Department of Energy

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

SEP 0 8 2016

Mr. Brian Begley
Federal Facility Agreement Manager
Division of Waste Management
Kentucky Department for Environmental Protection
300 Sower Blvd.
Frankfort, Kentucky 40601

PPPO-02-3675584-16B

Ms. Julie Corkran
Federal Facility Agreement Manager
U.S. Environmental Protection Agency, Region 4
61 Forsyth Street
Atlanta, Georgia 30303

Dear Mr. Begley and Ms. Corkran:

REMOVAL NOTIFICATION FOR SOLID WASTE MANAGEMENT UNIT 27 AT THE PADUCAH GASEOUS DIFFUSION PLANT, PADUCAH, KENTUCKY, DOE/LX/07-2406&D2

References:

1. Letter from A. Webb to T. Duncan, "Submittal of Comments on the Removal Notification for SWMU 27, DOE/LX/07-2406&D1," dated July 22, 2016
2. Letter from J. Corkran to T. Duncan, "EPA Comments: Removal Notification for Solid Waste Management Unit 27 at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky, DOE/LX/07-2406&D1, transmittal dated June 21, 2016, PPPO-02-3536729-16C," dated July 20, 2016

Enclosed for your approval is the certified *Removal Notification for Solid Waste Management Unit 27 at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky,* DOE/LX/07-2406&D2 (Removal Notification). This version of the document includes changes made as a result of written comments received from the U.S. Environmental Protection Agency and Kentucky Department for Environmental Protection on July 20, 2016, and July 22, 2016, respectively. It also includes changes made as a result of meetings held on August 30, 2016, September 1, 2016, and September 8, 2016.

A redlined version of the document and comment response summaries are included to assist with your review.

In accordance with Section XX.G.2 of the Federal Facility Agreement (FFA), there is a 30-day review/comment period for this document; however, as discussed with the FFA parties in February and during the call on September 8, 2016, the U.S. Department of Energy respectfully

requests an accelerated review/approval in order to begin field work upon receipt of written approval of this Removal Notification.

If you have any questions or require additional information, please contact April Ladd at (270) 441-6843.

Sincerely,

Tracey Duncan
Federal Facility Agreement Manager
Portsmouth/Paducah Project Office

Enclosures:
1. Certification Pages
2. *Removal Notification for the Solid Waste Management Unit 27 at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*, DOE/LX/07-2406&D2—Clean
3. *Removal Notification for the Solid Waste Management Unit 27 at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*, DOE/LX/07-2406&D2—Redline
4. Comment Response Summary—Kentucky Department for Environmental Protection
5. Comment Response Summary—U.S. Environmental Protection Agency

e-copy w/enclosures:
april.ladd@lex.doe.gov, PPPO/PAD
april.webb@ky.gov, KDEP/Frankfort
brian.begley@ky.gov, KDEP/Frankfort
bwhatton@tva.gov, TVA/PAD
corkran.julie@epa.gov, EPA/Atlanta
craig.jones@ffspaducah.com, FFS/Kevil
dave.dollins@lex.doe.gov, PPPO/PAD
ffscorrespondence@ffspaducah.com, FFS/Kevil
gaye.brewer@ky.gov, KDEP/PAD
hjlawrence@tva.gov, TVA/PAD
jana.white@ffspaducah.com, FFS/Kevil
jennifer.woodard@lex.doe.gov, PPPO/PAD
john.morgan@ffspaducah.com, FFS/Kevil
leo.williamson@ky.gov, KDEP/Frankfort
mike.guffey@ky.gov, KDEP/Frankfort
myrna.redfield@ffspaducah.com, FFS/Kevil
nathan.garner@ky.gov, KYRHB/Frankfort
pad.rmc@swiftstaley.com, SSI/Kevil
richards.jon@epamail.epa.gov, EPA/Atlanta
rkdehart@tva.gov, TVA/PAD
stephaniec.brock@ky.gov, KYRHB/Frankfort
tracey.duncan@lex.doe.gov, PPPO/PAD

CERTIFICATION

Document Identification: ***Removal Notification for Solid Waste Management Unit 27 at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky,*** **DOE/LX/07-2406&D2, dated September 2016**

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 ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or 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.

U.S. Department of Energy

Robert E. Edwards III

Robert E. Edwards III, Manager
Portsmouth/Paducah Project Office
U.S. Department of Energy

9/8/2016

Date Signed

CERTIFICATION

Document Identification: ***Removal Notification for Solid Waste Management Unit 27 at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky,*** **DOE/LX/07-2406&D2, dated September 2016**

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 ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or 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.

Fluor Federal Services, Inc.

Myrna E. Redfield, Director
Environmental Management

9/8/16
Date Signed

DOE/LX/07-2406&D2
Primary Document

Removal Notification for Solid Waste Management Unit 27 at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky

CLEARED FOR PUBLIC RELEASE

DOE/LX/07-2406&D2
Primary Document

Removal Notification for Solid Waste Management Unit 27 at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky

Date Issued—September 2016

U.S. DEPARTMENT OF ENERGY
Office of Environmental Management

Prepared by
FLUOR FEDERAL SERVICES, INC.,
Paducah Deactivation Project
managing the
Deactivation Project at the
Paducah Gaseous Diffusion Plant
under Task Order DE-DT0007774

CLEARED FOR PUBLIC RELEASE

THIS PAGE INTENTIONALLY LEFT BLANK

PREFACE

This Time Critical Removal Notification documents the time critical removal action described herein. The U.S. Department of Energy, the U.S. Environmental Protection Agency and the Kentucky Division of Waste Management, which comprises the Paducah Gaseous Diffusion Plant Federal Facility Agreement (FFA) parties, have agreed that a time critical removal action to address the liquid and sludge in Solid Waste Management Unit (SWMU) 27 is appropriate. The agreement by the FFA parties followed a review of data presented in the *Addendum to the Soils Operable Unit Remedial Investigation Report for Solid Waste Management Unit 27 at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*, DOE/LX/07-0358&D2/R1/A1 (DOE 2015a).

During field activities outlined in the *Addendum to the Work Plan for Soils Operable Unit Remedial Investigation/Feasibility Study at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky, Remedial Investigation 2, Sampling and Analysis Plan*, DOE/LX/07-0120&D2/R2/A1 (DOE 2014), the field crew opened the underground acid neutralization tank (C-722), which is designated as SWMU 27, and sampled liquid and sludge contained within the tank. DOE has determined, pursuant to 40 *CFR* § 300.415(b)(2), that a removal action is appropriate considering the age and the unknown condition of the SWMU 27 tank that may pose a threat of release of hazardous substances.

The scope of this Time Critical Removal Action includes a removal action for the liquid and sludge within the acid neutralization tank only and does not include soil media.

THIS PAGE INTENTIONALLY LEFT BLANK

CONTENTS

PREFACE iii

TABLES vii

FIGURES vii

ACRONYMS ix

EXECUTIVE SUMMARY ES-1

1. PURPOSE 1

2. SITE CONDITIONS AND BACKGROUND 2
   2.1 TANK BACKGROUND, LOCATION AND DESCRIPTION 2
   2.2 WASTE AREA GROUP 9 AND SWMU 27 8
   2.3 TANK CONTENTS CHARACTERIZATION 8

3. THREATS TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT AND STATUTORY AND REGULATORY AUTHORITIES 8
   3.1 NATIONAL ENVIRONMENTAL POLICY ACT EVALUATIONS 8
   3.2 APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS 9

4. PROPOSED ACTIONS AND ESTIMATED COSTS 10
   4.1 PROPOSED ACTIONS 10
      4.1.1 Securing and Preparing the SWMU 27 Boundary 10
      4.1.2 Opening the Tank 10
      4.1.3 Liquid and Sludge Removal 10
      4.1.4 Influent and Effluent Line Isolation 11
      4.1.5 Disposition of Waste and Site Cleanup 11
   4.2 CONFIRMATORY SAMPLING 12
   4.3 ESTIMATED COSTS AND SCHEDULE 12

5. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN 12

6. OUTSTANDING POLICY ISSUES AND ENFORCEMENT 12

7. ENFORCEMENT 13

8. RECOMMENDATION 13

9. REFERENCES 13

APPENDIX A: DIAGRAM OF THE TANK A-1

APPENDIX B: KENTUCKY COMPLIANCE EVALUATION INSPECTION REPORT—SEPTEMBER 22, 1992 ..... B-1

APPENDIX C: TANK DATA FROM SOILS OU RI REPORT (DOE/LX/07-0358&D2/R1/A1, SEPTEMBER 2015) C-1

APPENDIX D: APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS D-1

TABLES

1. Factors for Consideration for a Removal Action 2
2. Summary of Hazardous Substances in C-722 Tank 6

FIGURES

1. PGDP Location 3
2. SWMU 27 5

THIS PAGE INTENTIONALLY LEFT BLANK

ACRONYMS

ARAR	applicable or relevant and appropriate requirement
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	*Code of Federal Regulations*
DOE	U.S. Department of Energy
EPA	U.S. Environmental Protection Agency
FFA	Federal Facility Agreement
IM	interim measure
KDWM	Kentucky Division of Waste Management
OU	operable unit
NCP	National Contingency Plan
PGDP	Paducah Gaseous Diffusion Plant
RA	Removal Action
RI	Remedial Investigation
RN	Removal Notification
RSE	Removal Site Evaluation
SMP	Site Management Plan
SWMU	solid waste management unit
TCRA	Time Critical Removal Action
TCRN	Time Critical Removal Notification
WAC	waste acceptance criteria
WAG	waste area group

THIS PAGE INTENTIONALLY LEFT BLANK

EXECUTIVE SUMMARY

During the field activities of the *Addendum to the Work Plan for Soils Operable Unit Remedial Investigation/Feasibility Study at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky, Remedial Investigation 2, Sampling and Analysis Plan,* DOE/LX/07-0120&D2/R2/A1 (DOE 2014), an underground acid neutralization tank (C-722), which is designated as Solid Waste Management Unit (SWMU) 27, was opened and observed to contain liquid and sludge. The liquid and sludge phases were sampled as specified in the addendum.

Data from the sampling event has identified Toxic Substances Control Act-regulated constituents, Resource Conservation and Recovery Act hazardous constituents, and low-level radionuclides contained within the SWMU 27 tank.

DOE has determined, pursuant to 40 *CFR* § 300.415(b)(2), that a removal action is appropriate considering the age and the unknown condition of the SWMU 27 tank that may pose a threat of release of hazardous substances. The Paducah Gaseous Diffusion Plant Federal Facility Agreement (FFA) parties agreed to a Time Critical Removal Action (TCRA) to remove the liquid and sludge within the tank and fill the tank with flowable fill.

The scope and objective for a TCRA are captured in a Removal Notification (RN). Per FFA Section X.B, a proposed RN shall include the removal site evaluation or summary of the Administrative Record constituting an equivalent removal site evaluation, a description of the factors considered in determining the appropriateness of the Removal Action (RA), and any information produced through a remedial site evaluation, current site conditions, and adequate specificity in defining the nature, extent and duration of the activity. Per FFA Section X.D, the RN shall meet the requirements of an Action Memorandum and Interim Measures Work Plan. This RN serves to meet these requirements.

This RN also specifies the proposed actions to complete this RA according to the National Contingency Plan requirements and the Comprehensive Environmental Response, Compensation, and Liability Act.

THIS PAGE INTENTIONALLY LEFT BLANK

1. PURPOSE

The purpose of this Time Critical Removal Notification (TCRN) is to document the proposed Time Critical Removal Action (TCRA) described herein for the removal of contents from an underground acid neutralization tank, referred to as the tank, located at the Paducah Gaseous Diffusion Plant (PGDP). It is known as facility C-722 and is designated as Solid Waste Management Unit (SWMU) 27 in the Soils Operable Unit (OU) project. Any additional actions for the tank structure and/or surrounding soils will be addressed separately under the Soils and Slabs OU project at a later time in the PGDP cleanup program.

Pursuant to Section X.B of the Paducah Gaseous Diffusion Plant *Federal Facility Agreement for the Paducah Gaseous Diffusion Plant* (FFA) (EPA 1998), the U.S. Department of Energy (DOE) provides this written TCRN for the removal of the tank's contents. Section X.B states the following for a Removal Notification (RN):

> DOE's Removal Notification shall include the removal site evaluation or summary of the administrative record constituting an equivalent removal site evaluation, a description of the factors considered in determining the appropriateness of the Removal Action (i.e., NCP § 300.415 (b) (2)), and any information produced through a remedial site evaluation, if any has been done previously, and the current site conditions, to determine if Removal Action is appropriate. The Removal Notification shall contain adequate specificity in defining the nature, extent and duration of the activity to permit meaningful review and comment.
>
> The Removal Notification shall identify whether a planning period of at least six (6) months exists before on-site activities must be initiated.

Section X.D of the FFA states that the removal notification shall meet the requirements of the Action Memorandum Primary Document and the Interim Measures (IM) work plan requirements of condition IV.F.1 of the Kentucky Hazardous Waste Permit. This TCRN serves to include the key components of an IM Work Plan and an Action Memorandum as set forth in the U.S. Environmental Protection Agency (EPA) guidance on Action Memorandums with some deviations to account for site-specific factors and to meet requirements of Section X.B of the FFA. The FFA (Sections X.B and IX), the Action Memorandum Guidance, and the National Contingency Plan (NCP) (300.405 and 300.410) require a removal site evaluation (RSE). Section X.B allows for an RSE equivalent based upon information in the Administrative Record. The SWMU Assessment Report for SWMU 27 (DOE 1987), combined with the *Waste Area Groups 9 and 11 Site Evaluation Report, Paducah Gaseous Diffusion Plant* (DOE/OR/07-1785&D2) (DOE 1999) and the *Addendum to the Soils Operable Unit Remedial Investigation Report for Solid Waste Management Unit 27 at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky,* DOE/LX/07-0358&D2/R1/A1 (DOE 2015a) constitute the equivalent of an RSE.

This TCRN has been prepared in accordance with the FFA and constitutes the Action Memorandum for the purposes of Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the NCP. This RN meets the requirements of an Action Memorandum Primary Document and the Interim Measures Work Plan requirements of Condition IV.F.1. of the Kentucky Hazardous Waste Permit.

Table 1 identifies the eight factors under 40 *CFR* § 300.415(b)(2) and summarizes each factor's applicability to SWMU 27. The presence of hazardous substances in an underground tank of unknown integrity may pose a threat of release to the environment and relates to the factor set forth in 40 *CFR* § 300.415 (b)(2)(iii).

Table 1. Factors for Consideration for a Removal Action

Factors for Consideration for a Removal Action per 40 *CFR* § 300.415 (b) (2)	Evaluation of Factor in Relation to Current Condition of SWMU 27
(i) Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants	It is unlikely that nearby human populations, animals, or the food chain would be subject to exposure to the tank contents.
(ii) Actual or potential contamination of drinking water supplies or sensitive ecosystems	Groundwater below and downgradient of the site is not accessed for drinking water; therefore, the contaminated liquid and sludge likely does not pose an actual or potential threat to drinking water supplies. The tank's contents do not present a potential threat to sensitive ecosystems, because there would be no pathway from a release of hazardous substances from the tank to any sensitive ecosystem.
(iii) Hazardous substances or pollutants or contaminants in drums, barrels, tanks, or other bulk storage containers, that may pose a threat of release	The presence of hazardous substances in the tank and the age and unknown integrity of the tank may pose a threat of release to soil surrounding the tank.
(iv) High levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface, that may migrate	Historical sampling results in the soils near the surface of SWMU 27 do not indicate the presence of high levels of hazardous substances.
(v) Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released	It is unlikely that a weather condition would cause the release of the tank's contents.
(vi) Threat of fire or explosion	The tank does not pose a threat of fire or explosion.
(vii) The availability of other appropriate federal or state response mechanisms to respond to the release	Federal and state response mechanisms are considered appropriate to respond to a release of the tank's contents.
(viii) Other situations or factors that may pose threats to public health or welfare of the United States or the environment	Not applicable.

Conditions presently exist that may impact the human health and the environment, if not addressed by implementing the proposed RA. Tank records indicate that the tank had been emptied of its contents on March 6, 1992, so it has been out of service for years. The integrity of the tank is unknown; therefore, DOE has determined, pursuant to 40 *CFR* § 300.415(b)(2)(iii), that an RA is appropriate considering the age and the unknown condition of the SWMU 27 tank that may pose a threat of release of hazardous substances.

2. SITE CONDITIONS AND BACKGROUND

2.1 TANK BACKGROUND, LOCATION AND DESCRIPTION

The underground tank was original to PGDP's construction during the early 1950s. The PGDP site, owned by DOE, is located in western McCracken County, Kentucky, about 3.5 miles south of the Ohio River and approximately 10 miles west of the city of Paducah (Figure 1).

