ELIMINATION SYSTEM

PERMIT

PERMIT NO.: KY0004049

AI NO.: 3059

AUTHORIZATION TO DISCHARGE UNDER THE KENTUCKY POLLUTANT DISCHARGE ELIMINATION SYSTEM

Pursuant to Authority in KRS 224,

United States Department of Energy (DOE)
P.O. Box 1410
Paducah, Kentucky 42001-1410

Paducah Remediation Services, LLC
P.O. Box 340
Kevil, Kentucky 42053

Uranium Disposition Services, LLC
1020 Monarch Street, Suite 100
Lexington, Kentucky 40513

is authorized to discharge from a facility located at

Paducah Gaseous Diffusion Plant
Depleted Uranium Hexafluoride Conversion Facility
5600 Hobbs Road
West Paducah, Kentucky 42086

to receiving waters named

Outfalls 001, 015, and 017 discharges to Bayou Creek at mile points 5.6, 6.2, and 7.1, respectively.

Outfall 019 discharges to an Unnamed Tributary of Little Bayou Creek at mile point 0.25

in accordance with effluent limitations, monitoring requirements, and other conditions set forth in PARTS I, II, III, IV, and V hereof. The permit consists of this cover sheet, and PART I 13 pages, PART II 6 page, PART III 2 page, PART IV 6 pages, and PART V 3 pages.

This permit shall become effective on NOV 1 2006

This permit and the authorization to discharge shall expire at midnight,

OCT 31 2011

SEP 29 2006

Date Signed

David W. Morgan, Director
Division of Water

Lloyd R. Cress
Commissioner

DEPARTMENT FOR ENVIRONMENTAL PROTECTION

Division of Water, Frankfort Office Park, 14 Reilly Road, Frankfort, Kentucky 40601

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A1. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date of this permit and lasting through the term of this permit, the permittee is authorized to discharge from Outfall serial number: Outfall 001 - The treated wastestreams of the C-752-A Waste Storage and Treatment Facility (100,000 gpy), C-752-C Decontamination Pad (100,000 gpy), C-753 Waste Treatment and Storage, C-616 Wastewater Treatment Facility (0.8 MGD), C-612 Northwest Plume Groundwater System (0.3 MGD), C-614 Northeast Plume Containment System, and C-613 Northwest Corner Storm Water Collection Basin (1500 gpm) and contributing sources of these units.

Such discharges shall be limited and monitored by the permittee as specified below:

<u>EFFLUENT CHARACTERISTICS</u>	<u>DISCHARGE LIMITATIONS</u>			<u>MONITORING REQUIREMENTS</u>		
	Monthly Avg.	(lbs/day) Daily Max.	Other Units (Specify) Monthly Avg. Daily Max.	Measurement Frequency	Sample Type	
Flow (MGD)	Report N/A	Report N/A	N/A	1/day	Instantaneous	
Total Suspended Solids (mg/l)	N/A	N/A	30	1/Week	Grab	
Oil & Grease (mg/l)	N/A	N/A	10	1/Week	Grab	
Total Residual Chlorine (mg/l)	N/A	N/A	0.011	1/Week	Grab	
Temperature (°F)	N/A	N/A	Report	1/Week	Grab	
PCBs (mg/l)	N/A	N/A	0.000000065	1/Week	Grab	
Trichloroethylene (mg/l)	N/A	N/A	0.0308	1/Week	Grab	
Total Phosphorus (mg/l)	N/A	N/A	1.0	1/Week	Grab	
Total Alpha (pCi/l)	N/A	N/A	Report	1/Week	Grab	
Total Beta (pCi/l)	N/A	N/A	Report	1/Week	Grab	
Uranium (µg/l)	N/A	N/A	Report	1/Week	Grab	
Chronic Toxicity (TU _c)	N/A	N/A	N/A	1/Week	Grab	
Technetium-99 (pCi/l)	N/A	N/A	Report	1/Week	Grab	
Hardness (as mg/l CaCO ₃)	N/A	N/A	15	1/Week	Grab	
1,1,2,2-Tetrachloroethane (µg/l)	N/A	N/A	50	1/Week	Grab	
1,1-Dichloroethylene (µg/l)	N/A	N/A	30	1/Week	Grab	
1,2-Diphenylhydrazine (µg/l)	N/A	N/A	1.00	1/Quarter	3 24-Hr Composites	
	N/A	N/A	Report	1/Quarter	Grab	
	N/A	N/A	Report	1/Quarter	Grab	
	N/A	N/A	Report	1/Quarter	Grab	
	N/A	N/A	Report	1/Quarter	Grab	
	N/A	N/A	Report	1/Quarter	Grab	

The pH of the effluent shall not be less than 6.0 standard units or greater than 9.0 standard units and shall be monitored 1/Week by grab sample.

The abbreviation N/A means Not Applicable.
 The abbreviation PCBs means Polychlorinated Biphenyls.

A1. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date of this permit and lasting through the term of this permit, the permittee is authorized to discharge from Outfall serial number: Outfall 001 - The treated wastestreams of the C-752-A Waste Storage and Treatment Facility (100,000 gpy), C-752-C Decontamination Pad (100,000 gpy), C-753 Waste Treatment and Storage, C-616 Wastewater Treatment Facility (0.8 MGD), C-612 Northwest Plume Groundwater System (0.3 MGD), C-614 Northeast Plume Containment System, and C-613 Northwest Corner Storm Water Collection Basin (1500 gpm) and contributing sources of these units.

Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS (lbs/day)		Other Units (Specify)		MONITORING REQUIREMENTS	
	Monthly Avg.	Daily Max.	Monthly Avg.	Daily Max.	Measurement Frequency	Sample Type
2,4,6-Trichlorophenol (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
2,4-Dinitrotoluene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
3,3-Dichlorobenzidine (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
4,4'-DDD (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
4,4'-DDE (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
4,4'-DDT (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Acrylonitrile (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Aldrin (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
alpha-BHC (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
alpha-Endosulfan (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Benzidine (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Benzo(a)anthracene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Benzo(a)pyrene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Benzo(k)fluoranthene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Beta-BHC (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Beta-Endosulfan (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Bis(2-ethylhexyl)phthalate (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Carbon Tetrachloride (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Chlordane (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Chrysene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Dibenzo(a,h)anthracene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab

The abbreviation N/A means Not Applicable.

A1. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date of this permit and lasting through the term of this permit, the permittee is authorized to discharge from Outfall serial number: Outfall 001 - The treated wastestreams of the C-752-A Waste Storage and Treatment Facility (100,000 gpy), C-752-C Decontamination Pad (100,000 gpy), C-753 Waste Treatment and Storage, C-616 Wastewater Treatment Facility (0.8 MGD), C-612 Northwest Plume Groundwater System (0.3 MGD), C-614 Northeast Plume Containment System, and C-613 Northwest Corner Storm Water Collection Basin (1500 gpm) and contributing sources of these units.

Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS		MONITORING REQUIREMENTS	
	(lbs/day)	Other Units (Specify)	Measurement Frequency	Sample Type
	Monthly Avg.	Daily Max.	Monthly Avg.	Daily Max.
Dieldrin (µg/l)	N/A	N/A	Report	Report
Endrin (µg/l)	N/A	N/A	Report	Report
Free Cyanide (µg/l)	N/A	N/A	Report	Report
gamma-BHC (Lindane) (µg/l)	N/A	N/A	Report	Report
Heptachlor (µg/l)	N/A	N/A	Report	Report
Heptachlor epoxide (µg/l)	N/A	N/A	Report	Report
Hexachlorobenzene (µg/l)	N/A	N/A	Report	Report
Hexachloroethane (µg/l)	N/A	N/A	Report	Report
Ideno(1,2,3-cd)pyrene (µg/l)	N/A	N/A	Report	Report
N-Nitrosodimethylamine (µg/l)	N/A	N/A	Report	Report
N-Nitrosodi-n-Propylamine (µg/l)	N/A	N/A	Report	Report
N-Nitrosodiphenylamine (µg/l)	N/A	N/A	Report	Report
Pentachlorophenol (µg/l)	N/A	N/A	Report	Report
Tetrachloroethylene (µg/l)	N/A	N/A	Report	Report
Total Recoverable Cadmium (µg/l)	N/A	N/A	Report	Report
Total Recoverable Copper (µg/l)	N/A	N/A	Report	Report
Total Recoverable Lead (µg/l)	N/A	N/A	Report	Report
Total Recoverable Mercury (µg/l)	N/A	N/A	Report	Report
Total Recoverable Selenium (µg/l)	N/A	N/A	Report	Report
Total Recoverable Silver (µg/l)	N/A	N/A	Report	Report
Total Recoverable Thallium (µg/l)	N/A	N/A	Report	Report

There shall be no discharge of floating solids or visible foam or sheen in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location: nearest accessible point prior to discharge to or mixing with the receiving waters or wastestreams from other outfalls. The abbreviation N/A means Not Applicable.

PART I
 Page I-4
 Permit No.: KY0004049
 AI NO.: 3059

A2. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date of this permit and lasting through the term of this permit, the permittee is authorized to discharge from Outfall serial number: Outfall 015 - Untreated storm water runoff from the C-749 Uranium Scrap Burial Yard, C-404 Low-Level Radioactive Waste Burial Ground, and the C-747 Burial Area.

Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTICS

DISCHARGE LIMITATIONS

MONITORING REQUIREMENTS

	(lbs/day)		Other Units (Specify)		Measurement Frequency	Sample Type
	Monthly Avg.	Daily Max.	Monthly Avg.	Daily Max.		
Flow (MGD)	Report	Report	N/A	N/A	1/Month	Instantaneous
Total Suspended Solids (mg/l)	N/A	N/A	30	60	1/Month	Grab
Oil & Grease (mg/l)	N/A	N/A	10	15	1/Month	Grab
PCBs (mg/l)	N/A	N/A	0.000000065	Report	1/Month	Grab
Total Alpha (?Ci/l)	N/A	N/A	Report	15	1/Month	Grab
Total Beta (?Ci/l)	N/A	N/A	Report	50	1/Month	Grab
Uranium (µg/l)	N/A	N/A	Report	30	1/Month	Grab
Acute Toxicity (TU _A)	N/A	N/A	N/A	1.00	1/Quarter	2 Grabs
Technetium-99 (?Ci/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Hardness (as mg/l CaCO ₃)	N/A	N/A	Report	Report	1/Quarter	Grab
Total Recoverable Iron (mg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
1,1,2,2-Tetrachloroethane (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
1,1-Dichloroethylene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
1,2-Diphenylhydrazine (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
2,4,6-Trichlorophenol (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab

The pH of the effluent shall not be less than 6.0 standard units or greater than 9.0 standard units and shall be monitored 1/Month by grab sample.

The abbreviation N/A means Not Applicable.

The abbreviation PCBs means Polychlorinated Biphenyls.

A2. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date of this permit and lasting through the term of this permit, the permittee is authorized to discharge from Outfall serial number: Outfall 015 - Untreated storm water runoff from the C-749 Uranium Scrap Burial Yard, C-404 Low-Level Radioactive Waste Burial Ground, and the C-747 Burial Area.

Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS (lbs/day)			Other Units (Specify)		MONITORING REQUIREMENTS	
	Monthly Avg.	Daily Max.	Daily	Monthly Avg.	Daily Max.	Measurement Frequency	Sample Type
2,4-Dinitrotoluene (µg/l)	N/A	N/A	N/A	Report	Report	1/Quarter	Grab
3,3-Dichlorobenzidine (µg/l)	N/A	N/A	N/A	Report	Report	1/Quarter	Grab
4,4'-DDD (µg/l)	N/A	N/A	N/A	Report	Report	1/Quarter	Grab
4,4'-DDE (µg/l)	N/A	N/A	N/A	Report	Report	1/Quarter	Grab
4,4'-DDT (µg/l)	N/A	N/A	N/A	Report	Report	1/Quarter	Grab
Acrylonitrile (µg/l)	N/A	N/A	N/A	Report	Report	1/Quarter	Grab
Aldrin (µg/l)	N/A	N/A	N/A	Report	Report	1/Quarter	Grab
alpha-BHC (µg/l)	N/A	N/A	N/A	Report	Report	1/Quarter	Grab
alpha-Endosulfan (µg/l)	N/A	N/A	N/A	Report	Report	1/Quarter	Grab
Benzidine (µg/l)	N/A	N/A	N/A	Report	Report	1/Quarter	Grab
Benzo(a)anthracene (µg/l)	N/A	N/A	N/A	Report	Report	1/Quarter	Grab
Benzo(a)pyrene (µg/l)	N/A	N/A	N/A	Report	Report	1/Quarter	Grab
Benzo(k)fluoranthene (µg/l)	N/A	N/A	N/A	Report	Report	1/Quarter	Grab
Beta-BHC (µg/l)	N/A	N/A	N/A	Report	Report	1/Quarter	Grab
Beta-Endosulfan (µg/l)	N/A	N/A	N/A	Report	Report	1/Quarter	Grab
Bis(2-ethylhexyl)phthalate (µg/l)	N/A	N/A	N/A	Report	Report	1/Quarter	Grab
Carbon Tetrachloride (µg/l)	N/A	N/A	N/A	Report	Report	1/Quarter	Grab
Chlordane (µg/l)	N/A	N/A	N/A	Report	Report	1/Quarter	Grab
Chrysene (µg/l)	N/A	N/A	N/A	Report	Report	1/Quarter	Grab
Dibenzo(a,h)anthracene (µg/l)	N/A	N/A	N/A	Report	Report	1/Quarter	Grab
Dieldrin (µg/l)	N/A	N/A	N/A	Report	Report	1/Quarter	Grab

The abbreviation N/A means Not Applicable.

