

DOE/OR/07-1707
PRS-035

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**FEDERAL FACILITY AGREEMENT
FOR THE
PADUCAH GASEOUS DIFFUSION PLANT**

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February 2021

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THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IV

AND

THE UNITED STATES DEPARTMENT OF ENERGY

AND

THE KENTUCKY NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION
CABINET

IN THE MATTER OF:)
)
The U. S. Department) FEDERAL FACILITY AGREEMENT
of Energy's) UNDER SECTION 120 OF CERCLA
) AND SECTIONS 3004(u), 3004(v)
) AND 6001 OF RCRA, AND KRS
PADUCAH GASEOUS DIFFUSION PLANT) 224 SUBCHAPTER 46
)
)
_____) Docket No.

Based upon the information available to the Parties on the effective date of this FEDERAL FACILITY AGREEMENT (Agreement), and without trial or adjudication of any issues of fact or law, the Parties agree as follows:

INTRODUCTION

This Agreement directs the comprehensive remediation of the Paducah Gaseous Diffusion Plant (PGDP). It contains requirements for: (1) implementing investigations of known or potential releases of hazardous substances, pollutants or contaminants, or hazardous wastes or hazardous constituents, (2) selection and implementation of appropriate remedial and removal actions, and (3) establishing priorities for action and development of

schedules, consistent with the established priorities, goals and objectives of this Agreement. This Agreement delineates the relationship between its requirements and the requirements for corrective measures being conducted under Sections 3004(u) and 3004(v) of the Resource Conservation and Recovery Act (RCRA), 42 U.S.C. § 6924(u) and 6924(v), as amended by the Hazardous and Solid Waste Amendments of 1984 (HSWA), and KRS 224 Chapter 46, according to the conditions of PGDP's Federal Environmental Protection Agency RCRA Permit (the "HSWA" Permit) and Kentucky's Hazardous Waste Permit (collectively, the "RCRA Permits") and actions taken in accordance with a certain Administrative Consent Order dated November 23, 1988, (the "ACO"), pursuant to Section 106 of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), 42 U.S.C. § 9620(e)(1), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), Pub. L. 99-499. It incorporates the site investigation process as begun at PGDP in accordance with the ACO issued November 1988 and the RCRA Permits, and addresses those releases included in the RCRA Permits and any newly discovered releases at or from units not identified in the RCRA Permits. This Agreement sets forth the CERCLA requirements to address releases of hazardous or radioactive substances or both not specifically regulated by RCRA and/or KRS 224 Chapter 46.

This Agreement governs the corrective/remedial action process from site investigation through site remediation and

describes procedures for the Parties to set annual work priorities (including schedules and deadlines) for that process. The Parties will coordinate the administrative and public participation processes prescribed by the various statutes (e.g., RCRA and CERCLA) governing the corrective/remedial action process at PGDP. Upon execution of this Agreement, the CERCLA ACO shall be terminated and the Parties agree that all DOE obligations and actions required by the CERCLA ACO are satisfied and complete.

This Agreement also consists of Appendices A through G. In the event of any inconsistency between this Agreement and its Appendices, this Agreement shall govern unless and until modified under Section XXXIX (Modification of Agreement) of this Agreement.

I. JURISDICTION

A. Each Party is entering into this Agreement pursuant to the following authorities:

1. The U. S. Environmental Protection Agency (EPA), Region IV, enters into those portions of this Agreement that relate to: (1) the remedial investigation/feasibility study (RI/FS) pursuant to Section 120(e)(1) of CERCLA; (2) the RCRA Facility Investigation/Corrective Measures Study (RFI/CMS) pursuant to RCRA Sections 3004(u), 3004(v), 3008(h) and 6001, 42 U.S.C. §§ 6924(u), 6924(v), 6428(h), and 6961;

2. EPA enters into those portions of this Agreement

that relate to: (1) interim and final remedial actions pursuant to Section 120(e)(2) of CERCLA; and (2) corrective measures implementation, including interim measures, pursuant to Sections 3004(u), 3004(v), 3008(h) and 6001 of RCRA;

3. The U. S. Department of Energy (DOE) enters into those portions of this Agreement that relate to: (1) the RI/FS pursuant to Section 120(e)(1) of CERCLA; (2) the RFI/CMS pursuant to Sections 3004(u), 3004(v), 3008(h) and 6001 of RCRA; (3) the National Environmental Policy Act, 42 U.S.C. § 4321; and (4) the Atomic Energy Act of 1954 (AEA), as amended, 42 U.S.C. § 2201;

4. DOE enters into those portions of this Agreement that relate to: (1) interim and final remedial actions pursuant to Section 120(e)(2) of CERCLA; (2) corrective measures implementation, including interim measures, pursuant to Sections 3004(u), 3004(v), 3008(h) and 6001 of RCRA; and (3) the AEA;

5. DOE will take all necessary actions in order to fully effectuate the terms of this Agreement, including undertaking response actions on the Site (as such term is hereinafter defined) in accordance with laws, standards, limitations, criteria, and requirements under Federal or Kentucky law to the extent consistent with CERCLA, RCRA and KRS 224 Chapter 46.

6. The Kentucky Natural Resources and Environmental Protection Cabinet (KNREPC) enters into this Agreement pursuant to Sections 107, 120(f) and 121(f) of CERCLA; Section 3006 of

RCRA and the Kentucky Revised Statutes Sections 224.46-530 and 224.10-100. On April 26, 1996 at 61 Fed. Reg. 18,504, EPA, pursuant to RCRA Section 3006, gave Kentucky final authorization, effective June 25, 1996, to administer the Corrective Action portions of HSWA, specifically including 42 U.S.C. § 6924(u) and (v).

B. The National Priorities List (NPL) is promulgated under Section 105 of CERCLA, 42 U.S.C. § 9605 and at 40 C.F.R. Part 300. The Paducah Site was included by EPA on the Federal Agency Hazardous Waste Compliance Docket established under Section 120 of CERCLA, 42 U.S.C. § 9620, (See Federal Register February 12, 1988). EPA Region IV has evaluated the Paducah Site for inclusion on the NPL. The site was proposed for inclusion on the NPL in Federal Register May 10, 1993. The Site was listed on the NPL on May 31, 1994 at 59 Fed. Reg. 27,989. The Parties intend that this Agreement shall satisfy the requirements for an interagency agreement under Section 120 of CERCLA, 42 U.S.C. § 9620, for the Paducah Site.

II. DEFINITIONS

Except as provided below or otherwise explicitly stated in this Agreement, the definitions provided in CERCLA and the National Oil and Hazardous Substances Pollution Contingency Plan, 40 C.F.R. Part 300 (hereinafter the National Contingency Plan or

NCP) and RCRA and its implementing regulations, as they may be amended, shall control the meaning of the terms used in this Agreement unless such terms are otherwise modified by the Parties. This Agreement references documents and terms required by DOE's RCRA Permits. Appendix A to this Agreement identifies those documents and their CERCLA equivalents. For the purposes of this Agreement and the work required herein, any and all references to the documents or terms identified in Appendix A shall use the CERCLA terminology to simplify use of terms (e.g.,: any reference to an RI shall also include a reference to an RFI).

In addition, the following definitions are used for purposes of this Agreement.

A. Additional Work shall mean any work agreed upon by the Parties under Section XIX (Additional Work) to this Agreement.

B. Atomic Energy Act (AEA) shall mean the Atomic Energy Act of 1954, as amended, 42 U.S.C. §§ 2011, et seq.

C. Agreement shall mean this document and shall include all Appendices to this document referred to herein. All such Appendices shall be enforceable in accordance with Section XLIV (Enforceability) of this Agreement.

D. Applicable Kentucky Laws shall include but not be limited to all laws determined to be applicable or relevant and appropriate requirements (ARARs) as described in Section 121(d) of CERCLA, 42 U.S.C. § 9621(d). It is recognized that in some

instances in which this phrase is used, there may be no applicable Kentucky laws.

E. ARAR(s) shall mean "legally applicable" or "relevant and appropriate", standards, requirements, criteria, or limitations as those terms are used in Section 121(d)(2)(A) of CERCLA, 42 U.S.C. § 9621(d)(2)(A).

F. Areas of Concern (AOC) shall include any area having a probable or known release of a hazardous waste, hazardous constituent or hazardous substance which is not from a solid waste management unit and which poses a current or potential threat to human health or the environment. Such areas of concern may require investigations and remedial action, in accordance with the requirements of this Agreement.

G. Authorized Representatives shall mean a Party's employees, agents, successors, assigns, and contractors acting in any capacity, including an advisor capacity, when so designated by that Party.

H. CERCLA shall mean the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 42 U.S.C. §§ 9601, et seq., as amended by the Superfund Amendments and Reauthorization Act of 1986, Pub. L. 99-499.

I. Corrective Action shall mean those actions necessary to correct releases to all media from all Solid Waste Management Units and/or AOCs at RCRA facilities. Corrective Action consists

primarily of four steps: the RCRA Facility Assessment, the RCRA Facility Investigation, the Corrective Measures Study, and the Corrective Measures Implementation (including interim measures). For the purposes of this Agreement, the term Corrective Action shall be equivalent to the terms Respond, Response or Response Action.

J. Corrective Measures Implementation (CMI) shall mean the design, construction, operation, maintenance, and monitoring of selected corrective measures. For the purposes of this Agreement, the CMI shall meet the requirements of RCRA, the corrective action requirements of KRS 224 SubChapter 46, their implementing regulations and the RCRA Permits, and shall be equivalent to the Remedial Design/Remedial Action.

K. Corrective Measures Study (CMS) shall mean the study or report identifying and recommending, as appropriate, specific corrective measures that will correct the release(s) identified during the RCRA Facility Investigation. For the purposes of this Agreement, the CMS shall be equivalent to the Feasibility Study.

L. Days shall mean calendar days, unless business days are specified. Any submittal or written statement of dispute that, under the terms of this Agreement, would be due on a Saturday, Sunday, or holiday shall be due on the following business day:

M. DOE shall mean the United States Department of Energy and its authorized representatives.

N. Draft (D1) Primary Document shall mean the first draft of a report or work plan issued by DOE for any primary document listed in Section XX.C.1 and transmitted to EPA and KNREPC for review and comment under Section XX (Review/Comment On Draft/Primary Documents) of this Agreement except for RODs and IM Reports. The first draft of RODs and IM Reports shall represent the Draft-Final (D2) Primary Document.

O. Draft-Final (D2) Primary Document shall mean the revised draft report or work plan issued by DOE for any primary document listed in Section XX.C.1 (Review/Comment On Draft/Primary Documents) after receipt of comments from the EPA and KNREPC and before it becomes a final primary document under Section XX (Review/Comment On Draft/Primary Documents). All Draft-Final Primary Documents will be designated D2. A D2 Primary Document may be subject to the dispute resolution procedures of Section XXV (Resolution of Disputes) of this Agreement.

P. EPA shall mean the United States Environmental Protection Agency and its authorized representatives.

Q. Feasibility Study(s) (FS) shall mean a study to develop and evaluate options for remedial action. The FS emphasizes data analysis and is generally performed concurrently and in an interactive fashion with the remedial investigation (RI), using the data gathered during the RI. The RI data are used to define the objectives of the response action, to develop remedial action

alternatives, and to undertake an initial screening and detailed analysis of the alternatives. The term also refers to the report that describes the results of the study. For purposes of this Agreement, the FS shall be equivalent to the CMS.

R. Hazardous Constituent(s) shall mean those substances listed in Appendix VIII to 40 C.F.R. Part 261 and includes Hazardous Constituents listed in Table 1 of 40 C.F.R. § 261.24.

S. Hazardous Substances shall have the meaning set forth in Section 101(14) of CERCLA, 42 U.S.C. § 9601(14).

T. Hazardous Waste(s) shall have the meaning set forth by § 1004(5) of RCRA, 42 U.S.C. § 6903(5) and in 40 C.F.R. Parts 260 and 224 KRS 01-010 (31)(b).

U. Interim Measures (IM) shall mean those measures conducted in accordance with Condition II.E. of the EPA HSWA Permit and Condition IV.E of DOE's Kentucky Hazardous Waste Permit to contain, remove, mitigate, or treat contamination resulting from the release of Hazardous Constituents from Solid Waste Management Units and AOCs in order to protect against current or potential threats to human health and the environment. Such measures shall be equivalent to Interim Remedial Actions or Removal Actions under this Agreement.

V. Interim Remedial Action shall mean a temporary or non-final action performed in anticipation of a subsequent final remedy decision. Such actions may be necessary to, among other

things, control or prevent the further spread of contamination while a final comprehensive remedy is being developed. A ROD specifying Interim Remedial Action for an Operable Unit necessitates an incomplete RI/FS for that Operable Unit. Therefore, an RI/FS for an Operable Unit undergoing an Interim Remedial Action, shall be continued or planned in accordance with Section XVIII (Site Management, Timetables and Deadlines, Budget Planning and Execution, Cost and Productivity Savings) of this Agreement.

W. KNREPC shall mean the Commonwealth of Kentucky's Natural Resources and Environmental Protection Cabinet and its authorized representatives.

X. National Contingency Plan (NCP) shall mean the National Oil and Hazardous Substances Pollution Contingency Plan, 40 C.F.R. Part 300, and any amendments thereto.

Y. National Priorities List (NPL) Site shall mean the Site as finally promulgated at 40 C.F.R. Part 300.

Z. On-site shall mean the areal extent of contamination and all suitable areas in very close proximity to the contamination necessary for implementation of the response action, 40 C.F.R. Section 300.400(e). Nothing contained in this paragraph Z shall limit any authority KNREPC has, absent this Agreement, to enforce the requirements of Kentucky law.

AA. Operable Unit (OU) shall mean a discrete action that

comprises an incremental step toward comprehensively addressing Site problems. This discrete portion of a remedial response manages migration, or eliminates or mitigates a release, threat of release, or pathway of exposure. The cleanup of the Site can be divided into a number of OUs, depending on the complexity of the problems associated with the Site. OUs may address geographic portions of the Site, specific Site problems, or initial phases of an action, or may consist of any set of actions performed over time or any actions that are concurrent but located in different parts of the Site. A Comprehensive Site (CS) OU is an OU which integrates the information obtained from Potential OU RI/FS activities regarding environmental media (i.e., surface water OU and ground water OU) which has been contaminated by commingled source Releases. OUs will not impede implementation of subsequent response actions at the Site.

BB. Paducah Gaseous Diffusion Plant (PGDP) shall mean the lands owned by the United States and under the jurisdiction of DOE (approximately 3,423 acres) that are located in Western McCracken County, Kentucky, approximately 10 miles west of Paducah Kentucky. PGDP is described in more detail in Section VIII (Site Description) of this Agreement.

CC. Parties shall mean all parties who are signatories to this Agreement.

DD. Potential Operable Units shall mean those areas listed

in the most recently approved SMP and RCRA Permits which are to be addressed under a single RI/FS Work Plan which may lead to a single Proposed Plan (as such term is hereafter defined) and a corresponding RCRA Permit modification for the Potential OU as a whole, or multiple Interim Remedial Action OU Proposed Plans. Waste Area Groupings identified in the RCRA Permits shall be included in the list of Potential OUs.

EE. Project Manager(s) shall mean the officials designated by EPA, DOE, and KNREPC to coordinate, monitor, or direct remedial response actions at the Site.

FF. Proposed Plan shall be the report which briefly describes the remedial alternatives analyzed, proposes a preferred remedial action alternative, and summarizes the information relied upon to select the preferred alternative. The Proposed Plan shall meet the criteria established in 40 C.F.R. Section 300.430(f)(2). The Proposed Plan shall be considered as equivalent to the Draft Permit Modification.

GG. Quality Assured Data shall mean data that have undergone the quality assurance process as set forth in the approved Quality Assurance Plan.

HH. RCRA shall mean the Resource Conservation and Recovery Act, 42 U.S.C. §§ 6901, et seq., as amended. 98-616.

II. RCRA closure and post-closure care shall mean closure and post-closure care of hazardous waste management units under

40 C.F.R. Parts 264 and 265 or the Commonwealth of Kentucky's corresponding regulations.

JJ. RCRA Facility Assessment(s) (RFA(s)) shall mean the assessment(s) performed under RCRA to identify actual and potential releases from regulated units and other Solid Waste Management Units located at PGDP. This includes Solid Waste Management Unit (SWMU) Assessment Reports for newly discovered SWMUs identified since issuance of the RCRA Permits. For the purposes of this Agreement, RFA shall include removal and remedial site evaluations.