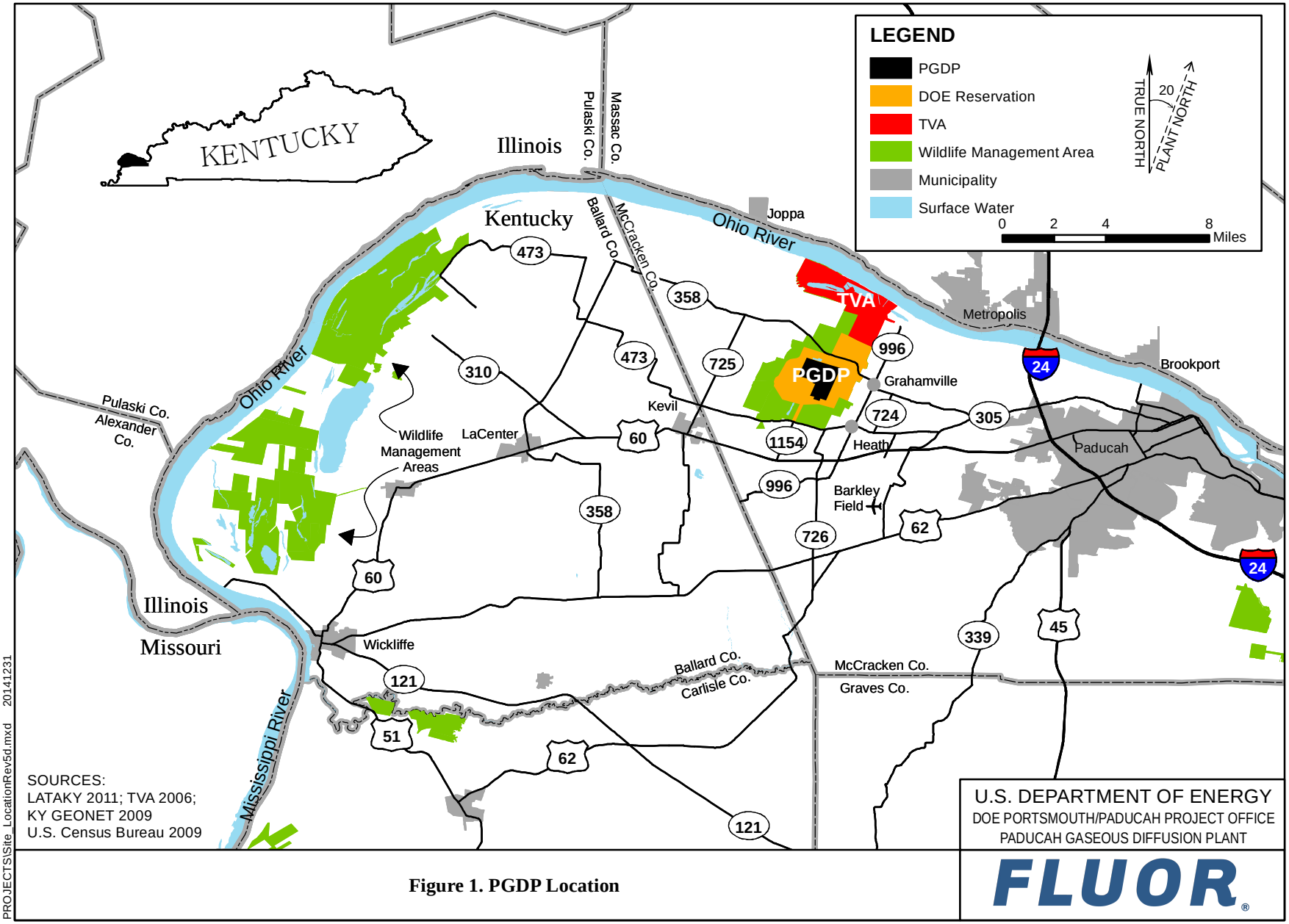


Figure 1. PGDP Location

The tank, designated as SWMU 27, is located immediately adjacent to the northeast corner of the C-720 Building, which is an occupied structure. The tank, identified as C-722, was intended as an auxiliary facility to the instrument shop, which is located in the northeast corner of the first floor of the C-720 facility. Engineering drawings show that four acid sinks drained from the instrument shop and flowed into the tank. The tank originally was constructed with one effluent line; that line discharged to the site's sewer system, which eventually discharged along with other plant effluent water into Bayou Creek at Outfall 008. During what was known as the waste heat project during the 1970s, the original effluent line was blocked, and a new effluent line was added; however, the effluent water's path to the site's sewer system, with eventual discharge to Outfall 008, remained unchanged. The tank also has a vent line that runs from the tank to the roof of C-720.

The underground tank is a concrete structure with internal dimensions of approximately 5.2 ft × 6.2 ft × 3.9 ft (height × length × width). These dimensions equate to approximately 124.3 ft^3. There is an internal baffle wall suspended within the tank, which has a volume of approximately 19.5 ft^3. The volume of this baffle wall is subtracted from the volume of tank when calculating the overall volume of the tank. Additionally, there is a manhole access way to the tank, which will be filled with flowable fill material. The manhole access way's dimensions are 2.8 ft × 4.3 ft (diameter × height), which results in a volume of 25 ft^3. Given these dimensions, the overall volume of the tank is approximately 129.8 ft^3. Appendix A provides a detailed diagram of the tank.

The western side of the tank is located approximately 2.5 ft from the northeast corner of the C-720 facility (Figure 2). The concrete structure is lined with acid resistant bricks and an acid resistant, laminated membrane. The tank contains a baffle wall that is suspended on the sides of the tank. The top and bottom of the tank allowed for material to comingle; therefore, the liquid and sludge within the tank is considered homogeneous by phase (i.e., liquid and sludge).

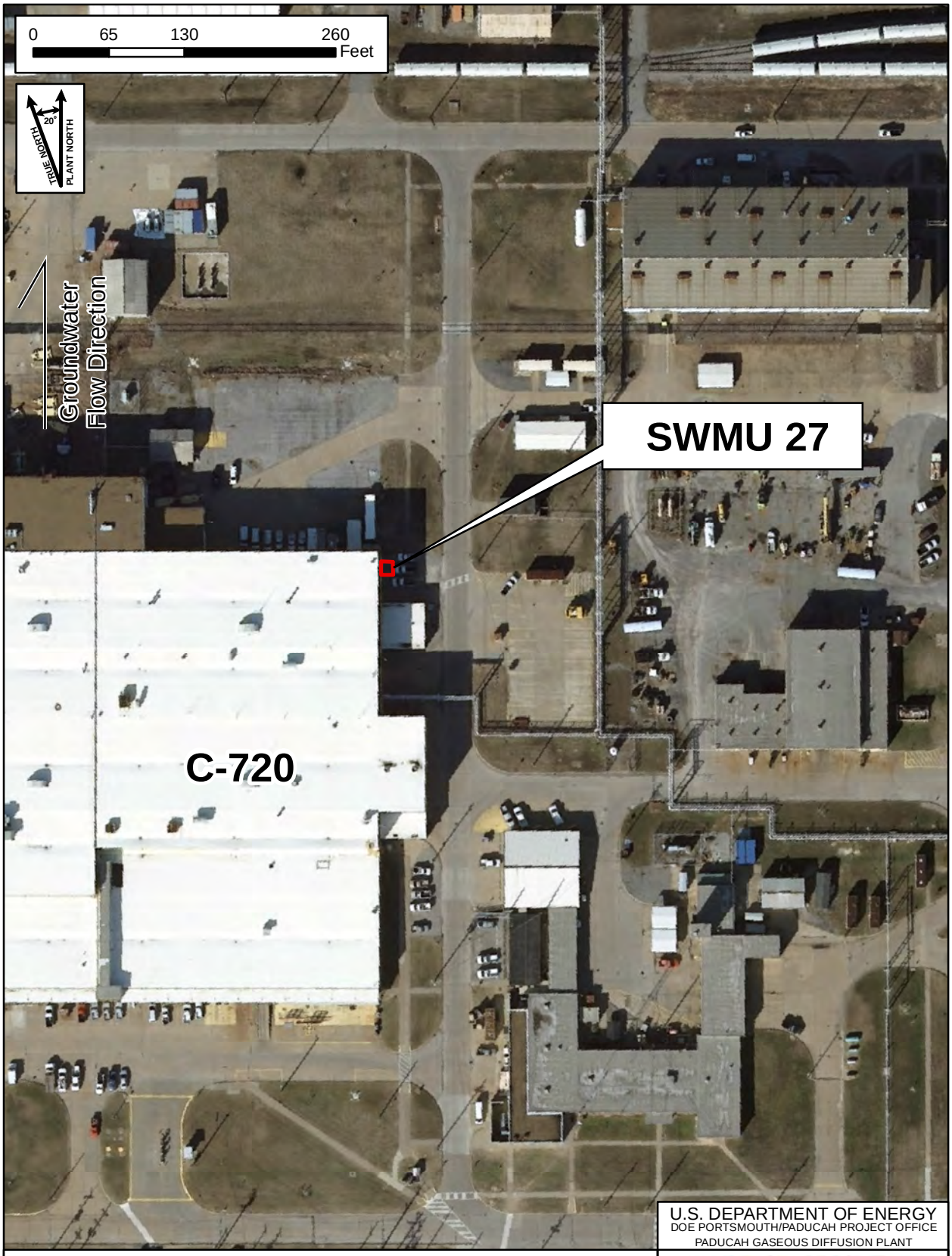
The tank was emptied on March 6, 1992. All known influent lines from the C-720 facility that led to the tank were considered closed at that time. A Kentucky Division of Waste Management (KDWM) compliance inspection report dated September 22, 1992, contained internal correspondence (Appendix B, Attachment III, of the report) that stated the tank was inspected to verify that the tank had been emptied (Appendix B). The internal correspondence states, "A visual inspection on March 6, 1992, was made by personnel in the Waste Compliance Department, and it was noted that sludge in the pit had been removed and the manhole cover was placed back in its original position and covered by a tarp."

The internal correspondence also states that the removal of the tank's contents followed a notification from DOE to KDWM stating that the tank could be discharging mercury into the plant's effluent waters.

The tank's contents were removed by mixing the sludge in the pit with water to form a slurry. The slurry was pumped to drums. Removal of the material continued until a small residue remained and a fire hose was used to flush the remaining residue. The material from the tank was sampled as a homogeneous mixture after sludge and water was mixed.

Once the material was removed, the tank was considered empty, and no further inspections of the tank have been recorded.

As part of the site evaluation for Waste Area Groups (WAGs) 9 and 11 (DOE 1999), the soils surrounding SWMU 27 were sampled. It was determined that contamination present in the soils surrounding SWMU 27 did not present potential risks and hazards that exceed *de minimis* levels to



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

Figure 2. SWMU 27

FLUOR

G:\GIS\ARCVIEWS\PROJECTS\SWMU_Assessment_Reports\SWMUS\SWMU027.mxd
4/18/2016

industrial workers, potential residential groundwater users, or nonhuman receptors. Direct contact risks were *de minimis* because contaminated media were not available for direct contact at SWMU 27. Potential risks and hazards from use of groundwater contaminated by the migration from soil were considered to be *de minimis* because the concentrations of all contaminants in soil were below the groundwater protection screening criteria.

The *Soils Operable Unit Remedial Investigation Report at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky,* DOE/LX/07-0358&D2/R1, (RI Report) (DOE 2013) used the WAGs 9 and 11 data set to provide the nature and extent and baseline risk assessment for SWMU 27 and concluded that no further action was necessary, but that the conclusion was contingent upon an examination of the inside of the tank.

The *Addendum to the Work Plan for Soils Operable Unit Remedial Investigation/Feasibility Study at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky, Remedial Investigation 2, Sampling and Analysis Plan,* DOE/LX/07-0120&D2/R2/A1, (Work Plan) called for opening the tank to confirm that the tank was empty (DOE 2014). The Work Plan specified that if the tank contained material, samples would be collected.

The Work Plan was executed and the tank was opened in February 2015. Approximately 3.5 ft of liquid and sludge was measured to be within the tank, with the liquid layer on top of a sludge layer. Both phases were sampled for radiochemistry, metals, volatile organic compounds, and polychlorinated biphenyls (PCBs). The sludge material contained the highest concentrations of the two phases.

The *Soils Operable Unit Remedial Investigation Report for Solid Waste Management Unit 27 at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky,* DOE/LX/07-0358&D2/R1/A1, referred to as the Addendum Report, presented the data obtained from the February 5 and February 11, 2015, sampling events (DOE 2015a). Appendix C contains the data presented in this report. Table 2 is a summary of some of the hazardous substances detected within the liquid and sludge phases.

Historical sampling results also were compared to results from samples of sludge collected in 2015. Similar contaminants were found to be present.

The reappearance of hazardous substances in liquid and sludge in the tank and lack of information regarding the genesis and pathway of liquid and sludge into the tank suggests that the tank has unknown integrity. Contaminants in the tank, therefore, may pose a threat of release to soil surrounding the tank. The bases for this TCRA are the presence of hazardous substances in the liquid and sludge phases in the tank and the age and unknown integrity of the tank.

Table 2. Summary of Hazardous Substances in C-722 Tank

Analyte	Result	Lab Qualifier*	Detection Limit	Radiological Counting Error	Total Propagated Uncertainty
Liquid Sample (2/5/2015)					
Organics (µg/L)					
1,1-Dichloroethane	890		25	N/A	N/A
cis-1,2-Dichloroethene	2500		100	N/A	N/A
Trichloroethene	830		25	N/A	N/A

Table 2. Summary of Hazardous Substances in C-722 Tank (Continued)

Analyte	Result	Lab Qualifier*	Detection Limit	Radiological Counting Error	Total Propagated Uncertainty
Sludge Sample (2/11/2015)					
Metals (mg/kg)					
Antimony	250		1.8	N/A	N/A
Chromium	530		3.4	N/A	N/A
Lead	1,000		1	N/A	N/A
Mercury	7,200		1,100	N/A	N/A
Uranium	1,700	Y	0.86	N/A	N/A
Organics (µg/kg)					
PCB-1254	1,300,000		120,000	N/A	N/A
1,1,1-Trichloroethane	44,000,000		1,800,000	N/A	N/A
1,1-Dichloroethane	260,000		180,000	N/A	N/A
1,1-Dichloroethene	1,300,000		180,000	N/A	N/A
Tetrachloroethene	5,600,000		180,000	N/A	N/A
Trichloroethene	12,000,000		1,800,000	N/A	N/A
Radionuclides (pCi/g)					
Neptunium-237	1.92		0.0504	0.241	0.29
Technetium-99	3980		3.19	59.2	386
Uranium-234	557		1.48	24.4	52.7
Uranium-235	37.6		0.997	7.06	7.74
Uranium-238	692		0.8	27.2	64.2

*Y Lab Qualifier: Matrix spike/matrix spike duplicate relative percent difference exceeds the control limits.

KDWM commented on the Addendum Report on December 10, 2015, (KDWM 2015) stating, "Beyond the need to properly address waste in the unit, the age of the data and lack of data beneath the unit eliminate any consideration of a No Further Action petition. Please revise the document by proposing a more appropriate path forward for the C-722 Acid Neutralization tank (SWMU 27)." EPA deferred to KDWM's comments on January 21, 2016 (FPDP 2016a). DOE agreed that, based on the nature and concentrations of the contaminants, further action is appropriate.

DOE, EPA, and KDWM, in a call on February 8, 2016, discussed the data presented in the *Soils Operable Unit Remedial Investigation Report for Solid Waste Management Unit 27 at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*, DOE/LX/07-0358&D2/R1/A1 (DOE 2015a) and also discussed the age and unknown integrity of the tank. In the meeting, DOE presented EPA and KDWM with a proposed path forward to address the tank's contents based on data and the unknown integrity of the tank. The path forward included (1) implementing a TCRA under Section X.D of the FFA to remove the liquid and sludge to the extent practicable and filling the tank with flowable fill, which will plug the influent and effluent lines; and (2) deferring the final remedial decision of SWMU 27 to the Soils and Slabs OU project. KDWM and EPA accepted the proposal via e-mail on February 12, 2016 (FPDP 2016b). DOE documented the correspondence in a formal letter to EPA and KDWM on March 9, 2016 (DOE 2016). KDWM and EPA responded with concurrences to this letter on March 14, 2016, and March 18, 2016, respectively (KDWM 2016; EPA 2016).

As a result of field activities associated with the Addendum to the Soils OU Work Plan, the FFA parties agreed that the Site Management Plan (SMP) would be updated to reflect that a remedial decision for SWMU 27 will be under the Soils and Slabs OU.

2.2 WASTE AREA GROUP 9 AND SWMU 27

SWMU 27 was assigned to the former WAG 9. The baseline risk assessment for SWMU 27 was presented in the RI Report utilizing data collected in the WAGs 9 and 11 site evaluation (DOE 1999). The *Soils Operable Unit Remedial Investigation Report at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*, DOE/LX/07-0358&D2/R1, determined that contamination present in soil at SWMU 27 did not present potential risks and hazards that exceeded *de minimis* levels to industrial workers, potential residential groundwater users, or nonhuman receptors.

2.3 TANK CONTENTS CHARACTERIZATION

The tank has an approximate volume of 129.8 ft^3. During the field activities to implement the Work Plan, 3.5 ft of liquid and sludge was recorded as being within the tank. This equates to approximately 1,200 gal of material that when removed will be managed as mixed waste (i.e., hazardous waste that is radiologically contaminated) compliant with applicable or relevant and appropriate requirements (ARARs) until the liquid and sludge are transported off-site for treatment and final disposition. The data set obtained during the 2015 investigation, as well as other applicable process knowledge, will be used to characterize the waste for storage, treatment, and disposal. The waste will be managed as listed hazardous waste and characteristically hazardous waste, as applicable.

