Department of Energy

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

NOV 13 2009

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

PPPO-02-160-10

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 ACTION MEMORANDUM ADDENDUM FOR THE C-410 INFRASTRUCTURE REMOVAL AT THE PADUCAH GASEOUS DIFFUSION PLANT, PADUCAH, KENTUCKY (DOE/LX/07-0273&D2)

Please find enclosed the certified D2 *Action Memorandum Addendum for the C-410 Infrastructure Removal at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*, (DOE/LX/07-0273&D2) for your review. This document incorporates comments from discussions held among U.S. Department of Energy (DOE), the Commonwealth of Kentucky (Kentucky), and U.S. Environmental Protection Agency (EPA) by teleconference on October 1, October 7, and October 14, 2009. These discussions met the intent of Paragraph XX.G.3 of the Paducah Site Federal Facility Agreement (FFA), which allows DOE to respond informally to comments from EPA and Kentucky and does not require a written response. Accordingly, this submittal does not include a comment response summary. A red-lined version of the document is included which also incorporates minor editing changes, for example, identifying acronyms, updating the date of the document, etc.

Because this project is funded by the American Recovery and Reinvestment Act, it is important that your review and approval of this document be completed within the agreed upon timeframe. This will ensure that our project schedules will not be jeopardized.

If you have any questions or require additional information, please contact Rob Seifert at (270) 441-6823.

Sincerely,

William E. Murphie
Manager
Portsmouth/Paducah Project Office

Enclosures:
1. Certification Page
2. D2 AM Addendum for C-410
3. Red-lined D2 AM Addendum for C-410

cc w/enclosures:
AR File/Kevil
DMC/Kevil
EIC/PAD

e-copy w/enclosures:
ballard.turpin@epa.gov, EPA/Atlanta
brad.montgomery@prs-llc.net, PRS/Kevil
brandy.mitchell@prs-llc.net, PRS/Kevil
brian.begley@ky.gov, KDEP/Frankfort
christa.turner@ky.gov, KDEP/Frankfort
dennis.ferrigno@prs-llc.net, PRS/Kevil
donald.ulrich@prs-llc.net, PRS/Kevil
edward.winner@ky.gov, KDEP/Frankfort
elizabeth.wyatt@prs-llc.net, PRS/Kevil
jana.white@prs-llc.net, PRS/Kevil
janet.miller@lex.doe.gov, PRC/PAD
john.morgan@prs-llc.net, PRS/Kevil
mike.spry@prs-llc.net, PRS/Kevil
myrna.redfield@prs-llc.net, PRS/Kevil
pamela.dawson@lex.doe.gov, PRC/PAD
patricia.goddard@prs-llc.net, PRS/Kevil
paul.bengal@prs-llc.net, PRS/Kevil
paul.deltete@prs-llc.net, PRS/Kevil
pete.coutts@prs-llc.net, PRS/Kevil
rachel.blumenfeld@lex.doe.gov, PPPO/LEX
reinhard.knerr@lex.doe.gov, PPPO/PAD
rob.seifert@lex.doe.gov, PPPO/PAD
sidney.dumont@lex.doe.gov, PTC/PAD
tufts.jennifer@epa.gov, EPA/Atlanta
william.murphie@lex.doe.gov, PPPO/LEX

CERTIFICATION

Document Identification: ***Action Memorandum Addendum for the C-410 Infrastructure Removal at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky,* DOE/LX/07-0273&D2**

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
Paducah Remediation Services, LLC

11-09-09
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

William E. Murphie
U.S. Department of Energy

11-10-09
Date Signed

DOE/LX/07-0273&D2
Primary Document

Action Memorandum Addendum for the C-410 Infrastructure Removal at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky

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Action Memorandum Addendum for the C-410 Infrastructure Removal at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky
DOE/LX/07-0273&D2
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Subject: Change in Scope of Removal Action
Action Memorandum

Date: November 2009

1. PURPOSE

This Action Memorandum Addendum (Addendum) was prepared in accordance with U.S. Environmental Protection Agency's (EPA's) *Superfund Removal Procedures Action Memorandum Guidance,* EPA/540/P-90/004, under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA). The purpose of this Addendum is to document a change in scope of the removal action that was documented in the CERCLA decision document, *Action Memorandum for the C-410 Infrastructure Removal at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*, DOE/OR/07-2002&D1/R1, which was signed on August 2, 2002 (DOE 2002a; See Attachment 1). The ongoing non-time-critical removal action (NTCRA) is being performed by the U.S. Department of Energy (DOE) pursuant to DOE's removal authority under Executive Order 12580 and in accordance with the Federal Facility Agreement (FFA) for the Paducah Gaseous Diffusion Plant (PGDP) Section X.E, Non-Time-Critical Removal Actions and the National Contingency Plan regulations.

This Addendum was prepared to document the following decisions:

1) To expand the scope of the existing NTCRA to include facility structure demolition to the slabs and disposition of demolition debris, and

2) To allow the non-process systems to remain in place and to remove these systems at the same time the building is demolished using heavy equipment such as excavators with shears.

These changes in the method of accomplishment are safer and more efficient than manually removing these systems. The systems left in place may contain small quantities of hazardous substances, but the levels are not expected to result in the building debris being characterized as a Resource Conservation and Recovery Act (RCRA) hazardous or Toxic Substances Control Act (TSCA)-regulated waste. Small volumes of hazardous waste, such as paint chips or vacuum dust, may be generated during building demolition. These waste streams will be segregated from the building debris and managed in accordance with applicable regulations. Most of the resulting waste from building demolition is expected to be low-level radiologically contaminated waste and/or polychlorinated biphenyl (PCB) bulk product waste. Any material in the building that can be reused or recycled will be removed prior to demolition and reused or recycled according to applicable regulations and requirements, if economically practicable.

2. SITE CONDITIONS AND BACKGROUND

The C-410 Feed Plant Complex produced uranium hexafluoride from uranium oxides for enrichment at PGDP and is no longer used. It is located near the center of the industrialized area of PGDP, inside the security fence. Figure 1 shows its location within PGDP, as well as the location of individual structures that comprise the complex. The C-410 Feed Plant Complex received uranium oxide (UO_3) and converted it in successive steps to uranium tetrafluoride (UF_4) and then to uranium hexafluoride (UF_6) for use as feed material for the diffusion process cascades. Although the primary feed operations of the C-410 Feed Plant Complex were shut down in 1977, fluorine production continued until 1994. Other activities (such as valve rebuilding and computer maintenance) were conducted in the complex until 1994. Following shut down of the C-410 Feed Plant Complex, materials from other parts of the DOE site were stored in the C-410 Feed Plant Complex.

The major radiological contaminants of concern that prompted the need to conduct the current Removal Action were uranium and its progeny. The widespread presence of these contaminants remaining on the building structure also prompts the need for the additional scope proposed in this Action Memorandum Addendum. The uranium is present as oxide and fluoride compounds. Some other radionuclides, including technetium-99, cesium-137, and plutonium-239, are present in small quantities as a result of processing reactor return material. Uranium and other radionuclides present potential hazards from inhalation, ingestion, and skin contact from contamination on building and equipment surfaces.

Several sources of potential chemical hazards existed in the C-410 Complex as a result of the operations that took place there. These hazards resulted in the need to conduct the currently ongoing removal action at the C-410 Complex. The hydrogen fluoride was used to convert UO_3 to UF_4 and to generate fluorine for use in the production of UF_6. Potassium bifluoride and lithium fluoride also were known to be present in the fluorine generation process. The process cooling water was treated with chromates. Polychlorinated biphenyls (PCBs) were used in electrical and hydraulic equipment and as an additive in paints. Asbestos was used for insulation on equipment and piping. Mercury was present in instruments and electrical equipment. Ethylene glycol, ammonia, methanol, and Freon™ were present in refrigeration systems. Lead (in paint) and other metals, such as silver and cadmium, also may be present in the building.