A2. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date of this permit and lasting through the term of this permit, the permittee is authorized to discharge from Outfall serial number: Outfall 015 - Untreated storm water runoff from the C-749 Uranium Scrap Burial Yard, C-404 Low-Level Radioactive Waste Burial Ground, and the C-747 Burial Area.

Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS		Other Units (Specify)		MONITORING REQUIREMENTS	
	(lbs/day)	Daily	Monthly	Daily	Measurement Frequency	Sample Type
Endrin (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Free Cyanide (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
gamma-BHC (Lindane) (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Heptachlor (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Heptachlor epoxide (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Hexachlorobenzene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Hexachloroethane (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Ideno(1,2,3-cd)pyrene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
N-Nitrosodimethylamine (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
N-Nitrosodi-n-Propylamine (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
N-Nitrosodiphenylamine (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Pentachlorophenol (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Tetrachloroethylene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Total Recoverable Cadmium (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Total Recoverable Copper (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Total Recoverable Lead (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Total Recoverable Mercury (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Total Recoverable Selenium (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Total Recoverable Silver (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Total Recoverable Thallium (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab

There shall be no discharge of floating solids or visible foam or sheen in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location: nearest accessible point prior to discharge to or mixing with the receiving waters or wastestreams from other outfalls.

The abbreviation N/A means Not Applicable.

A3. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date of this permit and lasting through the term of this permit, the permittee is authorized to discharge from Outfall serial number: Outfall 017 - Untreated storm water runoff, distilled water treatment reject stream, and cooling tower blowdown from the depleted uranium hexafluoride cylinder yard and conversion facility.

Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTICS

DISCHARGE LIMITATIONS

MONITORING REQUIREMENTS

	(lbs/day)		Other Units (Specify)		Sample Type
	Monthly Avg.	Daily Max.	Monthly Avg.	Daily Max.	
Flow (MGD)	Report	Report	N/A	N/A	1/Month
Temperature ¹ (°F)	N/A	N/A	Report	89	1/Month
Total Suspended Solids (mg/l)	N/A	N/A	30	60	1/Month
Oil & Grease (mg/l)	N/A	N/A	10	15	1/Month
PCBs (mg/l)	N/A	N/A	0.00000065	Report	1/Month
Total Recoverable Zinc (µg/l)	N/A	N/A	0.120	0.120	1/Month
Total Alpha (?Ci/l)	N/A	N/A	Report	15	1/Month
Total Beta (?Ci/l)	N/A	N/A	Report	50	1/Month
Uranium (µg/l)	N/A	N/A	Report	30	1/Month
Acute Toxicity (TU _c)	N/A	N/A	N/A	1.00	1/Quarter
Chronic Toxicity ¹ (TU _A)	N/A	N/A	N/A	1.00	2 Grabs
Technetium-99 (?Ci/l)	N/A	N/A	N/A	Report	3 24 Hr Composites
Hardness (as mg/l CaCO ₃)	N/A	N/A	Report	Report	1/Month
1,1,2,2-Tetrachloroethane (µg/l)	N/A	N/A	Report	Report	1/Quarter
1,1-Dichloroethylene (µg/l)	N/A	N/A	Report	Report	1/Quarter
1,2-Diphenylhydrazine (µg/l)	N/A	N/A	Report	Report	1/Quarter
2,4,6-Trichlorophenol (µg/l)	N/A	N/A	Report	Report	1/Quarter

The pH of the effluent shall not be less than 6.0 standard units or greater than 9.0 standard units and shall be monitored 1/Month by grab sample.

The abbreviation N/A means Not Applicable.

The abbreviation PCBs means Polychlorinated Biphenyls.

¹The limits for Temperature and Chronic Toxicity for Outfall 017 shall become effective upon completion and commencement of operation of the depleted uranium conversion facility.

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A3. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date of this permit and lasting through the term of this permit, the permittee is authorized to discharge from Outfall serial number: Outfall 017 - Untreated storm water runoff, distilled water treatment reject stream, and cooling tower blowdown from the depleted uranium hexafluoride cylinder yard and conversion facility.

Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTICS

MONITORING REQUIREMENTS

	(lbs/day)			DISCHARGE LIMITATIONS		Other Units (Specify)		Measurement Frequency	Sample Type
	Monthly Avg.	Daily	Max.	Monthly Avg.	Daily	Max.			
2,4-Dinitrotoluene (µg/l)	N/A	N/A	N/A	Report	Report	Report	Report	1/Quarter	Grab
3,3-Dichlorobenzidine (µg/l)	N/A	N/A	N/A	Report	Report	Report	Report	1/Quarter	Grab
4,4'-DDD (µg/l)	N/A	N/A	N/A	Report	Report	Report	Report	1/Quarter	Grab
4,4'-DDE (µg/l)	N/A	N/A	N/A	Report	Report	Report	Report	1/Quarter	Grab
4,4'-DDT (µg/l)	N/A	N/A	N/A	Report	Report	Report	Report	1/Quarter	Grab
Acrylonitrile (µg/l)	N/A	N/A	N/A	Report	Report	Report	Report	1/Quarter	Grab
Aldrin (µg/l)	N/A	N/A	N/A	Report	Report	Report	Report	1/Quarter	Grab
alpha-BHC (µg/l)	N/A	N/A	N/A	Report	Report	Report	Report	1/Quarter	Grab
alpha-Endosulfan (µg/l)	N/A	N/A	N/A	Report	Report	Report	Report	1/Quarter	Grab
Benzidine (µg/l)	N/A	N/A	N/A	Report	Report	Report	Report	1/Quarter	Grab
Benzo(a)anthracene (µg/l)	N/A	N/A	N/A	Report	Report	Report	Report	1/Quarter	Grab
Benzo(a)pyrene (µg/l)	N/A	N/A	N/A	Report	Report	Report	Report	1/Quarter	Grab
Benzo(k)fluoranthene (µg/l)	N/A	N/A	N/A	Report	Report	Report	Report	1/Quarter	Grab
Beta-BHC (µg/l)	N/A	N/A	N/A	Report	Report	Report	Report	1/Quarter	Grab
Beta-Endosulfan (µg/l)	N/A	N/A	N/A	Report	Report	Report	Report	1/Quarter	Grab
Bis(2-ethylhexyl)phthalate (µg/l)	N/A	N/A	N/A	Report	Report	Report	Report	1/Quarter	Grab
Carbon Tetrachloride (µg/l)	N/A	N/A	N/A	Report	Report	Report	Report	1/Quarter	Grab
Chlordane (µg/l)	N/A	N/A	N/A	Report	Report	Report	Report	1/Quarter	Grab
Chrysene (µg/l)	N/A	N/A	N/A	Report	Report	Report	Report	1/Quarter	Grab
Dibenzo(a,h)anthracene (µg/l)	N/A	N/A	N/A	Report	Report	Report	Report	1/Quarter	Grab
Dieldrin (µg/l)	N/A	N/A	N/A	Report	Report	Report	Report	1/Quarter	Grab

The abbreviation N/A means Not Applicable.

A3. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date of this permit and lasting through the term of this permit, the permittee is authorized to discharge from Outfall serial number: Outfall 017 - Untreated storm water runoff, distilled water treatment reject stream, and cooling tower blowdown from the depleted uranium hexafluoride cylinder yard and conversion facility.

Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS		
	(lbs/day)		Other Units (Specify)		Measurement Frequency	Sample Type	
	Monthly Avg.	Daily Max.	Monthly Avg.	Daily Max.			
Endrin (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab	
Free Cyanide (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab	
gamma-BHC (Lindane) (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab	
Heptachlor (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab	
Heptachlor epoxide (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab	
Hexachlorobenzene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab	
Hexachloroethane (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab	
Ideno(1,2,3-cd)pyrene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab	
N-Nitrosodimethylamine (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab	
N-Nitrosodi-n-Propylamine (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab	
N-Nitrosodiphenylamine (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab	
Pentachlorophenol (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab	
Tetrachloroethylene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab	
Total Recoverable Cadmium (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab	
Total Recoverable Copper (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab	
Total Recoverable Lead (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab	
Total Recoverable Mercury (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab	
Total Recoverable Selenium (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab	
Total Recoverable Silver (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab	
Total Recoverable Thallium (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab	

There shall be no discharge of floating solids or visible foam or sheen in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location: nearest accessible point prior to discharge to or mixing with the receiving waters or wastestreams from other outfalls.

The abbreviation N/A means Not Applicable.

A4. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date of this permit and lasting through the term of this permit, the permittee is authorized to discharge from Outfall serial number: Outfall 019 - Storm water runoff from the C-746-U landfill, and leachate from the C-746-U contained landfill, the C-746-S closed residential landfill, and the C-404 closed hazardous waste landfill.

Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS (lbs/day)			MONITORING REQUIREMENTS		
	Monthly Avg.	Daily Max.	Other Units (Specify) Monthly Avg.	Measurement Frequency	Sample Type	
Flow (MGD)	Report	Report	N/A	1/Month	Instantaneous	
Total Suspended Solids (mg/l)	N/A	N/A	30	1/Month	Grab	
Oil & Grease (mg/l)	N/A	N/A	10	1/Month	Grab	
PCBs (lbs/day) (mg/l)	N/A	0.0	0.00000065	1/Month	Grab	
BOD ₅ (mg/l)	N/A	N/A	37	1/Month	Grab	
Ammonia (as mg/l N)	N/A	N/A	3.36	1/Month	Grab	
a-Terpineol (mg/l)	N/A	N/A	0.016	1/Month	Grab	
Benzoic Acid (mg/l)	N/A	N/A	0.071	1/Month	Grab	
p-Cresol (mg/l)	N/A	N/A	0.014	1/Month	Grab	
Phenol (mg/l)	N/A	N/A	0.015	1/Month	Grab	
Total Recoverable Zinc (µg/l)	N/A	N/A	0.120	1/Month	Grab	
Total Alpha (?Ci/l)	N/A	N/A	Report	1/Month	Grab	
Total Beta (?Ci/l)	N/A	N/A	Report	1/Month	Grab	
Uranium (µg/l)	N/A	N/A	Report	1/Month	Grab	
Acute Toxicity (TU _A)	N/A	N/A	Report	1/Month	Grab	
Technetium-99 (?Ci/l)	N/A	N/A	Report	1/Month	Grab	
Hardness (as mg/l CaCO ₃)	N/A	N/A	Report	1/Month	Grab	
Total Recoverable Iron (mg/l)	N/A	N/A	Report	1/Month	Grab	
1,1,2,2-Tetrachloroethane (µg/l)	N/A	N/A	Report	1/Month	Grab	
1,1-Dichloroethylene (µg/l)	N/A	N/A	Report	1/Month	Grab	
1,2-Diphenylhydrazine (µg/l)	N/A	N/A	Report	1/Month	Grab	
2,4,6-Trichlorophenol (µg/l)	N/A	N/A	Report	1/Month	Grab	

The pH of the effluent shall not be less than 6.0 standard units or greater than 9.0 standard units and shall be monitored 1/Week by grab sample.

The abbreviation N/A means Not Applicable.
 The abbreviation PCBs means Polychlorinated Biphenyls.
 The abbreviation BOD₅ means Biochemical Oxygen Demand, 5-day.

A4. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date of this permit and lasting through the term of this permit, the permittee is authorized to discharge from Outfall serial number: Outfall 019 - Storm water runoff from the C-746-U landfill, and leachate from the C-746-U contained landfill, the C-746-S closed residential landfill, and the C-404 closed hazardous waste landfill.

Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS (lbs/day)		Other Units (Specify)		MONITORING REQUIREMENTS	
	Monthly Avg.	Daily Max.	Monthly Avg.	Daily Max.	Measurement Frequency	Sample Type
2,4-Dinitrotoluene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
3,3-Dichlorobenzidine (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
4,4'-DDD (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
4,4'-DDE (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
4,4'-DDT (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Acrylonitrile (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Aldrin (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
alpha-BHC (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
alpha-Endosulfan (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Benzidine (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Benzo(a)anthracene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Benzo(a)pyrene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Benzo(k)fluoranthene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Beta-BHC (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Beta-Endosulfan (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Bis(2-ethylhexyl)phthalate (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Carbon Tetrachloride (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Chlordane (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Chrysene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Dibenzo(a,h)anthracene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Dieldrin (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab

There shall be no discharge of floating solids or visible foam or sheen in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location: nearest accessible point prior to discharge to or mixing with the receiving waters or wastestreams from other outfalls.

The abbreviation N/A means Not Applicable.

A4. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date of this permit and lasting through the term of this permit, the permittee is authorized to discharge from Outfall 019 - Storm water runoff from the C-746-U landfill, and leachate from the C-746-U contained landfill, the C-746-S closed residential landfill, and the C-404 closed hazardous waste landfill.

Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS (lbs/day)		Other Units (Specify)		MONITORING REQUIREMENTS	
	Monthly Avg.	Daily Max.	Monthly Avg.	Daily Max.	Measurement Frequency	Sample Type
Endrin (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Free Cyanide (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
gamma-BHC (Lindane) (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Heptachlor (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Heptachlor epoxide (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Hexachlorobenzene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Hexachloroethane (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Ideno (1,2,3-cd)pyrene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
N-Nitrosodimethylamine (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
N-Nitrosodi-n-Propylamine (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
N-Nitrosodiphenylamine (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Pentachlorophenol (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Tetrachloroethylene (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Total Recoverable Cadmium (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Total Recoverable Copper (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Total Recoverable Lead (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Total Recoverable Mercury (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Total Recoverable Selenium (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Total Recoverable Silver (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab
Total Recoverable Thallium (µg/l)	N/A	N/A	Report	Report	1/Quarter	Grab

There shall be no discharge of floating solids or visible foam or sheen in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location: nearest accessible point prior to discharge to or mixing with the receiving waters or wastestreams from other outfalls.