KK. RCRA Facility Investigation (RFI) shall mean an investigation performed in accordance with the RCRA Permits to gather data sufficient to adequately characterize the nature, extent and rate of migration of actual and potential hazardous constituent releases identified in the RFA. For purposes of this Agreement, RFI shall be equivalent to the Remedial Investigation.

LL. Record of Decision (ROD) shall mean the document issued which describes a remedial action plan for an Operable Unit pursuant to Section 117(b) of CERCLA, 42 U.S.C. § 9617 and shall be consistent with 40 C.F.R. 300.430(f)(5).

MM. Release shall mean any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment (including the abandonment or discarding of barrels, containers, and other

closed receptacles containing any hazardous substance or pollutant or contaminant), but excludes 1) any Release which results in exposure to persons solely within a workplace, with respect to a claim which such persons may assert against the employer of such person, 2) emissions from the engine exhaust of a motor vehicle, rolling stock, aircraft, vessel, or pipeline pumping station engine, 3) Release of source, byproduct, or special nuclear material from a nuclear incident, as those terms are defined in the AEA, if such Release is subject to requirements with respect to financial protection established by the Nuclear Regulatory Commission under Section 170 of the AEA, or, for the purposes of Section 104 of CERCLA or any other response action, any Release of source, byproduct, or special nuclear material from any processing site designated under Section 102(a)(1) or 302(a) of the Uranium Mill Tailings Radiation Control Act of 1978, 4) the normal application of fertilizer, and 5) the Releases of petroleum as excluded under Section 101(14) and (33) of CERCLA, 42 U.S.C. § 9601(14) and (33). However, nothing herein shall affect DOE's obligation to report Releases of petroleum pursuant to KRS 224.01-400 and 224.01-405.

NN. Regulated Unit shall mean a surface impoundment, waste pile, and land treatment unit or landfill that receives hazardous waste after July 26, 1982.

OO. Remedial Action (RA) shall mean the implementation of the RA Work Plan, in accordance with the ROD, the approved Remedial Design (RD), the NCP and Superfund Remedial Design and RA Guidance including on-site construction, treatment processes, and any other necessary tasks and shall be consistent with 42 U.S.C. Section 9601(24). For the purposes of this Agreement, the RA shall be equivalent to the CMI which shall meet the requirements of the RCRA Permits.

PP. Remedial Action Work Plan shall mean the plan describing the implementation of the RA selected for remediation of an OU.

QQ. Remedial Design (RD) Report shall mean the report which specifies the technical analysis and procedures which follow the selection of a remedy and result in a detailed set of plans and specifications for final design of the RA. In accordance with the approved RD Work Plan, Intermediate RD Reports and a Final RD Report shall be submitted for review and comment in accordance with Section XX (Review/Comment on Draft/Final Documents) of this Agreement. The design shall generally be developed in phases (e.g., 30%, 60%, 90%, etc.,) with Intermediate RD Reports for each primary design development/review phase.

RR. Remedial Design (RD) Work Plan shall mean the plan specifying the approach to developing the RD. This plan shall

specify the general content, approach, and schedule for submitting the secondary Intermediate RD Report(s) and the D1 RD Report. Generally, the RD Work Plan shall include the conceptual design.

SS. Remedial Investigation (RI) shall mean an investigation conducted to adequately assess the nature and extent of the Release or threat of Release of Hazardous Substances, pollutants or contaminants, or Hazardous Wastes and Hazardous Constituents and to gather necessary data to support the corresponding baseline risk assessment and FS and shall be consistent with 40 C.F.R. 300.5. For purposes of this Agreement, the RI shall be equivalent to the RFI.

TT. Removal Action shall have the same meaning as "remove" or "removal" as defined by Section 101(23) of CERCLA, 42 U.S.C. § 9601(23). For the purposes of this Agreement, Removal Action shall be equivalent to IM under the RCRA Permits.

UU. Respond, Response or Response Action shall have the meaning set forth in Section 101(25) of CERCLA, 42 U.S.C. § 9601(25). For purposes of this Agreement, the terms respond, response and response action shall be equivalent to Corrective Action.

VV. Site (Paducah Site) shall mean "facility" as defined by Section 101(9) of CERCLA, 42 U.S.C. § 9601(9), and includes all areas contaminated by Hazardous Substances, pollutants or

contaminants, or Hazardous Wastes and Hazardous Constituents from Releases at PGDP. This definition is not intended to limit CERCLA, RCRA, or any other federal response authorities or Kentucky authorities.

WW. Site Management Plan (SMP) shall mean the plan, to be updated annually, which establishes the fiscal year, fiscal year +1, fiscal year +2, and any outyear enforceable commitments (i.e., surface and ground water OU completion dates), and long term projections schedule for work planned in accordance with Section XVIII (Site Management, Timetables and Deadlines, Budget Planning and Execution, Cost and Productivity Savings) of this Agreement. The SMP is Appendix G hereto.

XX. Solid Waste shall have the meaning set forth by Section 1004(27) of RCRA, 42 U.S.C. § 6903(27) and in 40 C.F.R. Part 261 and KRS 224.01-010(31).

YY. Solid Waste Management Unit (SWMU) means any discernible unit at which solid wastes have been placed at any time, irrespective of whether the unit was intended for the management of solid or Hazardous Waste. Such units include any area at a facility at which routine and systematic releases of hazardous wastes or hazardous constituents has occurred.

ZZ. Kentucky shall mean the Commonwealth of Kentucky.

AAA. Treatment, Storage, and Disposal (TSD) Units shall include all hazardous waste management units, as the term is

defined by 40 C.F.R. 260.10 and 401 KAR 30:010, authorized to treat, store, and dispose of RCRA hazardous wastes under the RCRA "base program" administered by the Commonwealth of Kentucky.

BBB. Timetables and Deadlines shall mean schedules as well as that work and those actions that are to be completed and performed in conjunction with such schedules, including performance of actions and schedules established pursuant to Section XVIII (Site Management, Timetables and Deadlines, Budget Planning and Execution, Cost and Productivity Savings), Section XIX (Additional Work), Section XX (Review/Comment On Draft/Primary Documents), and Section XXV (Resolution of Disputes) of this Agreement.

CCC. Waste Area Grouping (WAG) shall mean a group of solid waste management units and/or other Areas Of Concern that are geographically contiguous, hydrologic units or SWMUs/AOCs that exhibit other common characteristics (e.g., contaminant type, remedial alternatives, etc.). DOE may consolidate SWMUs, WAGs, and/or other areas into single groupings for purposes of conducting any work under this Agreement and with the concurrence of EPA and KNREPC. Potential OUs include a WAG or a group of WAGs which assemble SWMUs/AOCs under a single RI/FS Work Plan to facilitate effective site characterization.

III. PURPOSES OF AGREEMENT

A. The general purposes of this Agreement are to:

1. Ensure that the environmental impacts associated with past and present activities at the Site are thoroughly investigated and that appropriate response action is taken as necessary to protect the public health and welfare and the environment.

2. Ensure that all Releases of Hazardous Substances, pollutants or contaminants as defined by CERCLA and all Releases of Hazardous Wastes as defined by RCRA and KRS Section 224 or Hazardous Constituents as defined by RCRA are addressed so as to achieve a comprehensive remediation of the Site;

3. Establish a procedural framework and schedule for developing, implementing, and monitoring appropriate response actions at the Site in accordance with CERCLA, the NCP, RCRA Sections 3004(u) and (v), 3008(h), the RCRA Permits the Corrective Action Provisions of KRS 224 Subchapter 46, and appropriate guidance and policy, and in accordance with the law of the Commonwealth of Kentucky;

4. Facilitate cooperation, exchange of information, and participation of the Parties and provide for effective public participation;

5. Minimize the duplication of investigative and analytical work and documentation and ensure the quality of data management;

6. Ensure that response action(s) at the Site will be

in compliance with ARARs (unless a particular ARAR is waived pursuant to 40 CFR §300.430(f)(1)(ii)(C));

7. Expedite response actions with a minimum of delay;

8. Establish a basis for a determination that DOE has completed the RI/FS(s), RD(s), and RA(s) at the Site pursuant to CERCLA, the NCP and the corrective action provisions of KRS 224 Subchapter 46;

9. Coordinate response actions under CERCLA, including actions taken under the ACO, with the Corrective Action activities required by the RCRA Permits and Kentucky hazardous waste laws.

10. Coordinate response actions under CERCLA, RCRA Sections 3004(u) and (v), 3008(h), the Corrective Action Provisions of KRS 224 Subchapter 46, and this Agreement with any investigatory/response actions that may be required pursuant to the KPDES, for those outfall ditches subject to investigation under this Agreement;

11. Coordinate an early review of response actions by the appropriate federal and Kentucky Natural Resources Trustees to minimize or eliminate potential injury to natural resources. Provided, however, that nothing herein shall be deemed to vest in the Natural Resource Trustees any authority they would not otherwise have absent this Agreement.

B. Specifically, the purposes of this Agreement are to:

1. Establish requirements for conducting the removal actions identified or to be identified in Section X (Removal Actions) consistent with the purposes of this Agreement and in a manner consistent with the NCP and the RCRA Permits.

2. Identify Potential OUs, and OUs for Interim RAs, which are necessary or appropriate at the Site in accordance with the program management principles of the NCP. This process is designed to promote cooperation among the Parties in the early identification of Potential OUs and to coordinate the investigatory process with the evaluation of remedial alternatives prior to selection of an Operable Unit(s) via a Proposed Plan.

3. Establish one set of consistent requirements, consistent with the NCP, and the RCRA Permits, for the performance of an RI(s) to adequately determine the nature and extent of the threat to the public health or welfare or the environment caused by the Release or threatened Release of Hazardous Substances, pollutants or contaminants, or Hazardous Wastes and hazardous constituents at the Site in accordance with CERCLA, RCRA Sections 3004(u) and (v), 3008(h), the Corrective Action Provisions of KRS 224 Subchapter 46, and in compliance with ARARs identified pursuant to this Agreement. Appendix B lists those SWMUs or AOCs under the RCRA Permits requiring an RI.

4. Establish one set of consistent requirements, consistent with the NCP, and the RCRA Permits for the performance of an FS(s) for the Site to identify, evaluate, and select alternatives for the appropriate RA(s) to prevent, mitigate, or abate the Release or threatened Release of Hazardous Substances, pollutants or contaminants, or Hazardous Wastes and Hazardous Constituents at the Site in accordance with CERCLA, RCRA Sections 3004(u) and (v), 3008(h), the Corrective Action Provisions of KRS 224 Subchapter 46, and in compliance with ARARs identified pursuant to this Agreement.

5. Establish requirements for the performance of a periodic review of response actions to determine fully the nature and extent of the threat to the public health or welfare or the environment anticipated to remain at the Site, including risks associated with more than one Operable Unit. The periodic review shall be performed in accordance with Section XXX (Five Year Review) of this Agreement.

6. Identify the nature, objective and schedule of response actions to be taken at the Site. Response actions at the Site shall attain that degree of remediation of Hazardous Substances, pollutants or contaminants, or Hazardous Wastes and Hazardous Constituents, as mandated by CERCLA, RCRA Sections 3004(u) and (v), 3008(h), the Corrective Action Provisions of KRS 224 Subchapter 46, and in compliance with ARARs identified

pursuant to this Agreement.

7. Implement the selected removal actions and RAs (including Interim Remedial Actions) in accordance with CERCLA, the NCP, RCRA Sections 3004(u) and (v), 3008(h), the RCRA Permits, the Corrective Action Provisions of KRS 224 Subchapter 46, and in compliance with ARARs identified pursuant to this Agreement.

8. Meet the requirements of Section 120(e)(2) of CERCLA, 42 U.S.C. § 9620(e)(2).

9. Provide for continued operation and maintenance following implementation of the selected RA(s).

10. Assure compliance with Federal and Commonwealth of Kentucky hazardous waste laws and regulations for matters covered by this Agreement.

11. Expedite the remediation process to the extent necessary to protect human health and welfare and the environment.

12. Provide for the continuation of the actions initiated under the ACO and ensure that such actions are in compliance with this Agreement, the NCP and RCRA Sections 3004(u) and (v), 3008(h), and the Corrective Action Provisions of KRS 224 Subchapter 46.

13. Provide for early and meaningful public involvement in the initiation, development, and selection of remedial

action(s) to be undertaken at the Site, including the review of all applicable data as it becomes available and the development of studies, reports, and action plans.

14. Provide a framework for reducing the costs of clean-up activities at the Site through improved project management, greater involvement of EPA and KNREPC in DOE's planning and budgeting processes, improved oversight of clean-up, greater use of consultative approaches, and elimination or streamlining of unnecessary procedures.

C. Under this Agreement, DOE agrees that it shall conduct, at a minimum, the following activities to meet the purposes of this Agreement:

1. Perform site evaluations for those areas with potential or known Releases of Hazardous Substances, pollutants or contaminants, or Hazardous Wastes and Hazardous Constituents identified after the effective date of this Agreement, pursuant to Section IX (Site Evaluations) of this Agreement.

2. Identify and prioritize Potential OUs at the Site for the purposes of expediting removal actions/RAs for those OUs which pose the greatest risks of exposure and/or migration. The identification and prioritization of Potential OUs shall meet the requirements of Section XVIII (Site Management, Timetables and Deadlines, Budget Planning and Execution, Cost and Productivity Savings) of this Agreement.

3. Conduct removal actions for the Site in accordance with the timetables set forth in Appendix C of this Agreement. The removal actions shall meet the requirements set forth in Section X of this Agreement.

4. For each final Potential OU (involving final Remedial Action) at the Site, conduct an RI and prepare a Baseline Risk Assessment in accordance with the timetables set forth in Appendix C of this Agreement. The RI and Baseline Risk Assessment shall meet the requirements set forth in Section XI of this Agreement. The scope of the RI and Baseline Risk Assessment shall reflect the scope of the response action for the action under consideration.

5. For each final Potential OU (involving final Remedial Action) at the Site, conduct, develop, and prepare an FS in accordance with the timetables set forth in Appendix C of this Agreement. The FS shall meet the requirements set forth in Section XII of this Agreement. The scope of the FS shall reflect the scope of the action under consideration.

6. Following completion of the RI, Baseline Risk Assessment, and FS for each of the Potential OUs, publish a Proposed Plan for public review and comment in accordance with the timetables set forth in Appendix C of this Agreement. The Proposed Plan shall meet the requirements of Section XIV of this Agreement.

7. For each of the OUs at the Site, issue a ROD in accordance with the timetables set forth in Appendix C of this Agreement. The ROD shall meet the requirements of Section XIV of this Agreement.

8. Develop documentation necessary to support Interim RAs, as required pursuant to Section XIV.B of this Agreement.

9. For the Comprehensive Site Operable Unit(s) (CS OUs) (i.e., surface and ground water integrator units) required in accordance with Section XIII of this Agreement, conduct and report upon a RI/FS (including Baseline Risk Assessment), in accordance with the timetables set forth in Appendix C of this Agreement. The CS OU RI/FS(s) shall be carried out in accordance with Section XIII of this Agreement, and any necessary remedial action shall be selected and implemented in accordance with Sections XIV and XV of this Agreement. In the event EPA and Kentucky determine after review of the Final CS OU, as described in Section XIII of this Agreement, that the selected response actions are not protective of human health and the environment, as required by CERCLA, the NCP, RCRA Sections 3004(u) and (v), 3008(h), the Corrective Action Provisions of KRS 224 Subchapter 46, and appropriate EPA policy and guidance, the three Parties to this Agreement agree to modify the Agreement to take the necessary action to provide adequate protection to human health and the environment.

10. Following finalization of each ROD for each Operable Unit, as set forth in Section XIV of this Agreement, DOE shall develop and submit a RD/RA Work Plan for the design and implementation of the RA(s) selected in each ROD in accordance with Section XV of this Agreement.

11. Following review and approval by EPA and KNREPC of the RD/RA Work Plans for each OU, DOE shall implement the RA(s) in accordance with Section XV of this Agreement.