Under the originally approved CERCLA NTCRA, all infrastructure (i.e., piping, equipment, material, platforms, and interior non-load-bearing walls) was to be removed from the C-410 Feed Plant Complex, essentially leaving an empty facility shell prior to building demolition (DOE 2001; DOE 2002a; DOE 2002b). The remaining facility structure (i.e., shell) originally was intended to be decommissioned as part of a subsequent CERCLA response action after all of the infrastructure systems had been removed. The approach in this addendum anticipates that some infrastructure will be left in place to be decommissioned with the facility structure. Prior to structure demolition, it is anticipated that all accessible interior asbestos-containing materials will have been removed and chemical- and/or radionuclide-containing

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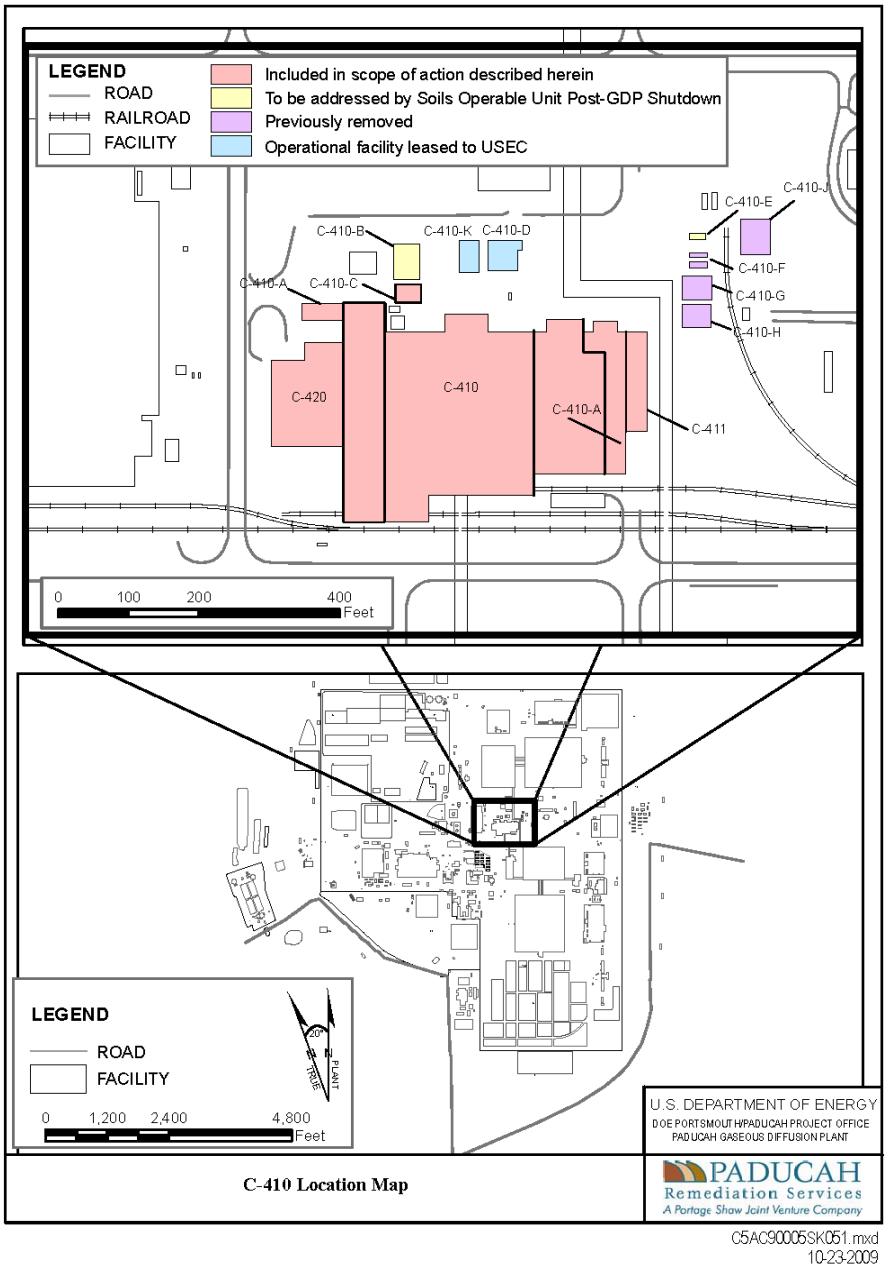

Figure 1. C-410 Location Map

systems (e.g., process piping) will have been emptied of residual material to the extent practicable. Additionally, certain wastes such as PCB capacitors, mercury switches, or manometers, etc., will have been removed. The building surfaces and remaining infrastructure that will be removed during structural demolition (i.e., floors, walls, residual piping, and equipment) will have been vacuumed and sealed to the extent practicable to contain and minimize airborne releases during the demolition process. This Addendum is documenting the decision to change the approach to the C-410 removal. Further detail about the demolition preparation actions will be discussed in the Removal Action Work Plan (RAWP).

3. THREATS TO PUBLIC HEALTH AND THE ENVIRONMENT

Hazardous materials will remain in the C-410 Complex structure following completion of process system removal. These include transite siding, radioactively contaminated steel structures, and lead and PCBs in paint. These present a potential threat to human health (including current PGDP workers) and the environment. If facility deterioration continues, the probability of future contaminant release to the environment will increase because of structural failure and subsequent contaminant migration. The controlled demolition of these facilities is consistent with the intent of CERCLA to mitigate a release or threat of release.

Controlled demolition, using engineered safety measures, is both safer and more cost-effective than uncontrolled collapse (i.e., building "falling in on itself"). The latter scenario produces commingled waste streams that are more difficult to dispose of, whereas the former can utilize waste segregation to simplify waste disposition.

4. STATUTORY LIMITS ON REMOVAL ACTIONS

Because the removal action will be performed and funded by DOE, it is not subject to the fund-financed cost limitations of 12 months and $2 million prescribed in 40 *CFR* § 300.415(a)(5). The original applicable or relevant and appropriate requirements (ARARs) from the Engineering Evaluation/Cost Analysis (EE/CA) remain in effect and are incorporated by reference in Attachment 2. A discussion and table of ARARs for the additional work scope presented in this Addendum are included as Attachment 3.

5. PROPOSED ACTIONS AND ESTIMATED COSTS

This Addendum presents two changes to the scope of the approved C-410 Complex NTCRA:

1) To expand the scope of the removal action to include facility structure demolition to the slabs and disposition of demolition debris, and

2) To allow the non-process systems to remain in place and to remove these systems at the same time the building is demolished using heavy equipment such as excavators with shears.

The change in the overall approach to the removal action is expected to be safer and more efficient than manually removing the remaining infrastructure. The revised approach was developed after comparing similar projects at DOE's Savannah River Site and the East Tennessee Technology Park. Under this approach, significant amounts of piping and equipment can be removed with heavy equipment during building demolition, thus minimizing personnel exposure. Most of the resulting waste from building demolition is expected to be low-level radiologically contaminated waste and/or PCB bulk product waste. Any hazardous materials that may be present in non-process systems and become commingled with the demolition debris are expected to be in sufficiently low quantities that they would not require the building debris to be regulated as RCRA hazardous waste. The demolition debris will be characterized and consist of various types of waste such as low-level radiologically contaminated waste, PCB bulk product waste, and solid waste.