The abbreviation N/A means Not Applicable.

B. Schedule of Compliance

Permittee shall comply with the effluent limitations by the effective date of the permit with the following exceptions.

The effluent limitations for Total Alpha, Total Beta, and Uranium shall become effective three years after the effective date of this permit.

C. Responsible Parties

The United States Department of Energy (DOE), Paducah Remediation Services, LLC (PRS), and Uranium Disposition Services, LLC (UDS) are co-permittees. The DOE and PRS are jointly responsible for all outfalls addressed by this permit. UDS responsibility is limited to Outfall 017 only.

STANDARD CONDITIONS FOR KPDES PERMIT

This permit has been issued under the provisions of KRS Chapter 224 and regulations promulgated pursuant thereto. Issuance of this permit does not relieve the permittee from the responsibility of obtaining any other permits or licenses required by this Cabinet and other state, federal, and local agencies.

It is the responsibility of the permittee to demonstrate compliance with permit parameter limitations by utilization of sufficiently sensitive analytical methods.

The following KPDES permit conditions apply to all discharges authorized by this permit pursuant to 401 KAR 5:065, Section 1.

(1) Duty to comply.

(a) General requirement.

The permittee shall comply with all conditions of this permit. Any permit noncompliance shall constitute a violation of KRS Chapter 224, among which shall be the following remedies: enforcement action, permit revocation, revocation and reissuance, or modification; or denial of a permit renewal application.

(b) Specific duties.

1. The permittee shall comply with effluent standards or prohibitions established under 40 CFR Part 129 as of July 1, 2001, as adopted without change, within the time provided in the federal regulations that establish these standards or prohibitions, even if the permit has not yet been modified to incorporate the requirement.
2. Any person who violates a permit condition as set forth in the KPDES administrative regulations shall be subject to penalties under KRS 224.99-010(1) and (4).

(2) Duty to reapply.

If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee shall apply for and obtain a new permit as required in 401 KAR 5:060, Section 1.

(3) Need to halt or reduce activity not a defense.

It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

(4) Duty to mitigate.

The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

(5) Proper operation and maintenance.

The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control and related appurtenances which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also shall include adequate laboratory controls, and appropriate quality assurance procedures. This provision shall require the operation of back-up or auxiliary facilities or similar systems which are installed by a permittee only if the operation is necessary to achieve compliance with the conditions of the permit.

(6) Permit actions.

The permit may be modified, revoked and reissued, or revoked for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or revocation, or a notification of planned changes or anticipated noncompliance, shall not stay any permit condition.

(7) Property rights.

This permit shall not convey any property rights of any kind, or any exclusive privilege.

(8) Duty to provide information.

The permittee shall furnish to the cabinet, within a reasonable time, any information which the cabinet may request to determine whether cause exists for modifying, revoking and reissuing, or revoking this permit, or to determine compliance with this permit. The permittee shall also furnish to the cabinet, upon request, copies of records required to be kept by this permit.

(9) Inspection and entry.

The permittee shall allow the cabinet, or an authorized representative, upon the presentation of credentials and other documents as may be required by law, to:

- (a) Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records pertinent to the KPDES program are or may be kept;
- (b) Have access to and copy, at reasonable times, any records that are required to be kept under the conditions of this permit;
- (c) Inspect at reasonable times any facilities, equipment, including monitoring and control equipment, practices, or operations regulated or required under this permit; and
- (d) Sample or monitor at reasonable times, for the purposes of assuring KPDES program compliance or as otherwise authorized by KRS Chapter 224, any substances or parameters at any location.

(10) Monitoring and records.

- (a) Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.
- (b) The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least three (3) years from the date of the sample, measurement, report, or application. This period may be extended by request of the cabinet at any time.
- (c) Records of monitoring information shall include:
 1. The date, exact place, and time of sampling or measurements;
 2. The individuals who performed the sampling or measurements;
 3. The dates analyses were performed;
 4. The individuals who performed the analyses;
 5. The analytical techniques or methods used; and
 6. The results of the analyses.
- (d) Monitoring shall be conducted according to test procedures approved under 40 CFR Part 136, unless other test procedures have been specified in the permit.
- (e) Any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under the permit shall, upon conviction, be subject to penalties under KRS 224.99-010(4).

(11) Signatory requirement.

All applications, reports, or information submitted to the cabinet shall be signed and certified as indicated in 401 KAR 5:060, Section 9. Any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance shall, upon conviction, be subject to penalties under KRS 224.99-010(4).

(12) Reporting requirements.

(a) Planned changes.

The permittee shall give notice to the cabinet as soon as possible of any planned physical alteration or additions to the permitted facility. Notice shall be required only if:

1. The alteration or addition to a permitted facility may meet one (1) of the criteria for determining whether a facility is a new source in 401 KAR 5:080, Section 5; or
2. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification only applies to pollutants which are subject either to effluent limitations in the permit, or to notification requirements under 401 KAR 5:080, Section 5.

(b) Anticipated noncompliance.

The permittee shall give advance notice to the cabinet of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

(c) Transfers.

The permit shall not be transferable to any person except after notice to the cabinet. The cabinet may require modification or revocation and reissuance of the permit to change the name of the permittee and incorporate other requirements as may be necessary under KRS Chapter 224.

(d) Monitoring reports.

Monitoring results shall be reported at the intervals specified in the permit. Monitoring results shall be reported as follows:

1. Monitoring results shall be reported on a Discharge Monitoring Report (DMR).
2. If the permittee monitors any pollutant more frequently than required by the permit, using test procedures approved under 40 CFR Part 136 or as specified in the permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR.
3. Calculations for all limitations which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified by the cabinet in the permit.

(e) Compliance schedules.

Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than fourteen (14) days following each schedule date.

(f) Twenty-four (24) hour reporting.

The permittee shall follow the provisions of 401 KAR 5:015 and shall orally report any noncompliance which may endanger health or the environment, within twenty-four (24) hours from the time the permittee becomes aware of the circumstances. This report shall be in addition to and not in lieu of any other reporting requirement applicable to the noncompliance. A written submission shall also be provided within five (5) days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance. The cabinet may waive the written report on a case-by-case basis if the oral report has been received within twenty-four (24) hours. The following shall be included as events which shall be reported within twenty-four (24) hours:

1. Any unanticipated bypass which exceeds any effluent limitation in the permit, as indicated in subsection (13) of this section.
2. Any upset which exceeds any effluent limitation in the permit.
3. Violation of a maximum daily discharge limitation for any of the pollutants listed by the cabinet in the permit to be reported within twenty-four (24) hours, as indicated in Section 2(7) of this administrative regulation.

(g) Other noncompliance.

The permittee shall report all instances of noncompliance not reported under paragraphs (d), (e), and (f) of this subsection, when monitoring reports are submitted. The reports shall contain the information listed in paragraph (f) of this subsection.

(h) Other information.

Where the permittee becomes aware that it failed to submit any relevant fact in a permit application, or submitted incorrect information in a permit application or in any report to the cabinet, it shall promptly submit these facts or information.

(13) Occurrence of a bypass.

(a) Bypass not exceeding limitations.

The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. This type of bypass shall not be subject to the provisions of paragraphs (b) and (c) of this subsection.

(b) Notice.

1. Anticipated bypass.

If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least ten (10) days before the date of the bypass. Compliance with this requirement constitutes compliance with 401 KAR 5:015, Section 1.

2. Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required in subsection (12)(f) of this section, twenty-four (24) hour notice.

Compliance with this requirement constitutes compliance with 401 KAR 5:015, Section 4.

(c) Prohibition of a bypass.

1. Bypassing shall be prohibited, and the cabinet may take enforcement action against a permittee for bypass, unless:

- a. The bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;
- b. There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition shall not be satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and
- c. The permittee submitted notices as required under paragraph (b) of this subsection.

2. The cabinet may approve an anticipated bypass, after considering its adverse effects, if the cabinet determines that it will meet the three (3) conditions listed in subparagraph 1a, b, and c of this paragraph.

(14) Occurrence of an upset.

(a) Effect of an upset.

An upset constitutes an affirmative defense to an action brought for noncompliance with technology-based permit effluent limitations if the requirements of paragraph (b) of this subsection are met.

(b) Conditions necessary for a demonstration of an upset.

A permittee who wishes to establish the affirmative defense of upset shall demonstrate through properly signed, contemporaneous operating logs, or other relevant evidence that:

1. An upset occurred and that the permittee can identify the causes of the upset;
2. The permitted facility was at the time being properly operated;
3. The permittee submitted notice of the upset as required in subsection (12)(f) of this section; and
4. The permittee complied with any remedial measures required under subsection (4) of this section.

(c) Burden of proof.

In any enforcement proceeding, the permittee seeking to establish the occurrence of an upset shall have the burden of proof.

(15) Additional conditions applicable to specified categories of KPDES permits.
The following conditions, in addition to others set forth in this administrative regulation, shall apply to all KPDES permits within the categories specified below:

(a) Existing manufacturing, commercial, mining, and silvicultural dischargers.

In addition to the reporting requirements under subsections (12), (13), and (14) of this section, any existing manufacturing, commercial, mining, and silvicultural discharger shall notify the cabinet as soon as it knows or has reason to know:

1. That any activity has occurred or will occur which would result in the discharge on a routine or frequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels:"

- a. 100 micrograms per liter (100 µg/l);
- b. 200 micrograms per liter (200 µg/l) for acrolein and acrylonitrile; 500 micrograms per liter (500 µg/l) for 2,4-dinitrophenol and for 2-methyl-4,6-dinitrophenol; and one (1) milligram per liter (1 mg/l) for antimony;
- c. Five (5) times the maximum concentration value reported for that pollutant in the permit application in accordance with 401 KAR 5:060, Section 2(7);
- d. The level established by the cabinet in accordance with Section 2(6) of this administrative regulation.

2. That any activity has occurred or will occur which would result in any discharge, on a nonroutine or infrequent basis, of a toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels:"

- a. 500 micrograms per liter (500 µg/l);
- b. One (1) milligram per liter (1 mg/l) for antimony;
- c. Ten (10) times the maximum concentration value reported for that pollutant in the permit application in accordance with 401 KAR 5:060, Section 2(7); or
- d. The level established by the cabinet in accordance with Section 2(6) of this administrative regulation.

(b) POTWs.

1. POTWs shall provide adequate notice to the cabinet of the following:

- a. Any new introduction of pollutants into that POTW from an indirect discharger which would be subject to the KPDES administrative regulations if it were directly discharging those pollutants; or
- b. Any substantial change in the volume or character of pollutants being introduced into that POTW by a source introducing pollutants into the POTW at the time of issuance of the permit.

2. For purposes of this paragraph, adequate notice shall include information on the quality and quantity of effluent introduced into the POTWs and any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW.

PART III

OTHER REQUIREMENTS

A. Reporting of Monitoring Results

Monitoring results obtained during each monitoring period must be reported on a preprinted Discharge Monitoring Report (DMR) Form that will be mailed to you. The completed DMR for each monitoring period must be sent to the Division of Water at the address listed below (with a copy to the appropriate Regional Office) postmarked no later than the 28th day of the month following the monitoring period for which monitoring results were obtained.

Division of Water
Paducah Regional Office
130 Eagle Nest Drive
Paducah, Kentucky 42003

Environmental & Public Protection Cabinet
Dept. for Environmental Protection
Division of Water/KPDES Branch
14 Reilly Road, Frankfort Office Park
ATTN: Supervisor Frankfort, Kentucky 40601

B. Reopener Clause

This permit shall be modified, or alternatively revoked and reissued, to comply with any applicable effluent standard or limitation issued or approved under 401 KAR 5:050 through 5:086, if the effluent standard or limitation so issued or approved:

1. Contains different conditions or is otherwise more stringent than any effluent limitation in the permit; or
2. Controls any pollutant not limited in the permit.

The permit as modified or reissued under this paragraph shall also contain any other requirements of KRS Chapter 224 when applicable.

C. Cooling Water Additives, FIFRA, and Mollusk Control

The discharge of any product registered under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) in cooling water which ultimately may be released to the waters of the Commonwealth is prohibited, except Herbicides, unless specifically identified and authorized by the KPDES permit. In the event the permittee needs to use a biocide or chemical not previously reported for mollusk control or other purpose, the permittee shall submit sufficient information, a minimum of thirty (30) days prior to the commencement of use of said biocides or chemicals, to the Division of Water for review and establishment of appropriate control parameters. Such information requirements shall include:

1. Name and general composition of biocide or chemical,
2. Any and all aquatic organism toxicity data,
3. Quantities to be used,
4. Frequencies of use,
5. Proposed discharge concentrations, and
6. EPA registration number, if applicable.

PART III

OTHER REQUIREMENTS

D. Bayou Creek and Little Bayou Creek Watershed Monitoring Program

During the reissuance of the previous permit this program was imposed as permit condition to gauge the success of the DOE remediation of the Paducah Gaseous Diffusion Plant. Over the interim period the two watersheds have been extensively sampled to the point that further collection of aquatic organisms could result in a deleterious effect on the aquatic community. Therefore biological sampling will not be required as part of these programs, the permittee shall however continue with the physical/chemical assessment of these watersheds. The permittee shall submit a revised monitoring program for the 2007 calendar year by December 1, 2006.

E. Required Detected Limits For Selected Pollutants

The following MDLs are required to demonstrate compliance of the listed pollutant with water quality based limitations.

