



Department of Energy

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January 10, 2022

Mr. Brian Begley
Federal Facility Agreement Manager
Division of Waste Management
Kentucky Department for Environmental Protection
300 Sower Boulevard, 2nd Floor
Frankfort, Kentucky 40601

PPPO-02-10018692-22B

Ms. April Webb
Division of Waste Management
Kentucky Department for Environmental Protection
300 Sower Boulevard, 2nd Floor
Frankfort, Kentucky 40601

Mr. Victor Weeks
Federal Facility Agreement Manager
U.S. Environmental Protection Agency, Region 4
61 Forsyth Street
Atlanta, Georgia 30303

Dear Mr. Begley, Ms. Webb, and Mr. Weeks:

SITE EVALUATION REPORT [INTEGRATED REMOVAL/REMEDIAL SITE EVALUATION AND SOLID WASTE MANAGEMENT UNIT ASSESSMENT REPORT] FOR SWMU 574, C-709-A ACID NEUTRALIZATION VAULT, PADUCAH GASEOUS DIFFUSION PLANT, PADUCAH, KENTUCKY, DOE/LX/07-2477&D1, HAZARDOUS WASTE MANAGEMENT FACILITY PERMIT NUMBER KY8-890-008-982, AGENCY INTEREST NUMBER 3059

Reference: Letter from J. Woodard to A. Webb, "Notification of New Solid Waste Management Unit 574 at the U.S. Department of Energy Paducah Site Under Hazardous Waste Management Facility Permit Number KY8-890-008-982, Agency Interest Number 3059," (PPPO-02-10017061-22B), dated October 13, 2021

Section IX [Site Evaluation(s)] of the Federal Facility Agreement (FFA) requires the U.S. Department of Energy (DOE) to conduct integrated Site Evaluations (SEs) that consist of the removal SE, remedial SE, and solid waste management unit (SWMU) assessment report. Per the FFA, the integrated SEs are to be documented in an SE report consistent with the format in Appendix D of the FFA. Furthermore, the SE report is intended to satisfy Permit Condition

IV.B.2, of the Hazardous Waste Management Facility Permit Number KY8-890-008-982 (Permit), issued by the Kentucky Department for Environmental Protection (KDEP) on February 21, 2020, which requires DOE to submit a SWMU assessment report for a newly identified SWMU or area of concern. In accordance with Section IX of the FFA and Section IV.B.2 of the Permit, DOE is submitting an SE report for SWMU 574, C-709-A Acid Neutralization Vault. Notification of SWMU 574 was provided to KDEP on October 13, 2021 (Reference).

If you have questions or require additional information, please contact Tracey Duncan at (270) 441-6862.

Sincerely,

**Jennifer R.
Woodard**

Jennifer Woodard
Paducah Site Lead
Portsmouth/Paducah Project Office

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Jennifer R. Woodard
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Enclosures:

1. Certification Page
2. *Site Evaluation Report [Integrated Removal/Remedial Site Evaluation and Solid Waste Management Unit Assessment Report] for SWMU 574, C-709-A Acid Neutralization Vault, Paducah Gaseous Diffusion Plant, Paducah, Kentucky, DOE/LX/07-2477&D1*

Administrative Record File—Administrative Record Reference

cc w/enclosures:

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CERTIFICATION

Document Identification: **Site Evaluation Report [Integrated Removal/Remedial Site Evaluation and Solid Waste Management Unit Assessment Report] for SWMU 574, C-709-A Acid Neutralization Vault, Paducah Gaseous Diffusion Plant, Paducah, Kentucky, DOE/LX/07-2477&D1, Hazardous Waste Management Facility Permit Number KY8-890-008-982, Agency Interest Number 3059, dated January 2022**

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

Four Rivers Nuclear Partnership, LLC

MYRNA REDFIELD
(Affiliate)

Digitally signed by MYRNA REDFIELD
(Affiliate)
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Myrna E. Redfield, Program Manager
Four Rivers Nuclear Partnership, LLC

Date Signed

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

U.S. Department of Energy

Jennifer R. Woodard

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Jennifer Woodard, Paducah Site Lead
Portsmouth/Paducah Project Office
U.S. Department of Energy

