



Department of Energy

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FEB 18 2010

Mr. W. Turpin Ballard
U.S. Environmental Protection Agency, Region 4
Federal Facilities Branch
61 Forsyth Street
Atlanta, Georgia 30303

PPPO-02-359-10

Mr. Edward Winner, FFA Manager
Kentucky Department for Environmental Protection
Division of Waste Management
200 Fair Oaks Lane, 2nd Floor
Frankfort, Kentucky 40601

Dear Mr. Ballard and Mr. Winner:

TRANSMITTAL OF THE D1 REMOVAL NOTIFICATION FOR A REMOVAL ACTION AT C-747 CONTAMINATED BURIAL YARD AND C-748-B BURIAL AREA (SWMU 4) AT THE PADUCAH GASEOUS DIFFUSION PLANT, PADUCAH, KENTUCKY (DOE/LX/07-0334&D1)

Please find enclosed the certified D1 *Removal Notification for a Removal Action at C-747 Contaminated Burial Yard and C-748-B Burial Area (SWMU 4) at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky (DOE/LX/07-0334&D1)* for your review.

If you have any questions or require additional information, please contact Jennifer Woodard at (270) 441-6820.

Sincerely,

A handwritten signature in black ink, appearing to read "Reinhard Knerr", is written over a faint circular stamp.

Reinhard Knerr
Paducah Site Lead
Portsmouth/Paducah Project Office

Enclosures:

1. Certification Page
2. D1 RN for SWMU 4

cc w/enclosures:
AR File/Kevil

e-copy w/enclosures:

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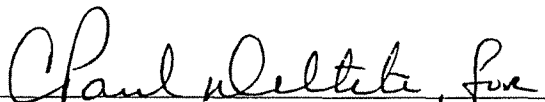
CERTIFICATION

Document Identification:

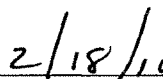
Transmittal of the Removal Notification for a Removal Action at the C-747 Contaminated Burial Yard and C-748-B Burial Area (SWMU 4) at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky DOE/LX/07-0334&D1

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons 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.

Paducah Remediation Services, LLC
Operator



Dennis Ferrigno, PM, Site Manager



Date Signed

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons 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 (DOE)
Owner



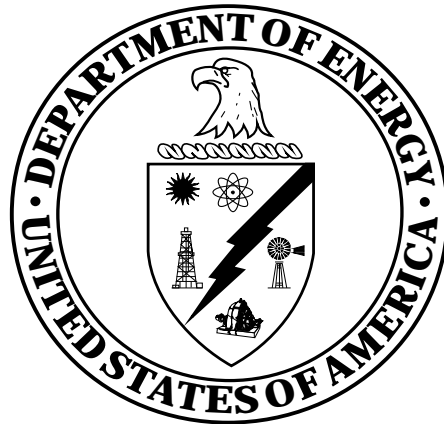
Reinhard Knerr, Paducah Site Lead
Portsmouth/Paducah Project Office



Date Signed

**DOE/LX/07-0334&D1
Primary Document**

**Removal Notification for a
Removal Action at the C-747 Contaminated Burial Yard
and C-748-B Burial Area (SWMU 4)
at the Paducah Gaseous Diffusion Plant,
Paducah, Kentucky**



CLEARED FOR PUBLIC RELEASE

**Removal Notification for a
Removal Action at the C-747 Contaminated Burial Yard
and C-748-B Burial Area (SWMU 4)
at the Paducah Gaseous Diffusion Plant,
Paducah, Kentucky**

Date Issued—February 2010

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

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

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ACRONYMS

AM	action memorandum
AR	Administrative Record
BGOU	Burial Grounds Operable Unit
bgs	below ground surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
<i>CFR</i>	<i>Code of Federal Regulation</i>
COC	contaminant of concern
DNAPL	dense nonaqueous-phase liquid
DOE	U.S. Department of Energy
EE/CA	Engineering Evaluation/Cost Analysis
ELCR	excess lifetime cancer risk
EPA	U.S. Environmental Protection Agency
FFA	Federal Facility Agreement
HI	hazard index
MCL	maximum contaminant level
NTCRA	non-time-critical removal action
PGDP	Paducah Gaseous Diffusion Plant
RAWP	removal action work plan
RGA	Regional Gravel Aquifer
RI	remedial investigation
RN	removal notification
RSE	removal site evaluation
SWMU	solid waste management unit
TCE	trichloroethene