Pollutant	MDL (µg/l)	Pollutant	MDL (µg/l)
Polychlorinated Biphenyls	0.065	Total Recoverable Zinc	1.0
1,1,2,2-Tetrachloroethane	0.03	1,1-Dichloroethylene	0.05
1,2-Diphenylhydrazine	0.028	2,4,6-Trichlorophenol	0.64
2,4-Dinitrotoluene	0.02	3,3-Dichlorobenzidine	0.13
4,4'-DDD	0.004	4,4'-DDE	0.004
4,4'-DDT	0.004	Acrylonitrile	0.5
Aldrin	0.007	alpha-BHC	0.0053
alpha-Endosulfan	0.006	Benzidine	0.08
Benzo(a)anthracene	0.002	Benzo(a)pyrene	0.029
Benzo(k)fluoranthene	0.002	Beta-BHC	0.0036
Beta-Endosulfan	0.001	Bis(2-ethylhexyl)phthalate	0.46
Carbon Tetrachloride	0.12	Chlordane	0.014
Chrysene	0.063	Dibenzo(a,h)anthracene	0.019
Dieldrin	0.004	Endrin	0.007
Free Cyanide	5.0	gamma-BHC (Lindane)	0.003
Heptachlor	0.005	Heptachlor epoxide	0.001
Hexachlorobenzene	0.002	Hexachloroethane	0.03
Ideno(1,2,3-cd)pyrene	0.011	N-Nitrosodimethylamine	0.15
N-Nitrosodi-n-Propylamine	0.15	N-Nitrosodiphenylamine	0.81
Pentachlorophenol	0.25	Tetrachloroethylene	0.03
Total Recoverable Cadmium	0.01	Total Recoverable Copper	1.0
Total Recoverable Lead	1.0	Total Recoverable Mercury	0.0002
Total Recoverable Selenium	1.0	Total Recoverable Silver	1.0
Total Recoverable Thallium	1.0		

PART IV
CHRONIC CONCERNS
Biomonitoring

In accordance with PART I of this permit, the permittee shall initiate, within 30 days of the effective date of this permit, or continue the series of tests described below to evaluate wastewater toxicity of the discharge from Outfalls 001 and 017¹.

1. Test Requirements

- A. The permittee shall perform one (1) short-term fathead minnow (Pimephales promelas) growth test and one (1) short-term daphnid (Ceriodaphnia sp.) life-cycle test. Tests shall be conducted with appropriate replicates of 100% effluent, a control and a minimum of four (4) evenly spaced effluent concentrations. If the permit limit is less than 100% effluent and greater than or equal to 75% effluent, then one (1) concentration should be 100%. If the permit limit is less than 75% effluent, the permit limit concentration shall be bracketed with two (2) concentrations above and two (2) concentrations below. The selection of the effluent concentrations is subject to revision by the Division. Controls shall be tested concurrently with effluent testing using a synthetic water. The analysis will be deemed reasonable and good only if the minimum control requirements are met (i.e. >80% survival; 60% adults with 3 broods and 15 or more young/surviving female for the Ceriodaphnia test; an average 0.25 mg weight for the minnow growth test). Any test that does not meet the control acceptability criteria shall be repeated as soon as practicable within the monitoring period (i.e. monthly or quarterly). Noncompliance with the toxicity limit will be demonstrated if the IC₂₅ (inhibition concentration) for reproduction or growth is less than 100% effluent
- B. Tests shall be conducted on both species at the frequency specified in PART I of this permit.

A minimum of three (3) twenty-four hour composite samples will be collected at a frequency of one (1) sample every other day, or at a frequency to be determined by the permitting authority. For example, the first sample would be used for test initiation, day 1, and for test solution renewal on day 2. The second sample would be used for test solution renewal on days 3 and 4. The third sample would be used for test solution renewal on days 5, 6, and 7. The lapsed time from collection of the last aliquot of the composite and its first use for test initiation, or for test solution renewal shall not exceed 36 hours. Composite samples shall be refrigerated during collection and maintained at 6°C until used.

If after at least six (6) tests, it can be determined that Ceriodaphnia or the Fathead minnow is more sensitive, a request for testing of only that organism can be made to the Division. Upon approval, that organism can be chosen as representative and all subsequent tests can be conducted on only that organism.

¹These requirements for Outfall 017 shall become effective upon completion and commencement of operation of the depleted uranium conversion facility.

2. Reporting Requirements

Results of all tests conducted with any organism shall be reported according to the most recent format provided by the Division of Water (Appendix 10 of 'Methods for Culturing and Conducting Toxicity Tests with *Pimephales promelas* and *Ceriodaphnia dubia* (Fifth Edition)' KDOW, January 2002). Test results shall be submitted to the Division of Water with the next regularly scheduled discharge monitoring report.

3. Chronic Toxicity

If noncompliance with the toxicity limit occurs (IC_{25} for reproduction or growth is less than 100% effluent), the permittee must conduct a second test within 15 days of the first failure. This test will be used in evaluating the persistence of the toxic event and the possible need for a toxicity reduction evaluation (TRE).

If the second test demonstrates noncompliance with the toxicity limit, the permittee will be required to perform accelerated testing as specified in the following paragraphs.

Complete four (4) additional tests within 90 days of failure of the second test to evaluate the frequency and degree of toxicity. The results of the two (2) tests specified above and of the four (4) additional tests will be used for purposes of this evaluation.

If results from two (2) of any six (6) tests show a significant noncompliance with the chronic limit (≥ 1.2 times the TU_c), or results from four (4) of any six (6) tests show chronic toxicity (as defined in 1.A), a Toxicity Reduction Evaluation (TRE) will be required.

The permittee shall provide written notification, within five (5) days of the completion of accelerated testing to the Division of Water, that toxicity persisted and that a TRE would be initiated or that toxicity did not persist and the normal testing would resume.

Should toxicity not prove persistent during the accelerated testing, but reoccur within 12 months of the initial failure at a level = 1.2 time the TU_c , then a TRE shall be initiated without further accelerated testing.

4. Toxicity Reduction Evaluation (TRE)

Having determined the effluent to be toxic, the permittee shall develop and implement an acceptable plan for the identification and treatability of the toxicant(s) within 90 days of completion of accelerated testing. The plan shall be developed in accordance with EPA guidance provided in the following EPA publications and submitted for DEP review and comment:

Clarifications Regarding Toxicity Reduction and Identification Evaluations in the National Pollutant Discharge Elimination System Program. March 27, 2001.

Toxicity Reduction Evaluation Guidance For Municipal Wastewater Treatment Plants. August, 1999.

Methods for Aquatic Toxicity Identification Evaluations: Phase I Toxicity Characterization Procedures. February 1991.

Methods for Aquatic Toxicity Identification Evaluations: Phase II Toxicity Identification Procedures. February 1989.

Methods for Aquatic Toxicity Identification Evaluations: Phase III Toxicity Confirmation Procedures. February 1989.

Generalized Methodology for Conducting Industrial Toxicity Reduction Evaluations (TRES). March 1989.

Abstracts of Toxicity Reduction Evaluations. March 1989.

The plan shall include Toxic Identification Evaluation (TIE) procedures, treatability studies, and evaluations of: chemical usage including changes in types, handling and suppliers; operational and process procedures; housekeeping and maintenance activities; and raw materials. The TRE will establish an implementation schedule not to exceed 24 months for completion of these activities. The implementation schedule shall include monthly progress reports and a final report.

Upon the completion of the TRE, the permittee shall submit a final report detailing the findings of the TRE and the actions to be taken to prevent the reoccurrence of toxicity. This final report shall include: the toxicant(s), if any are identified; treatment options; operational changes; and the proposed resolutions including an implementation schedule not to exceed 180 days.

Should the permittee determine the toxicant(s) and/or a workable treatment prior to the conclusion of the TRE, the permittee will notify, within five (5) days, the Division of Water and take appropriate actions to implement the solution within 180 days of determination.

5. Test Methods

All test organisms, procedures and quality assurance criteria used shall be in accordance with Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms (Fourth Edition), EPA-821-R-02-013, or the most recent edition of this publications.

PART IV
ACUTE CONCERNS
Biomonitoring
Precipitation Dependant Discharges

In accordance with Part I of this permit, the permittee shall initiate, within 30 days of the effective date of this permit, or continue the series of tests described below to evaluate wastewater toxicity of the discharge from Outfalls 015, 017, and 019.

1. Test Requirements

A. The permittee shall perform a 48-hour static toxicity test with Ceriodaphnia sp. and a 48-hour static toxicity test with fathead minnow (Pimephales promelas). Tests shall be conducted on each of two (2) grab samples taken over the period of discharge (e.g. discrete sample 1 taken at commencement of discharge, sample 2 taken prior to cessation of discharge). Tests shall be conducted with appropriate replicates of 100% effluent, a control and a minimum of four (4) evenly spaced effluent concentrations. The selection of the effluent concentrations is subject to revision by the Division. Testing of the effluent shall be initiated within 36 hours of each sample collection. Controls shall be conducted concurrently with effluent testing using a synthetic water. The analysis will be deemed reasonable and good only if control survival is 90% or greater in test organisms held in synthetic water. Any test that does not meet the control acceptability criteria shall be repeated as soon as practicable within the monitoring period (i.e. monthly or quarterly). Noncompliance with the toxicity limit will be demonstrated if the LC₅₀ is less than 100% effluent.

B. Tests shall be conducted on both species at the frequency specified in PART I of this permit.

If after at least six (6) tests, it can be determined that Ceriodaphnia or the fathead minnow is more sensitive, a request for testing only that organism can be made to the Division. Upon approval, that organism can be chosen as representative and all subsequent tests can be conducted on only that organism.

2. Reporting Requirements

Results of all tests conducted with any organism shall be reported according to the most recent format provided by the Division of Water (Appendix 10 of 'Methods for Culturing and Conducting Toxicity Tests with Pimephales promelas and Ceriodaphnia dubia (Fifth Edition)' KDOW, January 2002). Test results shall be submitted to the Division of Water with the next regularly scheduled discharge monitoring report.

3. Acute Toxicity

Due to the discharge being precipitation dependant, if noncompliance with the toxicity limit occurs (the LC_{50} is less than 100% effluent), the permittee must conduct a second test as soon as possible but no later than 30 days after the first failure. This test will be used in evaluating the persistence of the toxic event and the possible need for a toxics reduction evaluation (TRE). If a second sample cannot be obtained within this timeframe, then routine sampling shall continue.

If the second test demonstrates noncompliance with the toxicity limit, or any one of the next two routine samples, or any of the samples show a significant noncompliance with the acute limit ($=1.2$ times the TU_a), the permittee will be required to perform a Toxicity Reduction Evaluation (TRE). The permittee shall provide written notification, within five (5) days of such an event to the Division of Water also indicating that a TRE would be initiated.

4. Toxicity Reduction Evaluation (TRE)

Having determined the effluent to be toxic, the permittee shall develop and implement an acceptable plan for the identification and treatability of the toxicant(s) within 90 days of completion of accelerated testing. The plan shall be developed in accordance with EPA guidance provided in the following EPA publications and submitted for DEP review and comment:

Clarifications Regarding Toxicity Reduction and Identification Evaluations in the National Pollutant Discharge Elimination System Program. March 27, 2001.

Toxicity Reduction Evaluation Guidance For Municipal Wastewater Treatment Plants. August, 1999.

Methods for Aquatic Toxicity Identification Evaluations: Phase I Toxicity Characterization Procedures. February 1991.

Methods for Aquatic Toxicity Identification Evaluations: Phase II Toxicity Identification Procedures. February 1989.

Methods for Aquatic Toxicity Identification Evaluations: Phase III Toxicity Confirmation Procedures. February 1989.

Generalized Methodology for Conducting Industrial Toxicity Reduction Evaluations (TREs). March 1989.

Abstracts of Toxicity Reduction Evaluations. March 1989.

The plan shall include Toxic Identification Evaluation (TIE) procedures, treatability studies, and evaluations of: chemical usage including changes in types, handling and suppliers; operational and process procedures; housekeeping and maintenance activities; and raw materials. The TRE will establish an implementation schedule not to exceed 24 months for completion of these activities. The implementation schedule shall include monthly progress reports and a final report.

Upon the completion of the TRE, the permittee shall submit a final report detailing the findings of the TRE and the actions to be taken to prevent the reoccurrence of toxicity. This final report shall include: the toxicant(s), if any are identified; treatment options; operational changes; and the proposed resolutions, including an implementation schedule not to exceed 180 days.

Should the permittee determine the toxicant(s) and/or a workable treatment prior to the conclusion of the TRE, the permittee will notify, within five (5) days, the Division of Water and take appropriate actions to implement the solution within 180 days of determination.

5. Test Methods

All test organisms, procedures, and quality assurance criteria used shall be in accordance with Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, EPA-821-R-02-012 (5th edition) or the most recently published edition of this publication.

PART V

BEST MANAGEMENT PRACTICES

SECTION A. GENERAL CONDITIONS

1. Applicability

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 224.01-010(35) and who have ancillary manufacturing operations which could result in (1) the release of a hazardous substance, pollutant, or contaminant, or (2) an environmental emergency, as defined in KRS 224.01-400, 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.

2. BMP Plan

The permittee shall develop and implement a Best Management Practices (BMP) plan consistent with 401 KAR 5:065, Section 2(10) pursuant to KRS 224.70-110, which prevents or minimizes the potential for the release of "BMP pollutants" from ancillary activities through plant site runoff; spillage or leaks, sludge or waste disposal; or drainage from raw material storage. A Best Management Practices (BMP) plan will be prepared by the permittee unless the permittee can demonstrate through the submission of a BMP outline that the elements and intent of the BMP have been fulfilled through the use of existing plans such as the Spill Prevention Control and Countermeasure (SPCC) plans, contingency plans, and other applicable documents.

3. Implementation

If this is the first time for the BMP requirement, then the plan shall be developed and submitted to the Division of Water within 90 days of the effective date of the permit. Implementation shall be within 180 days of that submission. For permit renewals the plan in effect at the time of permit reissuance shall remain in effect. Modifications to the plan as a result of ineffectiveness or plan changes to the facility shall be submitted to the Division of Water and implemented as soon as possible.