The cost of the additional scope is projected to be approximately $10 million, or less than 25% of the overall project cost. The waste generation volumes for the building demolition debris from the additional scope are projected to be approximately 15,000 yd^3, or less than 50% of the overall volume for the project. The field work for this project is expected to be completed by December 2011.

Upon completion of this project, building slabs and/or basements will remain in place. This removal action will result in the C-410 Feed Plant Complex being in a configuration that minimizes the risks posed to human health and the environment by these facilities. The slabs that will remain after structural demolition will be visually inspected, surveyed, decontaminated as appropriate, and sealed to minimize the possibility of spreading contamination. Details associated with this process will be described in the RAWP. Also, sub-slab penetrations, such as basements, pits, and sumps will be backfilled to prevent accumulation of water and eliminate hazards to on-site personnel. Administrative and/or physical controls will be implemented, if necessary, to prevent unauthorized access and unacceptable exposures to the remaining contaminated slabs. The existing EE/CA (DOE 2001) states that building demolition and soils remediation will be conducted as a remedial action; however, this Addendum to the Action Memorandum includes building demolition as part of the removal action. This Addendum is consistent

with the joint DOE and EPA policy (DOE and EPA 1995) and the PGDP Site Management Plan (DOE 2009). Current plans are to address any residual contamination in the building slab and underlying soils as part of a final CERCLA response action under the Soils Operable Unit Post-Gaseous Diffusion Plant Shutdown.

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

There is a potential risk to human health and the environment posed by the C-410 Structure if this action is not taken. These risks would include releases of hazardous substances (e.g., transite from building siding) or radionuclides and/or PCBs and/or lead in paint from the structural steel, should the buildings collapse. If demolition is delayed, the potential threat of release from uncontrolled collapse would continue to be present. Delaying the action or not taking the action will increase the potential risks to workers and the environment. The potential for release to the environment of hazardous substances would increase as the buildings continue to deteriorate.

Without implementing this change, a new EE/CA, Action Memorandum, and RAWP would be required for demolishing the structure. Changing the method of accomplishment to a demolition with some infrastructure in place will allow accelerating the original removal action and demolition of the structure as presented in this Action Memo Addendum using American Recovery and Reinvestment Act funds.

7. PUBLIC PARTICIPATION

The regulations contained in the National Contingency Plan (NCP) of CERCLA (Subpart E of 40 *CFR* § 300) do not address explicitly the public participation requirements for issuing Addendums to a previously approved Action Memorandum that expand the scope of the original removal action; however, 40 *CFR* § 300.820 (a)(4) does indicate that documents generated or received after the decision document is signed shall be added to the Administrative Record file only, as provided in 40 *CFR* § 300.825, which, in turn, references 40 *CFR* § 300.435(c)—the community relations requirements for remedial action.

DOE has considered public participation requirements established for changes to signed decision documents for remedial actions as a guideline for this change. Accordingly, the proposed Addendum will follow a similar process to that under 40 *CFR* § 300.435(c)(2)(i), which provides for issuing an explanation of significant differences when the proposed change does not fundamentally alter the basic features of the selected response action with respect to scope, performance, or cost. The proposed change

to the C-410 Feed Plant Complex removal action will continue to implement the fundamental components of the original selected action, the dismantlement and disposition of the facility materials. Expanding the currently approved scope to include the facility structure does not fundamentally alter the management approach for any hazardous waste, result in generation of different classifications of waste streams, or adopt the use of any new or different treatment or disposal methods. Also, as mentioned above, the estimated cost of the additional scope is projected to be less than 25% of the overall project cost, and the estimated waste generation volumes are projected to be less than 50% of the overall waste volume for the project. The additional scope will not reduce the performance of the original action, but is actually expected to enhance the overall protectiveness by removal of additional materials.

Upon approval of this Addendum by the Kentucky Department for Environmental Protection and EPA, a public notice will be published in the *Paducah Sun,* or other appropriate local newspaper, briefly summarizing the significant differences listed in Section 5, including the reasons for the differences. The Addendum also will be made available to the public in the Administrative Record file at the McCracken County Public Library; the Kentucky Division of Waste Management in Frankfort, Kentucky; and DOE's Environmental Information Center in Paducah, Kentucky.

8. RECOMMENDATION

The change for the removal action as described in this Addendum meets the NCP criteria contained in 40 *CFR* § 300.415(b)(2) and is consistent with the joint DOE and EPA policy (DOE and EPA 1995), dated May 22, 1995, for conducting decommissioning activities under CERCLA and provides long-term protectiveness. This Addendum is appropriate and will be implemented in accordance with CERCLA, the NCP, and the FFA.

Approval

WE Murphie

William E. Murphie
U.S. Department of Energy

11/10/09
Date

The following attachments are enclosed with this Action Memorandum Addendum:

1. DOE 2002a. *Action Memorandum for the C-410 Infrastructure Removal at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*, DOE/OR/07-2002&D1/R1, May.

2. DOE 2001. *Engineering Evaluation/Cost Analysis for the C-410 Complex Infrastructure Removal at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*, DOE/OR/07-1952&D2/R1, December.

3. *Applicable or Relevant and Appropriate Requirements and To Be Considered Guidance.*

9. REFERENCES

DOE (U.S. Department of Energy) and EPA (U.S. Environmental Protection Agency) 1995. *Policy on Decommissioning of Department of Energy Facilities under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)*, Washington, DC, May.

DOE 2001. *Engineering Evaluation/Cost Analysis for the C-410 Complex Infrastructure Removal at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*, DOE/OR/07-1952&D2/Rl, December.

DOE 2002a. *Action Memorandum for the C-410 Infrastructure Removal at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*, DOE/OR/07-2002&D1/R1, May.

DOE 2002b. *Removal Action Work Plan for the C-410 Complex Infrastructure D&D Project at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky* DOE/OR/07-2012&D1, October.

DOE 2009. *Site Management Plan, Paducah Gaseous Diffusion Plant, Paducah, Kentucky*, DOE/LX/07-0185&D2/Rl, March.

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Attachment 1 on CD

Action Memorandum for the C-410 Infrastructure Removal at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky, DOE/OR/07-2002&D1/R1

Attachment 2 on CD

Engineering Evaluation/Cost Analysis for the C-410 Complex Infrastructure Removal at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky, DOE/OR/07-1952&D2/R1

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Attachment 1 on CD

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DOE/OR/07-2002&D1/R1

Attachment 2 on CD

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DOE/OR/07-1952&D2/R1

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Attachment 3

Additional Applicable or Relevant and Appropriate Requirements and To Be Considered Guidance

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Applicable or Relevant and Appropriate Requirements

In accordance with 40 *CFR* § 300.415(j), on-site removal actions conducted under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 are required to meet applicable or relevant and appropriate requirements (ARARs) to the extent practicable considering the urgency of the situation and the scope of the removal. DOE will comply with ARARs and to be considered (TBC) guidance as set forth in the original Action Memorandum and this addendum when conducting this removal action. Additionally, the following ARARs and TBC guidance have been added to reflect the change in scope of the removal action. Additional ARARs included in this attachment apply only to the additional scope of the removal action identified in the Action Memorandum Addendum.