(Note: Research of historical data showed that during some of the historical sampling events, the sludge had been found to have a flashpoint less than 60°C. The sludge in the tank was sampled for ignitability in April 2016, in preparation of this RA, so that workers are protected properly during fieldwork. The laboratory reported that the sludge had a flashpoint greater than 60°C.)

3. THREATS TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT AND STATUTORY AND REGULATORY AUTHORITIES

DOE is the lead agency for this TCRA. The tank contains hazardous substances as defined by CERCLA. The possible threat of the release of these hazardous substances warrants the RA, pursuant to 40 *CFR* § 300.415(b)(2)(iii).

3.1 NATIONAL ENVIRONMENTAL POLICY ACT EVALUATIONS

The following National Environmental Policy Act values were considered as part of this TCRN:

Land use. There would be no long-term effects to land use due to implementation of this TCRA. Current land use is industrial.

Socioeconomics. There would be no effects on socioeconomics due to implementation of this TCRA due to short-term and low cost nature of this action.

Air quality and noise. There is not anticipated to be any effects to air quality and noise due to the implementation of this TCRA.

Vegetation. There would be no long-term impact to vegetation. Current vegetation surrounding the tank is minimal.

Wildlife. No impact to wildlife is expected due to implementation of this TCRA. The tank is within an industrial area with little or no wildlife activity.

Threatened and Endangered Species. There are no threatened or endangered species known to exist in the SWMU 27 area; therefore, there would be no effects to threatened and endangered species due to implementation of this TCRA.

Cultural resources. No existing structures would be impacted by this action, no other cultural resources are present; therefore, there would be no effects to cultural resources due to implementation of this TCRA.

Groundwater. There would be no negative effects to groundwater due to implementation of this TCRA. This TCRA serves to mitigate possible effects to the environment, specifically, to the groundwater.

Surface water. There would be no negative effects to surface water due to implementation of this TCRA. Absorbent material will be stationed, as appropriate, throughout the work area and secondary containment will be in place around the waste containers.

Floodplains. There would be no changes to the flood plains and, therefore, no effects to the floodplains for this TCRA.

Wetlands. Wetlands will not be impacted during implementation of this TCRA.

Soils and prime farmland. No impacts to soils or prime farmlands would be expected to occur through the implementation this TCRA.

Transportation. No short-term, long-term direct or indirect effects are anticipated for this TCRA. Primary and secondary waste generated as part of this RA will be placed into U.S. Department of Transportation-approved containers and shipped off-site to an appropriate disposal facility for treatment and disposal. Transportation regulation standards will be met for waste shipments.

3.2 APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

Section 300.415(j) of the NCP states that removal actions (RAs) shall, to the extent practicable considering the exigencies of the situation, attain ARARs under federal environmental or state environmental or facility siting laws. Attainment of identified ARARs in Table D.2 is practicable for this action. Table D.2 is located in Appendix D of this RN.

A notice of availability of the Administrative Record for the selected TCRA will be published within 60 days of initiation of the RA in accordance with 300.415(m) of the NCP and the Administrative Record requirements of 300.820 of the NCP.

Within 30 days after the close of the comment period, DOE will respond to comments in a TCRA Responsiveness Summary for the FFA parties to review and approve in accordance with Section XX of the FFA. The approved RN and the Responsiveness Summary will be included in the Administrative Record.

4. PROPOSED ACTIONS AND ESTIMATED COSTS

The TCRA includes the removal of the liquid and sludge from the tank to the extent practicable. The tank was measured to contain approximately 3.5 ft of liquid and sludge during the Soils OU field investigation (DOE 2015a). The tank will be opened and the material will be removed using best management practices of standard pumping techniques, followed by the addition of flowable fill. Influent and effluent lines will be isolated as a result of the addition of flowable fill. Based on process knowledge and reviews conducted at the time of the development of this TCRN, all known influent lines leading from the C-720 facility to the underground tank are capped. The vent line that runs from the tank to the roof of C-720 will be capped and abandoned in place following the addition of the flowable fill.

4.1 PROPOSED ACTIONS

4.1.1 Securing and Preparing the SWMU 27 Boundary

The SWMU 27 area will be secured from site workers not involved in the project. For safety, the project will be discussed in advance with other site contractors. Those workers who routinely work in or around the facility will be briefed in more detail.

The work site will be set up following the contractor's health and safety procedures. Additionally, the areas designated for secondary containment will be established and receptacles to receive waste will be put in place. Absorbent material will be stationed, as appropriate, throughout the work area.

4.1.2 Opening the Tank

The top of the underground tank will be revealed by excavation of approximately 3.5 ft of soil and gravel currently atop the tank. The tank was designed with one opening, which is located on one side of the baffled wall that is suspended by the walls of the tank (i.e., the baffled wall does not rest on the floor of the tank, nor does it reach the top of the tank). Another opening, which will be located on the opposite side of the baffled wall, will be made in the top of the tank. Two openings, one on each side of the baffled wall, will allow for removal of the liquid and sludge and better visual confirmation that the cleanup performance objective has been met. Air monitoring shall be used to identify and quantify airborne levels of hazardous substances and health hazards in order to determine the appropriate level of employee protection needed on-site.

4.1.3 Liquid and Sludge Removal

The liquid and sludge will be removed to the extent practicable following the strategy discussed in this section.

Hose(s) attached to pump(s) will be lowered into the tank with minimal amount of disturbance to keep the two phases of liquid and sludge separated. To the extent possible, the phases will be removed separately to minimize homogenization of the liquid phase with the more contaminated sludge phase.

The liquid phase will be removed first using Pump A, an air-operated, double-diaphragm pump, followed by the sludge phase also using Pump A. When Pump A cannot maintain prime, initial pumping is considered complete. If sump(s) or other major depressions are encountered, then the hose will be placed within the sump/depressed area to remove as much material as practicable. [The project may choose to utilize multiple pumps (same design as Pump A) to optimize the liquid and sludge removal process.]

If materials remain in the tank after using Pump A pump(s), Pump B, a sludge pump, will be used to remove additional sludge. Pump B is capable of removing sludge to a depth of less than one inch, based on manufacturer's performance statements. Pump B provides a greater suction by delivering high-pressure water through the body of the pump creating a vacuum (venturi action) at the intake of the nozzle (i.e., the introduced water generates the suction, but does not act as a rinsing agent within the tank). This particular pump, however, is not expected to damage the tank because the introduced water does not come into contact with the tank.

Pump B is connected to a 4-inch diameter nozzle using a rigid section of piping to allow pump operators to position the nozzle head to span the bottom of the tank. Pump B will be used in two locations to gain access to both sides of the baffle wall, described in Section 2.1. It is assumed that the 4-inch intake of Pump B will influence an 8-inch diameter area. Based on this assumption, approximately 7 passes will be needed to cover the bottom surface of the tank effectively. If Pump B operates in 7 minutes time, this would allow for 3.5 minutes of operation per side of the tank or 30 seconds per pass. If flowable sludge material remains after 7 minutes of operating Pump B, repeat the pumping process using Pump B, up to an additional 7 minutes.

If solid material is present at the base of the tank and is not removed during the removal of flowable sludge material, as described above, the removal action will be considered complete without further efforts to remove the solid material. Such attempts to remove the solid material are not practicable or could damage the tank.

The liquid and sludge will be pumped directly into appropriate waste containers (i.e., totes, drums, etc.). The waste containers will be managed in accordance with ARARs and site procedures. Video recordings will be taken prior to and after liquid and sludge removal to document the condition of the tank prior to addition of flowable fill to inform a final remedial decision for SWMU 27 under the Soils and Slab OU project.

4.1.4 Influent and Effluent Line Isolation

After removal of the liquid and sludge to the extent practicable, the addition of flowable fill will commence by pouring it into the underground tank until the influent and effluent lines are plugged. The flowable fill will be applied to allow for a mixing/stabilization of remaining material.

Following time to allow for the flowable fill material to solidify, additional flowable fill will be added. This strategy will allow for the flowable fill not to run far into the influent and effluent lines due to the pressure from a high level of flowable fill being placed in the tank. Flowable fill then will be added to the tank openings. Following the flowable fill addition, the vent line will be capped at the C-720 roof area.

4.1.5 Disposition of Waste and Site Cleanup

The soil and gravel removed at the onset of the fieldwork activities will be managed appropriately. The area should be flush with the remainder of the surface; therefore, remaining surface depressions will be filled with aggregate.

Primary and secondary waste generated as part of this RA will be containerized and disposed of at an acceptable off-site facility in accordance with applicable requirements, the waste acceptance criteria (WAC) of the receiving facility, and the CERCLA Off-site Rule.

4.2 CONFIRMATORY SAMPLING

There will be no post-removal sampling within the emptied tank or in the surrounding soils at SWMU 27 as part of this TCRA. SWMU 27 will be added in the SMP as part of the Soils and Slabs OU project.

The soils surrounding SWMU 27 have been characterized and were summarized in the RI Report (DOE 2013). The tank's contents were sampled sufficiently to support characterization and reported in the addendum to the RI Report (DOE 2015a); therefore, no samples will be collected as part of this TCRA, and no Quality Assurance Project Plan will be required.

4.3 ESTIMATED COSTS AND SCHEDULE

The planning period for this RA is expected to take less than six months; therefore, based on the information presented within the RN and the expected planning period, a TCRA is appropriate. It is expected that the field activities for this TCRA will be completed within two months. Key schedule activities are as follows:

- Initiate mobilization to support the start of field work within 30 days of receiving the FFA parties' approval of the RN;
- Issue Notice of Availability of Administrative Record within 60 days of the initiation of on-site removal activity;
- Submit TCRA Responsiveness Summary within 30 days after close of the comment period;
- Complete field work within 60 days of field start date; and
- Submit a Removal Action Report to the FFA parties within 150 days of completion of fieldwork.

The total estimated cost to accomplish the cleanup ranges from $682,800 to $1,411,300. Estimate includes all costs associated with tasks described in Section 4.1 of this RN.

5. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

Delaying the proposed TCRA could allow contaminants to migrate from the underground tank and could result in a negative impact to the environment.

6. OUTSTANDING POLICY ISSUES AND ENFORCEMENT

There are no outstanding policy issues associated with this RA.

7. ENFORCEMENT

DOE is the lead agency responsible for funding and implementing this RA in accordance with the Paducah FFA.

8. RECOMMENDATION

This decision document represents the selected removal action at the PGDP site, developed in accordance with the FFA and CERCLA, as amended, and is not inconsistent with the NCP. The decision is based on the Administrative Record for the site.

9. REFERENCES

DOE (U.S. Department of Energy) 1987. *Solid Waste Management Unit 27 Assessment Report*, U.S. Department of Energy, Paducah, KY, August 24.

DOE 1999. *Waste Area Groups 9 and 11 Site Evaluation Report, Paducah Gaseous Diffusion Plant, Resource Conservation and Recovery Act Permit Number KY8-890-008-982,* DOE/OR/07-1785&D2, U.S. Department of Energy, Paducah, KY, June.

DOE 2013. *Soils Operable Unit Remedial Investigation Report at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky,* DOE/LX/07-0358&D2/RI, U.S. Department of Energy, Paducah, KY, February.

DOE 2014. *Addendum to the Work Plan for the Soils Operable Unit Remedial Investigation/Feasibility Study at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky, Remedial Investigation 2, Sampling and Analysis Plan,* DOE/LX/07-0120&D2/R2/A1/R1, U.S. Department of Energy, Paducah, KY, August.

DOE 2015a. *Addendum to the Soils Operable Unit Remedial Investigation Report for Solid Waste Management Unit 27 at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky,* DOE/LX/07-0358&D2/R1/A1, U.S. Department of Energy, Paducah, KY, September.

DOE 2015b. *Methods for Conducting Risk Assessments and Risk Evaluations at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky,* DOE/LX/07-0107&D2/R5/V1, Volume 1: Human Health, U.S. Department of Energy, Paducah, KY, June.

DOE 2016. T. Duncan, U.S. Department of Energy, to B. Begley, Kentucky Division of Waste Management, and J. Corkran, U.S. Environmental Protection Agency, "Transmittal of the Response to Regulator Comments on the Addendum to the Soils Operable Unit Remedial Investigation Report for Solid Waste Management Unit 27 at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky, DOE/LX/07-0358&D2/R1/A1, March 9.

EPA (U.S. Environmental Protection Agency) 1998. *Federal Facility Agreement for the Paducah Gaseous Diffusion Plant*, U.S. Environmental Protection Agency, Atlanta, GA, February 13.

EPA 2016. J. Corkran, U.S. Environmental Protection Agency, to T. Duncan, U.S. Department of Energy, "EPA Concurrence: Addendum to the Soils Operable Unit Remedial Investigation Report for SWMU 27, DOE/LX/07-0358&D2/R1/A1, EPA ID KY8890008892, McCracken County, KY, March 18.

FPDP (Fluor Federal Services, Inc., Paducah Deactivation Project) 2016a. J. White, FPDP, "Gentle Reminder-SWMU 27," e-mail correspondence to K. Layne, Geosyntec, Thursday, January 21, 2016, 8:13 a.m.

FPDP 2016b. J. White, FPDP, "EPA Comments—Addendum to the Soils Operable Unit Remedial Investigation Report for SWMU 27, DOE/LX/07-0358&D2/R1/A1," e-mail correspondence to K. Layne, et al., Geosyntec, Monday, January 25, 2:58 p.m.

KDWM 2015. A. Webb, Kentucky Division of Waste Management, to T. Duncan, U.S. Department of Energy, "Submittal of Comments to the Addendum to the Soils Operable Unit Remedial Investigation Report for SWMU 27, DOE/LX/07-0358&D2/R1/A1, Paducah Site, Paducah, McCracken County, Kentucky, KY8-890-008-982," December 10.

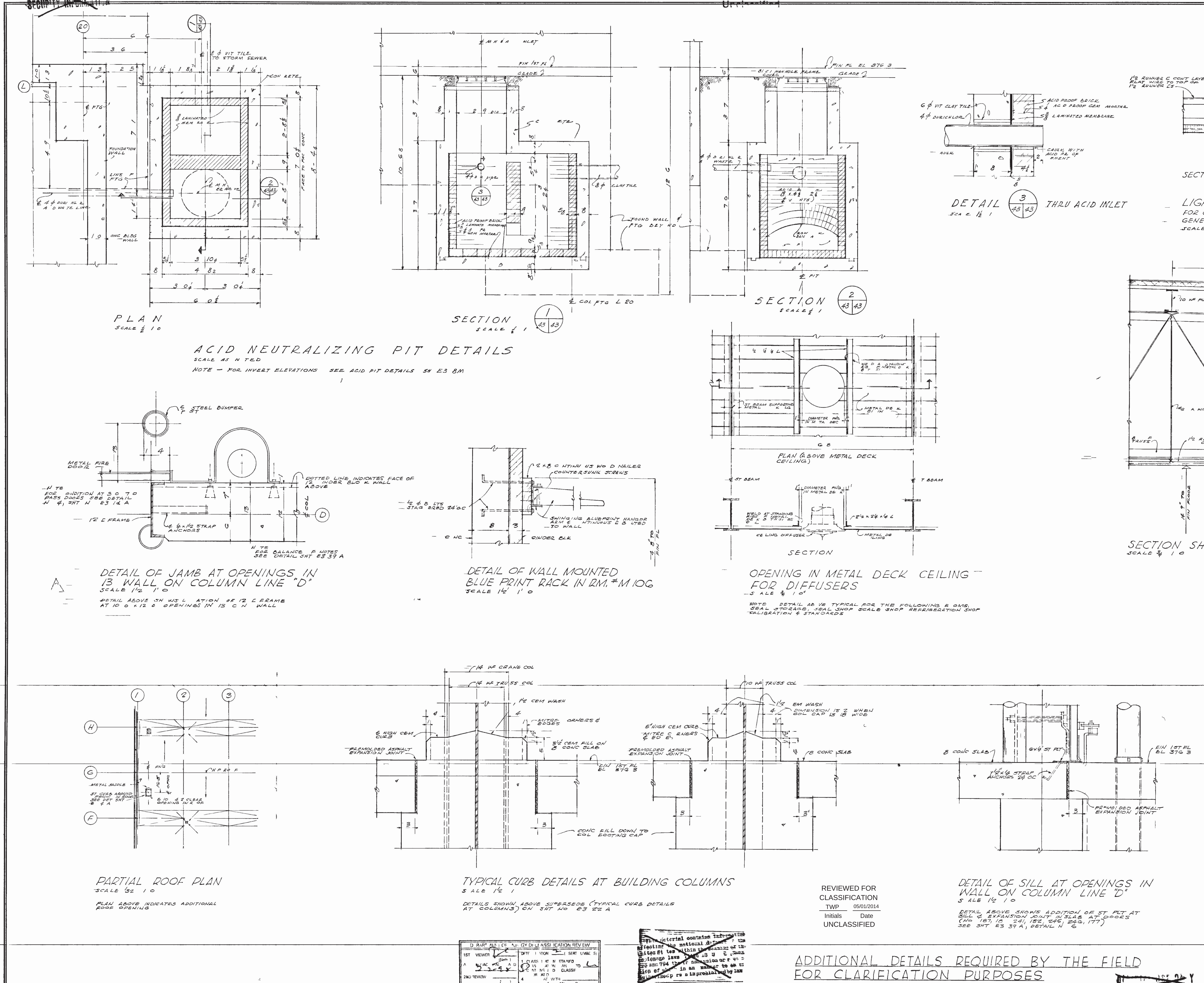
KDWM 2016. A. Webb, Kentucky Division of Waste Management, to T. Duncan, U.S. Department of Energy, "Letter of Concurrence on the Addendum to the Soils Operable Unit Remedial Investigation Report for SWMU 27, DOE/LX/07-0358&D2/R1/A1, Paducah Site, Paducah, McCracken County, Kentucky, KY8-890-008-982," March 14.