4. General Requirements

The BMP plan shall:

- a. Be documented in narrative form, and shall include any necessary plot plans, drawings, or maps.
- b. Establish specific objectives for the control of toxic and hazardous pollutants.

- (1) Each facility component or system shall be examined for its potential for causing a release of "BMP pollutants" due to equipment failure, improper operation, natural phenomena such as rain or snowfall, etc.

- (2) Where experience indicates a reasonable potential for equipment failure (e.g., a tank overflow or leakage), natural condition (e.g., precipitation), or other circumstances which could result in a release of "BMP pollutants," the plan should include a prediction of the direction, rate of flow, and total quantity of the pollutants which could be released from the facility as result of each condition or circumstance.
- c. Establish specific Best Management Practices to meet the objectives identified under paragraph b of this section, addressing each component or system capable of causing a release of "BMP pollutants."
- d. Include any special conditions established in part b of this section.
- e. Be reviewed by plant engineering staff and the plant manager.

5. Specific Requirements

The plan shall be consistent with the general guidance contained in the publication entitled "NPDES Best Management Practices Guidance Document," and shall include the following baseline BMPs as a minimum.

- a. BMP Committee
- b. Reporting of BMP Incidents
- c. Risk Identification and Assessment
- d. Employee Training
- e. Inspections and Records
- f. Preventive Maintenance
- g. Good Housekeeping
- h. Materials Compatibility
- i. Security
- j. Materials Inventory

6. SPCC Plans

The BMP plan may reflect requirements for Spill Prevention Control and Countermeasure (SPCC) plans under Section 311 of the Act and 40 CFR Part 151, and may incorporate any part of such plans into the BMP plan by reference.

7. Hazardous Waste Management

The permittee shall assure the proper management of solid and hazardous waste in accordance with the regulations promulgated under the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act of 1978 (RCRA) (40 U.S.C. 6901 et seq.) Management practices required under RCRA regulations shall be referenced in the BMP plan.

8. Documentation

The permittee shall maintain a description of the BMP plan at the facility and shall make the plan available upon request to NREPC personnel. Initial copies and modifications thereof shall be sent to the following addresses when required by Section 3:

Division of Water
Louisville Regional Office
9116 Leesgate Road
Louisville, Kentucky 40222-5084
ATTN: Supervisor

Kentucky Natural Resources and
Environmental Protection Cabinet
Dept. for Environmental Protection
Division of Water/KPDES Branch
14 Reilly Road, Frankfort Office Park
Frankfort, Kentucky 40601

9. BMP Plan Modification

The permittee shall amend the BMP plan whenever there is a change in the facility or change in the operation of the facility which materially increases the potential for the ancillary activities to result in the release of "BMP pollutants."

10. Modification for Ineffectiveness

If the BMP plan proves to be ineffective in achieving the general objective of preventing the release of "BMP pollutants," then the specific objectives and requirements under paragraphs b and c of Section 4, the permit, and/or the BMP plan shall be subject to modification to incorporate revised BMP requirements. If at any time following the issuance of this permit the BMP plan is found to be inadequate pursuant to a state or federal site inspection or plan review, the plan shall be modified to incorporate such changes necessary to resolve the concerns.

SECTION B. SPECIFIC CONDITIONS

Periodically Discharged Wastewaters Not Specifically Covered By Effluent Conditions

The permittee shall include in this BMP plan procedures and controls necessary for the handling of periodically discharged wastewaters such as intake screen backwash, meter calibration, fire protection, hydrostatic testing water, water associated with demolition projects, etc.



ERNIE FLETCHER
GOVERNOR

ENVIRONMENTAL AND PUBLIC PROTECTION CABINET
DEPARTMENT FOR ENVIRONMENTAL PROTECTION
DIVISION OF WATER
14 REILLY ROAD
FRANKFORT, KENTUCKY 40601-1190
www.kentucky.gov

LAJUANA S. WILCHER
SECRETARY

SEP 29 2006

Mr. William E. Murphie
United States Department of Energy
P.O. Box 1410
Paducah, Kentucky 42001-1410

Re: Paducah Gaseous Diffusion Plant
KPDES No.: KY0004049
McCracken County, Kentucky

Dear Mr. Murphie:

Enclosed is the Kentucky Pollutant Discharge Elimination System (KPDES) permit for the above-referenced facility. This action constitutes a final permit issuance under 401 KAR 5:075, pursuant to KRS 224.16-050.

This permit will become effective on the date indicated in the attached permit provided that no request for adjudication is granted. All provisions of the permit will be effective and enforceable in accordance with 401 KAR 5:075, unless stayed by the Hearing Officer under Sections 11 and 13.

Any demand for a hearing on the permit shall be filed in accordance with the procedures specified in KRS 224.10-420, 224.10-440, 224.10-470 and any regulations promulgated thereto. Any person aggrieved by the issuance of a permit final decision may demand a hearing, pursuant to KRS 224.10-420(2), within thirty (30) days from the date of the issuance of this letter. Two (2) copies of request for hearing should be submitted in writing to the Environmental and Public Protection Cabinet, Office of Administrative Hearings, 35-36 Fountain Place, Frankfort, Kentucky 40601 and the Commonwealth of Kentucky, Environmental and Public Protection Cabinet, Division of Water, 14 Reilly Road, Frankfort, Kentucky 40601. For your record keeping purposes, it is recommended that these requests be sent by certified mail. The written request must conform to the appropriate statutes referenced above.

If you have any questions regarding the KPDES decision, please contact Vickie L. Prather, Inventory and Data Management Section, KPDES Branch, at (502) 564-2225, extension 470.

Further information on procedures and legal matters pertaining to the hearing request may be obtained by contacting the Office of Administrative Hearings at (502) 564-7312.

Sincerely,

David W. Morgan, Director
Division of Water

DWM:NG:ng
Enclosure
c: Paducah Regional Office
Division of Water Files

APPENDIX B

**DESCRIPTION OF SOLID WASTE MANAGEMENT UNITS AT
THE PADUCAH GASEOUS DIFFUSION PLANT**

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APPENDIX B

**DESCRIPTION OF SOLID WASTE MANAGEMENT UNITS AT
THE PADUCAH GASEOUS DIFFUSION PLANT**

SWMU or AOC	Description	Contaminants of Concern	Discharge Location and Outfall
1	C-747-C Oil Landfarm	TCE, PCB, U, Oil, TCA	BB, 015
2	C-749 Uranium Burial Ground	U, oils, and TCE	BB, 015
3	C-404 Low-level Rad Waste Burial Ground	U	BB, 015
4	C-747 Contaminated Burial Ground	U	BB, 015
5	C-746-F Classified Burial Ground	Rad	BB, 001 & 015
6	C-747-B Burial Ground	Rad	BB, 001
7	C-747-A Burial Ground	Rad, Metals, PAHs	BB, 001
8	C-746-K Landfill	Iron, TCE, TCA	BB, 001
9	C-746-S Residential Landfill	Permitted	BB, Mile 6.71 (km 10.83)
10	C-746-T Inert Landfill	Permitted	LB, Mile 2.89 (km 4.65)
11	C-400 Trichloroethylene Leak Site	TCE	LB, Mile 2.89 (km 4.65)
12	C-747-A UF ₄ Drum Yard	Rad	BB, 008
13	C-746-P Clean Scrap Yard	None	BB, 001
14	C-746-E Contaminated Scrap Yard	Rad	BB, 001
15	C-746-C Scrap Yard	Rad	BB, 001
16	C-746-D Classified Scrap Yard	Rad	BB, 001
17	C-616-E Sludge Lagoon	Cr (non-haz)	BB, 001
18	C-616-F Full Flow Lagoon	Cr (non-haz)	BB, 001
19	C-410-B HF Neutralization Lagoon	Arsenic, Lead, Cadmium	BB, 001
20	C-410 E HF Emergency Lagoon	None	BB, 001
21	C-611-W Sludge Lagoon	Metals, Rad	BB, 006
22	C-611-Y Overflow Lagoon	Metals, Rad	BB, 006
23	C-611-V Lagoons	Metals, Rad	BB, 006
24	C-750-D Undergrounds Storage Tank	NFA	BB, 008
25	C-750 1000-Gallon Waste Oil Tank	NFA	BB, 008
26	C-400 to C-404 Underground Transfer Line	Rad	BB, 001 & 015
27	C-722 Acid Neutralization Tank	Solvents, Metals	BB, 008
28	C-712 Acid Neutralization Tank	Rad, Organic Metals	BB, 008
29	C-746-B TRU Storage Area	NFA	BB, 001
30	C-747-A Burn Area	Metals, PAHs	BB, 001
31	C-720 Compressor Pit Water Storage Tank	Rad	BB, 008
32	C-728 Clean Waste Oil Tank	Solvents, Oil	BB, 008
33	C-728 Motor Cleaning Facility	Solvents, Rad, Oil	BB, 008
34	C-746-M PCB Waste Storage Area	NFA	BB, 001 & 015
35	C-337 PCB Waste Storage Area Unit 2	NFA	LB, 002
36	C-337 PCB Waste Storage Area Unit 6	NFA	LB, 002
37	C-333 PCB Waste Storage Area	NFA	LB, 010 & 011
38	C-615 Sewage Treatment Plant	PCBs, U	BB, 004
39	C-746-B PCB Waste Storage Area	NFA	BB, 001
40	C-403 Neutralization Tank	Rad	BB, 008
41	C-410-C Neutralization Tank	Arsenic, Cadmium, Lead	BB, 008
42	C-616 Chromate Reduction Facility	Cr, Rad, PCBs	BB, 001
43	C-746-B Waste Chemical Storage Area	NFA	BB, 001
44	C-733 Hazardous Waste Storage Area	Permitted	BB, 008
45	C-746-R Water Solvent Storage Area	NFA	BB, 017
46	C-409 Hazardous Waste Pilot Plant	NFA	BB, 001 & 008
46-A	C-746-Q Hazardous and Low-Level Mixed Waste Storage Building	Permitted	LB, 011 & 012
47	C-400 Technetium Storage Tank Area	Rad, Cr	BB, 001 & 008
48	C-400-A Gold Dissolver Storage Tank	NFA	BB, 001 & 008
49	C-400-B Waste Solutions Storage Tank	NFA	BB, 001 & 008
50	C-400-C Nickel Stripper Evaporation Tank	NFA	BB, 001 & 008
51	C-400-D Lime Precipitation Unit	NFA	BB, 001 & 008
52	C-400 Waste Decontamination Solution Storage Tank	NFA	BB, 001 & 008
53	C-400 NaOH Precipitation Unit	NFA	BB, 001 & 008

APPENDIX B

**DESCRIPTION OF SOLID WASTE MANAGEMENT UNITS AT
THE PADUCAH GASEOUS DIFFUSION PLANT**

SWMU or AOC	Description	Contaminants of Concern	Discharge Location and Outfall
54	C-400 Degreaser Solvent Recovery Unit	NFA	BB, 001 & 008
55	C-405 Incinerator	Rad	BB, 001 & 015
56	C-540-A PCB Waste Staging Area	PCBs	LB, 010 & 011
57	C-541-A PCB Waste Staging Area	PCBs	LB, 002 & BB, 001
58	N-S Diversion Ditch (outside plant security fence)	Rad	BB, 001
59	N-S Diversion Ditch (inside Plant Security fence)	Rad	BB, 001
60	C-375-E2 Effluent Ditch (KPDES 002)	Cr	LB, 002
61	C-375-E5 Effluent Ditch (KPDES 013)	Cr	LB, 013
62	C-375-S6 Southwest Ditch (KPDES 009)	Laboratory Waters (Rad, Organics, Metals)	BB, 009
63	C-375-W7 Oil Skimmer Ditch (KPDES 008)	Oils	BB, 008
64	Little Bayou Creek	Cr	LB
65	Big Bayou Creek	Cr	BB
66	C-375-E3 Effluent Ditch (KPDES 010 Ditch)	Cr	LB, 010
67	C-375-E4 Effluent Ditch (KPDES 011)	Cr	LB, 011
68	C-375-W8 Effluent Ditch (KPDES 015)	Cr	BB, 015
69	C-375-W9 Effluent Ditch (KPDES 001)	PCBs, Rad, Oil	BB, 001
70	C-333-A Vaporizer	PCBs, Oil	LB, 011
71	C-337-A Vaporizer	PCBs, Oil	LB, 002, 010, & 011
72	C-200 UST	NFA	BB, 008
73	C-710 UST	NFA	BB, 008
74	C-340 PCB Transformer Spill Site	PCBs, Oil	BB, 001 & 008
75	C-633 PCB Spill Site	PCBs, Oil	LB, 012
76	C-632-B Sulfuric Acid Storage Tank	None	BB, 001
77	C-634-B Sulfuric Acid Storage Tank	None	LB, 012
78	C-420 PCB Spill Site	PCBs	BB, 008
79	C-611 PCB Spill Site	PCBs	BB, Mile 6.52 (km 10.49)
80	C-540-A PCB Spill Site	PCBs	LB, 010 & 011
81	C-541 PCB Spill Site	PCBs	BB, 001
82	C-531 Electric Switchyard	PCBs, Chlorinated Solvents	LB, 010 & 011
83	C-533 Electric Switchyard	PCBs, Chlorinated Solvents	BB, 001
84	C-535 Switchyard	PCBs, Chlorinated Solvents	BB, 001
85	C-537 Switchyard	PCBs, Chlorinated Solvents	BB, 001
86	C-631 Pumphouse and Cooling Tower	Cr	BB, 008
87	C-633 Pumphouse and Cooling Tower	Cr	LB, 012 & 013
88	C-635 Pumphouse and Cooling Tower	Cr	LB, 002 & BB, 001
89	C-637 Pumphouse and Cooling Tower	Cr	LB, 002
90	C-720 Underground Petroleum Naptha Pipe	NFA	Does Not Exist
91	UF ₆ Cylinder Drop Test Area	TCE	BB, 015
92	Fill Area for Dirt from the C-420 PCB Sill Site	PCB	LB, 010 & BB, 008
93	Concrete Rubble Pile	Rad	LB, 013
94	KOW Trickling Filter and Leach Field	NFA	BB, Mile 6.73 (km 10.83)
95	KOW Burn Area	NFA	BB, Mile 6.52 (km 10.49)
96	C-333 Cooling Tower Scrap Wood Pile	NFA	Removed
97	C-601 Diesel Spill	Fuel Oil (Diesel), PAHs	BB, 015
98	C-400 Basement Sump	TCE	BB, 008
99	C-745 Kellogg Building Site	TCE	LB, 002, 010, & 011
100	Fire Training Area	NFA	BB, 008 & 016
101	C-340 Hydraulic System	PCBs	LB, 010 & 011
102	Plant Storm Sewer	PCB, Rad	Outfalls 002, 008, 009, 010, 011, 012, 015, 016, & 017
103	Concrete Rubble Pile(s)	NFA	BB, Mile 7.68 (km 12.35)
104	Concrete Rubble Pile(s)	NFA	BB, Mile 7.73 (km 8.27)
105	Concrete Rubble Pile(s)	NA	LB, 011
106	Concrete Rubble Pile(s)	NA	LB, 010
107	Concrete Rubble Pile(s)	NA	LB, 002