U.S. Department of Energy Office of Environmental Management

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Table A.1. ARARs and TBC Guidance Required by Additional Decommissioning Scope for the C-410 Complex

General standards of performance			
Action	**Summary of Requirements**	**Prerequisite**	**Citation**
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; • Covering, at all times when in motion, open bodied trucks transporting materials likely to become airborne; • The maintenance of paved roadways in a clean condition; • The prompt removal of earth or other material from a paved street which earth or other material has been transported thereto by trucking or earth moving equipment or erosion by water.	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), (d)-(f)
	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)
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. No affected facility shall 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

Table A.1. ARARs and TBC Guidance Required by Additional Decommissioning Scope for the C-410 Complex (Continued)

General standards of performance			
Action	**Summary of Requirements**	**Prerequisite**	**Citation**
Activities causing storm water runoff (e.g., clearing, grading, excavation)	Implement good construction techniques to control pollutants in storm water discharges during and after construction in accordance with substantive requirements provided by permits issued pursuant to 40 *CFR* § 122.26(c).	Storm water discharges associated with small construction activities as defined in 40 *CFR* § 122.26(b)(15) and 401 *KAR* 5:002 § 1 (157)—**applicable**.	40 *CFR* § 122.26(c)(1)(ii)(C) and (D) 401 *KAR* 5:060 § 8
	Storm water runoff associated with construction activities taking place at a facility with an existing Best Management Practices (BMP) Plan shall be addressed under the facility BMP and not under a storm water general permit.	Storm water discharges associated with small construction activities as defined in 40 *CFR* § 122.26(b)(15) and 401 *KAR* 5:002 § 1 (157) —**TBC**.	Fact Sheet for the KPDES General Permit For Storm water Discharges Associated with Construction Activities, June 2009
	Best management storm water controls will be implemented and may include, as appropriate, erosion and sedimentation control measures, structural practices (e.g., silt fences, straw bale barriers) and vegetative practices (e.g., seeding); storm water management (e.g. diversion); and maintenance of control measures in order to ensure compliance with the standards in Section C.5. Storm Water Discharge Quality.	Storm water runoff associated with construction activities taking place at a facility [PGDP] with an existing BMP Plan—**TBC**.	Appendix C of the PGDP Best Management Practices Plan (2007) – Examples of Storm water Controls
Waste management			
Management of PCB Items	Must dispose of in accordance with 40 *CFR* § 761.60(b) or decontaminate in accordance with 40 *CFR* § 761.79.	Removal from use of a PCB Item containing intact, non-leaking PCB Article—**applicable**.	40 *CFR* § 761.50(b)(2)
	Must dispose of as bulk product waste in accordance with 40 *CFR* § 761.62(a) or (c).	Removal from use of a PCB Item where PCB Article is no longer intact and non-leaking—**applicable**.	40 *CFR* § 761.50(b)(2)

Table A.1. ARARs and TBC Guidance Required by Additional Decommissioning Scope for the C-410 Complex (Continued)

Decontamination and waste removal standards			
Action	**Summary of Requirements**	**Prerequisite**	**Citation**
Removal of friable asbestos prior to demolition	Any demolition of a structure or portion of a structure which contains facility components composed of or covered by friable asbestos material shall be preceded by a removal of all such materials prior to demolition, according to the relevant requirements of 401 *KAR* 58:040 § 4 (1) as provided below.	Demolition of a facility which may cause a disturbance of friable asbestos material and the demolition exceed the thresholds in 40 *CFR* § 61.145(a)(1)—**relevant and appropriate**.	401 *KAR* 58:040 § 4(2)(a)
	In lieu of the requirements specified in 401 *KAR* 58:040 § 4 (1)(a), (b), (c), (e), and (l), shall comply with the following requirements:		401 *KAR* 58:040 § 4(2)(b)
	Before beginning a demolition project, all doors, windows, floor drains, vents, and other openings to the outside of the building and to areas within the building that do not contain asbestos materials, shall be sealed off with polyethylene sheeting and waterproof tape.		401 *KAR* 58:040 § 4(2)(b)(1)

Table A.1. ARARs and TBC Guidance Required by Additional Decommissioning Scope for the C-410 Complex (Continued)

Decontamination and waste removal standards			
Action	**Summary of Requirements**	**Prerequisite**	**Citation**
	Prior to demolition, clearance air monitoring shall be performed as provided below in 401 *KAR* 58:040 § 4 (1)(s). At least five (5) samples of air per work area, or one (1) sample per room, whichever is greater, shall be obtained for the clearance air monitoring. A sample volume of 3,000 liters of air shall be used. The air samples shall be obtained when the air is being artificially circulated so that the fibers remain airborne during the sampling. Barriers shall not be dismantled, and openings shall not be uncovered, until the final samples show total fiber concentrations of less than or equal to 0.01 fibers per cubic centimeter of air. The method for determining compliance with the provisions of this paragraph shall be either of the methods specified in Appendix M to "Guidance for Controlling Asbestos-Containing Materials in Buildings" (U.S. Environmental Protection Agency, Office of Pesticides and Toxic Substances, EPA 560/5-85-024, June 1985). Appendix M, "Detailed Specifications for Sampling and Analyzing Airborne Asbestos," is hereby adopted and filed herein by reference.		401 *KAR* 58:040 § 4(2)(c)
	The following requirements of 401 *KAR* 58:040 § 4 (1), unless specifically deleted in 401 *KAR* 58:040 § 4 (2)(b), shall apply to the demolition abatement activities.		401 *KAR* 58:040 § 4(2)(d)
	Negative pressure ventilation units with HEPA filtration and in sufficient number to provide one (1) workplace air change every fifteen (15) minutes shall be operated continuously for the duration of the project. The duration of the project for this requirement shall be considered to be from the time that a containment area is established and wall and floor sheeting are installed through the time that acceptable final clearance air monitoring results are obtained.		401 *KAR* 58:040 § 4(1)(g)
	All friable asbestos material shall be thoroughly wetted through to the substrate prior to removal.		401 *KAR* 58:040 § 4(1)(h)

Table A.1. ARARs and TBC Guidance Required by Additional Decommissioning Scope for the C-410 Complex (Continued)

Decontamination and waste removal standards			
Action	**Summary of Requirements**	**Prerequisite**	**Citation**
	Facility components shall be removed intact or in large sections whenever possible and shall be carefully lowered to the floor. Other friable asbestos material shall be removed in small sections.		401 *KAR* 58:040 § 4(1)(i)
	Materials located at heights greater than fifteen (15) feet but less than or equal to fifty (50) feet above the floor shall be dropped into inclined chutes or onto scaffolding or containerized at their elevated levels for eventual disposal. For materials located at heights greater than fifty (50) feet above the floor, a dust-tight enclosed chute shall be constructed to transport removed material to containers on the floor.		401 *KAR* 58:040 § 4(1)(j)
	At no time shall the friable asbestos material that has been removed be allowed to accumulate or become dry.		401 *KAR* 58:040 § 4(1)(k)
	Following abatement, wall sheeting and floor sheeting shall be removed and containerized for disposal. A sequence of HEPA filtration vacuuming, wet wiping all exposed surfaces, and surface drying shall be performed until no visible residue is observed in the work area. A minimum of twenty-four (24) hours after wet wiping shall be required to ensure that sufficient drying has occurred.		401 *KAR* 58:040 § 4(1)(m)
	All asbestos-containing waste, except for large facility components, shall be thoroughly wetted before being placed into containers for disposal. Large components shall be thoroughly wetted before being wrapped in polyethylene sheeting for disposal.		401 *KAR* 58:040 § 4(1)(n)
	Wet asbestos-containing waste shall be double bagged in polyethylene bags placed in sealed, rigid containers (for example: steel drums, fiber drums, or heavy cardboard boxes) for transport to a landfill. Large facility components may be wrapped in two (2) layers of polyethylene sheeting which are secured with waterproof tape for disposal.		401 *KAR* 58:040 § 4(1)(o)