Date Signed

**DOE/LX/07-2477&D1
Primary Document**

**Site Evaluation Report
[Integrated Removal/Remedial Site Evaluation and
Solid Waste Management Unit Assessment Report]
for SWMU 574, C-709-A Acid Neutralization Vault,
Paducah Gaseous Diffusion Plant,
Paducah, Kentucky**



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**DOE/LX/07-2477&D1
Primary Document**

**Site Evaluation Report
[Integrated Removal/Remedial Site Evaluation and
Solid Waste Management Unit Assessment Report]
for SWMU 574, C-709-A Acid Neutralization Vault,
Paducah Gaseous Diffusion Plant,
Paducah, Kentucky**

Date Issued—January 2022

U.S. DEPARTMENT OF ENERGY
Office of Environmental Management

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

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ACRONYMS

AOC	area of concern
FFA	Federal Facility Agreement
KPDES	Kentucky Pollutant Discharge Elimination System
RCRA	Resource Conservation and Recovery Act
SE	site evaluation
SWMU	solid waste management unit
WWTU	wastewater treatment unit

1. SWMU/AOC NUMBER

574—C-709-A Acid Neutralization Vault

2. DATE OF ORIGINAL SAR

January 6, 2022

3. DATE OF SAR REVISIONS

N/A

4. REGULATORY STATUS

The area is being designated as a solid waste management unit (SWMU). In accordance with Section IX, Site Evaluations, of the Federal Facility Agreement (FFA), the U.S. Department of Energy (DOE) is required to conduct integrated site evaluations (SEs) that consist of the removal SE, remedial SE, and SWMU assessment report. The integrated SEs are to be documented in an SE report. This SE report is consistent with the FFA and the format described in Appendix D.

Based on process knowledge, engineering design, and operational history, the C-709-A Acid Neutralization Vault functioned as a wastewater treatment unit (WWTU) and received contaminated wastewater discharges from the sinks in the C-709 Plant Laboratory Annex. Based on treatment and/or storage of contaminated wastewater in the vault, the area is designated as a SWMU (i.e., SWMU 574). Additionally, based on potential contaminants in the vault, a Resource Conservation and Recovery Act (RCRA) Facility Investigation is necessary for the SWMU.

5. LOCATION

C-709-A is located in the central portion of the Paducah Site industrialized area, south of the C-709 Plant Laboratory Annex (see Figures 1 and 2).

6. APPROXIMATE DIMENSION OR CAPACITY

C-709-A consists of an outer vault (see Figures 3 and 4), which measures 11 ft 4 inches (length) × 16 ft 4 inches (width) × 9 ft 4 inches (depth), and contains a 360-gal treatment vessel that is 4 ft (diameter) × 4 ft (height) (see Figure 5).

7. FUNCTION

C-709-A was designed and used to store and/or treat wastewater discharges from routine laboratory operations associated with the C-709 Plant Laboratory Annex.

8. BRIEF HISTORY

C-709-A was designed by the United States Enrichment Corporation in 1996, with construction completed in 1998, to function as a WWTU for treatment of wastewater discharges associated with routine laboratory operations from laboratory sinks located in the C-709 Plant Laboratory Annex. After neutralization, the wastewater was then discharged to the C-615 Sanitary Sewer, which drains to the C-615 Sewage Treatment Plant with a final discharge to Kentucky Pollutant Discharge Elimination System (KPDES) Outfall 004. C-709-A was used to treat laboratory wastewater associated with routine laboratory operations until laboratory operations were discontinued in 2014. Since 2014, condensation water associated with

dehumidifiers used to support deactivation activities in C-709 has been discharged into the laboratory sinks where it is then treated via C-709-A prior to its discharge to the C-615 Sanitary Sewer, with a final discharge to KPDES Outfall 004.

9. PRESENT OPERATIONAL STATUS

Active

10. DATES OPERATED

1998 to Present

11. SITE/PROCESS DESCRIPTION

C-709-A consists of an outer vault, which measures approximately 660 ft³ and contains an internal 360-gal vessel measuring at approximately 50 ft³ (see Figure 5). The vessel is filled with limestone/marble chips, which are used to neutralize wastewater. Wastewater from the C-709 Plant Laboratory Annex laboratory sinks drain into the vessel where the wastewater is neutralized and then discharged into the C-615 Sanitary Sewer (i.e., SWMU 179). The C-615 Sanitary Sewer (i.e., SWMU 179) drains to the C-615 Sewage Treatment Plant (i.e., SWMU 38) where further treatment occurs. The C-615 Sewage Treatment Plant (i.e., SWMU 38) discharges to KPDES Outfall 004 and then to Bayou Creek (i.e., SWMU 65), where routine/permitted monitoring occurs.