1. INTRODUCTION

In accordance with Section X.B of the *Federal Facility Agreement for the Paducah Gaseous Diffusion Plant* (FFA) (EPA 1998), the U.S. Department of Energy (DOE) is hereby providing a written Removal Notification (RN) for Solid Waste Management Unit (SWMU) 4 of the Burial Grounds Operable Unit (BGOU) at the Paducah Gaseous Diffusion Plant (PGDP) as a non-time-critical removal action (NTCRA). This NTCRA is to address the threat to human health and the environment resulting from the release or potential release of contaminants of concern (COCs) from buried waste materials within the identified disposal cells and potential buried waste materials and COCs in soil outside the disposal cells, but within the administrative boundary of SWMU 4. This NTCRA will address known threats to human health and the environment and facilitate subsequent final remedial action for dense nonaqueous-phase liquid (DNAPL) sources expected to be in subsurface soils and the groundwater underlying SWMU 4. Any remaining threats following the NTCRA, including DNAPL sources, will be addressed as part of the final remedial action for SWMU 4 under the BGOU.

Section 104 of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) addresses the response to releases or threats of releases of hazardous substances through removal actions. Executive Order 12580, *Superfund Implementation*, delegates to DOE the response authorities for DOE facilities. As lead agency, DOE is authorized to conduct response measures, including removal actions, under CERCLA. A response under CERCLA is appropriate when (1) hazardous substances or contaminants are released or (2) there is a substantial threat of a release into the environment and a response is necessary to protect human health and the environment.

2. ADMINISTRATIVE RECORD FOR SWMU 4

Section X.B of the FFA requires that DOE RN include the removal site evaluation (RSE) or summary of the Administrative Record (AR) constituting an equivalent RSE. Included in this RN is a summary of existing information identified and contained in the AR, specifically the BGOU Remedial Investigation (RI) (DOE 2009), and is equivalent to information found in a RSE. The RI, this RN, and the ensuing Engineering Evaluation/Cost Analysis (EE/CA) and Action Memorandum (AM) will become part of the BGOU AR, which encompasses SWMU 4.

3. SWMU 4 BACKGROUND AND REMOVAL ACTION JUSTIFICATION

SWMU 4 consists of the C-747 Contaminated Burial Yard and C-748-B Burial Area covering an area of approximately 286,700 ft². The C-747 Burial Yard was in operation from 1951 to 1958 for the disposal of radiologically contaminated and uncontaminated debris originating from the C-410 uranium hexafluoride feed plant. It also may have received sludges designated for disposal in the C-404 Burial Ground; these may have included uranium-contaminated solid waste and technetium-99-contaminated magnesium fluoride. The C-748-B Burial Area, located on the west side of C-747, is identified as a Proposed Chemical Landfill Site in the 1973 Union Carbide document on waste disposal (Union Carbide 1973). Both the C-747 Burial Yard and the C-748-B Burial Area were covered with 2 to 3 ft of soil material and a 6-inch clay cap in 1982. Four subsurface buried waste cells are expected to exist within SWMU 4 based on site geophysical investigations conducted as part of the Waste Area Group 3 RI (DOE 2000).

Previous source-investigation work in and near SWMU 4 included soil and groundwater sampling, a geophysical survey, document research, and personnel interviews. This previous work indicates contamination in the surface soil (to 1 ft bgs), subsurface soil (below 1 ft bgs), buried waste materials, and groundwater. SWMU 4 also is a DNAPL source for the Upper Continental Recharge System and Regional Gravel Aquifer (RGA) groundwater.

The BGOU RI Appendix F presents human health risks calculated for SWMU 4 (DOE 2009). As stated in the RI, SWMU 4 presents risks to future on-site industrial and excavation workers with excess upper-bound lifetime risks for hazard index (HI) ($HI \geq 1$) and excess lifetime cancer risk (ELCR) ($ELCR \geq 1.0E-06$) from some contaminants, with a cumulative cancer risk in excess of $1.0E-04$. Additionally, fate and transport modeling was performed in the BGOU RI and determined that some constituents in surface and subsurface soil are expected to migrate to groundwater underlying SWMU 4.

The BGOU RI also includes a Screening-Level Ecological Risk Assessment for SWMU 4. Comparison of site characterization data against No Further Action screening levels determined that the SWMU contains metals and organic compounds (in surface soil) that are chemicals of potential ecological concern for risk to the environment.