Table A.1. ARARs and TBC Guidance Required by Additional Decommissioning Scope for the C-410 Complex (Continued)

Decontamination and waste removal standards			
Action	**Summary of Requirements**	**Prerequisite**	**Citation**
	All polyethylene sheeting that is used in an asbestos abatement project shall be treated as asbestos-containing waste.		401 *KAR* 58:040 § 4(1)(p)
	All wrapping or containerizing of asbestos-containing waste shall be done in such a manner so as to prevent the outside of the wrapping or container from being contaminated with asbestos fibers.		401 *KAR* 58:040 § 4(1)(q)
	All packaged wastes (boxes, drums, and wrapped components) shall be labeled according to the provisions of 40 *CFR* § 61.152, filed by reference in 401 *KAR* 58:025.		401 *KAR* 58:040 § 4(1)(r)
	Transport and disposal of asbestos-containing waste shall occur in a manner that will not permit the release of asbestos fibers into the outside air.		401 *KAR* 58:040 § 4(1)(t)
	In lieu of the work practice requirements of 401 *KAR* 58:040 § 4 (1)(a) to (e), (g), (i), (m), (n), (p), and (s); and (2)(b) and (c); and (3)(a) and (c), the glove bag technique or other alternative work practice requirements may be used for an asbestos abatement project where the requirements prescribed in this section is not practical or not feasible and that the proposed alternative to the requirements provides an equivalent control of asbestos and is not in conflict with any applicable local, state, or federal law.		401 *KAR* 58:040 § 4(4)

Table A.1. ARARs and TBC Guidance Required by Additional Decommissioning Scope for the C-410 Complex (Continued)

Transportation			
Action	**Summary of Requirements**	**Prerequisite**	**Citation**
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

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Action Memorandum Addendum for the C-410 Infrastructure Removal at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky

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U.S. Department of Energy Office of Environmental Management

Action Memorandum Addendum for the C-410 Infrastructure Removal at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky

DOE/LX/07-0273&D2

PRIMARY DOCUMENT

Subject: Change in Scope of Removal Action
Action Memorandum

Date: November 2009

1. PURPOSE

This Action Memorandum Addendum (Addendum) was prepared in accordance with U.S. Environmental Protection Agency's (EPA's) *Superfund Removal Procedures Action Memorandum Guidance*, EPA/540/P-90/004, under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA). The purpose of this Addendum is to document a change in scope of the removal action that was documented in the CERCLA decision document, *Action Memorandum for the C-410 Infrastructure Removal at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*, DOE/OR/07-2002&D1/R1, which was signed on August 2, 2002 (DOE 2002a; See Attachment 1). The ongoing non-time-critical removal action (NTCRA) is being performed by the U.S. Department of Energy (DOE) pursuant to DOE's removal authority under Executive Order 12580 and in accordance with the Federal Facility Agreement (FFA) for the Paducah Gaseous Diffusion Plant (PGDP) Section X.E, Non-Time-Critical Removal Actions and the National Contingency Plan regulations.

This Addendum was prepared to document the following decisions:

1) To expand the scope of the existing NTCRA to include facility structure demolition to the slabs and disposition of demolition debris, and

2) To allow the non-process systems to remain in place and to remove these systems at the same time the building is demolished using heavy equipment such as excavators with shears.

These changes in the method of accomplishment are safer and more efficient than manually removing these systems. The systems left in place may contain small quantities of hazardous substances, but the levels are not expected to result in the building debris being characterized as a Resource Conservation and Recovery Act (RCRA) hazardous or Toxic Substances Control Act (TSCA)-regulated waste. Small volumes of hazardous waste, such as paint chips or vacuum dust, may be generated during building demolition. These waste streams will be segregated from the building debris and managed in accordance with applicable regulations. Most of the resulting waste from building demolition is expected to be low-level radiologically contaminated waste and/or polychlorinated biphenyl (PCB) bulk product waste. Any material in the building that can be reused or recycled will be removed prior to demolition and reused or recycled according to applicable regulations and requirements, if economically practicable.

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2. SITE CONDITIONS AND BACKGROUND

The C-410 Feed Plant Complex produced uranium hexafluoride from uranium oxides for enrichment at PGDP and is no longer used. It is located near the center of the industrialized area of PGDP, inside the security fence. Figure 1 shows its location within PGDP, as well as the location of individual structures that comprise the complex. The C-410 Feed Plant Complex received uranium oxide (UO_3) and converted it in successive steps to uranium tetrafluoride (UF_4) and then to uranium hexafluoride (UF_6) for use as feed material for the diffusion process cascades. Although the primary feed operations of the C-410 Feed Plant Complex were shut down in 1977, fluorine production continued until 1994. Other activities (such as valve rebuilding and computer maintenance) were conducted in the complex until 1994. Following shut down of the C-410 Feed Plant Complex, materials from other parts of the DOE site were stored in the C-410 Feed Plant Complex.

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The major radiological contaminants of concern that prompted the need to conduct the current Removal Action were uranium and its progeny. The widespread presence of these contaminants remaining on the building structure also prompts the need for the additional scope proposed in this Action Memorandum Addendum. The uranium is present as oxide and fluoride compounds. Some other radionuclides, including technetium-99, cesium-137, and plutonium-239, are present in small quantities as a result of processing reactor return material. Uranium and other radionuclides present potential hazards from inhalation, ingestion, and skin contact from contamination on building and equipment surfaces.

Several sources of potential chemical hazards existed in the C-410 Complex as a result of the operations that took place there. These hazards resulted in the need to conduct the currently ongoing removal action at the C-410 Complex. The hydrogen fluoride was used to convert UO_3 to UF_4 and to generate fluorine for use in the production of UF_6. Potassium bifluoride and lithium fluoride also were known to be present in the fluorine generation process. The process cooling water was treated with chromates. Polychlorinated biphenyls (PCBs) were used in electrical and hydraulic equipment and as an additive in paints. Asbestos was used for insulation on equipment and piping. Mercury was present in instruments and electrical equipment. Ethylene glycol, ammonia, methanol, and Freon™ were present in refrigeration systems. Lead (in paint) and other metals, such as silver and cadmium, also may be present in the building.

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Under the originally approved CERCLA NTCRA, all infrastructure (i.e., piping, equipment, material, platforms, and interior non-load-bearing walls) was to be removed from the C-410 Feed Plant Complex, essentially leaving an empty facility shell prior to building demolition (DOE 2001; DOE 2002a; DOE 2002b). The remaining facility structure (i.e., shell) originally was intended to be decommissioned as part of a subsequent CERCLA response action after all of the infrastructure systems had been removed. The approach in this addendum anticipates that some infrastructure will be left in place to be decommissioned with the facility structure. Prior to structure demolition, it is anticipated that all accessible interior asbestos-containing materials will have been removed and chemical- and/or radionuclide-containing

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Action Memorandum Addendum for the C-410 Infrastructure Removal at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky

DOE/LX/07-0273&D2

PRIMARY DOCUMENT

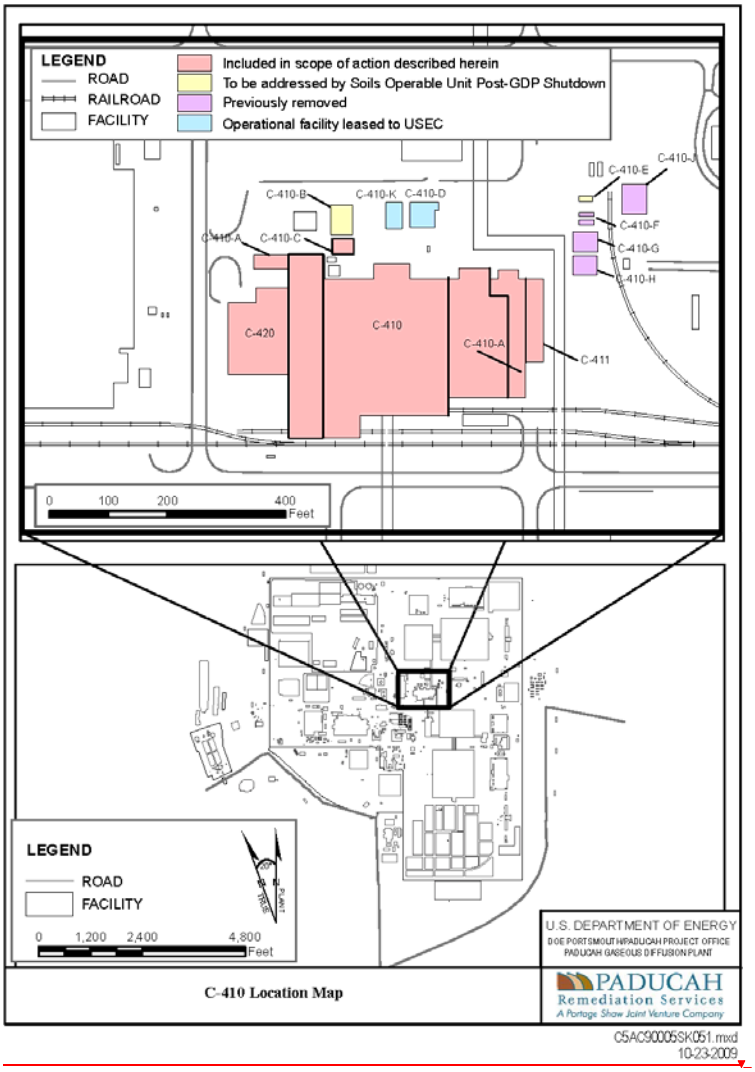

Figure 1. C-410 Location Map

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systems (e.g., process piping) will have been emptied of residual material to the extent practicable. Additionally, certain wastes such as PCB capacitors, mercury switches, or manometers, etc., will have been removed. The building surfaces and remaining infrastructure that will be removed during structural demolition (i.e., floors, walls, residual piping, and equipment) will have been vacuumed and sealed to the extent practicable to contain and minimize airborne releases during the demolition process. This Addendum is documenting the decision to change the approach to the C-410 removal. Further detail about the demolition preparation actions will be discussed in the Removal Action Work Plan (RAWP).

3. THREATS TO PUBLIC HEALTH AND THE ENVIRONMENT

Hazardous materials will remain in the C-410 Complex structure following completion of process system removal. These include transite siding, radioactively contaminated steel structures, and lead and PCBs in paint. These present a potential threat to human health (including current PGDP workers) and the environment. If facility deterioration continues, the probability of future contaminant release to the environment will increase because of structural failure and subsequent contaminant migration. The controlled demolition of these facilities is consistent with the intent of CERCLA to mitigate a release or threat of release.

Controlled demolition, using engineered safety measures, is both safer and more cost-effective than uncontrolled collapse (i.e., building "falling in on itself"). The latter scenario produces commingled waste streams that are more difficult to dispose of, whereas the former can utilize waste segregation to simplify waste disposition.

4. STATUTORY LIMITS ON REMOVAL ACTIONS

Because the removal action will be performed and funded by DOE, it is not subject to the fund-financed cost limitations of 12 months and $2 million prescribed in 40 *CFR* § 300.415(a)(5). The original applicable or relevant and appropriate requirements (ARARs) from the Engineering Evaluation/Cost Analysis (EE/CA) remain in effect and are incorporated by reference in Attachment 2. A discussion and table of ARARs for the additional work scope presented in this Addendum are included as Attachment 3.

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5. PROPOSED ACTIONS AND ESTIMATED COSTS

This Addendum presents two changes to the scope of the approved C-410 Complex NTCRA:

1) To expand the scope of the removal action to include facility structure demolition to the slabs and disposition of demolition debris, and

2) To allow the non-process systems to remain in place and to remove these systems at the same time the building is demolished using heavy equipment such as excavators with shears.

The change in the overall approach to the removal action is expected to be safer and more efficient than manually removing the remaining infrastructure. The revised approach was developed after comparing similar projects at DOE's Savannah River Site and the East Tennessee Technology Park. Under this approach, significant amounts of piping and equipment can be removed with heavy equipment during building demolition, thus minimizing personnel exposure. Most of the resulting waste from building demolition is expected to be low-level radiologically contaminated waste and/or PCB bulk product waste. Any hazardous materials that may be present in non-process systems and become commingled with the demolition debris are expected to be in sufficiently low quantities that they would not require the building debris to be regulated as RCRA hazardous waste. The demolition debris will be characterized and consist of various types of waste such as low-level radiologically contaminated waste, PCB bulk product waste, and solid waste.

The cost of the additional scope is projected to be approximately $10 million, or less than 25% of the overall project cost. The waste generation volumes for the building demolition debris from the additional scope are projected to be approximately 15,000 yd^3, or less than 50% of the overall volume for the project. The field work for this project is expected to be completed by December 2011.

Upon completion of this project, building slabs and/or basements will remain in place. This removal action will result in the C-410 Feed Plant Complex being in a configuration that minimizes the risks posed to human health and the environment by these facilities. The slabs that will remain after structural demolition will be visually inspected, surveyed, decontaminated as appropriate, and sealed to minimize the possibility of spreading contamination. Details associated with this process will be described in the RAWP. Also, sub-slab penetrations, such as basements, pits, and sumps will be backfilled to prevent accumulation of water and eliminate hazards to on-site personnel. Administrative and/or physical controls will be implemented, if necessary, to prevent unauthorized access and unacceptable exposures to the remaining contaminated slabs. The existing EE/CA (DOE 2001) states that building demolition and soils remediation will be conducted as a remedial action; however, this Addendum to the Action Memorandum includes building demolition as part of the removal action. This Addendum is consistent

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with the joint DOE and EPA policy (DOE and EPA 1995) and the PGDP Site Management Plan (DOE 2009). Current plans are to address any residual contamination in the building slab and underlying soils as part of a final CERCLA response action under the Soils Operable Unit Post-Gaseous Diffusion Plant Shutdown.

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

There is a potential risk to human health and the environment posed by the C-410 Structure if this action is not taken. These risks would include releases of hazardous substances (e.g., transite from building siding) or radionuclides and/or PCBs and/or lead in paint from the structural steel, should the buildings collapse. If demolition is delayed, the potential threat of release from uncontrolled collapse would continue to be present. Delaying the action or not taking the action will increase the potential risks to workers and the environment. The potential for release to the environment of hazardous substances would increase as the buildings continue to deteriorate.

Without implementing this change, a new EE/CA, Action Memorandum, and RAWP would be required for demolishing the structure. Changing the method of accomplishment to a demolition with some infrastructure in place will allow accelerating the original removal action and demolition of the structure as presented in this Action Memo Addendum using American Recovery and Reinvestment Act funds.