APPENDIX A

DIAGRAM OF THE TANK

THIS PAGE INTENTIONALLY LEFT BLANK

Unclassified



BT Imag s In
00001453

CLASSIFICATION CHANGED TO Unclassified

By Auth: DOE CG K 8 7-97
By: JH Miller ADC 2 2 98
Verified by: 2-2-98

REVIEWED FOR CLASSIFICATION
TWP 05/01/2014
Initials Date
UNCLASSIFIED

7	6 20 53	AS BUILT	CE	6 2 53
6	1 5 52	CONSTRUCTION B		1 4 52
5	12 22 51	APPROVAL A		
4	11 1 51	NEW ACID NEUTRAL IN T WHICH REPLACES SUMP PI IN INSTR SHOP ALSO LIGHT FIXTURE HANGING DETAILS	A F	
3	1 51	ALT NO T LS		
2	8 21 51	FIELD INFORMATION		
1	8 20 51	FIELD INFORMATION		

UNITED STATES
ATOMIC ENERGY COMMISSION

SMITH HINCHMAN & GRYLLS INC
ARCHITECTS & ENGINEERS

MISCELLANEOUS DETAILS

P J Ketelhut 8 20 51 | H W SAVAGE 1 4 52 | R J BROWN 1 4 52

H T MITCH | A S FARBER | 8768

C PLANT | MAINTENANCE C 720 | E3-43-A

~~RESTRICTED SECURITY INFORMATION~~

MICROFILMED

Unclassified

APPENDIX B

KENTUCKY COMPLIANCE EVALUATION INSPECTION REPORT— SEPTEMBER 22, 1992

(The following is a historical document reprinted in its original format, with the exception of inclusion of Attachments I, II, and IV.)

THIS PAGE INTENTIONALLY LEFT BLANK

DWM #170

COMPLIANCE EVALUATION INSPECTION REPORT

August 27, 1992

INSPECTOR AND AUTHOR OF REPORT
B. Parrish Roush
Environmental Inspector III
Division of Waste Management
Paducah Regional Office

FACILITY NAME, LOCATION AND EPA ID NUMBER
U.S. Department of Energy
Paducah Gaseous Diffusion Plant and
Martin Marietta Energy Systems, Inc.
5600 Hobbs Road
Paducah, Kentucky 42001-1410
KY8-890-008-982

MAILING ADDRESS
Department of Energy
Paducah Site Office
P.O. Box 1410
Paducah, Kentucky 42001-1410

RESPONSIBLE OFFICIAL
Mr. Donald C. Booher, Site Manager
502-441-6810

INSPECTION PARTICIPANTS
B. Parrish Roush, KY Division of Waste Management
Clay Bednarz, Martin Marietta Energy Systems
Richard Kuehn, Martin Marietta Energy Systems
Jimmie D. Hankins, Martin Marietta Energy Systems
David Tidwell, U.S. Department of Energy
Robert Carson, Martin Marietta Energy Systems
Other personnel were involved as deemed necessary throughout the inspection.

DATES AND TIMES OF INSPECTIONS
August 27, 1992 - from 1220 hours to 1600 hours
August 28, 1992 - from 0850 hours to 1600 hours
August 31, 1992 - from 0900 hours to 1600 hours
September 1, 1992 - from 0900 hours to 1130 hours
September 17, 1992 - from 0930 hours to 1030 hours (Inspection to address questions which arose after the initial inspection.)

APPLICABLE REGULATIONS
Kentucky Revised Statutes 224
Title 401 Kentucky Administrative Regulations
Chapters 32, 34, 35, 37, 38, and 40
Part B Permit #KY8-890-008-240

PURPOSE OF INSPECTION
To determine the facility's compliance with the applicable regulations noted above.

M E M O R A N D U M

TO: Hannah Helm, Manager
Field Operations Branch

FROM: Kenneth Yates, Environmental Control Supervisor
Paducah Regional Office

DATE: September 22, 1992

RE: Drum Storage Facility
Martin Marietta Energy Systems, Inc.
U.S. DOE

Attached is the inspection report of the above-named facility by Parrish Roush of this office. At the time of the inspection, he found deformed drums in the drum storage area caused by a buildup of hydrogen gas according to a letter (copy attached) dated July 24, 1992, addressed to Tuss Taylor.

We are not issuing a Notice of Violation because it appears they were advised by Tuss to modify the Part "B" permit to allow those drums to be vented to the atmosphere. It is my understanding, a permit modification addressing this issue has been submitted. In the meantime, I have a real concern about the condition of approximately 8 55-gallon drums.

Your recommendation and guidance in this matter would be appreciated.

KY/mb

Attachment

FACILITY DESCRIPTION

The Paducah Gaseous Diffusion Plant (hereinafter PGDP) is a uranium enrichment facility located west of Paducah, Kentucky, on Hobbs Road. Several support operations such as maintenance and laboratory facilities, fire brigade, ambulance, emergency response groups, safety and waste management services are maintained and performed at the plant. The facility is permitted for the treatment and storage of hazardous waste. Treatment is conducted in lime precipitation unit; however, the facility is permitted to conduct treatment in a nickel stripper evaporation unit, a thin film evaporator, a centrifuge, rotary vacuum filter, a chemical feeder, an extraction column, a solvent recovery system and a portable filter press. Storage takes place in eight permitted storage tanks and four container storage areas. These permitted facilities are described in detail in the facility's Part B Permit effective August 19, 1991.

PGDP is registered with the state of Kentucky as a full quantity generator of hazardous waste. Federal Facility Compliance Agreements exist for the TCLP characterization of solid, hazardous and mixed (radioactive and hazardous) waste stored at the facility and for the storage of radioactive mixed waste subject to the Land Disposal Restrictions.

FINDINGS

The Method 21 monitoring of permitted facilities subject to the RCRA Air Emission Standards (Attachment III of the PGDP's Part B Permit) was evaluated. The written monitoring plan was observed. Each valve and pump had been assigned an ID number. During the inspection of the C-733 storage facility each valve was noted to be tagged. Weekly visual inspections and monthly monitoring results are recorded and the records are maintained in accordance with the Part B Permit.

The less than 90-day accumulation area for the laboratory facilities was inspected. Four containers of liquid uranium salvage labeled "Hazardous Waste" were observed. One container of uranium contaminated pump oil labeled "Hazardous Waste" was also observed. One container of uranium contaminated trap mix containing rock salt, soda ash and alumina which is not a RCRA hazardous waste was observed. Each container observed in the accumulation area appeared to be in good condition, was closed, and had an accumulation start date on it. The earliest accumulation start date observed on these containers was July 15, 1992. An eyewash station and spill containment pads were noted in the accumulation area.

Several laboratories were inspected to observe the management of satellite accumulation areas for hazardous waste. All satellite accumulation containers were labeled "Hazardous Waste" maintained in secondary containment structures and were closed. Additionally, a log is maintained of all materials placed in each satellite container and inspections are conducted on all satellite accumulation areas.

The inspection logs for the under 90-day accumulation area at the laboratory were inspected. No violations or discrepancies were noted.

The inspection team went to the C-746K closed landfill to observe the system set up to contain liquids leaching from the area. These liquids are removed, containerized and stored at the plant. The leachate containment system appeared to be adequately collecting liquid leaching from the ground and there was no apparent evidence of discharges to the surface waters at the time of inspection.

The C-400 building was inspected. Several satellite accumulation areas and the lime precipitation (permitted) treatment unit was observed. A distillation unit for the reclamation of trichloroethane used in a degreaser was observed. A satellite accumulation area for F002 still bottoms was observed near this unit. T. J. Ellington stated that about 55 gallons a year of F002 still bottoms are generated in this unit.

A 1050-gallon tank for the accumulation of cutting oils was observed in the C-400 building. The cutting oils are water soluble and are generated in the C-720 building. The analytical results on the waste cutting oil was observed later during the inspection. The waste was characterized as nonhazardous with E.P. Toxicity Data dated December 31, 1984. On September 17, 1992, I returned to PGDP and observed TCLP data on the cutting oils.

Twelve 55-gallon containers labeled "Contaminated Water From Degreaser Sump" were observed. The water was explained to be rainwater which had leaked into the basement at C-400. The water is analyzed to determine if there is any radioactive contamination and whether it can be treated and discharged under the facility's KPDES permit.

Satellite accumulation containers were observed for aerosol cans, empty spray cans, uranium contaminated oil, and glass beads contaminated with paint and uranium. All satellite accumulation containers were labeled "Hazardous Waste," closed, within secondary containment and the containers were in good shape.

Three eye baths were noticed as we toured C-400. During the records review, T.J. Ellington and I reentered the C-400 plant to observe the documentation of inspections. Green tags containing the date and the inspector's initials are maintained on the unit. The eyewashes, safety showers and sprinkler systems are inspected weekly in the C-400 building.

The operating records for the lime precipitation unit were observed. The lime precipitation unit is a RCRA Part B permitted unit which is regulated only when hazardous waste is being treated in the unit. Uranium salvage waste from the laboratory is the only RCRA regulated waste treated in this unit. Uranium salvage is characterized as a D002, D008, D007 hazardous mixed radioactive waste. The uranium salvage is transported from the laboratory to C-400 for treatment by the Waste

Management Department. A "Request for Disposal of Waste Materials and Equipment" tracks the movement of the waste to C-400. The treatment residue uranium precipitate (D007, D008) is then transported from C-400 to a permitted storage facility by the Waste Management Department. A "Request for Disposal of Waste Materials and Equipment" tracks the movement and storage of all wastestreams at the plant.

The log indicating when hazardous waste was being treated was compared to the inspection logs for the unit. These logs were reviewed from the time of this inspection to August of 1991, the time of the last hazardous waste inspection. No problems were noted.

One manifest was reviewed. Three manifests were provided for 1992. Manifest Document No. 00143 described the shipment of 20,840 pounds of a D004, D005, D008, D009, D010, D040, D001, D018 hazardous waste containing PCBs to the U.S. DOE Oak Ridge facility in Tennessee. The manifest contained all required information and was properly executed. The manifest was accompanied by a Land Disposal Restriction Notice and analytical results in accordance with 401 KAR Chapter 37. The two other manifested wastes shipped off site in 1992 were for PCB wastes and were not reviewed.

Waste determinations were requested for uranium salvage generated in the laboratory and the machine coolant sludge (cutting oils described previously) stored in a tank in C-400. A July 1, 1985 document entitled "RCRA Classification of PGDP Wastes" was provided which contained E.P. Toxicity Data for these two wastestreams among others.

The uranium salvage was characterized by seven samples analyzed by the extraction procedure toxicity test. The results indicated the waste to be a D002, D007, D008 hazardous waste containing 1.67 ppm arsenic. Mr. Richard Kuehn indicated the waste was not compatible with organic compounds. Therefore, the TCLP volatile organic compounds would not be present in the waste. The machine coolant sludge analysis indicated the material to be nonhazardous with the presence of only trace amounts of metals. On page 12, TCLP data characterizing the uranium salvage and machine coolant discovered during a September 17, 1992 site visit is discussed.

The facility's inspection records for the permitted units (C-746Q, C-733, C-746R, and C-746A) were evaluated for compliance with the facility's Part B Permit. The records covering the time period beginning in August of 1991 through August 31, 1992 were reviewed. No violations were observed. The log for December of 1991 contained the date and year, excluding the month (December); however, there was no doubt as to which month the log was addressing.

The C-746Q hazardous waste storage facility was inspected. The location of safety equipment was compared to the Contingency Plan. The fire extinguishers had tags on

them indicating that they were last inspected in July of 1992. The Part B Permit indicates that fire extinguishers will be inspected every two months. Three bulging 55-gallon drums were observed in storage. Plant officials informed me that the Hazardous Waste Branch told them that they needed a permit to vent the swollen containers. See the Record of Conversation from Martin Marietta dated July 24, 1992 in Attachment IV. I informed Clay Bednarz, Robert Carson and Richard Kuehn that I disagree with the opinion that a permit is required to alleviate the potentially dangerous situation. I further informed them that the way I interpret 401 KAR 35:180, Sections 2 and 4, the condition must be corrected. I was informed in a phone conversation on September 21, 1992 that measures would be taken to correct the condition of the bulging containers by mid-October. PGDP has submitted a Part B Permit Modification to obtain permission to vent containers. Plant officials have expressed that bulging containers are a problem at most D.O.E. facilities. I was informed that procedures needed to be developed and employees needed to be trained for the use of a remote drum opening device. PGDP also plans to sample the gas phase when the containers are vented and perform a study to determine the cause of the problem so that preventive measures may be taken in the future.

The C-746Q, C-733 and C-746A storage facilities were inspected. The management of incompatible wastes were the focus of the inspections. No problems were noted. Corrosive wastes noted in the C-733 and C-746A storage areas were stored in metal fabricated secondary containment structures. On September 17, 1992, I returned to the facility and observed that the metal containment structures contained a synthetic liner (further discussion on pages 7 and 8). C-746Q is designed with built in concrete isolation bays and incompatible wastes were segregated at the time of inspection.

Containers of hazardous waste noted to contain trichloroethylene, acetone, mercury and PCBs were observed in the C-746A storage area. The waste was explained as being generated in cleaning out a sump which was determined by PGDP to be a Permit-By-Rule unit outside the C-722 maintenance shop. The area is also identified as solid waste management Unit #27.

On August 31, 1992, the inspection team went to the C-722 maintenance shop. Several satellite accumulation areas were observed as we walked through the building. The drains of three sinks had been disconnected or plugged. These sinks were used for cleaning equipment used to monitor the cascade operation. The cleaning process involves removing mercury from the monitoring devices which are then cleaned with chromic acid. A satellite accumulation area for mercury waste was observed at this location. Equipment which contains PCBs are also cleaned and/or repaired at this location. Deminimis spills in these sinks are considered a possible source of the contaminants which were removed from the sump. The sump still receives wastewaters from other areas of the plant. The site will be addressed as a solid waste management unit under the guidelines of the facility's permit and corrective action

plans. Attachment IV is a copy of internal Martin Marietta correspondence dated June 2, 1992 which outlines the closure and decontamination procedure for the sump in further detail.

The C-337 building was inspected. This is a two story building. Each floor encompasses 26 acres. The first floor was inspected. An ongoing project of installing troughs to contain PCB contaminated liquids which are generally a D018 hazardous waste due to the concentration of benzene was observed. The troughs drain into 5-gallon canisters through PVC pipes. One canister observed was labeled PCBs and Hazardous Waste. Absorbent pads were noted in three locations which were being utilized to absorb what was described as nonhazardous lubricating oils dripping from equipment in the area.

The inspection logs of safety and emergency response equipment maintained by the fire department were observed. Fire extinguishers throughout the plant are inspected monthly. Reportedly, the plant maintains 2,000 fire extinguishers. The fire department maintains and inspects 52 of about 438 sprinkler systems. The others are maintained by the cascade operations. The sprinkler systems are inspected quarterly. The fire department maintains and inspects 138 or so fire hydrants annually. Daily vehicle inspections are conducted on the following:

Support 1	Medic 1
Pumper 1	Squad 1
Ladder 1	Medic 2

The inspection logs maintained for the above-mentioned items are maintained, problems are noted and remedial measures are recorded.

Cartridge respirators are exchanged weekly and the Quality Assurance Department reissues new respirators. The quality Assurance Department also inspects and tests Level A suits annually.

The Part B Permit requires a spill control trailer to be stocked with specified equipment. The trailer was located outside of building C-400. The trailer appeared to contain the specified items; however, a detailed inventory was not conducted during the inspection. Another trailer in the area contained three 55-gallon drums, two of which contained an unknown liquid. The drums were sampled and the analytical results in Attachment I of this report, along with information provided over the phone on September 3, 1992, indicated the material to be leachate from the C-746K landfill. Attachment II is analytical characterization of the leachate from the C-746K landfill.

Personnel training records were observed for the following individuals:

T.J. Ellington	1/28/92
Wiliam R. Bagwell	4/15/92

M.T. Spiceland 4/15/92
Robert W. Thompson 4/15/92

Each employee specified above was given training in the following areas:

RCRA
Environmental Compliance
RCRA Overview (Part B Handling & Storage of Hazardous Waste)
Contingency Plan and Spill Control
Respirator Fit Test

The personnel training appeared to meet all the requirements of the facility's Part B Permit.

The Annual Report was briefly reviewed and documentation was provided which indicated a copy of the Annual Report was mailed to the McCracken County Judge/Executive on February 27, 1992.

A closing conference was held with numerous representatives of PGDP. I informed the attendees that a potentioal violation was pending the analytical characterization of the unidentified material in the two 55-gallon drums observed near the C-400 building. I also informed the attendees of my interpretation of 401 KAR 35:020, Section 6, referencing safety and emergency response inspections. I specifically mentioned the safety showers in the C-400 building and response equipment (i.e., diesel powered pumps and emergency response trailers operated by chemical operations personnel) at C-410.