IV. RCRA/CERCLA AND KPDES COORDINATION

A. The Parties intend to use this agreement to coordinate DOE's CERCLA response obligations with the corrective measures required by its current RCRA Permits and Kentucky's hazardous waste statutes and regulations. The Parties further intend that the response actions under this Agreement together with the corrective measures required by the RCRA Permits, will achieve comprehensive remediation of Releases and threatened Releases of Hazardous Substances, pollutants or contaminants or Hazardous Wastes and Hazardous Constituents from the SWMUs/AOCs in Appendix B, as well as any other Hazardous Substances, pollutants or contaminants, or Hazardous Wastes and Hazardous Constituents from sources identified pursuant to this Agreement. Response actions under this Agreement will address Hazardous Substances, pollutants or contaminants, as defined under CERCLA, in addition to Hazardous Wastes and Hazardous Constituents, as defined under

RCRA. Therefore, the Parties intend that compliance with the terms of this Agreement will be deemed to achieve compliance with CERCLA, 42 U.S.C. §§ 9601, et seq.; the Corrective Action requirements of Sections 3008(h) of RCRA, 42 U.S.C. § 6928(h) for Interim status facilities; the investigation and Corrective Action requirements of § 3004(u) and (v) of RCRA, 42 U.S.C. § 6924(u) and (v); and the Corrective Action requirements of KRS 224 Subchapter 46. The parties also intend that remediation at the Site will meet or exceed all applicable or relevant and appropriate Federal and Kentucky laws and regulations to the extent required by Section 121 of CERCLA, 42 U.S.C. § 9621. The documents common to RCRA and CERCLA, and a flowchart for their submittal is provided in Appendix A to this Agreement. For purposes of coordinating CERCLA, RCRA, and the corrective action requirements of KRS 224 Subchapter 26, the technical documents required pursuant to the CERCLA response action and the federal and Kentucky RCRA corrective action process will be deemed equivalent, provided that the elements of Appendix D are considered and incorporated as appropriate.

B. Further, the Parties intend to coordinate the remedial activities that are regulated under this Agreement with the requirements of the Federal Facility Compliance Act to develop a plan for treatment of those mixed wastes that are: (1) generated by actions under this Agreement, and (2) required to be treated

to meet RCRA Section 3004(m) and KRS 224 Subchapter 46 standards. The Parties agree that all mixed wastes generated by actions under this Agreement will be regulated by the approved Site Treatment Plan and Order enforced by KNREPC in lieu of being regulated under this Agreement.

Finally, the Parties intend to coordinate DOE's RCRA/CERCLA response obligations with the requirements of the KPDES Permit for the Site to evaluate contaminated surface water discharges. This coordination specifically applies to the outfall ditches identified in Appendix B and any other discharge applicable to KPDES permitting, resulting from, at least in part, SWMU or AOC hazardous constituent Releases, or any other hazardous substance Releases identified in Appendix B to this Agreement.

However, the Parties recognize that:

- a. DOE is obligated to comply with the applicable requirements of RCRA, KRS 224 Subchapter 46, CERCLA and Kentucky environmental law for all remedial activities under this Agreement;
- b. the coordination of these statutory requirements under this Agreement in no way diminishes DOE's obligations;
- c. the inclusion of these statutory requirements in a single document serves to facilitate DOE's efficient compliance with these statutory requirements; and
- d. the Agreement is a single document that has a dual purpose

of serving both as a CERCLA § 120 Interagency Agreement and a KRS 224 Subchapter 46 corrective action order; the requirements of both are enforceable by the parties.

C. This Agreement expands the RFAs and Investigations at PGDP, in a manner consistent with Conditions II.C. and II.D.1.b. of the EPA HSWA permit and Conditions IV.C. and IV.D.1.b. of the Kentucky Hazardous Waste Permit, to include requirements to investigate Releases at or from units not identified in the EPA HSWA Permit and the Kentucky Hazardous Waste Permit issued July 16, 1991. The Parties intend to coordinate and combine the assessments, investigations, and other response actions at the Site. Work done and data generated prior to the effective date of this Agreement pursuant to the ACO or the RCRA Permits shall be retained and utilized as appropriate under this Agreement to the maximum extent feasible. A list of the documents submitted to EPA and/or KNREPC pursuant to the ACO and the RCRA Permits is contained in Appendix E. Appendix F identifies the statutory framework governing review of such documents and further identifies whether or not approval of the document was granted. All documents submitted, but not approved, as of the effective date of this Agreement, shall be reviewed and approved in accordance with CERCLA, the NCP, RCRA Sections 3004(u) and (v), 3008(h), the RCRA Permits and the Corrective Action Provisions of KRS 224 Subchapter 46. All documents submitted after the

effective date of this Agreement shall be reviewed and approved in accordance with this Agreement. The Parties intend to combine the administrative records and files developed for activities under the RCRA Permits and any previous response actions with response actions under this Agreement in order to facilitate public participation in the selection of response actions under this Agreement and to ensure comprehensive remediation of the Site. The Parties shall coordinate the procedures for the selection of response action(s) under this Agreement with the administrative procedures for issuance of any future modifications of the RCRA Permits. Subject to Section XL (Reservation of Rights) of this Agreement, EPA and/or KNREPC will modify DOE's RCRA Permits to incorporate the RA(s) selected under this Agreement as corrective measures, when appropriate to satisfy Sections 3004(u) and (v) of RCRA, 42 U.S.C. §§ 6924(u) and (v), and the Corrective Action requirements of Kentucky's Hazardous Waste statutes and regulations. Upon signature of this Agreement by all parties, EPA and KNREPC shall modify DOE's RCRA Permits to amend the compliance schedule for Sections 3004(u) and (v) of RCRA, 42 U.S.C. §§ 6924(u) and (v), and KRS 224 Subchapter 46 to reference the Timetables and Deadlines of this Agreement, as well as other provisions of DOE's RCRA Permits necessary to facilitate coordination with the requirements of this Agreement. If, due to public comment or appeal, any amendment to DOE's RCRA

Permits being made to facilitate such coordination is changed so as to cause inconsistency between the requirements of DOE's RCRA Permits and this Agreement, the Parties agree to modify this Agreement so as to minimize or eliminate the inconsistency to the extent allowable under applicable law.

D. The Parties recognize that the requirement to obtain Permits for response actions undertaken pursuant to this Agreement shall be as provided for in Section XXI of this Agreement.

E. Notwithstanding any provision of this Agreement, any challenges to response actions selected or implemented under Sections 104, 106, or 120 of CERCLA, 42 U.S.C. §§ 9604, 9606, or 9620, may be brought only as provided in Section 113 of CERCLA, 42 U.S.C. § 9613. Judicial review of any conditions of the RCRA Permits which reference this Agreement shall, to the extent authorized by law, be consistent with this Subparagraph E. Nevertheless, KNREPC asserts that nothing in this Agreement shall preclude the KNREPC from taking any action to enforce any requirement of RCRA or KRS Subchapter 46 consistent with Section XL (Reservation of Rights) of this Agreement. DOE reserves the right to appeal any modification to the RCRA Permits which is different from the corresponding response action selected or implemented under this Agreement. The timing of such appeal shall not be limited by this Subparagraph D. DOE also reserves

the right to appeal any modification of the RCRA Permits which is inconsistent with RCRA or KRS 224.

F. KNREPC decisions for TSD Units over which KNREPC has regulatory authority, and for which KNREPC has issued RCRA Hazardous Waste Permits establishing operating, closure, or post-closure standards for treatment, storage and disposal shall not be subject to the terms of this Agreement. Appendix B, which lists such units, will be revised by KNREPC periodically, as appropriate.

G. All materials removed from the Site shall be disposed of or treated at facilities operating in compliance with applicable provisions of RCRA, the Toxic Substances Control Act, 15 U.S.C. §2601 et seq., and other applicable Federal and Kentucky requirements, including U.S. EPA's Off-Site Policy 42 U.S.C. §9657 and 40 CFR §300.440.

V. STIPULATED FACTS

A. For purposes of this Agreement only, the stipulated facts presented herein constitute a summary of facts upon which this Agreement is based. None of the facts related herein shall be considered admissions by any Party. This Section contains findings of fact determined solely by the Parties and shall not be used by any other person related or unrelated to this Agreement for purposes other than determining the basis of this Agreement.

B. PGDP is owned by DOE and is used for the enrichment of uranium for use in fueling power plants. The United States Enrichment Corporation (USEC), a wholly owned federal government corporation, leases and operates portions of PGDP in accordance with the Energy Policy Act of 1992, P.L. 102-486 (signed October 24, 1992), and is subject to the USEC Privatization Act, P.L. 104-134 (signed April 26, 1996) and the lease provisions between DOE and USEC.

C. DOE performed a baseline environmental survey in 1986 which revealed approximately ninety-three (93) areas in which Hazardous Substances may have been Released into the environment within the meaning of Section 101(22) of CERCLA, 42 U.S.C. §9601(22). The survey also identified at least three (3) areas in which the groundwater is contaminated with trichloroethylene (TCE) and radionuclides.

D. PGDP's 1986 Environmental Surveillance Report included data showing that beta emitters were present in samples taken from groundwater well number 66 located in the northwest corner of PGDP. Well number 66 was installed in August 1986. Initial sample data collected from well No. 66 revealed a dissolved beta activity in the sample of 1020 picocuries per liter (pCi/l).

E. On July 25, 1988, personnel from the McCracken County Health Department of the Commonwealth of Kentucky collected groundwater samples from groundwater wells designated 173-R-08

and 173-R-11, near PGDP. The Department for Health Services for the Commonwealth of Kentucky reported analytical results showing that the gross beta, and potentially gross-alpha, activity from these samples were 49.2 pCi/l and 6.8 pCi/l at sampling location 173-R-08 and 188.2 pCi/l and 6.8 pCi/l at sampling location 173-R-11. The analytical results from subsequent samples showed an alpha activity of 7.1 pCi/l and beta activity of 264.0 pCi/l.

F. The analytical data from samples taken in 1988 from on-site groundwater monitoring well number 66 show results for TCE that range from 3800 parts per billion (ppb) to 5900 ppb, and results for technetium (Tc^{99}) that range from 2850 pCi/l to 4200 pCi/l.

G. Groundwater well numbers 173-R-08 and 173-R-11 are located approximately 1.5 miles and 0.75 miles, respectively, from the northwest corner of PGDP and are located in line with groundwater well number 66 on PGDP.

H. On August 10, 1988, DOE initiated groundwater sampling of private groundwater wells and analyzed the samples for TCE and Tc^{99} .

I. As of November 1988, approximately 135 residential groundwater wells and 23 monitoring wells on the TVA-SHAWNEE reservation were sampled. These wells are located around the perimeter of PGDP. The results of sampling indicated that the contaminants TCE and Tc^{99} are/or may be present in 12 wells

located north of PGDP. In 6 wells, analytical results revealed the presence of TCE in excess of the standard (i.e. 5ug/l) established by EPA for drinking water, promulgated on July 8, 1987.

J. The concentration of TCE detected in the above-mentioned wells ranged from less than 1 ug/l to 960 ug/l. The concentration of technetium in the above-mentioned wells varied from less than 25 to 408 pCi/l. The maximum measured concentration of Tc⁹⁹ in a residential well was 408 pCi/l.

K. On August 12, 1988, PGDP and McCracken County Disaster and Emergency Services personnel contacted ten (10) residents north of the plant and advised them not to drink or bathe in water from their wells. Potable water was supplied to the affected residents.

L. Effective November 23, 1988, DOE and EPA entered into an Administrative Consent Order (ACO) for PGDP. The ACO directed an investigation of PGDP to: (1) determine fully the nature and extent of the threat to human health or welfare and the environment caused by the off-Site contamination of the groundwater from PGDP; (2) ensure that the environmental effects associated with any Releases or threatened Releases are thoroughly investigated and appropriate action taken as necessary to protect the public health, welfare and the environment; (3) establish a work plan and schedule(s) for developing,

implementing and monitoring any necessary response actions at the Site in accordance with CERCLA; and (4) to facilitate the cooperation, exchange of information and participation of the Parties in such action.

M. In accordance with the work plans required pursuant to the ACO, the ACO documents listed in Appendix F have been submitted.

N. In accordance with the Kentucky RCRA Permit and the EPA HSWA Permit, 7 RFI Work Plans, 205 SWMUs identified in various SWMU Assessment Reports, and 4 Interim Corrective Measures Work Plans have been submitted as of June 20, 1996.

O. In accordance with Section 120(d)(2) of the Superfund Amendments and Reauthorization Act of 1986, U.S. EPA prepared a final Hazard Ranking System (HRS) Scoring Package for the Site. The Site was proposed for listing on the National Priorities List in the Federal Register of May 10, 1993. The HRS score was 56.95. The Site was listed on the National Priorities List on May 31, 1994 at 59 Fed. Reg. 27,989.

VI. STIPULATED DETERMINATIONS

For the purposes of this Agreement only, the following constitute the determinations upon which this Agreement is based.

A. PGDP is located in Western McCracken County, Kentucky, approximately 10 miles west of Paducah, Kentucky and constitutes a facility within the meaning of Section 101(9) of CERCLA, 42

U.S.C. § 9601(9). PGDP, for the purposes of this Agreement, is a Federal installation listed on the Federal Agency Hazardous Waste Compliance Docket pursuant to CERCLA Section 120. PGDP is subject to, and shall comply with, CERCLA, RCRA and all applicable Kentucky hazardous waste laws in the same manner and to the same extent, both procedurally and substantively, as any nongovernmental entity, including liability under Section 107 of CERCLA, 42 U.S.C. § 9607. PGDP is a facility authorized to operate under Section 3005(c) and 3005(e) of RCRA, 42 U.S.C. § 6925(c) and 6925(e), and KRS 224 Subchapter 46.

B. Consistent with RCRA Section 3010, DOE notified EPA and/or Kentucky of hazardous waste activity at the Site in 1980. On June 29, 1984, DOE filed RCRA and KNREPC Part A hazardous waste permit applications. Thereafter, on November 1, 1985, DOE filed RCRA and KNREPC Part B hazardous waste applications for treatment, storage and/or disposal units at the Site.

C. On July 16, 1991, EPA issued a Permit, effective August 19, 1991, under Section 3005(c) of RCRA, 42 U.S.C. § 9625(c), to DOE to require it to determine whether there have been any Releases of Hazardous Waste or Hazardous Constituents from SWMUs or AOCs on PGDP and to take appropriate Corrective Action for any such Releases. This permit, in conjunction with the Hazardous Waste Permit issued by the Commonwealth of Kentucky on July 16, 1991, constitute the RCRA Permits for the PGDP. The PGDP has

treatment, storage or disposal units that have Part B hazardous waste permits.

D. Hazardous Substances, pollutants or contaminants and solid wastes and Hazardous Wastes and/or Hazardous Constituents within the meaning of Sections 101(14), 101(33) and 104(a)(2) of CERCLA, 42 U.S.C. §§ 9601(14), 9601(33), and 9604(a)(2), and Sections 1004(27) and 1004(5) of RCRA, 42 U.S.C. §§ 6903(27) and 6903(5) and 40 C.F.R. Part 261, and KRS 224.01.010 (31)(a) and (b)(42) and 401 KAR 30:010(85) and (87), and 401 KAR 31:010 Section 3 have been Released or disposed of at the Site.

E. There have been Releases and there continue to be Releases and threatened Releases of Hazardous Substances, pollutants or contaminants and solid and Hazardous Wastes (including Hazardous Constituents) from the Site into the environment within the meaning of Sections 101(22), 104, 106, and 107 of CERCLA, 42 U.S.C. §§ 9601(22), 9604, 9606, and 9607, and Sections 1004(27), 1004(5), and 3004(u) of RCRA, 42 U.S.C. §§ 6903(27), 6903(5), and 6924(u), and KRS 224.01-010 (31)0(3)(a) and (b) and (42) and 401 KAR 30:010 (85) and (87)(224)(b) and (82) and 401 KAR 31:010 Section 3. PGDP releases of source, special nuclear, and byproduct materials in compliance with legally enforceable orders issued pursuant to the AEA are "federally permitted releases" as defined in Section 101(10) of CERCLA, 42 U.S.C § 9601(10).

F. With respect to those Releases and threatened Releases, DOE is a person and an owner or operator within the meaning of Sections 101(21), 101(20), and 107 of CERCLA, 42 U.S.C. §§ 9601(21), 9601(20), and 9607, and KRS 224.01-010(17) and Kentucky Administrative Regulations 401 KAR 30:010 (144), (145). PGDP is authorized to operate under Section 3005(e) of RCRA, 42 U.S.C. § 6925(e) and 3005(c) of RCRA, 42 U.S.C. § 6925(c), and Section 3005(c) of RCRA, 42 U.S.C. § 9625(c), and KRS 224 Subchapter 46.

G. The actions to be taken pursuant to this Agreement are reasonable and necessary to protect public health, welfare and the environment.