7. PUBLIC PARTICIPATION

The regulations contained in the National Contingency Plan (NCP) of CERCLA (Subpart E of 40 *CFR* § 300) do not address explicitly the public participation requirements for issuing Addendums to a previously approved Action Memorandum that expand the scope of the original removal action; however, 40 *CFR* § 300.820 (a)(4) does indicate that documents generated or received after the decision document is signed shall be added to the Administrative Record file only, as provided in 40 *CFR* § 300.825, which, in turn, references 40 *CFR* § 300.435(c)—the community relations requirements for remedial action.

DOE has considered public participation requirements established for changes to signed decision documents for remedial actions as a guideline for this change. Accordingly, the proposed Addendum will follow a similar process to that under 40 *CFR* § 300.435(c)(2)(i), which provides for issuing an explanation of significant differences when the proposed change does not fundamentally alter the basic features of the selected response action with respect to scope, performance, or cost. The proposed change

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to the C-410 Feed Plant Complex removal action will continue to implement the fundamental components of the original selected action, the dismantlement and disposition of the facility materials. Expanding the currently approved scope to include the facility structure does not fundamentally alter the management approach for any hazardous waste, result in generation of different classifications of waste streams, or adopt the use of any new or different treatment or disposal methods. Also, as mentioned above, the estimated cost of the additional scope is projected to be less than 25% of the overall project cost, and the estimated waste generation volumes are projected to be less than 50% of the overall waste volume for the project. The additional scope will not reduce the performance of the original action, but is actually expected to enhance the overall protectiveness by removal of additional materials.

Upon approval of this Addendum by the Kentucky Department for Environmental Protection and EPA, a public notice will be published in the *Paducah Sun*, or other appropriate local newspaper, briefly summarizing the significant differences listed in Section 5, including the reasons for the differences. The Addendum also will be made available to the public in the Administrative Record file at the McCracken County Public Library; the Kentucky Division of Waste Management in Frankfort, Kentucky; and DOE's Environmental Information Center in Paducah, Kentucky.

8. RECOMMENDATION

The change for the removal action as described in this Addendum meets the NCP criteria contained in 40 *CFR* § 300.415(b)(2) and is consistent with the joint DOE and EPA policy (DOE and EPA 1995), dated May 22, 1995, for conducting decommissioning activities under CERCLA and provides long-term protectiveness. This Addendum is appropriate and will be implemented in accordance with CERCLA, the NCP, and the FFA.

Approval

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William E. Murphie
U.S. Department of Energy

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The following attachments are enclosed with this Action Memorandum Addendum:

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1. DOE 2002a. *Action Memorandum for the C-410 Infrastructure Removal at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*, DOE/OR/07-2002&D1/R1, May.

2. DOE 2001. *Engineering Evaluation/Cost Analysis for the C-410 Complex Infrastructure Removal at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*, DOE/OR/07-1952&D2/R1, December.

3. *Applicable or Relevant and Appropriate Requirements and To Be Considered Guidance.*

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9. REFERENCES

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DOE (U.S. Department of Energy) and EPA (U.S. Environmental Protection Agency) 1995. *Policy on Decommissioning of Department of Energy Facilities under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)*, Washington, DC, May.

DOE 2001. *Engineering Evaluation/Cost Analysis for the C-410 Complex Infrastructure Removal at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*, DOE/OR/07-1952&D2/Rl, December.

DOE 2002a. *Action Memorandum for the C-410 Infrastructure Removal at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*, DOE/OR/07-2002&D1/R1, May.

DOE 2002b. *Removal Action Work Plan for the C-410 Complex Infrastructure D&D Project at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky* DOE/OR/07-2012&D1, October.

DOE 2009. *Site Management Plan, Paducah Gaseous Diffusion Plant, Paducah, Kentucky*, DOE/LX/07-0185&D2/Rl, March.

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Action Memorandum Addendum for the C-410 Infrastructure Removal at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky
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Attachment 1 on CD

Action Memorandum for the C-410 Infrastructure Removal at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky,
DOE/OR/07-2002&D1/R1

Attachment 2 on CD

Engineering Evaluation/Cost Analysis for the C-410 Complex Infrastructure Removal at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky,
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Action Memorandum Addendum for the C-410 Infrastructure Removal at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky

DOE/LX/07-0273&D2

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Attachment 1 on CD

Action Memorandum for the C-410 Infrastructure Removal at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky,
DOE/OR/07-2002&D1/R1

Attachment 2 on CD

Engineering Evaluation/Cost Analysis for the C-410 Complex Infrastructure Removal at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky,
DOE/OR/07-1952&D2/R1

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Action Memorandum Addendum for the C-410 Infrastructure Removal at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky
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Attachment 3

Additional Applicable or Relevant and Appropriate Requirements and To Be Considered Guidance

Action Memorandum Addendum for the C-410 Infrastructure Removal at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky

DOE/LX/07-0273&D2

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Applicable or Relevant and Appropriate Requirements

In accordance with 40 *CFR* § 300.415(j), on-site removal actions conducted under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 are required to meet applicable or relevant and appropriate requirements (ARARs) to the extent practicable considering the urgency of the situation and the scope of the removal. DOE will comply with ARARs and to be considered (TBC) guidance as set forth in the original Action Memorandum and this addendum when conducting this removal action. Additionally, the following ARARs and TBC guidance have been added to reflect the change in scope of the removal action. Additional ARARs included in this attachment apply only to the additional scope of the removal action identified in the Action Memorandum Addendum.

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Action Memorandum Addendum for the C-410 Infrastructure Removal at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky

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Table A.1. ARARs and TBC Guidance Required by Additional Decommissioning Scope for the C-410 Complex

General standards of performance			
Action	**Summary of Requirements**	**Prerequisite**	**Citation**
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; • Covering, at all times when in motion, open bodied trucks transporting materials likely to become airborne; • The maintenance of paved roadways in a clean condition; • The prompt removal of earth or other material from a paved street which earth or other material has been transported thereto by trucking or earth moving equipment or erosion by water.	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), (d)-(f)
	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)
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. No affected facility shall 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

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Table A.1. ARARs and TBC Guidance Required by Additional Decommissioning Scope for the C-410 Complex (Continued)

Action	Summary of Requirements	Prerequisite	Citation
General standards of performance			
Activities causing storm water runoff (e.g., clearing, grading, excavation)	Implement good construction techniques to control pollutants in storm water discharges during and after construction in accordance with substantive requirements provided by permits issued pursuant to 40 *CFR* § 122.26(c).	Storm water discharges associated with small construction activities as defined in 40 *CFR* § 122.26(b)(15) and 401 *KAR* 5:002 § 1 (157)—**applicable**.	40 *CFR* § 122.26(c)(1)(ii)(C) and (D) 401 *KAR* 5:060 § 8
	Storm water runoff associated with construction activities taking place at a facility with an existing Best Management Practices (BMP) Plan shall be addressed under the facility BMP and not under a storm water general permit.	Storm water discharges associated with small construction activities as defined in 40 *CFR* § 122.26(b)(15) and 401 *KAR* 5:002 § 1 (157) —**TBC**.	Fact Sheet for the KPDES General Permit For Storm water Discharges Associated with Construction Activities, June 2009
	Best management storm water controls will be implemented and may include, as appropriate, erosion and sedimentation control measures, structural practices (e.g., silt fences, straw bale barriers) and vegetative practices (e.g., seeding); storm water management (e.g. diversion); and maintenance of control measures in order to ensure compliance with the standards in Section C.5. Storm Water Discharge Quality.	Storm water runoff associated with construction activities taking place at a facility [PGDP] with an existing BMP Plan—**TBC**.	Appendix C of the PGDP Best Management Practices Plan (2007)—Examples of Storm water Controls
Waste management			
Management of PCB Items	Must dispose of in accordance with 40 *CFR* § 761.60(b) or decontaminate in accordance with 40 *CFR* § 761.79.	Removal from use of a PCB Item containing intact, non-leaking PCB Article—**applicable**.	40 *CFR* § 761.50(b)(2)
	Must dispose of as bulk product waste in accordance with 40 *CFR* § 761.62(a) or (c).	Removal from use of a PCB Item where PCB Article is no longer intact and non-leaking—**applicable**.	40 *CFR* § 761.50(b)(2)