On September 17, 1992, I returned to PGDP to clarify some questions which arose since the previous inspection dates. Clay Bednarz, Robert Carson, Richard Kuehn, Jimmie Hankins and David Tidwell accompanied me in addressing these issues.

After review of the federal facility's Compliance Agreement for TCLP characterization of wastes in storage at PGDP, I felt the need to assure that the uranium salvage and cutting oils which are currently being generated were characterized utilizing TCLP methodology. Documents were provided which summarized the TCLP characterization data for the uranium salvage, cutting oils and other wastes generated since the September 1990 final rule.

As noted earlier, metal fabricated containment bins were utilized to segregate and contain containers of corrosive D002 wastes. Since I had not noted exactly what type of chemicals were in the container and metal secondary containment would not be compatible with most D002 wastes, I wanted to obtain more information. The 55-gallon drums of concern contained dichoronate etching solution (D001, D002, D007,

D008). The metal (aluminum) secondary containment structures were lined with a synthetic liner.

PREPARED BY

B. Parrish Roush — 9/22/92

B. Parrish Roush
Environmental Inspector III
Paducah Regional Office

(Date)

APPROVED BY

Kenneth Yates — 9/23/92

Kenneth Yates
Environmental Control Supervisor
Paducah Regional Office

(Date)

BPR/mb

ATTACHMENT

III

June 2, 1992

A. N. Sevi

RCRA Less Than 90-Day Closure of the C-722 Neutralization Unit, SWMU No. 27

The following is a narrative on the removal of RCRA hazardous waste from the C-722 Neutralization Pit, SWMU No. 27:

The pit is located on the northeast corner of the C-720 Maintenance building and is constructed of non-earthen materials (concrete) and meets the RCRA definition of a tank. The pit and effluent is identified and regulated under PGDP's KPDES permit. Therefore, a tank of which the effluent is monitored by a NPDES permit, or in this case a KPDES permit, is considered a permit-by-rule facility and is exempt from the RCRA process as long as the unit meets the KPDES criteria under CWA. The effluent from this tank discharges to Outfall 008.

The influent to the pit originates from several processes in the C-720 Maintenance building. The point of contention is the instrument shop where personnel extract mercury from line recorders used in cascade operations and allow the mercury to collect in a pan located in a sink. Continuous water flows from the line recorder and the dense mercury collects in the pan. A probability exists that small amounts of mercury overflowed from the pan and passed through the only other safeguard (sink trap) and into the neutralization pit. The Air and Water Compliance Department was notified of potential mercury discharging to the environment in mid January 1992, and samples were taken and confirmed that mercury was being discharged to permitted Outfall 008. As a result of the analysis, the influent to the tank from the instrument shop was suspended on January 23, 1992, (Attachment 1). Subsequent notification was submitted to the Kentucky Division of Water for the unpermitted discharge. On February 14, 1992, all effluents from the C-720 building to the neutralization pit were discontinued. The RCRA 90-day time limit began for closure without filing a formal closure plan with KDWM on this date as the permit-by-rule exemption was terminated. Representative sampling of the pit could not be performed as required by SW-846 "*Test Methods for Evaluating Solid Waste-Physical/Chemical Methods*" (third edition) without removing all the sludge simultaneously. The sludge in the pit was mixed with water by Chemical Operations personnel to form a slurry and then aliquots of the slurry were transferred to one 55-gallon drum for sampling while the remainder was pumped to additional 55-gallon

drums. This control provided a drum with contents that were representative of the pit. Cleaning operations continued until a small residue remained and a fire hose was used to flush the remaining residue. At cessation of the cleanout on March 6, 1992, the drums were transported to a RCRA permitted facility where samples were retrieved. The analyses revealed the slurry failed for ignitability and TCLP for TCE. PCBs were also detected as well as radionuclides. Although the slurry failed TCLP for TCE, the prior manner in which TCE was used dictates its hazardous waste code (F001). The TCLP data was approved on April 8, 1992, (Attachment 2). A visual inspection on March 6, 1992, was made by personnel in the Waste Compliance Department, and it was noted that sludge in the pit had been removed and the manhole cover was placed back in its original position and covered by a tarp.

At this point the pit was considered devoid of RCRA waste and no formal closure plan was warranted, however, the neutralization pit was identified in the Phase II Site Investigation report as suspected of contributing to the plantwide TCE groundwater plume. The groundwater phase of the remediation will be under the jurisdiction of CERCLA ACO and as such any water that migrates into the pit will be managed following ARARS under CERCLA. The unit is listed as SWMU No. 27 on PGDP'S HSWA permit.

The sludge in the pit contained as much as 118 ppm PCB and must be managed as a PCB waste. No further cleanup is required by TSCA at this time. The PCB contamination present in the pit may be left in place until addressed by PGDP's HSWA permit. This allowance is granted by the recent TSCA FFCA between EPA and DOE Headquarters which became effective on February 20, 1992. However, the maintenance group must take measures to prevent water from entering the pit. Any water that collects in the pit must be sampled for PCBs prior to discharge. If the water contains detectable PCBs, it must also be managed as a PCB waste in accordance with the "anti-dilution" provision outlined in 40 CFR 761.1(b) (Attachment 3).

The PCB wastewater can be transported to the C-400 Decontamination building and treated in the carbon adsorption system without following RCRA permitting requirements as long as the technical requirements of RCRA are satisfied following ARARS under CERCLA. The water can then be analyzed for KPDES parameters and if acceptable can be discharged in accordance with the KPDES permit.

Also, because the waste [TCE (F001)] is a LDR waste, a one-time notification (Attachment 4) must be placed in the facility operating record for any restricted waste that was hazardous as generated and then became exempt or was rendered

nonharzardous. In this case, the point of generation was the time the material was discarded in the sink and LDR attaches itself at the point of generation. Please place the attached LDR notification form in your facility operating record. Also, if TCE is to be used in the future, it must be collected in a SAA and not allowed to be discharged into any sink or unit associated with the sanitary or storm sewer systems.

If you have any questions or required additional information, please contact C. A. Bednarz at Extension 6697 or myself at Extension 6694.

Robert A. Carson

R. A. Carson, C-743, PGDP (6694)

RAC:CAB:mjw

Attachments (4)

cc: D. G. Cope/B. J. Montgomery
T. W. Farthing
J. D. Fletcher
W. G. Halicks/K.W. Reynolds
A. L. Harrington
D. L. Thompson
S. L. Shell/L. J. Beach/B. J. Kruger
W. E. Sykes
C. Woods

cc/att: C. G. Giltner/C. A. Bednarz
W. C. File - NoRC

THIS PAGE INTENTIONALLY LEFT BLANK

APPENDIX C

TANK DATA FROM SOILS OU RI REPORT (DOE/LX/07-0358&D2/R1/A1, SEPTEMBER 2015)

THIS PAGE INTENTIONALLY LEFT BLANK

Sample ID	Method	Analysis	Result	Units	Qualifier	Detection Limit	Dilution Factor	Station	Date Collected	LabCode
LIQUID SAMPLE										
C722TANK-LIQ	1110	Corrosivity	7.42	Std Units		1	1	027-TANK	2/5/2015	MCL
C722TANK-LIQ	6020A	Aluminum	0.043	mg/L	B	0.03	2	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	6020A	Antimony	0.0017	mg/L	J	0.005	2	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	6020A	Arsenic	0.01	mg/L	U	0.01	2	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	6020A	Barium	0.036	mg/L		0.002	2	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	6020A	Beryllium	0.0005	mg/L	U	0.0005	2	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	6020A	Cadmium	0.00026	mg/L	J	0.0005	2	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	6020A	Calcium	180	mg/L		0.1	2	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	6020A	Chromium	0.0022	mg/L	J	0.01	2	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	6020A	Cobalt	0.00034	mg/L	J	0.002	2	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	6020A	Copper	0.0057	mg/L		0.001	2	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	6020A	Iron	0.5	mg/L		0.05	2	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	6020A	Lead	0.0007	mg/L	J	0.003	2	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	6020A	Magnesium	16	mg/L		0.05	2	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	6020A	Manganese	0.041	mg/L	B	0.002	2	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	6020A	Molybdenum	0.0017	mg/L	J	0.005	2	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	6020A	Nickel	0.018	mg/L		0.005	2	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	6020A	Selenium	0.0032	mg/L	J,B	0.005	2	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	6020A	Silver	0.002	mg/L	U	0.002	2	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	6020A	Sodium	54	mg/L	B	0.05	2	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	6020A	Thallium	0.002	mg/L	U	0.002	2	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	6020A	Uranium	0.03	mg/L		0.001	2	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	6020A	Vanadium	0.01	mg/L	U	0.01	2	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	6020A	Zinc	0.021	mg/L		0.01	2	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	7470A	Mercury	0.000078	mg/L	J	0.0002	1	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8082A	Aroclor-1016	0.95	µg/L	U	0.95	1	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8082A	Aroclor-1221	0.95	µg/L	U	0.95	1	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8082A	Aroclor-1232	0.95	µg/L	U	0.95	1	027-TANK	2/5/2015	TALMO

Sample ID	Method	Analysis	Result	Units	Qualifier	Detection Limit	Dilution Factor	Station	Date Collected	LabCode
C722TANK-LIQ	8082A	Aroclor-1242	0.95	µg/L	U	0.95	1	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8082A	Aroclor-1248	0.95	µg/L	U	0.95	1	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8082A	Aroclor-1254	0.95	µg/L	U	0.95	1	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8082A	Aroclor-1260	0.95	µg/L	U	0.95	1	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8082A	PCB, Total	0.95	µg/L	U	0.95	1	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8260C	1,1,1,2-Tetrachloroethane	25	µg/L	U	25	25	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8260C	1,1,1-Trichloroethane	4700	µg/L		250	250	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8260C	1,1,2,2-Tetrachloroethane	25	µg/L	U	25	25	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8260C	1,1,2-Trichloroethane	17	µg/L	J	25	25	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8260C	1,1-Dichloroethane	890	µg/L		25	25	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8260C	1,1-Dichloroethene	220	µg/L		25	25	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8260C	1,2,3-Trichloropropane	25	µg/L	U	25	25	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8260C	1,2-Dichloroethane	12	µg/L	J	25	25	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8260C	1,2-Dichloropropane	25	µg/L	U	25	25	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8260C	2-Butanone	130	µg/L	U	130	25	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8260C	2-Chloroethyl vinyl ether	50	µg/L	U	50	25	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8260C	2-Hexanone	130	µg/L	U	130	25	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8260C	4-Methyl-2-pentanone	130	µg/L	U	130	25	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8260C	Acetone	50	µg/L	U	50	25	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8260C	Acrolein	250	µg/L	U	250	25	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8260C	Acrylonitrile	250	µg/L	U	250	25	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8260C	Benzene	25	µg/L	U	25	25	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8260C	Bromodichloromethane	25	µg/L	U	25	25	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8260C	Bromoform	25	µg/L	U	25	25	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8260C	Bromomethane	50	µg/L	U	50	25	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8260C	Carbon disulfide	25	µg/L	U	25	25	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8260C	Carbon tetrachloride	25	µg/L	U	25	25	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8260C	Chlorobenzene	25	µg/L	U	25	25	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8260C	Chloroethane	76	µg/L		50	25	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8260C	Chloroform	3.5	µg/L	J	25	25	027-TANK	2/5/2015	TALMO

Sample ID	Method	Analysis	Result	Units	Qualifier	Detection Limit	Dilution Factor	Station	Date Collected	LabCode
C722TANK-LIQ	8260C	Chloromethane	50	µg/L	U	50	25	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8260C	*cis*-1,2-Dichloroethene	2,500	µg/L		100	100	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8260C	*cis*-1,3-Dichloropropene	25	µg/L	U	25	25	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8260C	Dibromochloromethane	25	µg/L	U	25	25	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8260C	Dibromomethane	25	µg/L	U	25	25	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8260C	Dichlorodifluoromethane	50	µg/L	U	50	25	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8260C	Ethyl benzene	25	µg/L	U	25	25	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8260C	Ethyl methacrylate	25	µg/L	U	25	25	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8260C	Iodomethane	50	µg/L	U	50	25	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8260C	m,p-xylene	50	µg/L	U	50	25	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8260C	Methylene Chloride	25	µg/L	U	25	25	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8260C	o-xylene	25	µg/L	U	25	25	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8260C	Styrene	25	µg/L	U	25	25	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8260C	Tetrachloroethene	84	µg/L		25	25	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8260C	Toluene	25	µg/L	U	25	25	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8260C	*trans*-1,2-Dichloroethene	25	µg/L	U	25	25	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8260C	*trans*-1,3-Dichloropropene	25	µg/L	U	25	25	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8260C	*trans*-1,4-Dichloro-2-butene	50	µg/L	U	50	25	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8260C	Trichloroethene	830	µg/L		25	25	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8260C	Trichlorofluoromethane	25	µg/L	U	25	25	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8260C	Vinyl acetate	50	µg/L	U	50	25	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8260C	Vinyl chloride	50	µg/L	U	50	25	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8270D	1,2,4-Trichlorobenzene	13	µg/L	U	13	1	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8270D	1,2-Dichlorobenzene	13	µg/L	U	13	1	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8270D	1,3-Dichlorobenzene	13	µg/L	U	13	1	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8270D	1,4-Dichlorobenzene	13	µg/L	U	13	1	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8270D	2,4,5-Trichlorophenol	13	µg/L	U	13	1	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8270D	2,4,6-Trichlorophenol	13	µg/L	U	13	1	027-TANK	2/5/2015	TALMO

Sample ID	Method	Analysis	Result	Units	Qualifier	Detection Limit	Dilution Factor	Station	Date Collected	LabCode
C722TANK-LIQ	8270D	2,4-Dichlorophenol	13	µg/L	U	13	1	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8270D	2,4-Dimethylphenol	13	µg/L	U	13	1	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8270D	2,4-Dinitrophenol	63	µg/L	U	63	1	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8270D	2,4-Dinitrotoluene	13	µg/L	U	13	1	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8270D	2,6-Dinitrotoluene	13	µg/L	U	13	1	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8270D	2-Chloronaphthalene	13	µg/L	U	13	1	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8270D	2-Chlorophenol	13	µg/L	U	13	1	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8270D	2-Methyl-4,6-dinitrophenol	13	µg/L	U	13	1	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8270D	2-Methylnaphthalene	13	µg/L	U	13	1	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8270D	2-Nitroaniline	13	µg/L	U	13	1	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8270D	2-Nitrophenol	13	µg/L	U	13	1	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8270D	3,3'-Dichlorobenzidine	63	µg/L	U	63	1	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8270D	3-Nitroaniline	13	µg/L	U	13	1	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8270D	4-Bromophenyl phenyl ether	13	µg/L	U	13	1	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8270D	4-Chloro-3-methylphenol	13	µg/L	U	13	1	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8270D	4-Chloroaniline	13	µg/L	U,X	13	1	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8270D	4-Chlorophenylphenyl ether	13	µg/L	U	13	1	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8270D	4-Nitroaniline	13	µg/L	U	13	1	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8270D	4-Nitrophenol	13	µg/L	U	13	1	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8270D	Acenaphthene	13	µg/L	U	13	1	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8270D	Acenaphthylene	13	µg/L	U	13	1	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8270D	Anthracene	13	µg/L	U	13	1	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8270D	Benz(a)anthracene	13	µg/L	U	13	1	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8270D	Benzo(a)pyrene	13	µg/L	U	13	1	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8270D	Benzo(b)fluoranthene	13	µg/L	U	13	1	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8270D	Benzo(ghi)perylene	13	µg/L	U	13	1	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8270D	Benzo(k)fluoranthene	13	µg/L	U	13	1	027-TANK	2/5/2015	TALMO

Sample ID	Method	Analysis	Result	Units	Qualifier	Detection Limit	Dilution Factor	Station	Date Collected	LabCode
C722TANK-LIQ	8270D	Benzoic acid	63	µg/L	U	63	1	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8270D	Benzyl alcohol	13	µg/L	U	13	1	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8270D	Bis(2-chloroethoxy)methane	13	µg/L	U	13	1	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8270D	Bis(2-chloroethyl) ether	13	µg/L	U	13	1	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8270D	Bis(2-chloroisopropyl) ether	13	µg/L	U	13	1	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8270D	Bis(2-ethylhexyl)phthalate	13	µg/L	U	13	1	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8270D	Butyl benzyl phthalate	13	µg/L	U	13	1	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8270D	Chrysene	13	µg/L	U	13	1	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8270D	Dibenz(a,h)anthracene	13	µg/L	U	13	1	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8270D	Dibenzofuran	13	µg/L	U	13	1	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8270D	Diethylphthalate	13	µg/L	U	13	1	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8270D	Dimethylphthalate	13	µg/L	U	13	1	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8270D	Di-n-butylphthalate	13	µg/L	U	13	1	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8270D	Di-n-octylphthalate	13	µg/L	U	13	1	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8270D	Fluoranthene	13	µg/L	U	13	1	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8270D	Fluorene	13	µg/L	U	13	1	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8270D	Hexachlorobenzene	13	µg/L	U	13	1	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8270D	Hexachlorobutadiene	13	µg/L	U	13	1	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8270D	Hexachlorocyclopentadiene	13	µg/L	U	13	1	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8270D	Hexachloroethane	13	µg/L	U	13	1	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8270D	Indeno(1,2,3-cd)pyrene	13	µg/L	U	13	1	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8270D	Isophorone	13	µg/L	U	13	1	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8270D	m,p-cresol	25	µg/L	U	25	1	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8270D	Naphthalene	13	µg/L	U	13	1	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8270D	Nitrobenzene	13	µg/L	U	13	1	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8270D	N-Nitroso-di-n-propylamine	13	µg/L	U	13	1	027-TANK	2/5/2015	TALMO