APPENDIX B

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THE PADUCAH GASEOUS DIFFUSION PLANT**

SWMU or AOC	Description	Contaminants of Concern	Discharge Location and Outfall
108	Concrete Rubble Pile(s)	Rad	LB, Mile 5.36 (km 8.63)
110	Concrete Rubble Pile(s)	NFA	LB, 010 & 011
111	Concrete Rubble Pile(s)	NFA	LB, Mile 2.89 (km 4.65)
112	Concrete Rubble Pile(s)	NFA	LB, Mile 2.39 (km 3.58)
113	Concrete Rubble Pile(s)	Rad	LB, Mile 2.39 (km 3.58)
114	Concrete Rubble Pile(s)	NFA	LB, Mile 1.23 (km 1.98)
115	Concrete Rubble Pile(s)	NFA	River
116	Concrete Rubble Pile(s)	NFA	River
117	Concrete Rubble Pile(s)	NFA	River
118	Concrete Rubble Pile(s)	NFA	BB, Mile 5.49 (km 8.84)
119	Concrete Rubble Pile(s)	NFA	BB, Mile 5.93 (km 9.54)
120	Concrete Rubble Pile(s)	NFA	BB, 006 & Mile 6.05
121	Concrete Rubble Pile(s)	NFA	BB, Mile 6.73 (km 10.83)
122	Concrete Rubble Pile(s)	NFA	Does Not Exist
123	Concrete Rubble Pile(s)	NFA	BB, Mile 6.79 (km 10.93)
124	Concrete Rubble Pile(s)	NFA	BB, Mile 6.79 (km 10.93)
125	Concrete Rubble Pile(s)	NFA	BB, Mile 6.79 (km 10.93)
126	Concrete Rubble Pile(s)	NFA	BB, Mile 6.79 (km 10.93)
127	Concrete Rubble Pile(s)	NFA	BB, Mile 8.16 (km 13.13)
128	Concrete Rubble Pile(s)	NFA	BB, Mile 7.68 (km 12.35)
129	Concrete Rubble Pile(s)	None	BB, 008
130	C-611 550-Gallon Gasoline UST (west of C-611)	NFA	BB, Mile 6.52 (km 10.49)
131	C-611 50-Gallon UST	NFA	BB, Mile 6.52 (km 10.49)
132	C-611 2000-Gallon Oil UST (north of C-611)	NFA	BB, Mile 6.52 (km 10.49)
133	C-611 Unknown Size, Grouted UST (south of C-611)	NFA	BB, Mile 6.52 (km 10.49)
134	C-611 1000-Gallon Diesel/Gasoline Tank (southeast of C-611)	NFA	BB, Mile 6.52 (km 10.49)
135	C-333 PCB Soil Contamination (north side of C-333)	PCB	LB, 010 & 011
136	C-740 TCE Spill Site (northwest Corner, C-740 Concrete Pad)	NFA	BB, 008
137	C-746-A Inactive PCB Transformer Area	PCB	BB, 015
138	C-100 South Side Berm	Mercury, Lead	BB, 009
139	C-746-A1 Underground Storage Tank	NFA	BB, 015
140	C-746-A2 Underground Storage Tank	NFA	Does Not Exist
141	C-720 Inactive TCE Degreaser Unit	NFA	BB, 008 & 009
142	C-750-A 10,000-Gallon UST	NFA	BB, 008 & 009
143	C-750-B 10,000-Gallon UST	NFA	BB, 008 & 009
144	C-746-A Hazardous and Mixed Waste Storage Facility	Permitted	BB, 001
145	Residential/Inert Landfill Borrow Area	PCBs	LB, Mile 2.89 (km 4.65)
146 thru 152	Concrete Rubble Piles	NFA	Ballard County
153	C-331 PCB Soil Contamination (West)	PCBs	BB, 009
154	C-331 PCB Soil Contamination (Southwest)	PCBs	LB, 010 & 011
155	C-333 PCB Soil Contamination (West)	PCBs	BB, 009
156	C-310 PCB Soil Contamination (West)	PCBs	BB, 009
157	KOW Toluene Spill Area	NFA	BB, Mile 6.79 (km 10.93)
158	Chilled Water System Leak Site	Cr	BB, 009
159	C-746-H3 Storage Pad	PCBs	BB, 008
160	C-745 Cylinder Yard Spoils Area (PCB Soils)	PCBs	LB, 012 & 013
161	C-743-T01 Trailer Site (Soil Backfill)	PCBs	BB, 008 & 016
162	C-617-A Sanitary Water Line (Soil Backfill)	PCBs	LB, 010 & 011

APPENDIX B

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THE PADUCAH GASEOUS DIFFUSION PLANT**

SWMU or AOC	Description	Contaminants of Concern	Discharge Location and Outfall
163	C-304 Building/HB+VAC Piping System (Soil Backfill)	PCBs	BB, 009
164	KPDES Outfall Ditch 017 Flume (Soil Backfill)	PCBs	BB, 017
165	C-616-L Pipeline and Vault Soil Contamination	PCBs, U, ⁹⁹ Tc	BB, 001 & 015
166	C-100 Trailer Complex Soil Contamination (East)	⁹⁹ Tc	BB, 009
167	C-720 Whiteroom Sump	Cyanides, Silver, Tin, Lead, Gold, Cr	BB, 008 & 009
168	KPDES Outfall Ditch 012	Cr, Dioxins	LB, 012
169	C-410-E HF Vent Surge Protection Tank	Cr	BB, 008
170	C-729 Acetylene Building Drain Pits	Acetylene	BB, 008 & 009
171	C-617-A Lagoons	Cr	LB, 010 & 011
172	C-726 Sandblasting Facility	Rad	BB, 001 & 005
173	C-746-A Trash Sorting Area	NFA	BB, 001
174	C-745-K Low-Level Storage Area	NFA	BB, 017
175	Concrete Rubble Pile (28)	Rad	LB, 002
176	C-331 Recirculation Cooling Water (RCW) Leak Northwest Side	Cr	BB, 008
177	C-331 RCW Leak East Side	Cr	LB, 010 & 011
178	C-724-A Paint Spray Booth	PCBs	BB, 008
179	Plant Sanitary Sewer System	Unknown	BB, 004 & 008
180	Outdoor Firing Range (WKWMA)	Lead	BB, Mile 6.73 (km 10.83)
181	Outdoor Firing Range (PGDP)	Lead	BB, 008
182	Western Portion of Yellow Waterline	NFA	BB, Mile 6.73 (km 10.83)
183	McGraw UST	Oil	BB, 017
184	PCB Concrete Rubble Pile (29)	NFA	BB, Mile 6.73 (km 10.83)
185	C-611-4 Horseshoe Lagoon	Lead	BB, Mile 6.43 (km 10.35)
186	C-751 Fuel Facility	NFA	BB, 009
187	C-611 Septic System	NFA	BB, Mile 6.71 (km 10.83)
188	C-633 Septic System	NFA	LB, 012, 013, 011, & 010
189	C-637 Septic System	NFA	LB, 002
190	C-337-A Sewage Treatment Aeration Tank	NFA	BB, 001, LB, 002
191	C-333-A Sewage Treatment Aeration Tank	NFA	LB, 012
192	C-710 Acid Interceptor Pit	PCBs, Carbon tet, TCE, U, ⁹⁹ Tc	BB, 009
193	McGraw Construction Facilities (Southside Cylinder Yards)	TCE, PCBs	LB, 013
194	McGraw Construction Facilities (Southside)	TCE, PCBs	BB, 017
195	Curlee Road Contaminated Soil Mounds	Rad	BB, 009 & 016
196	C-746-A Septic Tank	None	BB
197	Concrete Rubble Pile (30)	NFA	BB, Mile 5.24 (km 8.43)
198	C-410-D Area Soil Contamination	PCBs, Rad	BB, 008
199	Big Bayou Creek Monitoring Station	Mercury	BB, Mile 5.93 (km 8.90)
200	Soil Contamination South of TSCA Waste Storage Facility	PCBs, U, ⁹⁹ Tc	BB, 001 & 015
201	Northwest Groundwater Contamination Plume	TCE, ⁹⁹ Tc	Underground Plume
202	Northeast Groundwater Contamination Plume	TCE	Underground Plume
203	C-400 Sump	PCBs, TCE, Rad	BB, 001 & 008
204	Dyke Road Historical Staging Area	TCE	LB, 010 & 011
205	Eastern Portion of Yellow Water Line	Sulfates, Nitrates, TNT Isomers	BB, Mile 6.14 (km 9.88)
206	C-753-A TSCA Waste Storage Building	NFA	BB, 001 & 015
207	C-752-A ER Waste Storage Building	Permitted	BB, 001 & 015
208	C-746-U Landfill	NFA, Permitted	LB, Mile 2.89 (km 4.65)
209	C-720 Compressor Shop Pit Sump	NA	BB, 008
210	Southwest Plume	NA	Underground Plume
211	C-720 TCE Spill Site	TCE	BB, 008
212	C-745-A Radiological Area	Rad	BB, 015

APPENDIX B

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THE PADUCAH GASEOUS DIFFUSION PLANT**

SWMU or AOC	Description	Contaminants of Concern	Discharge Location and Outfall
213	Outside Area DMSA-02	Rad, Unknown	BB, 015
214	Outside Area DMSA-03	Rad, Unknown	BB
215	Outside Area DMSA-04	Rad, Unknown	BB, 016
216	Outside Area DMSA-05	Rad, Unknown	BB, 008
217	Outside Area DMSA-06	Rad, Unknown	BB, 008
218	Outside Area DMSA-07	Rad, Asbestos, Unknown	BB, 008
219	Outside Area DMSA-08	Rad, PCBs, Unknown	BB, 008 & 015
220	Outside Area DMSA-09	Rad, Unknown	BB, 008
221	Outside Area DMSA-10	Rad, Cr, Unknown	BB, 001
222	Outside Area DMSA-11	Rad, Unknown	BB, 008
223	Outside Area DMSA-12	Rad, Unknown	LB, 002 & 010
224	Outside Area DMSA-13	Rad, Unknown	LB, 011
225	Outside Area DMSA-14	Rad, Unknown	LB, 012
226	Outside Area DMSA-15	Rad, Unknown	BB, 001
227	Outside Area DMSA-16	Rad, Unknown	BB, 001
228	Outside Area DMSA-17	Rad, Oil, PAHs, Unknown	BB, 001
229	Outside Area DMSA-18	Rad, Unknown	BB, 001
230	DMSA C310A-01	Rad, Unknown	Inside - No Discharge
231	DMSA C310-02	Rad, Unknown	Inside - No Discharge
232	DMSA C310-03	Rad, Unknown	Inside - No Discharge
233	DMSA C310-04	Rad, Unknown	Inside - No Discharge
234	DMSA C310-05	Rad, Unknown	Inside - No Discharge
235	DMSA C331-01	Rad, Unknown	Inside - No Discharge
236	DMSA C331-02	Rad, Unknown	Inside - No Discharge
237	DMSA C331-03	Rad, Unknown	Inside - No Discharge
238	DMSA C331-04	Rad, Unknown	Inside - No Discharge
239	DMSA C331-05	Rad, PCBs, Unknown	Inside - No Discharge
240	DMSA C331-06	Rad, Unknown	Inside - No Discharge
241	DMSA C331-07	Rad, Unknown	Inside - No Discharge
242	DMSA C331-08	Rad, Unknown	Inside - No Discharge
243	DMSA C331-09	Rad, Unknown	Inside - No Discharge
244	DMSA C331-10	Rad, Unknown	Inside - No Discharge
245	DMSA C331-11	Rad, Unknown	Inside - No Discharge
246	DMSA C331-12	Rad, Unknown	Inside - No Discharge
247	DMSA C331-13	Rad, Unknown	Inside - No Discharge
248	DMSA C331-14	Rad, Unknown	Inside - No Discharge
249	DMSA C331-15	Rad, Unknown	Inside - No Discharge
250	DMSA C331-16	Rad, Unknown	Inside - No Discharge
251	DMSA C331-19	Rad, Unknown	Inside - No Discharge
252	DMSA C331-20	Rad, Unknown	Inside - No Discharge
253	DMSA C331-22	Rad, Unknown	Inside - No Discharge
254	DMSA C331-23	Rad, Unknown	Inside - No Discharge
255	DMSA C331-24	Rad, Unknown	Inside - No Discharge
256	DMSA C333-01	Rad, Unknown	Inside - No Discharge
257	DMSA C333-02	Rad, Unknown	Inside - No Discharge
258	DMSA C333-03	Rad, Unknown	Inside - No Discharge
259	DMSA C333-04	Rad, Unknown	Inside - No Discharge
260	DMSA C333-05	Rad, Unknown	Inside - No Discharge
261	DMSA C333-06	Rad, Unknown	Inside - No Discharge
262	DMSA C333-07	Rad, Unknown	Inside - No Discharge
263	DMSA C333-08	Rad, Unknown	Inside - No Discharge
264	DMSA C333-09	Rad, Unknown	Inside - No Discharge
265	DMSA C333-10	Rad, Unknown	Inside - No Discharge
266	DMSA C333-11	Rad, Unknown	Inside - No Discharge
267	DMSA C333-12	Rad, Unknown	Inside - No Discharge
268	DMSA C333-13 and DMSA C333-32	Rad, Unknown	Inside - No Discharge