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Table A.1. ARARs and TBC Guidance Required by Additional Decommissioning Scope for the C-410 Complex (Continued)

Decontamination and waste removal standards			
Action	**Summary of Requirements**	**Prerequisite**	**Citation**
Removal of friable asbestos prior to demolition	Any demolition of a structure or portion of a structure which contains facility components composed of or covered by friable asbestos material shall be preceded by a removal of all such materials prior to demolition, according to the relevant requirements of 401 *KAR* 58:040 § 4 (1) as provided below.	Demolition of a facility which may cause a disturbance of friable asbestos material and the demolition exceed the thresholds in 40 *CFR* § 61.145(a)(1)—**relevant and appropriate**.	401 *KAR* 58:040 § 4(2)(a)
	In lieu of the requirements specified in 401 *KAR* 58:040 § 4 (1)(a), (b), (c), (e), and (l), shall comply with the following requirements:		401 *KAR* 58:040 § 4(2)(b)
	Before beginning a demolition project, all doors, windows, floor drains, vents, and other openings to the outside of the building and to areas within the building that do not contain asbestos materials, shall be sealed off with polyethylene sheeting and waterproof tape.		401 *KAR* 58:040 § 4(2)(b)(1)

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Table A.1. ARARs and TBC Guidance Required by Additional Decommissioning Scope for the C-410 Complex (Continued)

Decontamination and waste removal standards			
Action	**Summary of Requirements**	**Prerequisite**	**Citation**
	Prior to demolition, clearance air monitoring shall be performed as provided below in 401 *KAR* 58:040 § 4 (1)(s). At least five (5) samples of air per work area, or one (1) sample per room, whichever is greater, shall be obtained for the clearance air monitoring. A sample volume of 3,000 liters of air shall be used. The air samples shall be obtained when the air is being artificially circulated so that the fibers remain airborne during the sampling. Barriers shall not be dismantled, and openings shall not be uncovered, until the final samples show total fiber concentrations of less than or equal to 0.01 fibers per cubic centimeter of air. The method for determining compliance with the provisions of this paragraph shall be either of the methods specified in Appendix M to "Guidance for Controlling Asbestos-Containing Materials in Buildings" (U.S. Environmental Protection Agency, Office of Pesticides and Toxic Substances, EPA 560/5-85-024, June 1985). Appendix M, "Detailed Specifications for Sampling and Analyzing Airborne Asbestos," is hereby adopted and filed herein by reference.		401 *KAR* 58:040 § 4(2)(c)
	The following requirements of 401 *KAR* 58:040 § 4 (1), unless specifically deleted in 401 *KAR* 58:040 § 4 (2)(b), shall apply to the demolition abatement activities.		401 *KAR* 58:040 § 4(2)(d)
	Negative pressure ventilation units with HEPA filtration and in sufficient number to provide one (1) workplace air change every fifteen (15) minutes shall be operated continuously for the duration of the project. The duration of the project for this requirement shall be considered to be from the time that a containment area is established and wall and floor sheeting are installed through the time that acceptable final clearance air monitoring results are obtained.		401 *KAR* 58:040 § 4(1)(g)
	All friable asbestos material shall be thoroughly wetted through to the substrate prior to removal.		401 *KAR* 58:040 § 4(1)(h)

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Table A.1. ARARs and TBC Guidance Required by Additional Decommissioning Scope for the C-410 Complex (Continued)

Decontamination and waste removal standards			
Action	**Summary of Requirements**	**Prerequisite**	**Citation**
	Facility components shall be removed intact or in large sections whenever possible and shall be carefully lowered to the floor. Other friable asbestos material shall be removed in small sections.		401 *KAR* 58:040 § 4(1)(i)
	Materials located at heights greater than fifteen (15) feet but less than or equal to fifty (50) feet above the floor shall be dropped into inclined chutes or onto scaffolding or containerized at their elevated levels for eventual disposal. For materials located at heights greater than fifty (50) feet above the floor, a dust-tight enclosed chute shall be constructed to transport removed material to containers on the floor.		401 *KAR* 58:040 § 4(1)(j)
	At no time shall the friable asbestos material that has been removed be allowed to accumulate or become dry.		401 *KAR* 58:040 § 4(1)(k)
	Following abatement, wall sheeting and floor sheeting shall be removed and containerized for disposal. A sequence of HEPA filtration vacuuming, wet wiping all exposed surfaces, and surface drying shall be performed until no visible residue is observed in the work area. A minimum of twenty-four (24) hours after wet wiping shall be required to ensure that sufficient drying has occurred.		401 *KAR* 58:040 § 4(1)(m)
	All asbestos-containing waste, except for large facility components, shall be thoroughly wetted before being placed into containers for disposal. Large components shall be thoroughly wetted before being wrapped in polyethylene sheeting for disposal.		401 *KAR* 58:040 § 4(1)(n)
	Wet asbestos-containing waste shall be double bagged in polyethylene bags placed in sealed, rigid containers (for example: steel drums, fiber drums, or heavy cardboard boxes) for transport to a landfill. Large facility components may be wrapped in two (2) layers of polyethylene sheeting which are secured with waterproof tape for disposal.		401 *KAR* 58:040 § 4(1)(o)

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Table A.1. ARARs and TBC Guidance Required by Additional Decommissioning Scope for the C-410 Complex (Continued)

Decontamination and waste removal standards			
Action	**Summary of Requirements**	**Prerequisite**	**Citation**
	All polyethylene sheeting that is used in an asbestos abatement project shall be treated as asbestos-containing waste.		401 *KAR* 58:040 § 4(1)(p)
	All wrapping or containerizing of asbestos-containing waste shall be done in such a manner so as to prevent the outside of the wrapping or container from being contaminated with asbestos fibers.		401 *KAR* 58:040 § 4(1)(q)
	All packaged wastes (boxes, drums, and wrapped components) shall be labeled according to the provisions of 40 *CFR* § 61.152, filed by reference in 401 *KAR* 58:025.		401 *KAR* 58:040 § 4(1)(r)
	Transport and disposal of asbestos-containing waste shall occur in a manner that will not permit the release of asbestos fibers into the outside air.		401 *KAR* 58:040 § 4(1)(t)
	In lieu of the work practice requirements of 401 *KAR* 58:040 § 4 (1)(a) to (e), (g), (i), (m), (n), (p), and (s); and (2)(b) and (c); and (3)(a) and (c), the glove bag technique or other alternative work practice requirements may be used for an asbestos abatement project where the requirements prescribed in this section is not practical or not feasible and that the proposed alternative to the requirements provides an equivalent control of asbestos and is not in conflict with any applicable local, state, or federal law.		401 *KAR* 58:040 § 4(4)

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Table A.1. ARARs and TBC Guidance Required by Additional Decommissioning Scope for the C-410 Complex (Continued)

Transportation			
Action	**Summary of Requirements**	**Prerequisite**	**Citation**
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

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