Sample ID	Method	Analysis	Result	Units	Qualifier	Detection Limit	Dilution Factor	Station	Date Collected	LabCode
C722TANK-LIQ	8270D	N-Nitrosodiphenylamine	13	µg/L	U	13	1	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8270D	o-cresol	13	µg/L	U	13	1	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8270D	Pentachlorophenol	13	µg/L	U	13	1	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8270D	Phenanthrene	13	µg/L	U	13	1	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8270D	Phenol	13	µg/L	U	13	1	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8270D	Pyrene	13	µg/L	U	13	1	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	8270D	Pyridine	25	µg/L	U	25	1	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	900.0	Gross Alpha	8.48	pCi/L		4.28	1	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	900.0	Gross Beta	9.25	pCi/L		1.91	1	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	A-01-R	Americium-241	0.0375	pCi/L	U	0.113	1	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	A-01-R	Neptunium-237	-0.0635	pCi/L	U	0.312	1	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	A-01-R	Plutonium-238	0.0777	pCi/L	U	0.116	1	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	A-01-R	Plutonium-239/240	0.0222	pCi/L	U	0.0829	1	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	A-01-R	Thorium-228	-0.0358	pCi/L	U	0.18	1	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	A-01-R	Thorium-230	0.178	pCi/L		0.108	1	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	A-01-R	Thorium-232	0.0209	pCi/L	U	0.0836	1	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	A-01-R	Uranium-234	6.66	pCi/L		0.0899	1	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	A-01-R	Uranium-235	0.277	pCi/L		0.0693	1	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	A-01-R	Uranium-238	9.75	pCi/L		0.0556	1	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	GA-01-R	Cesium-137	0.371	pCi/L	U	11.3	1	027-TANK	2/5/2015	TALMO
C722TANK-LIQ	TC-02-RC	Technetium-99	8.28	pCi/L		2.11	1	027-TANK	2/5/2015	TALMO
SLUDGE SAMPLE										
C722TANK-SLDG	6020A	Aluminum	1,300	mg/kg		17	2	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	6020A	Antimony	250	mg/kg		1.8	2	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	6020A	Arsenic	2.4	mg/kg	J	3.4	2	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	6020A	Barium	47	mg/kg		6.9	2	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	6020A	Beryllium	0.17	mg/kg	J	0.34	2	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	6020A	Cadmium	10	mg/kg		0.17	2	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	6020A	Calcium	2,200	mg/kg		170	2	027-TANK	2/11/2015	TALMO

Sample ID	Method	Analysis	Result	Units	Qualifier	Detection Limit	Dilution Factor	Station	Date Collected	LabCode
C722TANK-SLDG	6020A	Chromium	530	mg/kg		3.4	2	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	6020A	Cobalt	4.2	mg/kg		0.69	2	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	6020A	Copper	3,100	mg/kg		3.4	2	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	6020A	Iron	4,500	mg/kg		17	2	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	6020A	Lead	1,000	mg/kg		1	2	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	6020A	Magnesium	140	mg/kg	J	170	2	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	6020A	Manganese	25	mg/kg		1.7	2	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	6020A	Molybdenum	30	mg/kg		1.7	2	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	6020A	Nickel	500	mg/kg		1.7	2	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	6020A	Selenium	1.7	mg/kg	U	1.7	2	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	6020A	Silver	160	mg/kg	B	0.69	2	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	6020A	Sodium	200	mg/kg		69	2	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	6020A	Thallium	1.7	mg/kg	U	1.7	2	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	6020A	Uranium	1,700	mg/kg	Y	0.86	5	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	6020A	Vanadium	9.9	mg/kg		3.4	2	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	6020A	Zinc	250	mg/kg		17	2	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	7471B	Mercury	7,200	mg/kg		1100	10000	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8082A	Aroclor-1016	120,000	µg/kg	U	120000	100	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8082A	Aroclor-1221	120,000	µg/kg	U	120000	100	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8082A	Aroclor-1232	120,000	µg/kg	U	120000	100	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8082A	Aroclor-1242	120,000	µg/kg	U	120000	100	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8082A	Aroclor-1248	120,000	µg/kg	U	120000	100	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8082A	Aroclor-1254	1,300,000	µg/kg		120000	100	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8082A	Aroclor-1260	120,000	µg/kg	U	120000	100	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8082A	PCB, Total	1,300,000	µg/kg		120000	100	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8260C	1,1,1,2-Tetrachloroethane	180,000	µg/kg	U	180000	200	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8260C	1,1,1-Trichloroethane	44,000,000	µg/kg		1800000	2000	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8260C	1,1,2,2-Tetrachloroethane	180,000	µg/kg	U	180000	200	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8260C	1,1,2-Trichloroethane	180,000	µg/kg	U	180000	200	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8260C	1,1-Dichloroethane	260,000	µg/kg		180000	200	027-TANK	2/11/2015	TALMO

Sample ID	Method	Analysis	Result	Units	Qualifier	Detection Limit	Dilution Factor	Station	Date Collected	LabCode
C722TANK-SLDG	8260C	1,1-Dichloroethene	1,300,000	µg/kg		180000	200	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8260C	1,2,3-Trichloropropane	180,000	µg/kg	U	180000	200	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8260C	1,2-Dichloroethane	180,000	µg/kg	U	180000	200	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8260C	1,2-Dichloropropane	180,000	µg/kg	U	180000	200	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8260C	2-Butanone	360,000	µg/kg	U	360000	200	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8260C	2-Chloroethyl vinyl ether	730,000	µg/kg	U	730000	200	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8260C	2-Hexanone	730,000	µg/kg	U	730000	200	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8260C	4-Methyl-2-pentanone	730,000	µg/kg	U	730000	200	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8260C	Acetone	730,000	µg/kg	U	730000	200	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8260C	Acrolein	1,800,000	µg/kg	U	1800000	200	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8260C	Acrylonitrile	1,800,000	µg/kg	U	1800000	200	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8260C	Benzene	180,000	µg/kg	U	180000	200	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8260C	Bromodichloromethane	180,000	µg/kg	U	180000	200	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8260C	Bromoform	180,000	µg/kg	U	180000	200	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8260C	Bromomethane	360,000	µg/kg	U	360000	200	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8260C	Carbon disulfide	180,000	µg/kg	U	180000	200	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8260C	Carbon tetrachloride	180,000	µg/kg	U	180000	200	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8260C	Chlorobenzene	180,000	µg/kg	U	180000	200	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8260C	Chloroethane	360,000	µg/kg	U	360000	200	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8260C	Chloroform	180,000	µg/kg	U	180000	200	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8260C	Chloromethane	360,000	µg/kg	U	360000	200	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8260C	*cis*-1,2-Dichloroethene	290,000	µg/kg		180000	200	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8260C	*cis*-1,3-Dichloropropene	360,000	µg/kg	U	360000	200	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8260C	Dibromochloromethane	180,000	µg/kg	U	180000	200	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8260C	Dibromomethane	180,000	µg/kg	U	180000	200	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8260C	Dichlorodifluoromethane	360,000	µg/kg	U	360000	200	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8260C	Ethyl benzene	14,000	µg/kg	J	180000	200	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8260C	Ethyl methacrylate	180,000	µg/kg	U	180000	200	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8260C	Iodomethane	140,000	µg/kg	J	180000	200	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8260C	m,p-Xylene	45,000	µg/kg	J	360000	200	027-TANK	2/11/2015	TALMO

Sample ID	Method	Analysis	Result	Units	Qualifier	Detection Limit	Dilution Factor	Station	Date Collected	LabCode
C722TANK-SLDG	8260C	Methylene chloride	180,000	µg/kg	U	180000	200	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8260C	o-Xylene	180,000	µg/kg	U	180000	200	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8260C	Styrene	180,000	µg/kg	U	180000	200	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8260C	Tetrachloroethene	5,600,000	µg/kg		180000	200	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8260C	Toluene	310,000	µg/kg		180000	200	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8260C	*trans*-1,2-Dichloroethene	180,000	µg/kg	U	180000	200	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8260C	*trans*-1,3-Dichloropropene	180,000	µg/kg	U	180000	200	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8260C	*trans*-1,4-Dichloro-2-butene	360,000	µg/kg	U	360000	200	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8260C	Trichloroethene	12,000,000	µg/kg		1800000	2000	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8260C	Trichlorofluoromethane	180,000	µg/kg	U	180000	200	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8260C	Vinyl acetate	180,000	µg/kg	U,X	180000	200	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8260C	Vinyl chloride	180,000	µg/kg	U	180000	200	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8270D	1,2,4-Trichlorobenzene	11,000	µg/kg	J	12000	1	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8270D	1,2-Dichlorobenzene	12,000	µg/kg	U	12000	1	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8270D	1,3-Dichlorobenzene	12,000	µg/kg	U	12000	1	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8270D	1,4-Dichlorobenzene	11,000	µg/kg	J	12000	1	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8270D	2,4,5-Trichlorophenol	12,000	µg/kg	U	12000	1	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8270D	2,4,6-Trichlorophenol	12,000	µg/kg	U	12000	1	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8270D	2,4-Dichlorophenol	12,000	µg/kg	U	12000	1	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8270D	2,4-Dimethylphenol	12,000	µg/kg	U	12000	1	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8270D	2,4-Dinitrophenol	57,000	µg/kg	U,Y	57000	1	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8270D	2,4-Dinitrotoluene	12,000	µg/kg	U	12000	1	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8270D	2,6-Dinitrotoluene	12,000	µg/kg	U	12000	1	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8270D	2-Chloronaphthalene	12,000	µg/kg	U	12000	1	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8270D	2-Chlorophenol	12,000	µg/kg	U	12000	1	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8270D	2-Methyl-4,6-dinitrophenol	57,000	µg/kg	U,Y	57000	1	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8270D	2-Methylnaphthalene	7,000	µg/kg	J	12000	1	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8270D	2-Nitroaniline	12,000	µg/kg	U	12000	1	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8270D	2-Nitrophenol	12,000	µg/kg	U	12000	1	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8270D	3,3'-Dichlorobenzidine	57,000	µg/kg	U	57000	1	027-TANK	2/11/2015	TALMO

Sample ID	Method	Analysis	Result	Units	Qualifier	Detection Limit	Dilution Factor	Station	Date Collected	LabCode
C722TANK-SLDG	8270D	3-Nitroaniline	12,000	µg/kg	U	12000	1	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8270D	4-Bromophenyl phenyl ether	12,000	µg/kg	U	12000	1	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8270D	4-Chloro-3-methylphenol	12,000	µg/kg	U	12000	1	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8270D	4-Chloroaniline	12,000	µg/kg	U	12000	1	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8270D	4-Chlorophenylphenyl ether	12,000	µg/kg	U	12000	1	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8270D	4-Nitroaniline	57,000	µg/kg	U	57000	1	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8270D	4-Nitrophenol	57,000	µg/kg	U	57000	1	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8270D	Acenaphthene	12,000	µg/kg	U	12000	1	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8270D	Acenaphthylene	12,000	µg/kg	U	12000	1	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8270D	Anthracene	12,000	µg/kg	U	12000	1	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8270D	Benz(a)anthracene	12,000	µg/kg	U,Y	12000	1	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8270D	Benzo(a)pyrene	12,000	µg/kg	U	12000	1	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8270D	Benzo(b)fluoranthene	12,000	µg/kg	U	12000	1	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8270D	Benzo(ghi)perylene	12,000	µg/kg	U,Y	12000	1	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8270D	Benzo(k)fluoranthene	12,000	µg/kg	U,X	12000	1	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8270D	Benzoic acid	57,000	µg/kg	U	57000	1	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8270D	Benzyl alcohol	12,000	µg/kg	U	12000	1	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8270D	Bis(2-chloroethoxy)methane	12,000	µg/kg	U	12000	1	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8270D	Bis(2-chloroethyl) ether	12,000	µg/kg	U	12000	1	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8270D	bis(2-chloroisopropyl) ether	12,000	µg/kg	U	12000	1	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8270D	Bis(2-ethylhexyl)phthalate	180,000	µg/kg	Y	12000	1	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8270D	Butyl benzyl phthalate	4,000	µg/kg	J	12000	1	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8270D	Chrysene	12,000	µg/kg	U	12000	1	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8270D	Dibenz(a,h)anthracene	12,000	µg/kg	U,Y	12000	1	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8270D	Dibenzofuran	12,000	µg/kg	U	12000	1	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8270D	Diethylphthalate	12,000	µg/kg	U	12000	1	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8270D	Dimethylphthalate	12,000	µg/kg	U	12000	1	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8270D	Di-n-butylphthalate	89,000	µg/kg	Y	12000	1	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8270D	Di-n-octylphthalate	12,000	µg/kg	U	12000	1	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8270D	Fluoranthene	3,600	µg/kg	J	12000	1	027-TANK	2/11/2015	TALMO

Sample ID	Method	Analysis	Result	Units	Qualifier	Detection Limit	Dilution Factor	Station	Date Collected	LabCode
C722TANK-SLDG	8270D	Fluorene	12,000	µg/kg	U	12000	1	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8270D	Hexachlorobenzene	12,000	µg/kg	U	12000	1	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8270D	Hexachlorobutadiene	12,000	µg/kg	U	12000	1	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8270D	Hexachlorocyclopentadiene	57,000	µg/kg	U	57000	1	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8270D	Hexachloroethane	12,000	µg/kg	U	12000	1	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8270D	Indeno(1,2,3-cd)pyrene	12,000	µg/kg	U,Y	12000	1	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8270D	Isophorone	12,000	µg/kg	U	12000	1	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8270D	m,p-cresol	24,000	µg/kg	U	24000	1	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8270D	Naphthalene	14,000	µg/kg		12000	1	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8270D	Nitrobenzene	12,000	µg/kg	U	12000	1	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8270D	N-Nitroso-di-n-propylamine	12,000	µg/kg	U	12000	1	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8270D	N-Nitrosodiphenylamine	12,000	µg/kg	U	12000	1	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8270D	o-Cresol	12,000	µg/kg	U	12000	1	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8270D	Pentachlorophenol	24,000	µg/kg	U,X	24000	1	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8270D	Phenanthrene	5,000	µg/kg	J	12000	1	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8270D	Phenol	12,000	µg/kg	U	12000	1	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8270D	Pyrene	2,500	µg/kg	J	12000	1	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	8270D	Pyridine	24,000	µg/kg	U	24000	1	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	9310	Alpha activity	1,770	pCi/g		5.71	1	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	9310	Beta activity	6,900	pCi/g		10.7	1	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	A-01-R	Americium-241	0.465	pCi/g		0.0884	1	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	A-01-R	Neptunium-237	1.92	pCi/g		0.0504	1	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	A-01-R	Plutonium-238	0.051	pCi/g		0.0381	1	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	A-01-R	Plutonium-239/240	5.59	pCi/g		0.0329	1	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	A-01-R	Thorium-228	0.496	pCi/g		0.0826	1	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	A-01-R	Thorium-230	4.41	pCi/g		0.0481	1	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	A-01-R	Thorium-232	0.32	pCi/g		0.0478	1	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	A-01-R	Uranium-234	557	pCi/g		1.48	1	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	A-01-R	Uranium-235	37.6	pCi/g		0.997	1	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	A-01-R	Uranium-238	692	pCi/g		0.8	1	027-TANK	2/11/2015	TALMO

Sample ID	Method	Analysis	Result	Units	Qualifier	Detection Limit	Dilution Factor	Station	Date Collected	LabCode
C722TANK-SLDG	GA-01-R	Cesium-137	0.219	pCi/g	U	0.465	1	027-TANK	2/11/2015	TALMO
C722TANK-SLDG	TC-02-RC	Technetium-99	3,980	pCi/g		3.19	1	027-TANK	2/11/2015	TALMO

The following data qualifiers were used for reporting fixed-base laboratory results:

Inorganic Analysis

B	This flag is used when the analyte is found in the associated blank as well as in the sample.
J	Indicates an estimated value.
U	The analyte was analyzed for, but not detected.
Y	MS/MSD RPD exceeds the control limits.

Organic Analysis

J	Indicates an estimated value. This flag is used under the following circumstances: (1) when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed and (2) when the mass spectral and retention time data indicate the presence of a compound that meets the pesticide/PCB identification criteria, and the result is less than the contract-required quantitation limit, but greater than zero.
U	Indicates compound was analyzed for, but not detected.
X	Other specific flags may be required to properly define the results.
Y	Indicates MS/MS duplicate (MSD) recovery and/or relative percent difference (RPD) failed to meet acceptance criteria.

Radionuclide Analysis

U	Indicates compound was analyzed for, but not detected.