12. WASTE DESCRIPTION

Wastewater from the C-709 Plant Laboratory Annex laboratory sinks that was treated at C-709-A contained residual and processed samples, acids, bases, salts, and trace amounts of organics associated with organic analysis, inorganic analysis, metal analysis, radiological analysis, and urine analysis related to process, environmental, and waste samples. Wastewaters were not known to contain polychlorinated biphenyls, oils, F- or U-coded waste, gross radiological constituents, or fissile constituents.

13. WASTE QUANTITY

The exact amount of waste associated with C-709-A is unknown; however, estimates can be determined based on the dimensions of the vessel and the vault. A worse case estimated waste volume associated with C-709-A is 710 ft³ (50 ft³ based on the dimensions of the vessel and 660 ft³ based on the dimensions of the outer vault).

14. SUMMARY OF ENVIRONMENTAL SAMPLING DATA

Very limited sampling data is located in the close vicinity of C-709-A and, of the available data, none is expected to be representative of any potential releases that may or may not have occurred at C-709-A. This historical environmental sampling data is available on PPPO Environmental Geographic Analytical Spatial Information System.

15. DESCRIPTION OF RELEASE AND MEDIA AFFECTED

GROUNDWATER:	None Known
SURFACE WATER:	None Known
SOIL:	None Known
ECOLOGY AFFECTED: (i.e., threatened/endangered species):	None Known
AIR:	None Known

No releases from C-709-A have been documented.

16. DOCUMENTATION OF NO RELEASE

N/A

17. IMPACT ON OR BY OTHER SWMU/AOC

C-709-A connects to the Plant Sanitary Sewer System (i.e., SWMU 179), which then empties into the C-615 Sewage Treatment Plant (i.e., SWMU 38), which then discharges to KPDES Outfall 004, and then finally discharges to Bayou Creek (i.e., SWMU 65).