H. A reasonable time for completing the actions required by this Agreement will be provided.

VII. PARTIES

The Parties to this Agreement are EPA, KNREPC, and DOE. KNREPC is the authorized representative of Kentucky for purposes of this Agreement. The terms of this Agreement shall apply to and be binding upon the EPA, KNREPC, and DOE, their respective agents, employees, and response action contractors for the Paducah Site and upon all subsequent owners, operators, and lessees of DOE for the Site. Nothing in this Section shall be construed as binding the United States Enrichment Corporation (USEC) to the terms of this Agreement. This Agreement shall not

be construed to relieve USEC of its obligations, if any, under the hazardous waste Permit issued for PGDP or of compliance with RCRA or KRS 224 and the regulations promulgated thereunder; nor shall this Agreement be construed as relieving the USEC from any potential CERCLA liability. DOE shall be responsible for coordinating with the USEC to ensure that the on-Site activities of the USEC do not interfere in any way with the implementation of this Agreement. DOE shall notify EPA and KNREPC in its fiscal year ~~quarterly~~ semiannual written progress reports (as further discussed in Section XXIII (Reporting) of this Agreement) of the identity and assigned tasks of each of its contractors performing work under this Agreement upon their selection. DOE shall take all necessary measures to assure that its contractors, subcontractors, and consultants performing work under this Agreement act in a manner consistent with the terms of this Agreement. This Section shall not be construed as an agreement by the Parties to indemnify each other or any third party. DOE shall notify its agents, employees, response action contractors for the Site, and all subsequent owners, operators, and lessees of PGDP of the existence of this Agreement.

VIII. SITE DESCRIPTION

PGDP is an active Uranium Enrichment (UE) facility consisting of a diffusion cascade and extensive support facilities. Construction of PGDP began in 1951. The plant began operating in

1952 and was fully operational by 1955, supplying enriched uranium for commercial reactors and military defense reactors.

Extensive facilities are utilized in generating the primary product, enriched uranium. Enriched uranium is uranium in which the concentration of the fissionable U^{235} has been increased. Natural uranium is mostly U^{238} , with about 0.72 weight-percent U^{235} and 0.005 weight-percent U^{234} . Uranium mills process the ores to produce a concentrated uranium oxide, U_3O_8 , that is then commercially converted to uranium hexafluoride (UF_6) for enrichment in the gaseous diffusion plant. The enrichment mechanism is based on the fact that a UF_6 molecule containing U^{235} is slightly lighter than a UF_6 molecule containing U^{238} . As the UF_6 molecules move through several miles of tubing in the diffusion plant's cascade system, slightly more U^{235} than U^{238} escapes through the small holes in the tubing. As the process of cascading is repeated, the U^{235} concentration increases. About two-thirds of the U^{235} in the natural ore is extracted during enrichment, so there are two product streams (1) enriched uranium product, and (2) depleted uranium tails. The majority of the depleted tails are stored, on-site, in 14-ton steel cylinders.

There are facilities to store, process, and manage the two uranium components (enriched and depleted). Also, at present, uranium enriched at PGDP is further enriched at another DOE

gaseous diffusion plant in Portsmouth, Ohio; accordingly, there are packaging and transportation facilities. Most of the uranium from PGDP is ultimately designated for the commercial sector as fuel for nuclear power reactors in the United States and abroad.

There are extensive support facilities to maintain the diffusion process. These include a steam plant, four electrical switchyards, four sets of cooling towers, a chemical cleaning and decontamination facility, water and wastewater treatment plants, a chromium reduction facility, maintenance and laboratory facilities, and two active landfills. Several inactive facilities are also located on the plant site.

On October 24, 1992, the Energy Policy Act of 1992, Pub. L. 102-486, which amended the Atomic Energy Act of 1954, §§ 2011-2296 (1992, as amended), was signed into law. The Energy Policy Act establishes a new government corporation, the United States Enrichment Corporation (USEC), whose charter is to provide uranium enrichment services on a profitable and competitive basis. USEC leased DOE's Gaseous Diffusion Plant at Paducah beginning July 1, 1993. On April 26, 1996, the USEC Privatization Act, Pub. L. 104-134, was enacted.

The Energy Policy Act, the USEC Privatization Act and the lease provisions between DOE and USEC set out certain obligations for environmental conditions at the plant. The Energy Policy Act requires DOE to be responsible for the decontamination and

decommissioning, response actions, and/or Corrective Actions for conditions existing before the transition date. "[A]ll liabilities attributable to operation of the uranium enrichment enterprise before the transition (July 1, 1993) shall remain direct liabilities of the Department of Energy" Pub.L. 102-486 §1406(a). Section 3109(c) of the USEC Privatization Act provides that USEC "shall be liable for any liabilities arising out of its operations after the privatization date."

The area surrounding PGDP is predominantly rural. Immediately adjacent to PGDP is the West Kentucky Wildlife Management Area (WKWMA) comprised of 7000 acres, which is used by a considerable number of hunters and fishermen each year. A portion of PGDP is located on property formerly owned by the Department of Defense that includes the remnants of the Kentucky Ordnance Works (KOW), a World War II-era facility where trinitrotoluene (TNT) and other explosives were manufactured. The remaining area is lightly populated, and includes several farms and residences. The small communities of Grahamville and Heath are located approximately two (2) miles east of the plant. The community of Metropolis, Illinois is across the Ohio River from PGDP. PGDP is ten (10) miles west of Paducah, Kentucky.

PGDP is located within the drainage areas of Big Bayou and Little Bayou creeks, which meet about three miles north of the site and discharge into the Ohio River. Big Bayou Creek, which

flows along the western boundary of the plant, is a perennial stream whose drainage extends from approximately two and one-half miles south of the site to the Ohio River. Little Bayou Creek, which originated in the WKWMA, flows north toward the Ohio River along a course that includes parts of the eastern boundary of the plant. During dry weather much of the flow in both creeks is due to controlled effluent Releases from PGDP. These effluents constitute about 85 percent of the normal flow in Big Bayou Creek and 100 percent in Little Bayou Creek.

The regional geology at PGDP is characterized by Cretaceous, Tertiary, and Quaternary sediments overlying Paleozoic bedrock. The most important formation of these geologic systems includes the Continental Deposits of the Pleistocene/Pliocene series. The sediments of the Continental Deposits predominantly consist of clays, sands, and gravels. The gravel facies, which comprises the lower portion of the formation, is recognized as the most important portion of the formation because of its aquiferous characteristics and continuous nature. Accordingly, the unit has been termed the Regional Gravel Aquifer (RGA). The RGA is the uppermost aquifer at PGDP and serves as a local source of water to residences with private wells surrounding PGDP.

Since establishment of the UE facility in 1951, materials defined as hazardous substances, pollutants and contaminants by

CERCLA and materials defined as hazardous waste and hazardous constituents by RCRA and KRS Chapter 224 and the regulations promulgated thereunder have been produced and disposed or released at various locations at the Site including but not limited to treatment, storage and disposal units. Certain hazardous substances, pollutants, contaminants, hazardous waste and hazardous constituents have been detected and remain in groundwater, surface water, sediments and soils at the Site. Groundwater, surface water, sediments, soils and air pathways provide routes, or potential routes, of migration of hazardous substances, pollutants, contaminants, hazardous waste and hazardous constituents into the environment.

IX. SITE EVALUATION(S)

Upon discovery of an area with potential or known Releases of Hazardous Substances, pollutants or contaminants, or Hazardous Wastes and Hazardous Constituents identified after the effective date of this Agreement, DOE agrees to: (a) provide notice to EPA and KNREPC in accordance with Section 300.405 of the NCP, Conditions II.B.1 and II.B.2 of the EPA RCRA Permit and Conditions IV.B.1 and IV.B.2 of the Kentucky Hazardous Waste Permit; and (b) conduct removal site evaluations (SEs) in accordance with Section 300.410 of the NCP, remedial SEs in accordance with Section 300.420 of the NCP, and SWMU assessments in accordance with Condition II.B.3 of the EPA HSWA Permit and

Condition IV.B.3 of the Kentucky Hazardous Waste Permit. The Parties agree that the notifications provided by DOE pursuant to the RCRA Permits shall fulfill the reporting requirements to EPA and KNREPC specified in Section 300.405 of the NCP. DOE shall submit to EPA and KNREPC integrated Removal/Remedial SE and SWMU Assessment Reports (hereafter referred to as SE Reports), in a format consistent with Appendix D to this Agreement, for each newly discovered area with potential or known Releases of Hazardous Substances, pollutants or contaminants, or Hazardous Wastes and Hazardous Constituents. If the SE Report indicates that a removal and/or RA under Sections 300.415 or 300.430 of the NCP or the RCRA Permits is necessary, DOE shall conduct such response actions in accordance with Sections X and/or Sections XI through XV (i.e., Removal Actions or RAs) of this Agreement. If, upon review of the SE Report, EPA and KNREPC determine that a remedial investigation is necessary for an area, then DOE agrees, subject to the dispute resolution procedures in Section XXV (Resolution of Disputes), to amend Appendix B to this Agreement to include such areas and to conduct Additional Work at such areas under the terms of this Agreement as needed.

X. REMOVAL ACTIONS

A. Applicability:

DOE shall develop and perform removal actions, pursuant to this Agreement, CERCLA, the NCP, and the IM provisions of the

RCRA Permits to abate, minimize, stabilize, mitigate or eliminate the Release or threat of Release of Hazardous Substances, pollutants or contaminants, or Hazardous Wastes and Hazardous Constituents at or from PGDP. DOE shall designate a PGDP On-Scene Coordinator (OSC) as required by Section 300.120 of the NCP. The PGDP OSC shall be the point of contact between DOE, EPA and KNREPC for all removal actions. DOE agrees to submit to EPA and KNREPC an annual Removal Action Report which describes the removal actions performed during the previous fiscal year. As appropriate, this report shall meet the reporting requirements to EPA of §300.165 of the NCP and the IM Reporting provisions of condition II.E.3 of the EPA HSWA Permit and condition IV.E.3 of the Kentucky Hazardous Waste Permit. The report shall be submitted as a section or appendix to the annual SMP.

Nothing in this Section or any other part of this Agreement shall restrict EPA or KNREPC from taking any action authorized under Section 106 of CERCLA necessary to abate Releases or potential Releases of Hazardous Substances, pollutants or contaminants, or Hazardous Wastes or Hazardous Constituents at or from the facility that present an imminent and substantial endangerment to public health or welfare or the environment. Likewise, nothing in this Agreement shall be construed as a waiver of DOE's authority under Executive Order 12580 for implementation of removal actions. Pursuant to Executive Order

12580, DOE has authority to conduct removal actions under Section 104 of CERCLA, 42 U.S.C. § 9604. Except as otherwise provided in this Agreement, in the event of dispute, DOE will exercise its authority to conduct removal actions under Section 104 of CERCLA, 42 U.S.C. Section 9604, pursuant to Executive Order 12580 for Releases or threatened Releases covered by RCRA or KRS 224, Subchapter 46, only after exhausting the dispute resolution provisions of this Agreement. The terms of this Agreement shall not apply to those removal actions addressing Releases which are not covered by RCRA or KRS 224, Subchapter 46. Notwithstanding the foregoing, DOE will notify EPA and KNREPC of any removal actions which are not covered by RCRA or KRS 224 Subchapter 46, and, upon request, will provide copies of the work plans for such removal actions. The Parties understand that DOE is agreeing to notify EPA and KNREPC and provide requested copies of work plans for informational purposes only.

The Parties agree that removal actions shall generally be low-cost response actions, that deal with situations requiring a short-term response. Removal activity is not intended to supplant, compromise or foreclose RAs, including Interim RAs, at the Site. If a long-term remedy is planned, removal actions at the Site may be used to mitigate the threat to human health and the environment until the RA can be implemented. Removal actions shall, to the extent practicable, contribute to the efficient

performance of any anticipated long-term RA with respect to the Release concerned. In selecting an appropriate Removal Action, the parties shall take into consideration the removal actions outlined in section 300.415(d) of the NCP.

B. Removal Action Planning:

Except as otherwise provided by this Section, prior to initiating removal activities, DOE shall submit to EPA and KNREPC for review and approval, a written Removal Notification (the "Removal Notification"). Such submission shall be by return receipt mail or hand delivery.

DOE's Removal Notification shall include the removal site evaluation or summary of the administrative record constituting an equivalent removal site evaluation, a description of the factors considered in determining the appropriateness of the Removal Action (i.e., NCP §300.415(b)(2)), and any information produced through a remedial site evaluation, if any has been done previously, and the current site conditions, to determine if Removal Action is appropriate. The Removal Notification shall contain adequate specificity in defining the nature, extent and duration of the activity to permit meaningful review and comment.

The Removal Notification shall identify whether a planning period of at least six (6) months exists before on-Site activities must be initiated. The planning period shall commence upon submission of the Removal Notification. Removal actions for

which a six month or longer planning period exists shall be defined as Non-Time critical. The Removal Notification for Non-Time Critical Removals shall include a schedule for submission of an EE/CA (as defined below.) All other removal actions shall be defined either as time-critical or emergency actions.

Except as otherwise provided herein, EPA and KNREPC shall review DOE's Removal Notification and shall respond with any comments and/or objections within thirty (30) Days of their receipt. EPA and KNREPC may request additional time, not to exceed twenty (20) Days, in which to respond to the Removal Notification. If EPA or KNREPC disagrees with the classification of an action as removal rather than remedial, or any other aspect of the proposed Removal Action, the disagreement shall be resolved in accordance with Section XXV (Resolution of Disputes) of this Agreement. All removal actions subject to dispute resolution shall be stayed until resolution of the dispute in accordance with Section XXV (Resolution of Disputes) of this Agreement. Unless otherwise provided herein, removal actions under the terms of this Agreement will be taken at the facility if pursuant to this Agreement: 1) DOE determines that a Removal Action is appropriate and such determination is not disputed by EPA or KNREPC, or is resolved in favor of DOE in dispute resolution; or 2) EPA or KNREPC determines that a Removal Action is necessary and DOE agrees to perform such removal or such

determination is resolved in favor of EPA or KNREPC in dispute resolution. EPA or KNREPC may require DOE to submit a Removal Notification. Such submission will be consistent with Condition II.E. of the EPA HSWA Permit or Condition IV.E. of the Kentucky Hazardous Waste Permit. DOE shall submit the Removal Notification within ninety (90) Days of receipt of the EPA or KNREPC request.

C. Emergency Removal Action/Imminent Hazard

An emergency Removal Action taken because of imminent and substantial endangerment to human health or the environment, may be taken by DOE without following the notice, Removal Notification and comment procedures of this Section, including the commitment to exhaust dispute resolution in Subparagraph A and the review and comment procedures of Subparagraph B, only if consultation (i.e., development, review and approval of the Removal Notification) would be impractical, considering the exigencies of the situation. In cases in which a Release at the Site could cause imminent and substantial endangerment to the public health or welfare or the environment, DOE shall proceed as soon possible with the emergency Removal Action and notify EPA and KNREPC in accordance with Section 300.125 of the NCP and ~~Conditions II.I. (Imminent Hazard) and I.D.14. (Twenty Four Hour Reporting) of the EPA HSWA Permit and Conditions IV. I. and~~

IV.D.14. of the Kentucky Hazardous Waste Permit. A description of the emergency and the technical specifications for the Removal Action, including any further action needed to complete the Removal Action, must be submitted in writing to EPA and KNREPC within fifteen (15) Days of the Release. The emergency Removal Action must be consistent with the provisions of NCP Section 300.415, and the RCRA Permits.

D. Time-Critical Removal Actions

Upon EPA and KNREPC approval of the Removal Notification for a proposed time critical removal action, DOE shall implement the selected removal action. The Removal Notification submitted for a proposed time critical removal action shall also meet the requirements of the Action Memorandum Primary Document and the IM Work Plan requirements of ~~Section II.E.1.b of the EPA HSWA Permit and~~ condition IV.E.1.b of the Kentucky Hazardous Waste Permit and shall include a proposed response action. DOE shall publish a notice of availability of the administrative record for the selected removal action within sixty (60) Days of the initiation of on-Site removal activity in accordance with §300.415(m) of the NCP and the Administrative Record requirements of §300.820 of the NCP. Within thirty (30) Days after the close of the comment period, DOE shall respond to comments in a Time Critical Removal Action Responsiveness Summary Primary Document for EPA and Kentucky review and approval in

accordance with Section XX of this Agreement. The approved Removal Notification and the Responsiveness Summary shall be included in the Administrative Record.