THIS PAGE INTENTIONALLY LEFT BLANK

APPENDIX D

APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

THIS PAGE INTENTIONALLY LEFT BLANK

CONTENTS

ACRONYMS D-5

D.1. INTRODUCTION D-7

D.2. CHEMICAL-SPECIFIC ARARS/TBC D-7

D.3. LOCATION-SPECIFIC ARARS/TBC D-7

D.4. ACTION-SPECIFIC ARARS/TBCS D-8
D.4.1 FUGITIVE EMISSIONS D-8
D.4.2 WASTE MANAGEMENT D-8
D.4.3 TRANSPORTATION D-8

THIS PAGE INTENTIONALLY LEFT BLANK

ACRONYMS

ARAR	applicable or relevant and appropriate requirement
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	*Code of Federal Regulations*
DOE	U.S. Department of Energy
DOT	U.S. Department of Transportation
EDE	effective dose equivalent
EPA	U.S. Environmental Protection Agency
FFA	Federal Facility Agreement
HMR	Hazardous Materials Regulations
KAR	*Kentucky Administrative Regulations*
LLW	low-level waste
NCP	National Contingency Plan
NRC	Nuclear Regulatory Commission
PPE	personal protective equipment
RA	removal action
RCRA	Resource Conservation and Recovery Act
TBC	to be considered
TSCA	Toxic Substances Control Act
WAC	waste acceptance criteria

THIS PAGE INTENTIONALLY LEFT BLANK

D.1. INTRODUCTION

Section 300.415(j) of the NCP states that removal actions (RAs) shall, to the extent practicable considering the exigencies of the situation, attain ARARs under federal environmental or state environmental or facility siting laws. Attainment of identified ARARs in Table D.2 is practicable for this action. ARARs include the substantive requirements of federal or more stringent state environmental or facility siting laws/regulations. Additionally, per 40 *CFR* § 300.400(g)(3), other advisories, criteria, or guidance may be considered in determining remedies [to be considered (TBC) category]. CERCLA § 121(d)(4) provides several ARAR waiver options that may be invoked, provided that human health and the environment are protected. ARARs do not include occupational safety or worker protection requirements. On-site activities must comply with the substantive, but not administrative requirements. Administrative requirements include applying for permits, recordkeeping, consultation, and reporting. Activities conducted off-site must comply with both the substantive and administrative requirements of applicable laws.

ARARs typically are divided into three categories: (1) chemical-specific, (2) location-specific, and (3) action-specific. "Chemical-specific ARARs usually are health- or risk-based numerical values or methodologies which, when applied to site-specific conditions, result in the establishment of numerical values" [53 *FR* 51394, 51437 (December 21, 1988)]. (In the absence of chemical-specific ARARs, cleanup criteria are based upon risk calculations.) Location-specific ARARs generally are restrictions placed upon the concentration of hazardous substances or the conduct of activities solely because they are in special locations [53 *FR* 51394, 51437 (December 21, 1988)]. Action-specific ARARs usually are technology- or activity-based requirements or limitations on actions taken with respect to hazardous wastes or requirements to conduct certain actions to address particular circumstances at a site [53 *FR* 51394, 51437 (December 21, 1988)].

The scope of this RA is to remove the free-flowing contents (e.g., liquid, sludge) of the C-722 Acid Neutralization Tank to the extent practical using best management practices of standard pumping techniques, followed by off-site disposal. A primary project goal is to dispose of the primary and secondary waste streams generated as part of this RA at an acceptable off-site facility. The primary ARARs for this action are related to on-site waste management activities associated with the generation, characterization, and processing/packaging of waste for off-site shipment and disposal.

Any off-site transfer and disposal of waste will be subject to all applicable requirements and the CERCLA off-site rule as defined by Section 300.440 of the NCP.

D.2. CHEMICAL-SPECIFIC ARARS/TBC

Chemical-specific ARARs provide health- or risk-based concentration limits or discharge limitations in environmental media (i.e., surface water, groundwater, soil, or air) for specific hazardous substances, pollutants, or contaminants. There are no chemical-specific ARARs for this removal action.

D.3. LOCATION-SPECIFIC ARARS/TBC

Location-specific requirements establish restrictions on activities conducted within protected or environmentally sensitive areas. In addition, these requirements establish restrictions on permissible

concentrations of hazardous substances within these areas. There are no location-specific ARARs identified for this removal action.

D.4. ACTION-SPECIFIC ARARS/TBCS

Action-specific ARARs include operation, performance, and design requirements or limitations based on waste type, media, and remedial activities. Component actions include groundwater monitoring, institutional controls, waste management, and transportation. The primary Action-Specific ARARs are related to waste management activities associated with the removal and on-site management of waste in preparation for off-site disposition. ARARs and TBC guidance for this removal action are identified in Table D.2.

D.4.1 FUGITIVE EMISSIONS

Excavation of soil and aggregate and coring of the tank structure are required to allow additional access for removal of the tank's contents (i.e. liquid and sludge). Fugitive emissions are regulated by Kentucky through administrative rules at 401 *KAR* 63:010. Reasonable precautions must be taken to prevent particulate matter from becoming airborne.

Radionuclide emissions, excluding radon-220 and radon-222, from the U.S. Department of Energy (DOE) facilities are addressed in 40 *CFR* § 61, Subpart H. These regulations apply to airborne emissions during construction and operation activities. National Emissions Standards for Hazardous Air Pollutants limit ambient air radionuclide emissions from DOE facilities to levels that would prevent any individual from receiving an effective dose equivalent (EDE) of 10 millirem per year (mrem/year) or more (40 *CFR* § 61.92). Nonpoint-source fugitive radionuclide emissions are estimated by plant monitoring stations.

D.4.2 WASTE MANAGEMENT

The waste (sludge and liquid) generated during removal activities is considered fully characterized and will not be sampled prior to shipment to an off-site facility. Samples taken to date are expected to be sufficient for waste management and characterization. There will be no post-removal sampling within the emptied Tank or in the soils around the Tank as part of this TCRA. The tank structure and the surrounding environmental media will be noted in the SMP to be evaluated as part of the Soils and Slabs OU project.

D.4.3 TRANSPORTATION

Any remediation waste transferred off-site or transported in commerce along public rights-of-way must be conducted in compliance with all applicable laws and regulations. These transportation requirements include provisions for proper packaging, labeling, marking, manifesting, recordkeeping, licensing, and placarding that must be complied with fully for shipment. Before shipment of CERCLA waste to any off-site facility, DOE must ensure the acceptance of the receiving site under the CERCLA Off-site Rule (40 *CFR* § 300.440 *et seq.*).

Table D.2. Action-Specific ARARs

Action-Specific			
Action	**Requirement**	**Prerequisite**	**Citation**
Site Preparation and Excavation			
Activities causing fugitive dust emissions	No person shall cause, suffer, or allow any material to be handled, processed, transported, or stored; a building or its appurtenances to be constructed, altered, repaired, or demolished, or a road to be used without taking reasonable precaution to prevent particulate matter from becoming airborne. Such reasonable precautions shall include, when applicable, but not be limited to the following: • Use, where possible, of water or chemicals for control of dust in the demolition of existing buildings or structures, construction operations, the grading of roads or the clearing of land; • Application and maintenance of asphalt, oil, water, or suitable chemicals on roads, materials stockpiles, and other surfaces which can create airborne dusts; • The maintenance of paved roadways in a clean condition.	Fugitive emissions from land-disturbing activities (e.g., handling, processing, transporting or storing of any material, demolition of structures, construction operations, grading of roads, or the clearing of land, etc.)—applicable.	401 *KAR* 63:010 § 3(1) and (1)(a), (b), and (e)
	No person shall cause or permit the discharge of visible fugitive dust emissions beyond the lot line of the property on which the emissions originate.		401 *KAR* 63:010 § 3(2)

Table D.2. Action-Specific ARARs (Continued)

Action-Specific			
Action	**Requirement**	**Prerequisite**	**Citation**
Air Emissions			
Activities causing radionuclide emissions	Emissions of radionuclides to the ambient air from DOE facilities shall not exceed those amounts that would cause any member of the public to receive in any year an EDE of 10 mrem/yr.	Radionuclide emissions at a DOE facility—**applicable**.	40 *CFR* § 61.92 401 *KAR* 57:002
Activities causing toxic substances or potentially hazardous matter emissions	Persons responsible for a source from which hazardous matter or toxic substances may be emitted shall provide the utmost care and consideration in the handling of these materials to the potentially harmful effects of the emissions resulting from such activities. Shall not allow any affected facility to emit potentially hazardous matter or toxic substances in such quantities or duration as to be harmful to the health and welfare of humans, animals and plants.	Emissions of potentially hazardous matter or toxic substances as defined in 401 *KAR* 63:020 § 2 (2)—**applicable**.	401 *KAR* 63:020 § 3
Waste Management			
Management of polychlorinated biphenyl (PCB) waste	Any person storing or disposing of PCB waste must do so in accordance with 40 *CFR* § 761, Subpart D.	Storage or disposal of waste containing PCBs at concentrations ≥ 50 ppm—**applicable**.	40 *CFR* § 761.50(a)
Management of PCB remediation waste	Any person cleaning up and disposing of PCBs shall do so based on the concentration at which the PCBs are found.	Cleanup and disposal of PCB remediation waste as defined in 40 *CFR* § 761.3—**applicable**.	40 *CFR* § 761.61
Management of PCB/radioactive waste	Any person storing such waste must do so taking into account both its PCB concentration and radioactive properties, except as provided in 40 *CFR* § 761.65(a)(1), (b)(1)(ii) and (c)(6)(i).	Generation of PCB/radioactive waste with ≥ 50 ppm PCBs for storage—**applicable**.	40 *CFR* § 761.50(b)(7)(i)

Table D.2. Action-Specific ARARs (Continued)

Action-Specific			
Action	**Requirement**	**Prerequisite**	**Citation**
Management of PCB/radioactive waste (Continued)	Any person disposing of such waste must do so taking into account both its PCB concentration and its radioactive properties. If, taking into account only the PCB properties in the waste (and not the radioactive properties of the waste), the waste meets the requirements for disposal in a facility permitted, licensed, or registered by a state as a municipal or nonmunicipal nonhazardous waste landfill [e.g., PCB bulk-product waste under 40 *CFR* § 761.62(b)(1)], then the person may dispose of PCB/radioactive waste, without regard to the PCBs, based on its radioactive properties in accordance with applicable requirements for the radioactive component of the waste.	Generation of PCB/radioactive waste with ≥ 50 ppm PCBs for storage—**applicable**.	40 *CFR* § 761.50(b)(7)(ii)
Characterization of solid waste	Must determine if solid waste is excluded from regulation under 40 *CFR* § 261.4.	Generation of solid waste as defined in 40 *CFR* § 261.2—**applicable**.	40 *CFR* § 262.11(a) 401 *KAR* 32:010 § 2
	Must determine if waste is listed as a hazardous waste in Subpart D of 40 *CFR* Part 261.	Generation of solid waste which is not excluded under 40 *CFR* § 261.4—**applicable**.	40 *CFR* § 262.11(b) 401 *KAR* 32:010 § 2
	Must determine whether the waste is characteristic waste (identified in Subpart C of 40 *CFR* Part 261) by using prescribed testing methods or applying generator knowledge based on information regarding material or processes used.	Generation of solid waste that is not listed in Subpart D of 40 *CFR* Part 261 and not excluded under 40 *CFR* § 261.4—**applicable**.	40 *CFR* § 262.11(c) 401 *KAR* 32:010 § 2
	Must refer to Parts 261, 262, 264, 265, 266, 268, and 273 of Chapter 40 for possible exclusions or restrictions pertaining to management of the specific waste.	Generation of solid waste which is determined to be hazardous waste—**applicable**.	40 *CFR* § 262.11(d) 401 *KAR* 32:010 § 2
Characterization of hazardous waste	Must obtain a detailed chemical and physical analysis on a representative sample of the waste(s), which at a minimum contains all the information that must be known to treat, store, or dispose of the waste in accordance with pertinent sections of 40 *CFR* §§ 264 and 268.	Generation of RCRA-hazardous waste for storage, treatment or disposal—**applicable**.	40 *CFR* § 264.13(a)(1) 401 *KAR* 34:020 § 4

Table D.2. Action-Specific ARARs (Continued)

Action-Specific			
Action	**Requirement**	**Prerequisite**	**Citation**
Determinations for management of hazardous waste	Must determine each EPA Hazardous Waste Number (Waste Code) to determine the applicable treatment standards under 40 *CFR* § 268.40 *et. seq*. NOTE: This determination may be made concurrently with the hazardous waste determination required in 40 *CFR* § 262.11.	Generation of hazardous waste—**applicable**.	40 *CFR* § 268.9(a) 401 *KAR* 37:010 § 8
	Must determine the underlying hazardous constituents [as defined in 40 *CFR* § 268.2(i)] in the characteristic waste.	Generation of RCRA characteristic hazardous waste (and is not D001 non-wastewaters treated by CMBST, RORGS, or POLYM of Section 268.42 Table 1) for storage, treatment or disposal—**applicable**.	40 *CFR* § 268.9(a) 401 *KAR* 37:010 § 8
	Must determine if the hazardous waste meets the treatment standards in 40 *CFR* §§ 268.40, 268.45, or 268.49 by testing in accordance with prescribed methods or use of generator knowledge of waste. NOTE: This determination can be made concurrently with the hazardous waste determination required in 40 *CFR* § 262.11.	Generation of hazardous waste—**applicable**.	40 *CFR* § 268.7(a) 401 *KAR* 37:020 § 7
Characterization of LLW	Shall be characterized using direct or indirect methods and the characterization documented in sufficient detail to ensure safe management and compliance with the WAC of the receiving facility.	Generation of LLW for storage and disposal at a DOE facility—**TBC**.	DOE M 435.1-1(IV)(I)
	Characterization data shall, at a minimum, include the following information relevant to the management of the waste: • physical and chemical characteristics; • volume, including the waste and any stabilization or absorbent media; • weight of the container and contents; • identities, activities, and concentration of major radionuclides;		DOE M 435.1-1(IV)(I)(2)

Table D.2. Action-Specific ARARs (Continued)

Action-Specific			
Action	**Requirement**	**Prerequisite**	**Citation**
Characterization of LLW (Continued)	• characterization date; • generating source; and • any other information that may be needed to prepare and maintain the disposal facility performance assessment, or demonstrate compliance with performance objectives.		
Temporary on-site storage of hazardous waste in containers	A generator may accumulate hazardous waste at the facility provided that	Accumulation of RCRA hazardous waste on-site as defined in 40 *CFR* § 260.10—**applicable**.	40 *CFR* § 262.34(a) 401 *KAR* 32:030 § 5
	• waste is placed in containers that comply with 40 *CFR* § 265.171-173;		40 *CFR* § 262.34(a)(1) (i) 401 *KAR* 32:030 § 5
	• the date upon which accumulation begins is clearly marked and visible for inspection on each container;		40 *CFR* § 262.34(a)(2) 401 *KAR* 32:030 § 5
	• container is marked with the words "hazardous waste."	Accumulation of RCRA hazardous waste on-site as defined in 40 *CFR* § 260.10—**applicable**.	40 *CFR* § 262.34(a)(3) 401 *KAR* 32:030 § 5
Use and management of containers holding hazardous waste	If container is not in good condition or if it begins to leak, must transfer waste into container in good condition.	Storage of RCRA hazardous waste in containers—**applicable**.	40 *CFR* § 265.171 401 *KAR* 35:180 § 2
	Use container made or lined with materials compatible with waste to be stored so that the ability of the container is not impaired.		40 *CFR* § 265.172 401 *KAR* 35:180 § 3
	Keep containers closed during storage, except to add/remove waste.		40 *CFR* § 265.173(a) 401 *KAR* 35:180 § 4
	Open, handle and store containers in a manner that will not cause containers to rupture or leak.		40 *CFR* § 265.173(b) 401 *KAR* 35:180 § 4
Storage of hazardous waste in container area	Area must have a containment system designed and operated in accordance with 40 *CFR* § 264.175(b).	Storage of RCRA hazardous waste in containers with free liquids—**relevant and appropriate**.	40 *CFR* § 264.175(a) 401 *KAR* 34:180 § 6
	Area must be sloped or otherwise designed and operated to drain liquid from precipitation, or Containers must be elevated or otherwise protected from contact with accumulated liquid.	Storage of RCRA hazardous waste in containers that do not contain free liquids (other than F020, F021, F022, F023, F026, and F027)—**relevant and appropriate**.	40 *CFR* § 264.175(c) 401 *KAR* 34:180 § 6

Table D.2. Action-Specific ARARs (Continued)

Action-Specific			
Action	**Requirement**	**Prerequisite**	**Citation**
Storage of PCB waste and/or PCB/radioactive waste in a RCRA-regulated container storage area	Does not have to meet storage unit requirements in 40 *CFR* § 761.65(b)(1) provided the unit:	Storage of PCBs and PCB items at concentrations ≥ 50 ppm designated for disposal—**applicable**.	40 *CFR* § 761.65(b)(2)
	• is permitted by EPA under RCRA § 3004 to manage hazardous waste in containers and spills of PCBs cleaned up in accordance with Subpart G of 40 *CFR* § 761; or		40 *CFR* § 761.65(b)(2)(i)
	• qualifies for interim status under RCRA § 3005 to manage hazardous waste in containers and spills of PCBs cleaned up in accordance with Subpart G of 40 *CFR* § 761; or		40 *CFR* § 761.65(b)(2)(ii)
	• is permitted by an authorized state under RCRA § 3006 to manage hazardous waste in containers and spills of PCBs cleaned up in accordance with Subpart G of 40 *CFR* § 761.		40 *CFR* § 761.65(b)(2)(iii)
	NOTE: For purpose of this exclusion, CERCLA remediation waste, which is also considered PCB waste, can be stored on-site provided the area meets all of the identified RCRA container storage ARARs and spills of PCBs cleaned up in accordance with Subpart G of 40 *CFR* § 761.		
Storage of PCB waste and/or PCB/radioactive waste in non-RCRA regulated unit	Except as provided in 40 *CFR* §§ 761.65 (b)(2), (c)(1), (c)(7), (c)(9), and (c)(10), after July 1, 1978, owners or operators of any facilities used for the storage of PCBs and PCB Items designated for disposal shall comply with the storage unit requirements in 40 *CFR* § 761.65(b)(1).	Storage of PCBs and PCB items at concentrations ≥ 50 ppm designated for disposal—**applicable**.	40 *CFR* § 761.65(b)