18. PRELIMINARY REMEDIATION GOAL COMPARISON

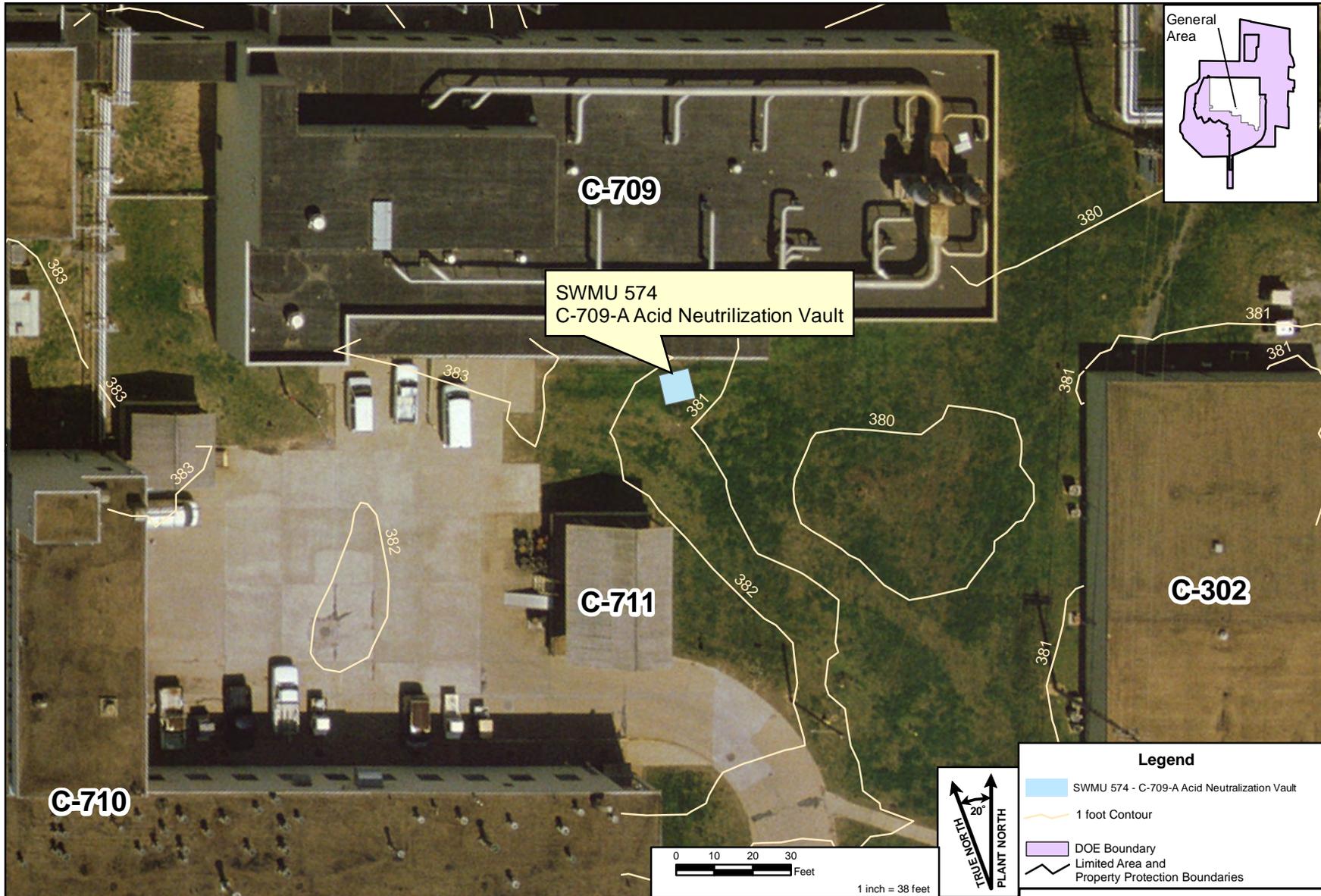
N/A

19. RCRA FACILITY INVESTIGATION NECESSARY

Yes.

20. OPERABLE UNIT ASSIGNMENT

Soils and Slabs Operable Unit



MAP SOURCE INFORMATION
 G:\GIS\ARCVIEWS\PROJECTS\SWMU_Assessment_Reports\C-709-A SWMU 574_20211111.mxd
 SWMU 574 -- GPS provided by FRNP Engineering based on field observation and engineering drawings.
 Contours -- G:\gis\lidar\Paducah_2009_Base_07.gdb\CONTOUR
 DOE Boundary - G:\GIS\PEGASIS.gdb\DOEBND; 229 Boundary - G:\GIS\PEGASIS.gdb\Security_229; Limited Area - G:\GIS\PEGASIS.gdb\limited_area
 Image -- G:\gis\lidar\SID_Mosaics\QuarterFoot_Mosaic.sid