E. Non-Time-Critical Removal Actions

Upon EPA and KNREPC approval of a Removal Notification for a proposed non-time-critical Removal Action, and in accordance with the schedule in the approved Removal Notification, DOE shall submit to EPA and to the KNREPC for approval, a D1 Engineering Evaluation/Cost Analysis (EE/CA) Primary Document to further evaluate removal alternatives. Upon issuance of the Final EE/CA pursuant to Section XX (Review/Comment on Draft/Primary Documents), DOE shall make the Removal Notification, the EE/CA, and the Administrative Record available for public comment in accordance with NCP § 300.415(m) and shall comply with the Administrative Record requirements of NCP § 300.820. Within thirty (30) Days of the close of the public comment period, DOE shall submit for EPA and Kentucky approval, a D1 Action Memorandum Primary Document which responds to public comments and describes the selected response action. Within thirty (30) Days of EPA and KNREPC approval of the Action Memorandum, DOE shall submit for EPA and KNREPC approval, a D1 Removal Work Plan Primary Document for the work to be performed in completing the selected alternative. The Removal Work Plan shall provide a concise description of the activities to be

undertaken to comply with the requirements of this Agreement and shall meet the IM Work Plan requirements of ~~Section II.E.1.b of the EPA HSWA permit and the requirements of Section IV.E.1.b of the Kentucky Hazardous Waste Permit.~~ The Removal Work Plan shall also contain, but not be limited to, the following: 1) a health and safety plan; 2) a detailed design report (or schedule for submitting a detailed design report); and 3) a schedule for the completion of the work to be performed. Removal Work Plans requiring environmental sampling shall also include a sampling and analysis plan and a quality assurance project plan. Within fifteen (15) Days of EPA's and KNREPC's approval, DOE shall commence implementation of the approved final Removal Work Plan in accordance with the requirements and time schedules set forth in the approved Removal Work Plan.

F. Removal Action Document Review

Unless otherwise provided in this Agreement, any Removal Notification, EE/CA, Action Memorandum, Time-Critical Removal Responsiveness Summary, or Removal Work Plan to be submitted pursuant to this section is a Primary Document subject to review in accordance with Section XX (Review/Comment on Draft/Final Documents) of this Agreement. Any modification of a D1 or D2 Removal Action Primary Document shall be consistent with the purposes of this Agreement, CERCLA, the NCP, ~~the EPA HSWA Permit and~~ the Kentucky Hazardous Waste Permit, and EPA

guidance and policy documents. The approved final EE/CA, Action Memorandum or Removal Work Plans required under this Section shall be incorporated into and be enforceable under this Agreement. Associated timetables and deadlines will be included in Appendix C and the SMP as appropriate.

XI. REMEDIAL INVESTIGATIONS

1. DOE shall develop and perform remedial investigations pursuant to this Agreement, CERCLA, the NCP, RCRA Sections 3004(u) and (v), and 3008(h), the RCRA Permits and the Corrective Action requirements of KRS 224 Subchapter 46. DOE agrees that it shall submit a D1 RI/FS Work Plan and conduct an RI for each Potential OU and CS OU, as defined in the most recently approved SMP. In accordance with this Agreement, an RI Report shall be prepared separately for any final RA. The RI/FS Work Plans and RI Reports shall be developed in a format consistent with Appendix D to this Agreement. The work plan shall be submitted in accordance with the Timetables and Deadlines set forth in Appendix C of this Agreement. The D1 RI/FS Work Plans shall describe the plan for implementing the RI (including a Baseline Risk Assessment) and FS and shall be reviewed in accordance with Section XX (Review/Comments on Draft/Final Documents) of this Agreement. The scope of the RI and Baseline Risk Assessment shall reflect the scope of the response action for the OU under consideration. The RI/FS Work Plan shall describe how Interim

RAs or removal actions, as defined under this Agreement, will be considered throughout the RI/FS to support a bias for action, as described in the NCP Program Management Principles (40 CFR 300.430(a)(1)(ii)).

2. For each of those areas in PGDP SWMU/AOC List of Appendix B to this Agreement, RIs shall be conducted which shall meet the purposes set forth in Section III (Purposes of Agreement) of this Agreement. The SWMUs and AOCs in Appendix B shall be grouped into Potential OUs in the SMP to facilitate effective RI/FS scoping for the Site. For SWMUs and AOCs for which DOE is required to conduct an RFI pursuant to its RCRA Permits, the Parties agree that the RFI and RI shall be combined into a single investigation designed to meet the requirements of both the RCRA Permits and the purposes of this Agreement, as described in Section IV.A. In accordance with the requirements of Section XIV (Proposed Plan(s)/Record(s) of Decision) to this Agreement, DOE will, at a minimum, submit D1 Proposed Plans to EPA and KNREPC for those Potential OUs and CS OUs listed in the most recently approved SMP. If EPA or KNREPC determine that Additional Work is necessary to complete the RI for such a unit, then DOE agrees, subject to the dispute resolution procedures in Section XXV (Resolution of Disputes), to conduct Additional Work at such unit, under the terms of this Agreement.

3. Consistent with Section XX.E (Review/Comment on

Draft/Final Documents; Meetings of Project Managers) of this Agreement, for each RI/FS Work Plan, an RI/FS Scoping meeting will be held in an effort to develop a general consensus on the scope of the RI/FS Work Plan. The purpose of RI/FS scoping is to ensure that KNREPC, EPA and other stakeholders have the opportunity to provide input into designing the work plan so as to minimize comments on the D1 RI/FS Work Plan and thereby accelerate the review, comment and approval process. To facilitate this effort, DOE shall submit a D1 RI/FS scoping document for EPA and Kentucky review at least fifteen (15) Days prior to the RI/FS Scoping meeting. The scoping document may serve as a portion of the RI/FS Work Plan, thereby eliminating duplication of efforts. The RI/FS Scoping Document shall be developed in a manner consistent with Appendix D to this Agreement.

XII. FEASIBILITY STUDIES

As specified herein, DOE agrees it shall conduct an FS for each Potential OU and CS OU, as defined in the most recently approved SMP, and in accordance with this Agreement. An FS shall be separately conducted for any OU carved out from a larger Potential OU or pursuant to Section XIV.B of this Agreement for the purpose of expediting Remedial Action. If an Interim RA is to be performed on an OU carved out in this manner, its separate FS may be limited as appropriate to the scope of that action. An FS

shall be required when the Baseline Risk Assessment, for the Potential OU or a portion thereof, identifies a risk that requires an evaluation of remedial alternatives. At a minimum, an evaluation of alternative remedies (i.e., an FS) to address any Release shall be conducted when the circumstances listed below are present.

- The Baseline Risk Assessment shows that the cumulative carcinogenic risk for an individual exposed to a given Release, based on a reasonable maximum exposure for both current and future land use, is greater than 10^{-6} , or;
- The Baseline Risk Assessment shows that the non-carcinogenic hazard quotient for an individual exposed to a given Release, based on a reasonable maximum exposure for both current and future land use, is greater than 1, or;
- The Release has caused adverse environmental impacts;
- Maximum Contaminant Levels, non-zero Maximum Contaminant Level Goals, or other Chemical-Specific ARARs are exceeded, or;
- Other site-specific or Release-specific circumstances warranting an evaluation of alternatives.

For each FS, a D1 report on the FS shall be submitted in accordance with the Timetables and Deadlines set forth in Appendix C of this Agreement. The D1 FS shall be reviewed in accordance with Section XX (Review/Comments on Draft/Final Documents). The FS shall be based on the RI and shall meet the purposes set forth in Section III (Purposes of Agreement) of this Agreement. For SWMUs for which DOE is required to conduct a CMS pursuant to its RCRA Permits, the Parties agree that the CMS and FS shall be combined into a single study designed to meet the requirements of both the RCRA Permits and the purposes of this Agreement. The FS Report shall be developed in a format consistent with Appendix D to this Agreement.

XIII. OPERABLE UNITS

The Site shall be segregated into Potential OUs and CS OUs for the purpose of scoping and planning RI/FS activities. Potential OUs shall be developed for source areas and CS OUs shall be developed for environmental media contaminated by commingled source releases. OUs for Interim or final RAs may be designated for all or any portion of a Potential OU or CS OU.

A. Potential Operable Units

Pursuant to Section XVIII (Site Management, Timetables and Deadlines, Budget Planning and Execution, Cost and Productivity Savings), DOE agrees that it shall develop a list of Potential OUs, which includes the units in Appendix B to this Agreement, to

effectively manage the implementation of RI/FS activities for the site. Potential OUs shall meet the purposes set forth in Section III (Purposes of Agreement) of this Agreement.

B. Comprehensive Site Operable Units

1. A Comprehensive Site (CS) OU is an OU which integrates the information obtained from Potential OU RI/FS activities regarding environmental media (i.e., surface water OU and ground water OU) which has been contaminated by commingled source Releases. The final RA for any given CS OU shall be evaluated after issuance of all RODs concerning the environmental medium at issue and after completion (excluding long term monitoring and/or Operation and Maintenance) of all final RA(s) for the sources contributing to the commingled contamination. The environmental medium and the sources causing the commingled contamination shall be collectively evaluated under the final CS OU. For each CS OU for which there exists insufficient data to adequately characterize the nature and extent of any contamination, DOE shall develop and submit to EPA a CS OU RI/FS Work Plan (e.g., RI/FS Strategy for the environmental medium) and a RI Report to be finalized in accordance with Section XX (Review/Comment On Draft/Primary Documents) of this Agreement. The schedule for submission of each CS OU RI/FS Work Plan and RI Report shall be included in the appropriate annual Site Management Plan. The CS OU RI Report shall include a baseline

risk assessment for the risk remaining at the Site associated with the CS OU and shall incorporate by reference all data collected pursuant to the RIs for any Interim remedial action OUs or Removal Actions being encompassed in the CS OU. The CS OU RI Report shall summarize all relevant CS OU RI data for the CS OU, including any data collected after the effective date of all RODs for Interim RA OUs and removal actions collectively being evaluated under the CS OU. The CS OU RI shall also gather any additional sampling data if necessary to support the CS OU RI Report (including baseline risk assessment) and FS.

2. A final CS OU shall be designated upon issuance of the last final ROD for the Site. The final CS OU shall evaluate all RODs subject to review under Section XXX (Five Year Review) for a determination of whether any further RA will be necessary due to residual risks which resulted in Hazardous Substances, pollutants or contaminants, or Hazardous Wastes and Hazardous Constituents remaining at the site above levels that allow for unlimited use and unrestricted exposure under the applicable risk/exposure scenario.

C. Operable Units

DOE agrees that a proposed designation of RODs for OUs (OUs), including, as appropriate, OUs carved out from previously-identified Potential OUs, shall be included in its annual Site Management Plan. The Parties shall make selections of the OUs

for the Site, annually, in accordance with Section XVIII (Site Management, Timetables and Deadlines, Budget Planning and Execution, Cost and Productivity Savings) of this Agreement, or as appropriate to support a bias for early response actions, as described in Section XIV.B of this Agreement. OUs may incorporate other OUs for which remedies have already been selected in a ROD, where appropriate (i.e., Comprehensive Site OU, RODs containing final remedy decisions following Interim RAs) to ensure that multiple remedies continue to be protective of human health and the environment. OU(s) and Potential OUs shall meet the purposes set forth in Section III (Purposes of Agreement) of this Agreement.

XIV. PROPOSED PLANS/RECORDS OF DECISION

A. Potential/Comprehensive Site Operable Unit Remedial Actions:

1. In accordance with the schedule in Appendix C and following completion of the review in accordance with Section XX (Review/Comment On Draft/Primary Documents) by EPA and KNREPC of the RI Reports and the corresponding FS Reports for those Potential OUs and CS OUs listed in the most recently approved SMP, DOE shall submit a D1 Proposed Plan(s) for RA(s), including proposed Timetables and Deadlines for the submittal of the RD Work Plan(s) and RA Work Plan(s), to EPA and KNREPC for review in accordance with Section XX (Review/Comment On Draft/Primary

Documents) of this Agreement. Proposed Plans for Potential and CS OU final RAs shall be supported by a complete RI/FS (including a baseline risk assessment) in which the RI/FS data and evaluations to support the final RA are commensurate to the scope of the proposed operable unit. Site-specific data needs, evaluation of alternatives and the appropriate documentation necessary to support a Proposed Plan for a Potential or CS OU for an RA shall reflect the scope and complexity of the site problems being addressed (Section 300.430(a)(1)(ii)(C)).

2. Subject to Section XL (Reservation of Rights) of this Agreement, EPA and/or KNREPC will develop a Statement(s) of Basis and a draft modified RCRA Permit(s) consistent with the approved Proposed Plan, pursuant to Condition II.G. of the EPA HSWA Permit and Condition IV.G. of the Kentucky Hazardous Waste Permit for selection of the WAG/WAG Group final remedy. Where practicable, and subject to Section XL (Reservation of Rights), EPA and KNREPC agree that the Statement of Basis and permit modification for such a final remedy will be contemporaneously developed and processed along with the Proposed Plan and ROD.

B. Expediting Actions under Remedial Authority:

Subject to Section XXV (Resolution of Disputes), any of the Parties may propose expediting Remedial Action for a part of any Potential OU listed in the most recently approved SMP, in accordance with CERCLA, the NCP, ~~Condition II.E of the EPA HSWA~~

Permit, and Condition IV.E. of the Kentucky Hazardous Waste Permit, so that an RA is performed on that part ahead of the time when the RA is scheduled for the entire OU as listed. By way of example (but not of limitation), expediting Remedial Action might be considered for achieving significant risk reduction quickly and/or efficiently, to expedite the completion of total site cleanup, or to respond to some immediate site threat. RAs expedited in this manner may be either interim or final with respect to the OU being carved out for remediation ahead of the entire OU listed in the SMP. An Interim RA is limited in scope and shall be followed by a final RA that completes protection of human health and the environment through a final remedy decision.

Proposed Plans for final RAs shall be supported by a complete RI/FS (including a baseline risk assessment) in which the RI/FS data and evaluations to support the final RA are commensurate to the scope of the proposed OU being remediated on an expedited basis. Site-specific data needs, evaluation of alternatives and the documentation necessary to support a Proposed Plan for a selected remedy for an Interim RA shall reflect the scope and complexity of the site problems being addressed (Section 300.430(a)(1)(ii)(C) of the NCP). Few alternatives (in some cases only one) should be developed for Interim RAs, and completed baseline risk assessments generally are not necessary for Interim RAs when sufficient data is otherwise available to

support interim action decisions.

C. Proposed Plan Review, Approval and Public Notice:

The Proposed Plans shall meet the purposes set forth in Section III (Purposes of Agreement) of this Agreement. Following approval by the EPA and KNREPC pursuant to Section XX (Review/Comment On Draft/Primary Documents) of this Agreement, DOE shall publish the Final Proposed Plan for public review and comment in accordance with Section 117(a) of CERCLA, 42 U.S.C. § 9617(a), the NCP, EPA policy and guidance, and KRS 224 Subchapter 46 and the regulations promulgated pursuant thereto. The Parties agree that public notice of the Proposed Plan may be issued jointly with public notices of any proposed modifications of DOE's RCRA Permits. The period for public review shall be coordinated to meet NCP and the RCRA Permit requirements. Within ten (10) Days of the completion of the public comment period, all Parties shall confer with each other about the need for modification of the Proposed Plan and additional public comment based on the public response.

D. ROD Review, Approval and Final Issuance:

1. For purposes of expediting the ROD development and review, the Parties agree that the Draft Primary Document review process shall not apply. Instead, DOE shall submit, within thirty (30) Days of the close of the public comment period, and any extensions thereof, a Draft-Final ROD, including the

responsiveness summary, to EPA and KNREPC in accordance with the schedule in Appendix C. The Draft-Final ROD shall be developed in accordance with appropriate guidance, shall meet the purposes set forth in Section III (Purposes of Agreement) of this Agreement, and include proposed timetables and deadlines for submittal of the RD Work Plan(s). A review in accordance with Section XX (Review/Comment On Draft/Primary Documents) shall be conducted on the Draft-Final ROD. If the Parties agree on the Draft-Final ROD, the ROD shall be adopted by EPA, KNREPC and DOE, and then DOE shall issue the final ROD pursuant to CERCLA Section 120(e)(4). If, after exhausting the dispute resolution provisions of this Agreement, EPA and DOE are unable to reach agreement on a Draft-Final ROD, the selection of the RA shall be made by the Administrator of EPA, or his or her delegatee, and EPA shall then prepare the final ROD. The selection of the RA by the Administrator of EPA shall be final as to EPA and DOE and shall not be subject to dispute under Section XXV (Resolution of Disputes). If, after the dispute resolution process, KNREPC and EPA are unable to reach an agreement on RA selection, then KNREPC reserves its rights, if any, to impose a permit modification consistent with KNREPC's hazardous waste statutes and regulations and to enforce those requirements in accordance with Section XL (Reservation of Rights) of this Agreement.