APPENDIX B

**DESCRIPTION OF SOLID WASTE MANAGEMENT UNITS AT
THE PADUCAH GASEOUS DIFFUSION PLANT**

SWMU or AOC	Description	Contaminants of Concern	Discharge Location and Outfall
269	DMSA C333-14	Rad, Unknown	Inside - No Discharge
270	DMSA C333-15 and DMSA C333-33	Rad, Unknown	Inside - No Discharge
271	DMSA C333-16	Rad, Unknown	Inside - No Discharge
272	DMSA C333-16	Rad, Oil, Unknown	Inside - No Discharge
273	DMSA C333-17 and DMSA C333-36	Rad, Unknown	Inside - No Discharge
274	DMSA C333-18	Rad, Unknown	Inside - No Discharge
275	DMSA C333-19	Rad, Unknown	Inside - No Discharge
276	DMSA C333-20	Rad, Cr, Unknown	Inside - No Discharge
277	DMSA C333-21	Rad, Unknown	Inside - No Discharge
278	DMSA C333-22	Rad, Unknown	Inside - No Discharge
279	DMSA C333-23	Rad, Unknown	Inside - No Discharge
280	DMSA C333-24	Rad, Unknown	Inside - No Discharge
281	DMSA C333-25	Rad, Unknown	Inside - No Discharge
282	DMSA C333-26	Rad, Unknown	Inside - No Discharge
283	DMSA C333-27	Rad, Unknown	Inside - No Discharge
284	DMSA C333-28	Rad, Unknown	Inside - No Discharge
285	DMSA C333-29	Rad, Unknown	Inside - No Discharge
286	DMSA C333-30	Rad, Unknown	Inside - No Discharge
287	DMSA C333-31	Rad, Unknown	Inside - No Discharge
288	DMSA C333-34	Rad, Unknown	Inside - No Discharge
289	DMSA C333-35	Rad, Unknown	Inside - No Discharge
290	DMSA C333-37	Rad, Unknown	Inside - No Discharge
291	DMSA C333-38	Rad, Unknown	Inside - No Discharge
292	DMSA C333-39	Rad, Unknown	Inside - No Discharge
293	DMSA C333-40	Rad, Unknown	Inside - No Discharge
294	DMSA C333-41	Rad, Asbestos, Unknown	Inside - No Discharge
295	DMSA C333-42	Rad, Unknown	Inside - No Discharge
296	DMSA C333-43	Rad, Propylene Glycol, Unknown	Inside - No Discharge
297	DMSA C335-01	Rad, Unknown	Inside - No Discharge
298	DMSA C335-02	Rad, Unknown	Inside - No Discharge
299	DMSA C335-03	Rad, Unknown	Inside - No Discharge
300	DMSA C335-04	Rad, Unknown	Inside - No Discharge
301	DMSA C335-05	Rad, Unknown	Inside - No Discharge
302	DMSA C335-06	Rad, Unknown	Inside - No Discharge
303	DMSA C335-07	Rad, Unknown	Inside - No Discharge
304	DMSA C335-08	Rad, Unknown	Inside - No Discharge
305	DMSA C335-09	Rad, Unknown	Inside - No Discharge
306	DMSA C335-11	Rad, Unknown	Inside - No Discharge
307	DMSA C335-12	Rad, Unknown	Inside - No Discharge
308	DMSA C337-01	Rad, Unknown	Inside - No Discharge
309	DMSA C337-02	Rad, Unknown	Inside - No Discharge
310	DMSA C337-03	Rad, Unknown	Inside - No Discharge
311	DMSA C337-04	Rad, Unknown	Inside - No Discharge
312	DMSA C337-05	Rad, Unknown	Inside - No Discharge
313	DMSA C337-06	Rad, Unknown	Inside - No Discharge
314	DMSA C337-07	Rad, Unknown	Inside - No Discharge
315	DMSA C337-08	Rad, Unknown	Inside - No Discharge
316	DMSA C337-09	Rad, Unknown	Inside - No Discharge
317	DMSA C337-10	Rad, Unknown	Inside - No Discharge
318	DMSA C337-11	Rad, Unknown	Inside - No Discharge
319	DMSA C337-12	Rad, Unknown	Inside - No Discharge
320	DMSA C337-13	Rad, Unknown	Inside - No Discharge
321	DMSA C337-14	Rad, Unknown	Inside - No Discharge
322	DMSA C337-15	Rad, Unknown	Inside - No Discharge
323	DMSA C337-16	Rad, Unknown	Inside - No Discharge

APPENDIX B

**DESCRIPTION OF SOLID WASTE MANAGEMENT UNITS AT
THE PADUCAH GASEOUS DIFFUSION PLANT**

SWMU or AOC	Description	Contaminants of Concern	Discharge Location and Outfall
324	DMSA C337-17	Rad, Unknown	Inside - No Discharge
325	DMSA C337-18	Rad, Unknown	Inside - No Discharge
326	DMSA C337-19	Rad, Unknown	Inside - No Discharge
327	DMSA C337-20	Rad, Unknown	Inside - No Discharge
328	DMSA C337-21	Rad, Unknown	Inside - No Discharge
329	DMSA C337-23	Rad, Unknown	Inside - No Discharge
330	DMSA C337-25	Rad, Unknown	Inside - No Discharge
331	DMSA C337-27	Rad, Unknown	Inside - No Discharge
332	DMSA C337-29	Rad, Unknown	Inside - No Discharge
333	DMSA C337-30	Rad, Unknown	Inside - No Discharge
334	DMSA C337-31	Rad, Unknown	Inside - No Discharge
335	DMSA C337-32	Rad, Unknown	Inside - No Discharge
336	DMSA C337-33	Rad, Unknown	Inside - No Discharge
337	DMSA C337-34	Rad, Unknown	Inside - No Discharge
338	DMSA C337-35	Rad, Unknown	Inside - No Discharge
339	DMSA C337-36	Rad, Unknown	Inside - No Discharge
340	DMSA C337-37	Rad, Unknown	Inside - No Discharge
341	DMSA C337-38	Rad, Unknown	Inside - No Discharge
342	DMSA C337-39	Rad, Unknown	Inside - No Discharge
343	DMSA C337-40	Rad, Unknown	Inside - No Discharge
344	DMSA C337-41	Rad, Unknown	Inside - No Discharge
345	DMSA C337-42	Rad, Unknown	Inside - No Discharge
346	DMSA C337-43	Rad, Unknown	Inside - No Discharge
347	DMSA C337-44	Rad, Unknown	Inside - No Discharge
348	DMSA C337-45	Rad, Unknown	Inside - No Discharge
349	DMSA C400-01	Rad, TCA, Unknown	Inside - No Discharge
350	DMSA C400-04	Rad, Corrosives, Unknown	Inside - No Discharge
351	DMSA C400-05	Rad, Unknown	Inside - No Discharge
352	DMSA C400-06	Rad, Unknown	Inside - No Discharge
353	DMSA C400-07	Rad, Unknown	Inside - No Discharge
354	DMSA C409-01	Rad, Unknown	Inside - No Discharge
355	DMSA C409-02	Rad, Sodium Fluoride, Unknown	Inside - No Discharge
356	DMSA C720-01	Rad, Unknown	Inside - No Discharge
357	DMSA C720-02	Rad, Cr, Lead, Unknown	Inside - No Discharge
358	DMSA C720-03	Rad, PCBs, Unknown	Inside - No Discharge
359	DMSA C720-04	Rad, Oil	Inside - No Discharge
360	DMSA C535	NFA RCRA Waste	Inside - No Discharge
361	DMSA C727-90 day	NFA Requested, PCBs, Rad, Metals	Inside - No Discharge
362	Generator Staging Area G-310-04	NFA Requested, PCBs, Rad	Inside - No Discharge
363	Generator Staging Area G-331-03	NFA	Inside - No Discharge
364	Generator Staging Area G-331-05	NFA	Inside - No Discharge
365	Generator Staging Area G-333-02	NFA	Inside - No Discharge
366	Generator Staging Area G-333-03	NFA	Inside - No Discharge
367	Generator Staging Area G-333-04	NFA	Inside - No Discharge
368	Generator Staging Area G-333-08	NFA	Inside - No Discharge
369	Generator Staging Area G-333-10	NFA	Inside - No Discharge
370	Generator Staging Area G-333-20	NFA	Inside - No Discharge
371	Generator Staging Area G-335-01	NFA	Inside - No Discharge
372	Generator Staging Area G-337-02	NFA	Inside - No Discharge
373	Generator Staging Area G-337-03	NFA	Inside - No Discharge
374	Generator Staging Area G-337-13	NFA	Inside - No Discharge
375	Generator Staging Area G-337-14	NFA	Inside - No Discharge
376	Generator Staging Area G-337-15	NFA	Inside - No Discharge
377	Generator Staging Area G-337-22	NFA	Inside - No Discharge
378	Generator Staging Area G-340-01	Rad	Inside - No Discharge

APPENDIX B

**DESCRIPTION OF SOLID WASTE MANAGEMENT UNITS AT
THE PADUCAH GASEOUS DIFFUSION PLANT**

SWMU or AOC	Description	Contaminants of Concern	Discharge Location and Outfall
379	Generator Staging Area G-340-03	Rad	Inside - No Discharge
380	Generator Staging Area G-340-04	Rad, Oil	Inside - No Discharge
381	Generator Staging Area G-340-05	Rad, PCBs, Oil, PAHs	Inside - No Discharge
382	Generator Staging Area G-340-06	NFA Requested, Asbestos, Rad	Inside - No Discharge
383	Generator Staging Area G-400-01	NFA	Inside - No Discharge
384	Generator Staging Area G-400-02	NFA	Inside - No Discharge
385	Generator Staging Area G-409-25	NFA	Inside - No Discharge
386	Generator Staging Area G-410-01	NFA Requested, Rad	Inside - No Discharge
387	Generator Staging Area G-416-01	Rad	BB, 008
388	DMSA 416	NFA	BB, 008
389	Generator Staging Area G-533-01	NFA	Inside - No Discharge
390	Generator Staging Area G-535-02	NFA	BB, 001
391	Generator Staging Area G-537-01	NFA	Inside - No Discharge
392	Generator Staging Area G-540-A-01	NFA Requested, PCBs	Inside - No Discharge
393	Generator Staging Area G-540-A-1-02	NFA Requested, PCBs	LB, 010 & 011
394	Generator Staging Area G-541-A-01	NFA	BB, 001
395	Generator Staging Area G-600-01	NFA Requested, Asbestos, Rad	BB, 008
396	Generator Staging Area G-611-U-01	NFA Requested, Oil	BB
397	Generator Staging Area G-612-01	NFA Requested, TCE, Rad	Inside - No Discharge
398	Generator Staging Area G-612-02	NFA Requested, Rad	Inside - No Discharge
399	Generator Staging Area G-612-A-01	NFA Requested, No Concern	BB, 001
400	Generator Staging Area G-635-01	NFA Requested, Asbestos	BB, 001
401	Generator Staging Area G-710	NFA	BB, 009
402	Generator Staging Area G-710-04	NFA	BB, 009
403	Generator Staging Area G-710-20	NFA	BB, 009
404	Generator Staging Area G-710-24	NFA	Inside - No Discharge
405	Generator Staging Area G-720-22	NFA Requested, Asbestos, PCBs, Rad	Inside - No Discharge
406	Generator Staging Area G-742-T-17-01	NFA	Inside - No Discharge
407	Generator Staging Area G-743-T-17-02	NFA Requested, No Concern	Inside - No Discharge
408	Generator Staging Area G-G-745-B-01	NFA Requested, Rad	BB, 015
409	Generator Staging Area G-745-T-01	NFA Requested, Rad	BB, 017
410	Generator Staging Area G-746-G-01	NFA	Inside - No Discharge
411	Generator Staging Area G-746-G-1-01	NFA Requested, PCBs	Inside - No Discharge
412	Generator Staging Area G-746-G-2-01	NFA	BB, 002 & 010
413	Generator Staging Area G-746-G-3-01	NFA	BB, 002 & 010
414	Generator Staging Area G-746-F-01	NFA	BB, 001
415	Generator Staging Area G-746-S-01	NFA Requested, No Concern	LB
416	Generator Staging Area G-746-X-01	NFA Requested, PCBs	BB, 001
417	Generator Staging Area G-746-X-01	NFA Requested, Asbestos	BB, 001
418	Generator Staging Area G-748-B-01	NFA	BB, 008 & 015
419	Generator Staging Area G-752-C-01	NFA Requested, TCE, Oil	BB, 009 & 016
420	Generator Staging Area G-752-C-02	NFA Requested, No Concern	BB, 009 & 016
421	Generator Staging Area G-754-01	NFA	BB, 008
422	Generator Staging Area G-755-A-01	NFA	LB, 002
423	Generator Staging Area G-755-C-01	NFA	Inside - No Discharge
424	Generator Staging Area G-755-T-07-01	NFA	Inside - No Discharge
425	Generator Staging Area G-755-T-08	NFA	Inside - No Discharge
426	Generator Staging Area G-755-T-2-3-01	NFA	LB, 2
427	Generator Staging Area G-755-T-3-1-01	NFA	LB, 2
428	Generator Staging Area G-755-T-3-2-01	NFA	LB, 2
429	Satellite Access Area S-310-04	NFA Requested, PCBs, Oil	Inside - No Discharge
430	Satellite Access Area S-331-02	NFA	Inside - No Discharge
431	Satellite Access Area S-333-12	NFA	Inside - No Discharge
432	Satellite Access Area S-335-09	NFA Requested, PCBs, Oil	Inside - No Discharge
433	Satellite Access Area S-337-11	NFA	Inside - No Discharge