Figure 1. SWMU 574—C-709-A Acid Neutralization Vault

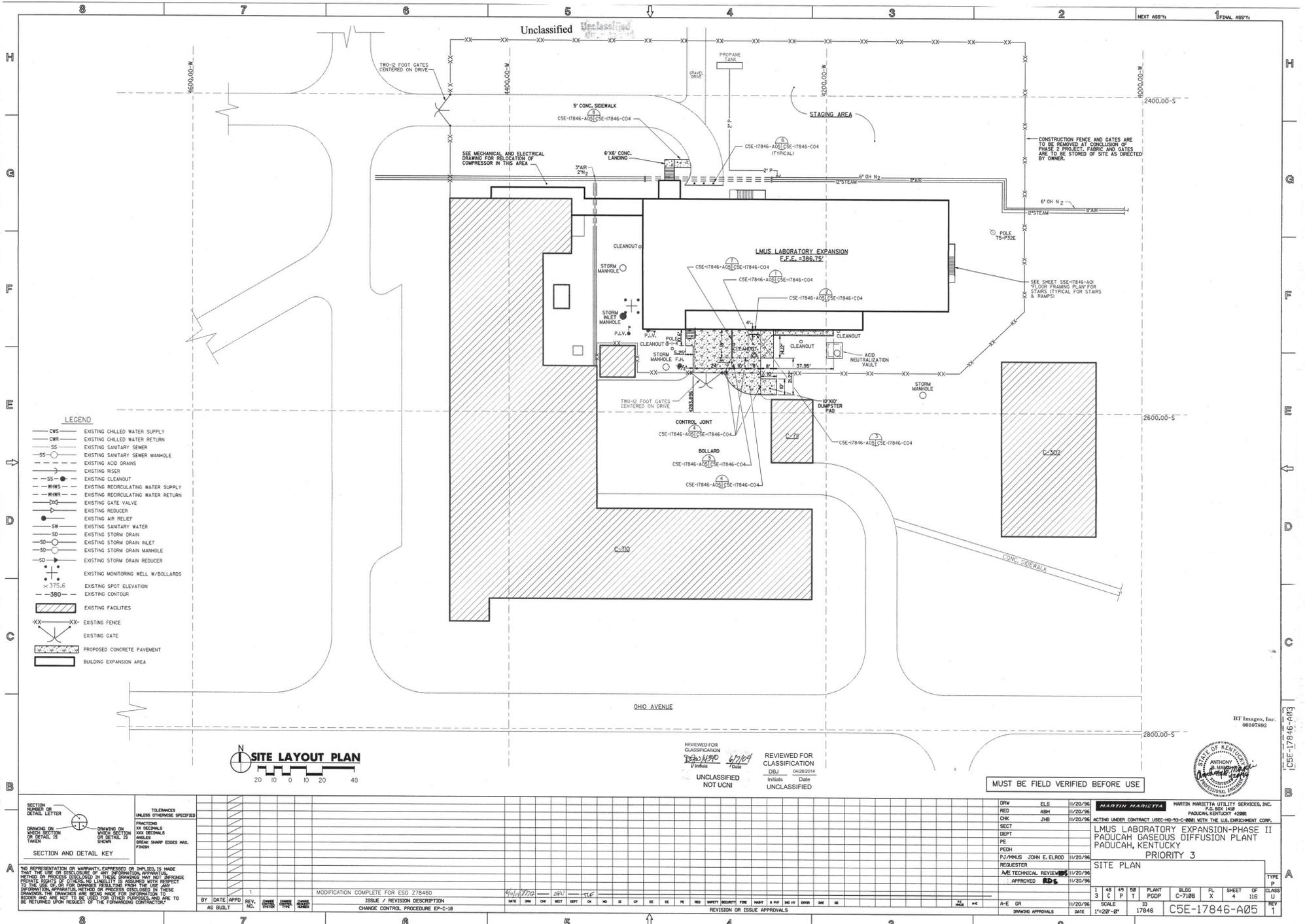


Figure 2. Engineering Drawing C5E-17846-A05



Figure 3. C-709-A Manhole and Isolation Valve Facing North towards C-709



Figure 4. C-709-A Acid Neutralization Vessel from Top of Manhole

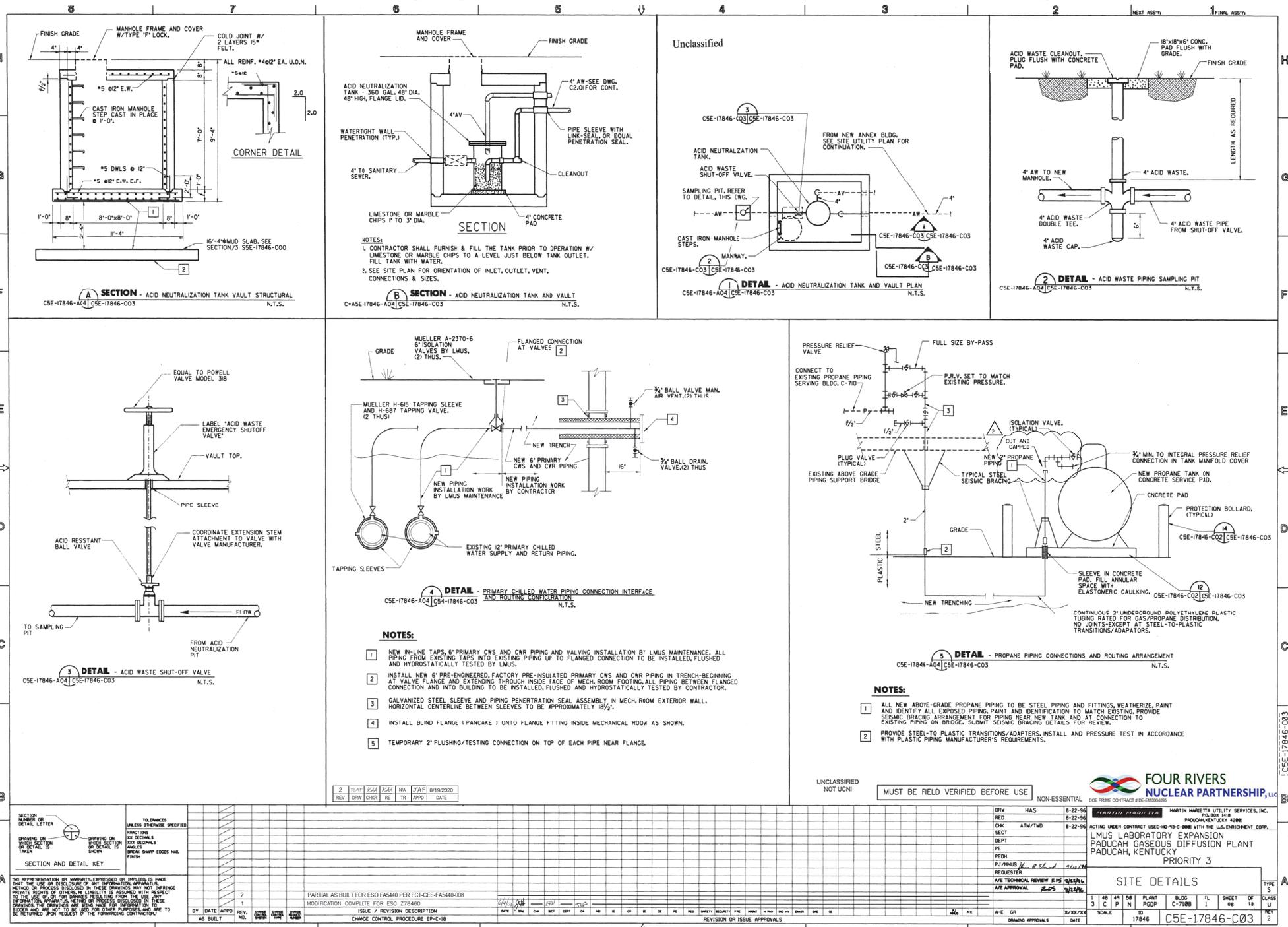


Figure 5. Engineering Drawing C5E-17846-C03

FOUR RIVERS NUCLEAR PARTNERSHIPS, LLC
 DOE PRIME CONTRACT # DE-EE000085

MARTIN MARETTA UTILITY SERVICES, INC.
 P.O. BOX 1418
 PADUCAH, KENTUCKY 42001
 ACTING UNDER CONTRACT USE-140-93-C-0001 WITH THE U.S. ENRICHMENT CORP.
LMUS LABORATORY EXPANSION
PADUCAH GASEOUS DIFFUSION PLANT
 PADUCAH, KENTUCKY
 PRIORITY 3

SITE DETAILS				TYPE 5	
1	48	48	58	PLANT	BLDG
3	C	P	N	PODP	C-710B
1	08	18	18	SHEET OF	CLASS
1	08	18	18	REV	2
SCALE				ID	REV
17846				C5E-17846-C03	

REV	DATE	BY	CHKD	APPD	DESCRIPTION
2	08/19/2020	XXX	KCA	NA	774F
1	08/19/2020	XXX	KCA	NA	774F

REV	DATE	BY	CHKD	APPD	DESCRIPTION
2	08/19/2020	XXX	KCA	NA	774F
1	08/19/2020	XXX	KCA	NA	774F

REV	DATE	BY	CHKD	APPD	DESCRIPTION
2	08/19/2020	XXX	KCA	NA	774F
1	08/19/2020	XXX	KCA	NA	774F

REV	DATE	BY	CHKD	APPD	DESCRIPTION
2	08/19/2020	XXX	KCA	NA	774F
1	08/19/2020	XXX	KCA	NA	774F

REV	DATE	BY	CHKD	APPD	DESCRIPTION
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1	08/19/2020	XXX	KCA	NA	774F

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1	08/19/2020	XXX	KCA	NA	774F

REV	DATE	BY	CHKD	APPD	DESCRIPTION
2	08/19/2020	XXX	KCA	NA	774F
1	08/19/2020	XXX	KCA	NA	774F