2. Notice of the final ROD shall be published by DOE with

EPA and KNREPC's concurrence (provided that KNREPC concurs with the ROD), and shall be made available to the public prior to the commencement of the RA, in accordance with Sections 117(b), (c), and (d) of CERCLA, 42 U.S.C. §§ 9617(b), (c), and (d), RCRA and KRS Chapter 224 and the regulations promulgated thereunder. EPA and/or KNREPC shall propose any modifications necessary to the Corrective Action provisions of DOE's RCRA Permit in conjunction with the notice of the Proposed Plan and final ROD.

XV. REMEDIAL DESIGNS/REMEDIAL ACTIONS

The RD/RAs shall meet the purposes set forth in Section III (Purposes of this Agreement) of this Agreement and the RODs. In accordance with the schedule in Appendix C and following final issuance of each ROD, DOE shall submit a D1 RD Work Plan for the RA selected in the ROD for review in accordance with Section XX (Review/Comment on Draft/Final Documents). The RD Work Plans shall include appropriate Timetables and Deadlines for developing the design and submission of the secondary Intermediate RD Report(s) (e.g., 30 per cent design, 60 per cent design) and the D1 RD Report, and submission of a RA Work Plan. The secondary Intermediate RD Reports and the D1 RD Reports shall be reviewed in accordance with Section XX (Review/Comment on Draft/final Documents). In accordance with the schedule in Appendix C and the schedule in the approved RD Work Plans, DOE shall submit a D1 RA Work Plan with a schedule for implementing the selected RA and

for submitting a Construction Quality Control Plan, a Post Construction Report, an Operation and Maintenance Plan, and a Final Remediation Report (as such terms are more fully defined in Appendix D.) The RA Work Plans, the Construction Quality Control Plans, the Post-Construction Reports, the Operation and Maintenance Plans and the Final Remediation Reports shall be reviewed in accordance with Section XX (Review/Comment on Draft/Final Documents). The parties acknowledge the requirement of CERCLA Section 120 (e) (2), 42 U.S.C. § 9620(e) (2), that substantial continuous physical on-site RA commence within 15 months of completion of the RI/FS.

XVI. DELIVERABLES

DOE agrees to submit to EPA and KNREPC certain deliverables to fulfill the obligations and meet the purposes of this Agreement. A schedule for submittal of these deliverables shall be specified in Appendix C to this Agreement. Deliverables which include engineering plans for construction, modification or operation of environmental restoration facilities, or which describe RAs, shall be certified by a registered professional in accordance with applicable law. All Primary Document (as such term is hereinafter defined) deliverables shall be signed and certified in accordance with 40 CFR §270.11(d).

XVII. GUIDANCE

EPA agrees to provide DOE with guidance and policy in

response to DOE's written request to assist DOE in the performance of the requirements under this Agreement. EPA shall respond to DOE's request within fifteen (15) Days of receipt of the written request. KNREPC agrees to respond within 15 days to any written request from DOE for information to assist DOE in the performance of the requirements under this Agreement.

XVIII. SITE MANAGEMENT, TIMETABLES AND DEADLINES,
BUDGET PLANNING AND EXECUTION,
COST AND PRODUCTIVITY SAVINGS

A. Site Management Plan

DOE shall submit a D1 annual Site Management Plan (SMP) each year to EPA, KNREPC and other Stakeholders no later than November 15, of each fiscal year (FY) for timetables, deadlines and projected activities pertaining to the next fiscal year (i.e., FY+1) and beyond. The currently effective annual SMP shall remain operative until the next annual SMP is finalized. KNREPC and EPA shall review and comment on the D1 SMP within thirty (30) Days of receipt. DOE shall revise the D1 SMP, if necessary, and submit a D2 SMP within fifteen (15) Days of receipt of EPA and KNREPC comments. The Parties agree to finalize the SMP in accordance with the provisions of Subsection I of Section XX (Review/Comment on Draft/Final Documents) of this Agreement. The purpose of the SMP is to coordinate and document the selected OUs (including Potential OUs and CS OUs), removal actions and proposed removal actions (to the extent possible), work

priorities, projected activities, and Timetables and Deadlines. The D1 SMP shall provide a list of the Potential OUs and CS OUs, as currently defined, based on information available in the current or previous fiscal years. The Potential OU and CS OU lists shall identify the SWMUs/AOCs in Appendix B to this Agreement which are included in each Potential OU and CS OU. A brief justification shall be provided for the inclusion of the SWMUs/AOCs in each Potential OU or CS OU. The SMP shall include a list of OUs, their ROD issuance dates, a brief description of their current RD/RA status and any published Explanation of Significant Difference. The SMP shall include an updated list of Removal Actions and a description of Removal Actions carried out during the previous fiscal year, in accordance with Section X (Removal Actions) of this Agreement. The SMP shall also include a section establishing priorities and Timetables and Deadlines for commitments and long-term projections, in accordance with this Section of the Agreement and based on consideration of other relevant factors, including but not limited to:

1. the logical progression toward cleanup;
2. the reduction of short-term and long-term human health and environmental risk;
3. existing requirements of this Agreement;
4. the life-cycle cost of individual projects;
5. logistic, engineering, technical, and health and safety

- concerns related to proposed projects;
6. any impacts on related projects, including the costs and scheduling of such projects;
 7. detrimental impacts of significant fluctuations in resource requirements from year to year;
 8. DOE's management capabilities;
 9. new or emerging technologies;
 10. KNREPC's and EPA's oversight capabilities;
 11. changing priorities as a result of new information;
 12. views expressed by local elected officials;
 13. views expressed by the public;
 14. any consensus views expressed by the PGDP Citizens Advisory Board;
 15. the Congressional budget appropriation, OMB apportionment, and DOE PGDP EM allotment for FY, as well as the PGDP EM allotment in the President's budget for FY+1 and associated outyear funding targets;
 16. the completeness and accuracy of the scope, schedule, and costs for the tentative FY tasks;
 17. the status of ongoing projects; and
 18. costs savings initiatives and productivity improvements.

The parties to this Agreement recognize that the management of the Site remains solely a DOE responsibility; however, the development of the SMP shall include the input and consultation

of EPA and KNREPC.

B. Scoping Work Priorities

DOE agrees to establish a basis for prioritizing response actions with the input and consultation of EPA and KNREPC, and to document the prioritization criteria in the annual SMP. The SMP prioritization criteria shall be used to prioritize the investigatory activities required for the Potential OUs and CS OUs identified in the annual SMP, and for identifying and implementing response actions. The D1 annual SMP shall identify the priorities by ranking the Potential OUs and CS OUs according to the prioritization criteria.

The D1 annual SMP shall include a list of commitments and long-term projections, developed in a manner consistent with the prioritization described herein, which identify the submittal dates for deliverables that correspond to work activities for FY+1 and FY+2, and any enforceable outyear commitments, ROD issuance dates for FY+1 and FY+2, ROD issuance target dates by fiscal year quarters for FY+3 and beyond for all Potential, CS and RA OUs defined pursuant to this Agreement. DOE, KNREPC and EPA agree that the dates for FY+3 RODs and beyond will be nonenforceable and used by all Parties for planning purposes and to develop an understanding of the resource needs that the implementation and oversight of the environmental restoration activities will require. However, the outyear completion dates

for the following pre-GDP shutdown OUs: surface water, and groundwater, soils, burial grounds, and D&D OUs shall be considered enforceable timetables and deadlines in accordance with the provisions of Subsection C (Timetables and Deadlines) of this Section. Commitments for FY+1 and FY+2 shall become current FY commitments in accordance with the provisions of Subsection C (Timetables and Deadlines) of this Section.

C. Timetables and Deadlines

Enforceable timetables and deadlines for current FY Commitments are contained in Appendix C to this Agreement. Enforceable timetables and deadlines for FY+1 and FY+2 commitments and completion dates for the following pre-GDP shutdown OUs: surface water, and groundwater, soils, burial grounds, and D&D OUs are contained in the most recently approved annual SMP. Enforceable timetables and deadlines under this Agreement shall be limited to FY, FY+1, FY+2, and completion dates for the work scope associated with the following pre-GDP shutdown OUs: surface water, groundwater, soils, burial grounds, and D&D, -OUs as specified in the most recently approved annual SMP. The FY+1 timetables and deadlines in the most recently approved SMP shall be incorporated into Appendix C to this Agreement and shall become current FY timetables and deadlines on October 1, FY+1.

D. Budget Planning

1. DOE shall use its best efforts and take all necessary steps to obtain sufficient and timely funding to meet all of its obligations under this Agreement. DOE's compliance with the Budget Planning and Execution provisions of this Agreement shall constitute compliance with the above standard. The Parties

acknowledge Executive Order 12088's requirement that DOE include sufficient funds in its budget request to the President to support the activities and requirements to be conducted under this Agreement.

2. It is DOE's intent to identify, evaluate and implement opportunities to control project costs and increase productivity in meeting its obligations under this Agreement. EPA and KNREPC intend to assist DOE in its commitment to identify, evaluate and implement productivity gains and cost saving measures. The parties agree that budget targets provided by the Office of Management and Budget (OMB) and DOE-HQ shall be considered in establishing the requirements and schedule under this Agreement but further and specifically agree that the targets shall not strictly drive the requirements and schedule of this Agreement. In any action to enforce any provision of this Agreement, DOE may raise as a defense that its failure or delay was caused by the unavailability of appropriated funds. Kentucky disagrees that an Anti-Deficiency Act Defense or any other defense based on the lack of appropriations or funding exists. However, Kentucky and DOE agree and stipulate that it is premature at this time to raise and adjudicate the existence of any such defense. Acceptance of this provision (or any other specific reservation of rights by Kentucky) does not constitute a waiver by DOE of its right to argue that its obligations under this Agreement are

subject to the provisions of the Anti-Deficiency Act, 31 U.S.C. Section 1341.

3. DOE shall consult with EPA and KNREPC in formulating its annual Environmental Management (EM) budget for PGDP, including project work scope and management, priorities, and schedules/compliance dates. DOE shall provide EPA and KNREPC with all necessary information and briefings on the budget formulation, including funding information at the level of the Activity Data Sheet (ADS) (or its Project Baseline Summary (PBS) successor) or the work breakdown structure (WBS) level, if requested. EPA and KNREPC will continue to serve as ex-officio members of the Oak Ridge Reservation Environmental Restoration Prioritization Board which may serve as one of the means by which DOE provides EPA and KNREPC with budget formulation and project management information. In addition, DOE shall provide EPA and KNREPC with budget and project information as follows:

a. Planning for FY and FY + 1

1. Prior to the submission of the annual SMP by DOE, (between July and October of each year), and for the purpose of providing early input into development of the annual SMP, the parties shall evaluate the FY and FY + 1 schedule, current projected cost and funding information, WBS summaries and any cost savings initiatives and productivity improvements. Further, during negotiations of Task Work Agreements (TWAs) and Incentive

Task Orders (ITOs), DOE shall inform EPA and KNREPC of potential changes in project workscope and/or project costs from the workscope and/or project costs contained in previously approved primary documents or ADS (or its Project Baseline Summary (PBS) successor) cost estimates. Upon request, DOE shall provide copies of finally negotiated TWAs and ITOs to EPA and KNREPC. The parties recognize that the terms of TWAs and ITOs are developed through negotiations between DOE and its contractors and that the final terms of these contracts are not subject to the dispute resolution provisions of this Agreement.

Notwithstanding the foregoing, the parties understand and agree that if project workscope change from previously approved workscope contained in primary documents, DOE shall submit such changes as a modification to the appropriate primary document. The modification request shall be subject to review and approval by EPA and KNREPC and to the dispute resolution provisions of this Agreement.

2. Within thirty (30) days after Congressional appropriation of the FY budget, DOE shall brief EPA and KNREPC on the budget appropriation and proposed Environmental Management (EM) funding allocations for the new FY at the level of the ADS (or its Project Baseline Summary (PBS) successor) or below, if requested. If there is a delay in Congressional appropriations beyond the first of the new federal fiscal year, DOE shall inform

EPA and KNREPC of any continuing resolution action and the impact of the delay on its ability to meet the requirements of this Agreement. EPA and KNREPC will review this information and may recommend reallocation of available funds.

3. Within ten (10) days of the DOE EM allotments to ORR, DOE-ORR shall brief EPA and KNREPC on the DOE-ORR EM allotments at the level of the ADS (or its Project Baseline Summary (PBS) successor) or below, if requested.

4. After receipt of the DOE EM allotments to PGDP, but no later than sixty (60) Days after OMB's apportionment of the DOE's FY EM appropriation, the parties shall evaluate all projects scheduled for FY and FY + 1 in light of the factors in Section XVIII.A. and cost and productivity savings and determine if the PGDP EM allotment exceeds or is less than the projected costs for the proposed work. If the PGDP EM allotment is greater than the projected costs, DOE shall propose additional work or an acceleration of scheduled work at PGDP. DOE may propose using part or all of the excess allotment for activities not covered by this agreement. EPA and KNREPC will review the proposals and may approve changes in the FY and FY + 1 Timetables and Deadlines in Appendix C.

5. If DOE believes that adequate funds or appropriations are not available to comply with the FY obligations of this Agreement, DOE shall nonetheless make a good faith effort to

comply with the enforceable commitments for FY. A good faith effort may, but does not necessarily, include one or more of the following actions: rescoping or rescheduling the work being performed under this agreement consistent with the enforceable commitments, developing and implementing new productivity or cost-saving measures, requesting re-allotments or reprogramming of appropriated funds, and seeking supplemental appropriations.

6. If DOE believes that adequate funds or appropriations are not available to comply with the FY obligations of this Agreement, DOE may submit a request within forty-five (45) business days of PGDP's budget allotment to modify the enforceable Timetables and Deadlines for the current FY commitments contained in Appendix C in accordance with Section XXXIX (Modification of Agreement) and this subsection to the Agreement. The request must include a draft revised Appendix C. KNREPC and EPA shall review and comment on the draft revised Appendix C within fifteen (15) business days of receipt. Within fifteen (15) business days of receipt of KNREPC and EPA comments, DOE will revise, if necessary, the draft revised Appendix C and submit a D2 Appendix C. The parties agree to finalize Appendix C in accordance with the provisions of Subsection I of Section XX (Review/Comment on Draft/Final Documents) of this Agreement and to incorporate necessary revisions to Appendix C approved in accordance with this Subsection into this Agreement, in

accordance with Section XXXIX (Modification of Agreement) of this Agreement. Also, at any other time DOE learns that adequate funds or appropriations are not available, it shall notify EPA and KNREPC within thirty (30) Days of learning such information.

7. KNREPC and EPA will consider the following factors in reviewing a request for a revision of the Timetables and Deadlines in Appendix C: DOE's efforts to comply with the requirements of paragraph D.a.5 of this section; public comments received; consensus views of the PGDP site-specific advisory board; the impact of the proposed revision on human health and the environment; the impact of the revision on project management, life-cycle costs and logistic, technical, and engineering issues related to the project; new or emerging technologies; new technical or characterization information; site priorities identified through consultation among DOE, EPA, KNREPC and the public; the Congressional budget appropriation, OMB apportionment, and DOE-ORR and PGDP EM allotment for FY; DOE's efforts to achieve project cost savings and increases in productivity; and other relevant factors.

b. Planning for FY + 2

1. DOE PGDP shall provide EPA and KNREPC with information on the EM planning budget for fiscal year + two (FY +2), within seven (7) Days of DOE PGDP receiving such information, including any information on OMB and DOE-HQ target funding guidance.

Within twenty-one (21) Days of DOE-PGDP receiving target funding guidance, DOE-PGDP shall provide EPA and KNREPC with a preliminary assessment of its impacts at PGDP. DOE shall also provide a copy of PGDP's initial contractor budget guidance to EPA and KNREPC within two (2) weeks after its issuance.

2. By February 1 of each year, DOE shall prepare a draft Integrated Priority List for PGDP. DOE shall provide EPA and KNREPC with a copy of its draft Integrated Priority List for PGDP and an assessment of the budget targets on site priorities by February 15 of each year. The list shall prioritize all PGDP waste management and environmental restoration activities (including all enforceable commitments of this Agreement) and may include other site activities, as appropriate.