APPENDIX B

**DESCRIPTION OF SOLID WASTE MANAGEMENT UNITS AT
THE PADUCAH GASEOUS DIFFUSION PLANT**

SWMU or AOC	Description	Contaminants of Concern	Discharge Location and Outfall
434	Satellite Access Area S-340-01	Mercury	Inside - No Discharge
435	Satellite Access Area S-409-100	NFA	Inside - No Discharge
436	Satellite Access Area S-409-20	NFA	Inside - No Discharge
437	Satellite Access Area S-409-40	NFA	Inside - No Discharge
438	Satellite Access Area S-409-60	NFA	Inside - No Discharge
439	Satellite Access Area S-409-80	NFA	Inside - No Discharge
440	Satellite Access Area S-410-05	NFA Requested, Mercury	Inside - No Discharge
441	Satellite Access Area S-540-A-2-01	NFA	LB, 011
442	Satellite Access Area S-612-01	NFA Requested, Rad, Oil	Inside - No Discharge
443	Satellite Access Area S-709-01	NFA	Inside - No Discharge
444	Satellite Access Area S-709-02	NFA	Inside - No Discharge
445	Satellite Access Area S-710-05	NFA Requested, Metals, Corrosive, Rad, Volatiles	Inside - No Discharge
446	Satellite Access Area S-710-06	NFA	Inside - No Discharge
447	Satellite Access Area S-710-09	NFA	Inside - No Discharge
448	Satellite Access Area S-710-16	NFA	Inside - No Discharge
449	Satellite Access Area S-710-18	NFA	Inside - No Discharge
450	Satellite Access Area S-710-32	NFA	Inside - No Discharge
451	Satellite Access Area S-710-41	NFA	Inside - No Discharge
452	Satellite Access Area S-710-44	NFA	Inside - No Discharge
453	Satellite Access Area S-710-46	NFA	Inside - No Discharge
454	Satellite Access Area S-743-T-17-01	NFA Requested, TCE, Methanol	Inside - No Discharge
455	Satellite Access Area S-755-T-16-01	NFA	LB, 002
456	Satellite Access Area S-755-T-16-02	NFA	LB, 002
457	Satellite Access Area S-755-T-16-03	NFA	LB, 002
458	Satellite Access Area S-755-T-2-3-01	NFA	LB, 002
459	Satellite Access Area S-755-T-3-1-01	NFA	LB, 002
460	Satellite Access Area S-755-T-3-2-01	NFA	LB, 002
461	Satellite Access Area S-755-T-3-2-02	NFA	LB, 002
462	Satellite Access Area S-755-7-3-2-03	NFA	LB, 002
463	C-746-A West End	NFA Requested, Metals, Rad	BB, 001
464	C-746-A West End	NFA Requested, Metals, Rad	BB, 001
465	G Yard Rubble Pile	NFA Requested, No Concern	BB, 017
466	South of Dykes Road, Pond Area	NFA Requested, No Concern	LB
467	WKWMA on KOW	NFA Requested, No Concern	BB
468	Area West of Plant, North of Outfall 015	NFA Requested, No Concern	BB, 015
469	C-745-J Yard	NFA Requested, Rad	BB, 001
470	C-746-V Yard	NFA Requested, Rad	BB, 001
471	South Area outside C-746-B	NFA Requested, Rad	BB, 001
472	West of C-746-B	NFA Requested, Rad	BB, 001
473	West of C-746-B	NFA Requested, Rad	BB, 001
474	West of Vortec Site	NFA Requested, No Concern	BB, 001
475	C-745-G5-01	NFA Requested, Rad	BB, 001
476	Concrete Crusher	NFA Requested, Rad	BB, 009
477	C-340 Metals Plant	D&D Operable Unit	Inside - No Discharge
478	C-410/420 Feed Plant	D&D Operable Unit	Inside - No Discharge
479	C-204 Disintegrator Building	NFA	Inside - No Discharge
480	C-402 Lime House	D&D Operable Unit	Inside - No Discharge
481	C-410-A Hydrogen Cylinder	NFA	Inside - No Discharge
482	C-415 Feed Plant Storage Building	D&D Operable Unit	Inside - No Discharge
483	Nitrogen Generating Facilities	Unknown	Inside - No Discharge
484	North Sanitary Water Storage Tank	NFA	Inside - No Discharge
485	North Sanitary Water Storage Tank	NFA	Inside - No Discharge
486	WKWMA southwest of plant, rubble pile	NFA Requested	Offsite
487	WKWMA southwest of plant, rubble pile	NFA Requested	Offsite

APPENDIX B

**DESCRIPTION OF SOLID WASTE MANAGEMENT UNITS AT
THE PADUCAH GASEOUS DIFFUSION PLANT**

SWMU or AOC	Description	Contaminants of Concern	Discharge Location and Outfall
488	Polychlorinated biphenyls (PCB) contamination area neat the future C-410 Trailer Complex	Surface Soils Operable Unit	BB, 015
489	Septic Tank, north of the C-710 Laboratory	Surface Soils Operable Unit	BB, 015
490	McGraw Fuel Facility Waste Oil Underground Storage Tank	NFA	LB, 013
491	Mercury Spill at the C-611 Water Treatment Plant Vault	NFA	BB, Mile 6.71 (km 10.83)
492	Contaminated Soil Area North of Outfall 010	Surface Soils Operable Unit	LB, 003
493a 493b	Concrete Rubble Piles near Outfall 001 ditch	Surface Soils Operable Unit	BB, 001
494	C-410 Ash Removal Systems	D&D Operable Unit	Inside - No Discharge
495	C-410-I Ash Receiver Shed	D&D Operable Unit	Inside - No Discharge
496	C-410 Fluorine Filters	D&D Operable Unit	Inside - No Discharge
497	C-410 Neutralization Room Vats	D&D Operable Unit	Inside - No Discharge
498	C-410/420 Complex Sump at D&D 1&2	D&D Operable Unit	Inside - No Discharge
499	C-410/420 Complex – Sump at H-9&10	D&D Operable Unit	Inside - No Discharge
500	C-410/420 Complex – Sump at U-10&11	D&D Operable Unit	Inside - No Discharge
501	C-410/420 Complex – Scale Pit Sumps A & B	D&D Operable Unit	Inside - No Discharge
502	C-410/420 Complex – Sump at Column U-9	D&D Operable Unit	Inside - No Discharge
503	C-410/420 Complex – Sump at Column G-1	D&D Operable Unit	Inside - No Discharge
504	C-410/420 Complex – Sump at Column L-10	D&D Operable Unit	Inside - No Discharge
505	C-410/420 Complex – Sump at Column A-3N	D&D Operable Unit	Inside - No Discharge
506	C-410/420 Complex – Sump at Column Wa-9	D&D Operable Unit	Inside - No Discharge
507	C-410/420 Complex – Condensate Tank Pit	D&D Operable Unit	Inside - No Discharge
508	C-410/420 Complex – Settling Basin	D&D Operable Unit	Inside - No Discharge
509	C-410/420 Complex – Drain Pit	D&D Operable Unit	Inside - No Discharge
510	C-410/420 Complex – Sump at Column P&Q-2	D&D Operable Unit	Inside - No Discharge
511	C-410/420 Complex – Sump at Column Q&R-2	D&D Operable Unit	Inside - No Discharge
512	C-410/420 Complex – Sump at Column R-2	D&D Operable Unit	Inside - No Discharge
513	C-411 Cell Maintenance Room Sump Pit	D&D Operable Unit	Inside - No Discharge
514	C-340 Magnesium Fluoride Reject Silo	D&D Operable Unit	Inside - No Discharge
515	C-340 "Dirty" Dust Collection System	D&D Operable Unit	Inside - No Discharge
516	C-340 Derby Preparation Area Sludge Collection System	D&D Operable Unit	Inside - No Discharge
517	Rubble and Debris Erosion Control Fill Area	Surface Soils Operable Unit	BB, 001
518	Field South of C-746-P Yard	Surface Soils Operable Unit	BB, 001
519	C-410 Sulfuric Acid Tank (C-634-B Tank)	NFA	Inside - No Discharge
520	Scrap Material West of C-746-A	Surface Soils Operable Unit	BB, 001
521	C-340 Saw System Degreaser	D&D Operable Unit	Inside - No Discharge
522	Pit Ground Floor at B-7-B-9	D&D Operable Unit	Inside - No Discharge
523	Pit Ground Floor F6-F11	D&D Operable Unit	Inside - No Discharge
524	Pickling Spray Booth Sump at B10 and B11	D&D Operable Unit	Inside - No Discharge
525	Water Tower Concrete Supports	NFA Requested	BB, 001
526	Internal Plant Drainage Ditches	Surface Soils Operable Unit Surface Water Operable Unit	All Outfalls
527	C-410 GSA/SAA at Column J9	NFA Requested	Inside - No Discharge
528	GSA/SAA at the northwest corner of the C-745-G3 Paint Enclosure	NFA Requested	Inside - No Discharge
529	C-340 Powder Plant Sump	D&D Operable Unit	Inside - No Discharge
530	Soil and Debris Storage Area by C-745-T Yard	NFA Requested	BB, 001
531	Aluminum Slag Reacting Area near the C-746-A Facility	Surface Soils Operable Unit	Inside - No Discharge
532	Photographic Solution Treatment Area in the C-102 building	NFA	Inside - No Discharge
533	TCE spill site from historical TCE unloading operations at C-400	TCE	BB, 008

APPENDIX B

**DESCRIPTION OF SOLID WASTE MANAGEMENT UNITS AT
THE PADUCAH GASEOUS DIFFUSION PLANT**

SWMU or AOC	Description	Contaminants of Concern	Discharge Location and Outfall
534	UST #18 within SWMU 193	NFA	LB, 013
535	SAA - located in trailer C-755-08	NFA Requested	Inside - No Discharge
536	Concrete truck washout area – west of gate 49	NFA	BB, 017
537	SAA – located outside at the southeast corner of C-400	NFA Requested	Contained – No Discharge
538	SAA's in groundwater sampling trailer 01	NFA Requested	Inside - No Discharge
539	SAA's in groundwater sampling trailer 02	NFA Requested	Inside - No Discharge
540	SAA's in groundwater sampling trailer 03	NFA Requested	Inside - No Discharge
541	Contaminated Soil Area, West of Outfall 011	Surface Soils Operable Unit	LB, 003
542	SAA's and GSA located outside south of C-746-B	NFA	Contained – No Discharge
543	90-Day Storage Area near C-746-S	NFA	Contained – No Discharge
544	90-Day Storage Area at C-752-C	NFA	Contained – No Discharge
545	Generator Staging Area and a Satellite Accumulation Area located at C-755-T-22	NFA	Contained – No Discharge
546	PGDP Post 67 Diesel Spill Area	NFA Requested	Contained – No Discharge
547	PGDP Post 38 Diesel Spill Area	NFA Requested	Contained – No Discharge
548	Staging Area for Concrete Piers, Rubble and Wood from C-745-B Cylinder Yard	NFA Requested	Contained – No Discharge
549	Dirt/Concrete Rubble Pile Near Outfall 008	Surface Water Operable Unit	BB, 008
550	Concrete Culvert Sections Located on the West Bank of the Ditch Leading to Outfall 001	Surface Water Operable Unit	BB, 001
551	GSA G-755-DMSA-23 located at C-755 on the East Fence Line	NFA Requested	Contained – No Discharge
552	90-Day Storage Area Located at C-760	NFA Requested	Contained – No Discharge
553	DMSA C331-17	NFA Requested	Inside - No Discharge
554	DMSA C331-18	NFA Requested	Inside - No Discharge
555	DMSA C331-21	NFA Requested	Inside - No Discharge
556	DMSA C337-22	NFA Requested	Inside - No Discharge
557	DMSA C337-24	NFA Requested	Inside - No Discharge
558	DMSA C337-26	NFA Requested	Inside - No Discharge
559	DMSA C337-28	NFA Requested	Inside - No Discharge
560	DMSA C333-16	NFA Requested	Inside - No Discharge

^aCarbon tet = Carbon tetrachloride; Cr = Chromium; NA = Not Applicable; NFA = No Further Action;

PAHs = Polynuclear aromatic hydrocarbons; ^aPCBs = Polychlorinated biphenyls; Rad = Radionuclides;

⁹⁹Tc = Technetium; TCA = Trichloroethane; TCE = Trichloroethene; TNT = Trinitrotoluene; U = Uranium

^b001-015 = Kentucky Pollutant Discharge Elimination System outfall locations (DOE and USEC); BB = Bayou Creek; LB = Little Bayou Creek; River = Ohio River

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