Table D.2. Action-Specific ARARs (Continued)

Action-Specific			
Action	**Requirement**	**Prerequisite**	**Citation**
Storage of PCB waste and/or PCB/radioactive waste in non-RCRA regulated unit (Continued)	Storage facility shall meet the following criteria: • Adequate roof and walls to prevent rainwater from reaching stored PCBs and PCB items;		40 *CFR* § 761.65(b)(1) 40 *CFR* § 761.65(b)(1)(i)
	• Adequate floor that has continuous curbing with a minimum 6-inch high curb. Floor and curb must provide a containment volume equal to at least two times the internal volume of the largest PCB article or container or 25% of the internal volume of all articles or containers stored there, whichever is greater. NOTE: 6-inch minimum curbing not required for area storing PCB/radioactive waste;		40 *CFR* § 761.65(b)(1)(ii)
	• No drain valves, floor drains, expansion joints, sewer lines, or other openings that would permit liquids to flow from curbed area;		40 *CFR* § 761.65(b)(1)(iii)
	• Floors and curbing constructed of Portland cement, concrete, or a continuous, smooth, non-porous surface that prevents or minimizes penetration of PCBs; and		40 *CFR* § 761.65(b)(1)(iv)
	• Not located at a site that is below the 100-year flood water elevation.		40 *CFR* § 761.65(b)(1)(v)
	Storage area must be properly marked as required by 40 *CFR* § 761.40(a)(10).		40 *CFR* § 761.65(c)(3)
Temporary storage of PCB waste (e.g., PPE, rags) in a container(s)	Container(s) shall be marked as illustrated in 40 *CFR* § 761.45(a).	Storage of PCBs and PCB items at concentrations ≥ 50 ppm in containers for disposal—**applicable**.	40 *CFR* § 761.40(a)(1)
	Storage area must be properly marked as required by 40 *CFR* § 761.40(a)(10).		40 *CFR* § 761.65(c)(3)
	Any leaking PCB Items and their contents shall be transferred immediately to a properly marked nonleaking container(s).		40 *CFR* § 761.65(c)(5)
	Container(s) shall be in accordance with requirements set forth in DOT HMR at 49 *CFR* §§ 171-180.		40 *CFR* § 761.65(c)(6)

Table D.2. Action-Specific ARARs (Continued)

Action-Specific			
Action	**Requirement**	**Prerequisite**	**Citation**
Storage of PCB/radioactive waste in containers	For liquid wastes, containers must be nonleaking.	Storage of PCB/radioactive waste in containers other than those meeting DOT HMR performance standards— **applicable**.	40 *CFR* § 761.65(c)(6)(i)(A)
	For both liquid and nonliquid wastes, containers must meet all substantive requirements pertaining to nuclear criticality safety. Acceptable container materials include polyethylene and stainless steel provided that the container material is chemically compatible with the waste being stored. Other containers may be used if the use of such containers is protective of health and the environment as well as public health and safety.	Storage of PCB/radioactive waste in containers other than those meeting DOT HMR performance standards—**applicable**.	40 *CFR* § 761.65(c)(6)(i)(C)
Staging of LLW	Shall be for the purpose of the accumulation of such quantities of wastes necessary to facilitate transportation, treatment, and disposal.	Staging of LLW at a DOE facility—**TBC**.	DOE M 435.1-1 (IV)(N)(7)
Temporary storage of LLW	Shall not be readily capable of detonation, explosive decomposition, reaction at anticipated pressures and temperatures, or explosive reaction with water.	Temporary storage of LLW at a DOE facility—**TBC**.	DOE M 435.1-1 (IV)(N)(1)
	Shall be stored in a location and manner that protects the integrity of waste for the expected time of storage.		DOE M 435.1-1 (IV)(N)(3)
	Shall be managed to identify and segregate LLW from mixed waste.	Temporary storage of LLW at a DOE facility—**TBC**.	DOE M 435.1-1 (IV)(N)(6)
Packaging of LLW for storage	Shall be packaged in a manner that provides containment and protection for the duration of the anticipated storage period and until disposal is achieved or until the waste has been removed from the container.	Storage of LLW in containers at a DOE facility—**TBC**.	DOE M 435.1-1(IV)(L)(1)(a)
	Vents or other measures shall be provided if the potential exists for pressurizing or generating flammable or explosive concentrations of gases within the waste container.		DOE M 435.1-1(IV)(L)(1)(b)
	Containers shall be marked such that their contents can be identified.		DOE M 435.1-1(IV)(L)(1)(c)

Table D.2. Action-Specific ARARs (Continued)

Action-Specific			
Action	**Requirement**	**Prerequisite**	**Citation**
Packaging of LLW for off-site disposal	Waste shall not be packaged for disposal in a cardboard or fiberboard box.	Packaging of LLW for off-site shipment of LLW to a commercial NRC or Agreement State licensed disposal facility—**relevant and appropriate**.	10 *CFR* § 61.56 902 *KAR* 100:021 § 7 (1)(b)
	Liquid waste shall be solidified or packaged in sufficient absorbent material to absorb twice the volume of the liquid.		10 *CFR* § 61.56 902 *KAR* 100:021 § 7 (1)(c)
	Solid waste containing liquid shall contain as little freestanding and noncorrosive liquid as is reasonably achievable. The liquid shall not exceed one (1) percent of the volume.	Preparation of solid LLW containing liquid for off-site shipment of LLW to a commercial NRC or Agreement State licensed disposal facility—**relevant and appropriate**.	10 *CFR* § 61.56 902 *KAR* 100:021 § 7 (1)(d)
	Waste shall not be readily capable of • Detonation; • Explosive decomposition or reaction at normal pressures and temperatures; or • Explosive reaction with water.	Packaging of LLW for off-site shipment of LLW to a commercial NRC or Agreement State licensed disposal facility—**relevant and appropriate**.	10 *CFR* § 61.56 902 *KAR* 100:021 § 7 (1)(e)
	Waste shall not contain, or be capable of generating, quantities of toxic gases, vapors, or fumes harmful to a person transporting, handling, or disposing of the waste.	Packaging of LLW for off-site shipment of LLW to a commercial NRC or Agreement State licensed disposal facility—**relevant and appropriate**.	10 *CFR* § 61.56 902 *KAR* 100:021 § 7 (1)(f)
	Waste shall not be pyrophoric.	Packaging of pyrophoric LLW for off-site shipment of LLW to a commercial NRC or Agreement State licensed disposal facility—**relevant and appropriate**.	10 *CFR* § 61.56 902 *KAR* 100:021 § 7 (1)(g)
	Notwithstanding the provisions in 10 *CFR* § 61.56(a) (2) and (3), liquid wastes, or wastes containing liquid, must be converted into a form that contains as little free standing and noncorrosive liquid as is reasonably achievable, but in no case shall the liquid exceed 1 percent of the volume of the waste when the waste is in a disposal container designed to ensure stability, or 0.5 percent of the volume of the waste for waste processed to a stable form.	Preparation of LLW for offsite disposal of the waste container at a commercial NRC or Agreement State licensed disposal facility—**relevant and appropriate**.	10 *CFR* § 61.56(b)(2)

Table D.2. Action-Specific ARARs (Continued)

Action-Specific			
Action	**Requirement**	**Prerequisite**	**Citation**
Packaging of LLW for off-site disposal (Continued)	Void spaces within the waste and between the waste and its package shall be reduced to the extent practical.	Preparation of LLW for offsite disposal of the waste container at a commercial NRC or Agreement State licensed disposal facility—**relevant and appropriate**.	10 *CFR* § 61.56(b)(3)
Release of property with residual radioactive material	Residual Radioactive Material. Property potentially containing residual radioactive material must not be cleared from DOE control unless either: A. The property is demonstrated not to contain residual radioactive material based on process and historical knowledge, radiological monitoring or surveys, or a combination of these; or B. The property is evaluated and appropriately monitored or surveyed to determine:	Generation of DOE materials and equipment with residual radioactive contamination—**TBC**.	DOE O 458.1 § 4.k(3)
	1. The types and quantities of residual radioactive material within the property; 2. The quantities of removable and total residual radioactive material on property surfaces (including residual radioactive material present on and under any coating); 3. That for property with potentially contaminated surfaces that are difficult to access for radiological monitoring or surveys, an evaluation of residual radioactive material on such surfaces is performed which is: a. Based on process and historical knowledge meeting the requirements of paragraph 4.k.(5) of this Order and monitoring and or surveys, to the extent feasible and b. Sufficient to demonstrate that applicable specific or pre-approved DOE Authorized Limits will not be exceeded; and 4. That any residual radioactive material within or on the property is in compliance with applicable specific or pre-approved DOE Authorized Limits.	Generation of DOE materials and equipment with residual radioactive contamination—**TBC**.	DOE O 458.1 § 4.k(3)

Table D.2. Action-Specific ARARs (Continued)

Action-Specific			
Action	**Requirement**	**Prerequisite**	**Citation**
Disposal of bulk PCB remediation waste off-site (self-implementing)	May be sent off-site for decontamination or disposal provided the waste either is dewatered on-site or transported off-site in containers meeting the requirements of DOT HMR at 49 *CFR* Parts 171-180.	Generation of bulk PCB remediation waste (as defined in 40 *CFR* § 761.3) for off-site disposal—**relevant and appropriate**.	40 *CFR* § 761.61(a)(5)(i)(B)
	Must provide written notice including the quantity to be shipped and highest concentration of PCBs [using extraction EPA Method 3500B/3540C or Method 3500B/3550B followed by chemical analysis using Method 8082 in SW 846 or methods validated under 40 *CFR* § 761.320-26 (Subpart Q)] before the first shipment of waste, to each off-site facility where the waste is destined for an area not subject to a TSCA PCB Disposal Approval.	Bulk PCB remediation waste (as defined in 40 *CFR* § 761.3) destined for an off-site facility not subject to a TSCA PCB Disposal Approval—**relevant and appropriate**.	40 *CFR* § 761.61(a)(5)(i)(B)(2)*(iv)*
	Shall be disposed of in accordance with the provisions for cleanup wastes at 40 *CFR* § 761.61(a)(5)(v)(A).	Off-site disposal of dewatered bulk PCB remediation waste with a PCB concentration < 50 ppm—**relevant and appropriate**.	40 *CFR* § 761.61(a)(5)(i)(B)(2)*(ii)*
	Shall be disposed of • in a hazardous waste landfill permitted by EPA under § 3004 of RCRA; • in a hazardous waste landfill permitted by a State authorized under § 3006 of RCRA; or • in a PCB disposal facility approved under 40 *CFR* § 761.60.	Off-site disposal of dewatered bulk PCB remediation waste with a PCB concentration ≥ 50 ppm—**relevant and appropriate**.	40 *CFR* § 761.61(a)(5)(i)(B)(2)*(iii)*
Disposal of liquid PCB remediation waste (self-implementing)	Shall either • decontaminate the waste to the levels specified in 40 *CFR* § 761.79(b)(1) or (2); or	Liquid PCB remediation waste (as defined in 40 *CFR* § 761.3)—**applicable**.	40 *CFR* § 761.61(a)(5)(iv)(A)
	• dispose of the waste in accordance with the performance-based requirements of 40 *CFR* § 761.61(b) or in accordance with a risk-based approval under 40 *CFR* § 761.61(c).		40 *CFR* § 761.61(a)(5)(iv)(B)

Table D.2. Action-Specific ARARs (Continued)

Action-Specific			
Action	**Requirement**	**Prerequisite**	**Citation**
Disposal of PCB cleanup wastes (e.g., PPE, rags, non-liquid cleaning materials) (self-implementing)	Shall be either decontaminated in accordance with 40 *CFR* § 761.79(b) or (c), or disposed of in one of the following facilities: • a facility permitted, licensed or registered by a State to manage municipal solid waste under 40 *CFR* § 258; • a facility permitted, licensed, or registered by a State to manage non-municipal non-hazardous waste subject to 40 CFR § 257.5 thru 257.30, as applicable; or • a hazardous waste landfill RCRA permitted by EPA under Section 3004 of RCRA, or a state authorized under Section 3006 of RCRA; or • in a PCB disposal facility approved under 40 *CFR* § 761; or NOTE: or otherwise authorized under CERCLA	Generation of non-liquid cleaning materials at any PCB concentration resulting from the cleanup of PCB remediation waste—**applicable**.	40 *CFR* § 761.61(a)(5)(v)(A)
Performance-based disposal of PCB remediation waste	May dispose by one of the following methods • in a high-temperature incinerator under 40 *CFR* § 761.70(b); • by an alternate disposal method under 40 *CFR* § 761.60(e); • in a chemical waste landfill under 40 *CFR* § 761.75; in a facility under 40 *CFR* § 761.77; or	Disposal of non-liquid PCB remediation waste (as defined in 40 *CFR* § 761.3)—**applicable**.	40 *CFR* § 761.61(b)(2) 40 *CFR* § 761.61(b)(2)(i)
	• through decontamination in accordance with 40 *CFR* § 761.79.		40 *CFR* § 761.61(b)(2) (ii)
	Shall be disposed according to 40 *CFR* § 761.60(a) or (e), or decontaminate in accordance with 40 *CFR* § 761.79.	Disposal of liquid PCB remediation waste—**applicable**.	40 *CFR* § 761.61(b)(1)

Table D.2. Action-Specific ARARs (Continued)

Action-Specific			
Action	**Requirement**	**Prerequisite**	**Citation**
Disposal of LLW	LLW shall be certified as meeting waste acceptance requirements before it is transferred to the receiving facility.	Disposal of LLW at a DOE facility—**TBC**.	DOE M 435.1-1(IV)(J)(2)
Transportation of RCRA hazardous waste off-site	Must comply with the generator requirements of 40 *CFR* § 262.20–23 for manifesting, Sect. 262.30 for packaging, Sect. 262.31 for labeling, Sect. 262.32 for marking, Sect. 262.33 for placarding, Sect. 262.40, 262.41(a) for record keeping requirements, and Sect. 262.12 to obtain EPA ID number.	Preparation and initiation of shipment of hazardous waste off-site—**applicable**.	40 *CFR* § 262.10(h) 401 *KAR* 32:010 § 1
Transportation of PCB wastes off-site	Must comply with the manifesting provisions at 40 *CFR* § 761.207 through 218.	Relinquishment of control over PCB wastes by transporting, or offering for transport—**applicable**.	40 *CFR* § 761.207(a)
Determination of radionuclide concentration	The concentration of a radionuclide may be determined by an indirect method, such as use of a scaling factor which relates the inferred concentration of one (1) radionuclide to another that is measured or radionuclide material accountability if there is reasonable assurance that an indirect method may be correlated with an actual measurement. The concentration of a radionuclide may be averaged over the volume or weight of the waste if the units are expressed as nanocuries per gram.	Preparation for off-site shipment of LLW to a commercial NRC or Agreement State licensed disposal facility—**relevant and appropriate**.	10 *CFR* § 61.55 (a)(8) 902 *KAR* 100:021 § 6(8)(a) and (b)
Labeling of LLW packages	Each package of waste shall be clearly labeled to identify if it is Class A, Class B, or Class C waste, in accordance with 10 *CFR* § 61.55 or Agreement State waste classification requirements.	Preparation for off-site shipment of LLW to a commercial NRC or Agreement State licensed disposal facility—**relevant and appropriate**.	10 *CFR* § 61.57 902 *KAR* 100:021 § 8
Transportation of radioactive waste	Shall be packaged and transported in accordance with DOE Order 460.1B and DOE Order 460.2.	Preparation of shipments of radioactive waste—**TBC**.	DOE M 435.1-(I)(1)(E)(11)
Transportation of LLW	To the extent practicable, the volume of the waste and the number of the shipments shall be minimized.	Preparation of shipments of LLW—**TBC**.	DOE M 435.1-1(IV)(L)(2)
Transportation of hazardous materials	Shall be subject to and must comply with all applicable provisions of the HMR at 49 *CFR* §§ 171–180 related to marking, labeling, placarding, packaging, emergency response, etc.	Any person who, under contract with a department or agency of the federal government, transports "in commerce," or causes to be transported or shipped, a hazardous material—**applicable**.	49 *CFR* § 171.1(c)

Table D.2. Action-Specific ARARs (Continued)

Action-Specific			
Action	**Requirement**	**Prerequisite**	**Citation**
Transportation of hazardous materials off-site	Off-site hazardous materials packaging and transfers shall comply with 49 *CFR* Parts 171–174, 177, and 178 and applicable tribal, State, and local regulations not otherwise preempted by DOT and special requirements for Radioactive Material Packaging.	Preparation of off-site transfers of LLW—**TBC**.	DOE O 460.1B(4)(a)