3. Between February 1 and the date that DOE submits its annual budget request and supporting ADS (or its Project Baseline Summary (PBS) successor) for PGDP EM activities to DOE-HQ, DOE, EPA and KNREPC shall meet and discuss project work scope, priorities, and funding levels required to comply with the obligations of this Agreement. DOE may revise its budget request and supporting documentation in response to issues raised by EPA and KNREPC during this timeframe. In the event that issues are not resolved with DOE, DOE shall submit with its budget request to DOE-HQ an outline of any unresolved issues identifying the issues, and DOE's and EPA's and KNREPC's respective positions

with respect to those issues, along with an estimate of the funding necessary to meet the requirements and obligations of this Agreement. In addition, if EPA or KNREPC disagree with DOE's assessment, they may jointly or individually prepare an assessment of the impacts as it relates to PGDP and DOE shall include a copy of the assessment(s) and any comments with its budget request to DOE-HQ. DOE shall provide EPA and KNREPC with a complete copy of the budget request and attached documentation relating to PGDP that is sent to DOE-HQ.

4. After submission of the PGDP EM budget request to DOE-HQ, and prior to submission of the EM budget request to the Secretary of DOE, it is DOE's intent to provide EPA and KNREPC with a copy of any additional written analyses of the proposed PGDP budget and/or potential changes to the proposed PGDP EM budget and any analyses of associated potential impacts on work required under this Agreement sent from PGDP or DOE-ORR to DOE-HQ concerning the PGDP EM budget, subject to a claim of privilege by DOE. In the event of a claim of privilege, DOE shall provide EPA and KNREPC with an explanation setting forth the basis for the claim of privilege. In the event that DOE changes its intent to provide EPA and KNREPC with the documentation required by this paragraph, DOE shall provide EPA and KNREPC with a written explanation as to why such documentation will no longer be provided. DOE's decision is not subject to the dispute

resolution provisions of this Agreement.

5. If the issues raised by EPA and/ or KNREPC are not resolved prior to DOE's submission of its budget request to the Office of Management and Budget (OMB), DOE shall include an outline of any unresolved issues at PGDP identifying the issues and DOE's and EPA's and/or KNREPC's respective positions with respect to those issues, including any comments submitted by EPA and/or KNREPC and an estimate of the funding necessary to meet the requirements of this Agreement with DOE-HQ's budget request submitted to the OMB.

6. Within 10 days of the President's submission of the FY + 1 budget to Congress, DOE shall submit to EPA and KNREPC a summary of the budget request forwarded to DOE-HQ by DOE-ORR and submit to EPA and KNREPC the DOE-PGDP budget request contained in the President's budget.

7. Within thirty (30) days after the President's submission of the FY + 1 budget to the Congress, DOE shall brief EPA and KNREPC on the President's budget request as it relates to the PGDP at the level of detail of the ADS (or its Project Baseline Summary (PBS) successor) or below, if requested. At this briefing, DOE shall provide EPA and KNREPC with a written description of the funding levels included in the President's budget request as it relates to PGDP and identification of any differences between these levels and the levels necessary to

comply with the terms of this Agreement, along with an assessment of the impacts these differences may have on DOE's ability to meet its requirements under this Agreement.

E. Budget Execution for the Current FY

1. During the regularly scheduled project manager meetings, the project managers in their review of the progress of projects scheduled for the year shall discuss potential cost savings initiatives and productivity gains for the projects.

2. DOE shall provide EPA and KNREPC with copies of any PGDP program execution guidance at the same time it is provided to DOE's contractors. DOE shall consult with EPA and KNREPC in reviewing WBS summaries prepared by the contractors.

3. Throughout the FY, DOE shall promptly notify EPA and KNREPC of any proposed site-specific or major programmatic action, if such action is likely to have an impact on DOE's ability to meet the requirements of this Agreement. DOE shall consider any comments made by EPA or KNREPC in implementing the proposed action.

4. Within thirty (30) days of the completion of DOE's annual midyear management review, DOE shall brief EPA and KNREPC on any decisions that affect compliance with the requirements of this Agreement.

5. DOE agrees to notify the EPA and KNREPC when it provides confidential budget information to EPA and KNREPC. EPA and

KNREPC agree not to release confidential budget information to any other entities prior to submission of the President's budget request to Congress, unless authorized by DOE or required to do so by the Kentucky Open Records Act (KRS 61.870 et seq.), by federal statute or regulation, or by court order. DOE may seek to intervene in any proceeding brought to compel or enjoin release of this information. If allowed to intervene, DOE may assert its interest in, and the legal basis for, maintaining the confidentiality of this information.

6. DOE shall provide EPA and KNREPC with a copy of the reports specified in section 3153 of the Defense Authorization Act for fiscal year 1994 within 10 days of their submission to Congress.

7. Neither the process described above, nor EPA and KNREPC's participation in the process, waives their position that the Executive Branch is obligated to seek full funding for all activities required by this Agreement and that DOE's failure to obtain adequate funds or appropriations from Congress does not in any way relieve DOE from its obligation to comply with this Agreement. If adequate funds or appropriations are not available to fulfill DOE's obligations under this Agreement, EPA and KNREPC may pursue any remedy they have under this Agreement or exercise any of their statutory or regulatory authority. In addition, acceptance of the process by DOE-PGDP does not constitute a waiver by DOE of its position that its obligations

under this Agreement are subject to the availability of appropriated funds and the provisions of the Anti-Deficiency Act, 31 U.S.C. Sec. 1341.

8. The participation by EPA and KNREPC in DOE's budget planning and execution process under this Section is limited solely to the process set forth herein and shall in no way be construed as allowing EPA and/or KNREPC to become involved with the internal DOE budget process. Furthermore, nothing herein shall affect DOE's authority over its budgets and funding level submissions.

F. Cost and Productivity Savings

1. The parties agree to consult during the site budget planning and execution processes to identify opportunities and develop and implement approaches for achieving cost and productivity savings in implementing this agreement. The parties agree that the approaches for achieving cost and productivity savings should include, inter alia, review of the standards, requirements, and practices of managing and conducting activities at PGDP to ensure that the objectives of this Agreement are carried out in an efficient and cost-effective manner, as well as efforts to control project scopes, as much as is practicable, to scopes originally agreed upon to provide for the maximum utilization of available allocated funding to implement this Agreement.

Notwithstanding the foregoing, the parties understand that it may be necessary in some circumstances to alter project scopes based

on regulatory or other requirements. Furthermore, while the parties recognize the value of identifying and implementing cost savings measures and productivity improvements, the Parties agree that the identification and implementation of such measures is a goal, and not a requirement, of this Agreement. This Section and Section 4.4 of the SMP set forth the process by which certain percentages of cost and productivity savings will presumptively remain at the PGDP and be applied to activities required under this Agreement.

2. In the event that projects achieve cost and productivity savings that result in excess funds being available after all enforceable commitments under this Agreement have been met within a fiscal year, subject to Paragraph 4 below, a portion of the funding not contractually obligated will stay at the PGDP site and be reallocated to support other work at the site. Cost and productivity savings realized during a given fiscal year may be carried over for performance of other work in subsequent years. DOE will confer with EPA and KNREPC in identifying the other work at PGDP to which any realized cost and productivity savings will be applied. Such other work may include work not required pursuant to this Agreement. If EPA or KNREPC disagrees with DOE's identification of other work to which realized cost and productivity savings will be applied, EPA or KNREPC may invoke the dispute resolution provisions of this Agreement.

3. The Parties understand and agree that mere deferral of work and associated costs shall not constitute "cost and productivity savings" within the meaning of this Agreement.

4. The reallocation process set forth in this Section and Section 4.4 of the SMP shall be utilized to ensure that cost and productivity savings in implementing this Agreement presumptively remain at the PGDP site in accordance with the following schedule:

FY 1997 -- no less than 60% of cost and productivity savings

FY 1998 -- no less than 75% of cost and productivity savings

FY 1999 and beyond -- no less than 90% of cost and productivity savings.

5. To the extent that cost and productivity savings are attributed to any DOE contractor at the Site performing activities required under this Agreement, the percentages cited herein apply to cost and productivity savings remaining after any contractual obligations are paid to any such contractor.

6. The presumption that cost and productivity savings will remain at PGDP may be overcome in cases where DOE determines that imminent danger or significant threat to human health or the environment exist at another site, and the application of PGDP cost and productivity savings is necessary to abate such danger or threat. DOE will consult with KNREPC and EPA prior to making a determination to apply any portion of cost and productivity

savings to another site. Determinations with respect to overcoming the presumption that cost and productivity savings will stay at PGDP lie within DOE's sole discretion and shall not be subject to the Dispute Resolution provisions of this Agreement.

XIX. ADDITIONAL WORK

A. In addition to the provisions of Section XX (Review/Comment On Draft/Primary Documents) of this Agreement, either EPA or KNREPC may at any time request Additional Work, including field modifications, remedial investigatory work, or engineering evaluations, which they determine necessary to accomplish the purposes of this Agreement, when the basis for modifying a primary document, as specified under Section XX.J of this Agreement, cannot be demonstrated. Such requests shall be in writing to DOE, with copies to the other Parties. DOE agrees to give full consideration to all such requests. DOE may either accept or reject any such requests and shall do so in writing, together with a statement of reasons, within forty-five (45) Days of receipt of any such request. If there is no agreement concerning whether or not the requested Additional Work or modification to work should be conducted, then dispute resolution may be invoked by DOE within thirty (30) Days after DOE's submission of its written rejection of the request for such Additional Work or modification of work.

B. Should Additional Work be required pursuant to this Section, the appropriate work plan shall be amended and proposed by DOE for review and approval by EPA and KNREPC. Appendix C to this Agreement shall be modified if necessary in accordance with Section XXXIX (Modification of Agreement) of this Agreement.

C. The discovery of previously unknown sites, Releases of Hazardous Substances, pollutants or contaminants, or Hazardous Wastes and Hazardous Constituents or other significant new Site conditions, including newly acquired information concerning residual risk, may be addressed as Additional Work under this Section.

D. Any Additional Work or modifications to work proposed by DOE shall be proposed in writing to the other Parties and shall be subject to review in a Primary Document (or modification to an existing Primary Document) in accordance with Section XX (Review/Comment on Draft/Final Documents) of this Agreement. DOE shall not initiate such work prior to review and approval by EPA and KNREPC, except for emergency Removal Actions taken under Subsection X.B (Removal Actions).

E. Any Additional Work or modification to work agreed to or required under this Section, shall be completed in accordance with the standards, specifications, and schedules determined or approved by EPA and KNREPC and shall be governed by the provisions of this Agreement.

XX. REVIEW/COMMENT ON DRAFT/FINAL DOCUMENTS

A. Applicability

The provisions of this Section establish the procedures that shall be used by DOE, EPA and KNREPC to provide the Parties with appropriate notice, review, comment, and response to comments regarding documents specified herein as either primary or secondary documents. In accordance with Section 120 of CERCLA, 42 U.S.C. § 9620, and the RCRA permits, DOE shall be responsible for issuing primary and secondary documents to EPA and KNREPC. As of the effective date of this Agreement, all D1 and D2 documents and reports that are required to be submitted to EPA and KNREPC under this Agreement, as identified herein, shall be prepared and distributed in accordance with Subsections B through J, below. All documents shall be clearly labeled as primary or secondary, and as D1, D2 or Final. All primary and secondary documents shall meet the requirements of CERCLA, the NCP, KRS 224 Subchapter 46, the RCRA Permits, and be consistent with relevant guidance issued by EPA.

The designation of a document as D1 or D2 is solely for purposes of consultation with EPA, KNREPC and other Stakeholder in accordance with this Section.

B. General Process for Document Review

1. Primary Documents are those documents identified in Subsection C.1 herein, for all response actions at the Site.

Primary Documents are initially issued by DOE in draft subject to review and comment by EPA and KNREPC. Following receipt of comments on a particular D1 Primary Document, DOE will respond to comments received and issue a D2 Primary Document subject to EPA and KNREPC approval.

2. Secondary Documents typically include those documents that are discrete portions of the Primary Documents and are typically feeder documents. Secondary Documents are issued by DOE in draft subject to review and comment by EPA and KNREPC. Although DOE must respond to comments received, the D1 Secondary Documents may be finalized in the context of the corresponding Primary Documents. A Secondary Document may only be disputed at the time the corresponding D2 Primary Document is submitted.

3. The Parties agree that plans and reports prepared by DOE for SWMUs/AOCs subject to the Corrective Action requirements of its RCRA Permits, as well as the review of such plans and reports by EPA and KNREPC, shall be combined into a single document with its corresponding CERCLA counterpart designed to meet the requirements of both the RCRA Permits and this Agreement.

C. Primary Documents

1. DOE shall complete and transmit the following D1 Primary Documents to EPA and KNREPC for review and comment in accordance with the provisions of this Section:

- a. Community Relations Plan;
- b. RI/FS Work Plans;
- c. RI Reports;
- d. Baseline Risk Assessment Reports;
- e. FS Reports;
- f. Proposed Plans;
- g. Records of Decision;
- h. Remedial Design Work Plans;
- i. Final Remedial Design Reports;
- j. Remedial Action Work Plans;
- k. Final Remediation Reports
- l. Site Management Plans;
- m. Removal Work Plans;
- n. Engineering Evaluation/Cost Analyses (EE/CA);
- o. Action Memoranda;
- p. Data Management Plan;
- q. Site Evaluation Reports;
- r. Time-Critical Responsiveness Summaries; and
- s. Removal Notification.

2. The RD Reports may be submitted in phased packages when necessary to expedite construction work under this Agreement. In such cases, the RD Work Plan shall describe the phased submittals and identify the RD submittals which shall be considered Primary Documents for purposes of Section XLIII (Stipulated Penalties) under this Agreement.

3. Only the D2 Documents for the Primary Documents identified above shall be subject to dispute resolution. DOE shall complete and transmit D1 Primary Documents in accordance with Section XVIII (Site Management, Timetables and Deadlines, Budget Planning and Execution, Cost and Productivity Savings) of this Agreement.

4. A D1 Primary Document may not be required for an OU if: (a) the same Primary Document completed or to be completed

with respect to another OU addresses all required elements of the subject OU, and, (b) the Parties agree in writing that such a Primary Document for the subject OU is adequately addressed in another Primary Document. The Parties agree to merge or combine multiple documents (including secondary documents), whenever appropriate, in an effort to accelerate the documentation process.

D. Secondary Documents

1. DOE shall complete and transmit drafts of secondary documents to EPA and KNREPC for review and comment in accordance with the provisions of this Section. The following list contains examples of secondary documents:

- a. Sampling and Analysis Plans;
- b. Preliminary Risk Assessment Reports;
- c. Preliminary Characterization Summary; Reports;
- d. Screening/Analysis of Alternatives;
- f. Treatability Study Reports;
- g. Fiscal Year ~~Quarterly~~ Semiannual Progress Reports;
- h. RI/FS Scoping Document;
- i. Field Sampling Plans;
- j. Quality Assurance Project Plans;
- k. Health and Safety Plans;
- l. Sampling and Analysis Results;
- m. Chain of Custody Forms;
- n. Request for Analysis Forms;
- o. Computer Models and Technical Databases;
- p. Minutes of Public Meetings;
- q. Public Meeting Transcripts;
- r. Administrative Record Index;
- s. Results of Community Interviews;
- t. Responsiveness Summaries;
- u. Intermediate Remedial Design Reports (eg., 30%, 60%, etc.);
- v. Removal Site Evaluations;

- w. Construction Quality Control Plans;
- x. Post-Construction Reports; and,
- y. Operation and Maintenance Plans.

2. Although EPA and KNREPC may comment on the D1 secondary documents, such documents shall not be subject to dispute resolution except as provided by Subsection B hereof. In lieu of providing comprehensive comments on a D1 Secondary document, EPA and KNREPC may comment or provide comments identifying major issues. At a minimum, it is EPA's and KNREPC's intent to provide comments on secondary documents to ensure that major issues are identified which may negatively impact review and approval of a subsequent primary document and/or to ensure that site activities are progressing consistent with the requirements of this Agreement and the RCRA Permits. Failure of EPA and/or KNREPC to comment on a secondary document does not constitute EPA and/or KNREPC approval of the secondary document. Secondary documents shall be identified and target dates shall be established for the completion and transmission of D1 secondary documents within Primary Documents (e.g., work plan primary documents) pursuant to Section XVIII (Site Management, Timetables and Deadlines) of this Agreement. When secondary documents are developed and submitted independent of primary documents, then DOE shall identify target dates for such secondary documents.

E. Meetings of Project Managers

The Project Managers shall meet approximately every forty-five (45) Days, except as otherwise agreed by the Parties, to review and discuss the progress of work being performed at the Site and to discuss the progress of work being performed on Primary and Secondary Documents. The Parties shall hold RI/FS scoping meetings pursuant to Section XI (Remedial Investigations) as early as possible and in accordance with the SMP to effect a meaningful exchange of information/expectations prior to the date D1 RI/FS Work Plans are due. Prior to preparing any D1 document specified in Subsections C and D above, the Parties may confer as necessary to discuss the documents in an effort to reach a common understanding.