Based on the conclusions of the BGOU RI, SWMU 4 has the potential to present risks to industrial and excavation workers in the absence of existing controls. Conditions at SWMU 4 meet the criteria for a removal action as stated in the National Contingency Plan, 40 *CFR* § 300.415 (b)(2)(i), (iii), (v), and (viii).

CERCLA hazardous substances [e.g., arsenic, trichloroethene (TCE), polychlorinated biphenyls, and radionuclides] in surface soil, subsurface soil, and buried waste material pose a threat to industrial workers and excavation workers should they be exposed to these contaminants. The BGOU RI (DOE 2009) presents human health hazard and risk calculated for SWMU 4. For current and future on-site industrial workers, the cumulative ELCR is within the U.S. Environmental Protection Agency (EPA) risk range (i.e., $1E-06$ to $1E-04$); however, cumulative ELCR for the future on-site excavation worker is greater than $1E-04$. The major contaminant driving the risk to the excavation worker is uranium. Additionally, TCE and its degradation products are found at high concentrations through the subsurface soil column and originate within the buried waste material. These contaminants continue to leach into the geologic layer underlying SWMU 4 and continue to pose a threat to RGA groundwater. The COCs driving the hazard associated with contaminant migration to groundwater are TCE, vinyl chloride, and *cis*-1,2 dichloroethene.

4. REMOVAL ACTION OBJECTIVES

The following Removal Action Objectives have been developed for this removal action and form the basis for identifying and evaluating appropriate response actions:

1. Prevent future contaminant migration from buried waste to the environment so that it does not present unacceptable direct exposure risks to future receptors or migration to groundwater above acceptable levels.
2. Prevent exposure from surface soil metals and radionuclides that would cause an unacceptable cumulative risk to future industrial workers.

3. Prevent exposure to subsurface soil metals, radionuclides, and semivolatile organic compounds within the SWMU boundary (to 16 ft bgs) that would cause an unacceptable cumulative risk to future excavation workers.
4. Prevent migration of metals, radionuclides, and volatile organic compounds in the top 16 ft of soil such that they will not contribute contamination to the RGA groundwater exceeding maximum contaminant levels (MCLs) or, in the absence of an MCL, a risk-based concentration.

5. REMOVAL ACTION PLANNING AND PATH FORWARD

The factors described in 40 *CFR* § 300.415 (b)(2)(i), (iii), (v), and (viii) were considered in determining whether a removal action is appropriate. Given the potential risk for possible industrial and excavation worker exposure to contamination associated with SWMU 4, combined with actual or potential contamination of drinking water supplies or the environment, DOE proposes to proceed with the process for implementing an NTCRA that is consistent with the final actions for PGDP and will contribute to the efficient performance of long-term remediation of PGDP. Consistent with the National Contingency Plan requirements for a NTCRA, a planning period of at least six months exists before on-site activities for SWMU 4 must be initiated.

The NTCRA will be supported by an EE/CA, AM, and Removal Action Work Plan (RAWP) as required by Section X.E of the FFA. DOE plans to submit a D1 EE/CA for regulatory review in February 2010. Upon review and approval by the regulatory agencies, it will be made available to the public for review and comment. Following the public comment period, an AM for SWMU 4 will be prepared and submitted for regulatory review. The AM will include the EE/CA, as an attachment, along with a summary of comments received during the public comment period. Upon regulatory approval of the AM, it will be finalized.

Following finalization of the AM, DOE will issue an RAWP for SWMU 4. After regulatory review and approval of the RAWP, DOE will initiate fieldwork activities as required by the FFA, contingent upon available funding. Upon completion of the activities, a removal completion letter will be submitted to EPA and Kentucky Department for Environmental Protection.

6. REFERENCES

DOE 2000. *Remedial Investigation Report for Waste Area Grouping 3 at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*, DOE/OR/07-1895/V1-V4&D1, U.S. Department of Energy, Paducah, KY, September.

DOE 2009. *Remedial Investigation Report for the Burial Grounds Operable Unit at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*, DOE/LX/07-0030&D2, U.S. Department of Energy, Paducah, KY, October.

EPA 1998. *Federal Facility Agreement for the Paducah Gaseous Diffusion Plant*, DOE/OR/07-1707, U.S. Environmental Protection Agency, Atlanta, GA, February.

Union Carbide 1973. *The Discard of Scrap Materials by Burial at the Paducah Gaseous Diffusion Plant*, Union Carbide Corporation, Paducah, KY, October.