F. Identification and Determination of Potential ARARs

1. For those Primary Documents or secondary documents that consist of or include ARAR determinations, prior to DOE's issuance of such a D1 document, the Parties shall confer to identify and propose, to the best of their ability, all potential ARARs pertinent to the document being addressed including any permitting requirements which may be a source of ARARs. DOE shall initiate ARARs identification during the initial stages of development of such primary or secondary documents by performing a comprehensive evaluation of possible ARARs. DOE shall notify EPA and KNREPC, as early as possible, of the status of the ARAR evaluation in order to permit a meaningful review of the

potential ARARs by EPA and KNREPC. EPA and KNREPC may request additions or deletions to the ARARs list prior to DOE's formal submission of the document. Kentucky will identify potential state ARARs as required by CERCLA Section 121(d)(2)(A)(ii), 42 U.S.C. § 9621(d)(2)(A)(ii). Draft ARARs determinations shall be prepared by DOE in accordance with Section 121(d)(2) of CERCLA, 42 U.S.C. § 9621(d)(2), the NCP, and pertinent guidance issued by EPA.

2. In identifying potential ARARs, the Parties recognize that actual ARARs can be identified only on an Operable Unit-specific basis and that ARARs depend upon the specific Hazardous Substances, pollutants or contaminants, or Hazardous Wastes and Hazardous Constituents at a site, the particular actions proposed as a remedy and the characteristics of an Operable Unit. The Parties recognize that ARARs identification is necessarily an iterative process and that potential ARARs must be re-examined throughout the RI/FS processes until the ROD is issued.

3. Nothing in this Agreement or this Section of the Agreement shall be construed to affect KNREPC's Reservation of Rights.

G. Review and Comment on Documents

1. DOE shall complete and transmit each D1 Primary Document to EPA and KNREPC on or before the corresponding

deadline established for the submittal of the document established pursuant to Section XVIII (Site Management, Timetables and Deadlines, Budget Planning and Execution, Cost and Productivity Savings) of this Agreement. DOE shall complete and transmit the D1 Secondary Document in accordance with the target dates established for the issuance of such documents according to the approved schedules within the appropriate Work Plans.

2. Unless the Parties mutually agree to another time period, or unless otherwise specified in this Agreement, all D1 Primary Documents shall be subject to the review/comment period specified in Appendix F for the given document under review. All D2 Primary Documents shall be subject to a thirty (30) Day period of review. All D1 Secondary Documents shall be subject to a ninety (90) Day period of review unless the Parties mutually agree to another time period, or if the ninety (90) Day review period would conflict with the review of the corresponding primary document, in which case an alternative period of review for the secondary document shall be specified in the annual SMP, the associated primary document, or other written Agreement. Review of any document by the EPA and KNREPC may concern all aspects of the document (including its completeness) and should include, but is not limited to, technical evaluation of any aspect of the document and consistency with CERCLA, the NCP, the RCRA Permits and any pertinent guidance or policy promulgated by

EPA. Comments by EPA and KNREPC shall provide adequate specificity so that DOE may respond to the comments and, if appropriate, make changes to the D1 document. Comments shall refer to any pertinent sources of authority or references upon which the comments are based, and, upon request of DOE, EPA and KNREPC shall provide a copy of the cited authority or reference. In cases involving complex or unusually lengthy reports, EPA and KNREPC may extend the review period for D1 and D2 Primary Documents an additional thirty (30) Days by written notice to DOE prior to the end of the review period. In extenuating circumstances, this period may be further extended in accordance with Section XXIX (Extensions) of this Agreement. On or before the close of the review/comment period, EPA and KNREPC shall transmit their written comments to DOE.

3. Representatives of DOE shall make themselves readily available to EPA and KNREPC during the review/comment period for purposes of informally responding to questions and comments on D1 documents. Oral comments made during such discussions need not be the subject of a written response by DOE at the close of the review/comment period.

4. In commenting upon a D1 document which contains a proposed ARAR determination, EPA or KNREPC shall include a reasoned statement of whether it objects to any portion of the proposed ARAR determination. To the extent that EPA and/or

KNREPC objects, it shall explain the bases for its objection in detail and shall identify any ARARs which it believes were not properly addressed in the proposed ARAR determination.

5. Following the close of the review/comment period for a D1 document, DOE shall fully address all EPA and KNREPC written comments on the D1 document submitted during the review/comment period by revising the document or providing an adequate response as to why the document does not require revision in response to the comment. Within forty-five (45) Days of the receipt of comments on a D1 Secondary Document, DOE shall transmit to EPA and KNREPC its written response to comments received within the review/comment period. The D1 Secondary Document may be revised and submitted with the appropriate D1 or D2 Primary Document. Within the time period specified in Appendix ~~G-F~~ for DOE response to comments on a D1 Primary Document, DOE shall transmit to EPA and KNREPC the D2 Primary Document, which shall include DOE's response to all EPA and KNREPC written comments received within the review/comment period.

6. DOE may extend the period specified in Appendix ~~G-F~~ for responding to comments on a D1 document and issuing the D2 Primary Document for an additional thirty (30) Days by providing written notice to EPA and KNREPC. In extenuating circumstances, this time period may be further extended in accordance with Section XXIX (Extensions) of this Agreement.

H. Availability of Dispute Resolution for D2 Primary Documents

1. Dispute resolution shall be available to the Parties for D2 Primary Documents as set forth in Section XXV (Resolution of Disputes).

2. When dispute resolution is invoked on a D2 Primary Document, work may be stopped in accordance with the procedures set forth in Section XXV (Resolution of Disputes).

I. Finalization of Documents

Within the time period for review of a D2 Primary Document, including any extensions thereof, both EPA and KNREPC shall either issue a letter of concurrence, a letter of conditional concurrence, or a letter of non-concurrence. The letter of conditional concurrence shall specify the conditions which must be satisfied in the subject Primary Document and shall either: 1) specify a due-date for resubmission of the revised D2 Primary Document and specify the revisions which must be made to the document (generally for reports); or, 2) specify the document's effective date and list the conditions which must be met (generally for work plans). The letter of non-concurrence shall describe the basis for non-concurrence and serve to invoke informal dispute in accordance with Section XXV.B (Resolution of Disputes) of this Agreement.

The period for review of the D2 Primary Document terminates upon EPA and KNREPC issuance of a letter of concurrence,

conditional concurrence, or non-concurrence. In accordance with Section XXV (Resolution of Disputes) of this Agreement, DOE may invoke dispute resolution regarding a conditional concurrence or nonconcurrence. If KNREPC and EPA fail to issue a letter of concurrence, non-concurrence, or conditional concurrence within the time period for review, including all extensions thereof, then DOE will be presumed to have good cause for a request for an extension pursuant to Section XXIX (Extensions) hereof.

The D2 Primary Document shall become the Final Primary Document upon DOE receipt of EPA and KNREPC written concurrence or, upon receipt of EPA and KNREPC letters of conditional concurrence which specify the required changes to the Primary Document, provided that the changes are made, or if dispute resolution is invoked, at completion of the dispute resolution process should DOE's position be sustained. If DOE's determination is not sustained in the dispute resolution process, DOE shall prepare, within not more than sixty (60) Days, a revision of the D2 Primary Document which conforms to the results of dispute resolution. In appropriate circumstances, the time period for this revision period may be extended in accordance with Section XXIX (Extensions) of this Agreement.

J. Subsequent Modifications of Final Documents

Following finalization of any Primary Document pursuant to Subsection I, above, EPA, KNREPC, or DOE may seek to modify

the document, including seeking additional field work, pilot studies, computer modeling or other supporting technical work, only as provided in Subsections J.1 and 2, below.

1. EPA, KNREPC, or DOE may seek to modify a document after finalization if it determines, based on new information (e.g., information that became available, or conditions that became known, after the document was finalized) that the requested modification is necessary. Any party seeking modification may seek such a modification by submitting a concise written request to persons designated to receive notice pursuant to Section XXIV of this Agreement. The request shall specify the nature of the requested modification and how the request is based on new information.

2. In the event that a consensus is not reached by the Parties on the need for a modification, any of the Parties may invoke dispute resolution to determine if such modification shall be made. Modification of a document shall be required only upon a showing that: (1) the requested modification is based on new information; and (2) the requested modification could be of significant assistance in evaluating impacts on the public health or the environment, in evaluating the selection of remedial alternatives, or in protecting human health and the environment.

3. Nothing in this Subsection shall alter either EPA's or KNREPC's ability to request the performance of Additional Work

pursuant to Section XIX (Additional Work) of this Agreement which does not constitute modification of a final document.

K. EPA/KNREPC Review and Comment Coordination

To the extent practicable, EPA and KNREPC intend to coordinate their review of documents and consult on major issues raised during such reviews prior to submission of their individual comments to DOE. However, this provision shall in no way preclude EPA and KNREPC from submitting comments to DOE which may conflict. If such conflicts cannot be resolved during preparation of the D2 document or the D2 review period, and any extensions thereof, the dispute may be resolved in accordance with Section XXV of this Agreement (Resolution of Disputes).

XXI. PERMITS

A. The Parties recognize that under Section 121 (e) (1) of CERCLA, 42 U.S. C. § 9621(e) (1), portions of the response actions required by this Agreement and conducted entirely on the Site are exempted from the procedural requirement to obtain federal, state, or local permits, when such response action is selected and carried out in compliance with Section 121 of CERCLA, 42 U.S. C. § 9621. It is the understanding of the parties that the statutory language is intended to avoid delays of on-Site response actions, due to procedural requirements of the permit process. The parties agree that: (a) any activity required under a ROD or hazardous waste permit modification in which KNREPC

concurrent; (b) decommissioning activities; (c) removal actions for hazardous substances that are also hazardous wastes or hazardous constituents performed in accordance with Section X (Removal Actions); and (d) remedial or removal actions for hazardous substances that are not also hazardous wastes or hazardous constituents (e.g., radionuclides that are not mixed wastes or PCBs) are being approved, at least in part, pursuant to CERCLA authorities. Therefore, no permits are required for these activities. DOE agrees to seek and implement any federal, state, or local permit, including RCRA or KNREPC hazardous waste permit, for operations or processes required to implement activities regulated under this Agreement, other than those listed in (a) - (d) above. However, this Agreement does not supersede, modify, or otherwise change the requirements of DOE's existing RCRA permits or DOE's requirement to modify its existing RCRA permits consistent with the terms of this Agreement. Further, when DOE proposes a response action to be conducted entirely on-site which in the absence of CERCLA Section 121(e)(1) and the NCP would require a federal or state permit, DOE shall include in the submittal:

1. Identification of each permit which would otherwise be required.
2. Identification of the standards, requirements, criteria, or limitations which would have had to have

been met to obtain such permit.

3. An explanation of how the response action proposed will meet the standards, requirements, criteria, or limitations identified.

Notwithstanding the foregoing, KNREPC asserts that the application of CERCLA Section 121(e)(1), 42 U.S.C. § 9621(e)(1), does not constitute a waiver of any Kentucky statutory or regulatory requirement or a waiver of KNREPC's rights to require DOE to obtain a permit if EPA and KNREPC do not issue concurrence hazardous waste permit modifications/RODs. Furthermore, nothing in this Agreement shall be construed as an admission by any Party as to whether any permits would be required if EPA and KNREPC do not issue concurrence hazardous waste permit modifications/RODs.

B. If a permit which is necessary for implementation of this Agreement is not issued, or is issued or renewed in a manner which is materially inconsistent with the requirements of this Agreement or, by no fault of DOE, is not issued in time for DOE to comply with the terms of this Agreement, DOE agrees it shall notify the Secretary of the KNREPC and the Regional Administrator of EPA of its intention to propose modifications to this Agreement (or modifications to primary or secondary documents required by this Agreement) to obtain conformance with the permit (or lack thereof). Notifications by DOE of its intention to propose modifications shall be submitted within seven (7)

business Days of receipt by DOE of notification that: (1) a permit will not be issued; (2) a permit has been issued or reissued; or (3) if the permit is appealed, a final determination with respect to any such appeal has been entered. If DOE does not receive advance notification that a permit will not be issued, then DOE may notify EPA and KNREPC of its intent to propose modifications within seven (7) Days after the date that the permit is needed by DOE in order to comply with the terms of this Agreement. Within thirty (30) Days from the date it submits its notice of intention to propose modifications, DOE shall submit to the Secretary of the KNREPC and the Regional Administrator of EPA its proposed modifications to this Agreement with an explanation of its reasons in support thereof.

C. During any appeal of any permit required to implement this Agreement or during review of any of DOE's proposed modifications as provided in Subsection B of this Section, DOE shall continue to implement those portions of this Agreement which can be implemented pending final resolution of the permit issue(s).

XXII. CREATION OF DANGER

A. In the event that the Secretary of KNREPC or the Regional Administrator of EPA determines that activities conducted pursuant to this Agreement may present an imminent and substantial endangerment to the health or welfare of the people

on the Site or in the surrounding areas or to the environment, the Secretary of KNREPC or the Regional Administrator of EPA may order DOE to stop any work being implemented under this Agreement for such period of time as needed to abate the danger or may require DOE to take necessary action to abate the danger or both.

In the event that DOE determines that any on-site activities or work being implemented under this Agreement may create an immediate threat to human health or the environment from the Release or threat of Release of a hazardous substance, pollutant or contaminant, it may stop any work or on-site activities for such period of time as needed to respond to or abate the danger.

In the event DOE makes a determination to stop work under this Section, it shall immediately notify EPA and KNREPC. DOE shall submit a written summary of events to EPA and KNREPC within five (5) Days of making a determination under this Section.

B. The EPA and KNREPC agree to comply with DOE's Site Health and Safety Plan, or its equivalent, for EPA and KNREPC activities on PGDP.

XXIII. REPORTING

DOE agrees that it shall submit to KNREPC and EPA, fiscal year ~~quarterly~~ seminannual written progress reports (FY ~~Quarterly~~ Seminannual Reports) which describe the actions which DOE has taken during the previous two quarters to implement the requirements of this Agreement. FY ~~Quarterly~~ Semiannual Reports shall also describe the schedules of

activities to be taken during the upcoming ~~quarter~~reporting period. FY ~~Quarterly~~Semiannual Reports shall also provide the identity and assigned tasks of each of DOE's contractors pursuant to Section VII (Parties) hereof. Progress reports shall be submitted on or before the thirtieth Day ~~following the end of~~ April and October of each fiscal year. ~~quarter (i.e., January 30, April 30, July 30 and October 30).~~ ~~DOE's first fiscal year quarterly progress report shall be due thirty (30) Days after the end of the first quarter following the effective date of this Agreement.~~ The progress reports shall include a detailed statement of the manner and extent to which the requirements and time schedules set out in the Appendices to this Agreement are being met. The Progress Report shall also include a Primary/Secondary Document Tracking System. The tracking system should identify all documents under review and/or preparation for the given ~~quarter~~reporting period and the due dates for completion of review/modification tasks. In addition, the progress reports shall identify any anticipated delays in meeting time schedules, the reason(s) for the delay and actions taken to prevent or mitigate the delay.

XXIV. NOTIFICATION

A. Unless otherwise specified, any report or submittal provided pursuant to a schedule or deadline identified in or developed under this Agreement shall be sent by certified mail, return receipt requested, or similar method (including electronic

transmission) which provides a written record of the sending and receiving dates and addressed or hand delivered to the following persons:

U. S. Environmental Protection Agency, Region IV
Remedial Project Manager
Paducah Gaseous Diffusion Plant
Federal Facilities Branch
100 Alabama Street, S. W.
Atlanta, Georgia 30303

Kentucky Department for Environmental Protection
Director, Division of Waste Management
14 Reilly Road, Frankfort Office Park
Frankfort, Kentucky 40601

U. S. Department of Energy
Site Manager
Paducah Site Office
P.O. Box 1410
Paducah, Kentucky 42001-1410

Copies of all correspondence shall be provided by the originator to all Parties. Unless otherwise specified or requested, all routine correspondence, other than a document or submittal as described above, may be sent via regular mail or electronically transmitted to the above persons.

XXV. RESOLUTION OF DISPUTES

Except as specifically set forth elsewhere in this Agreement, if a dispute arises under this Agreement, the procedures of this Section shall apply. All Parties to this Agreement shall make reasonable efforts to informally resolve disputes at the Project Manager or immediate supervisor level. If resolution cannot be achieved informally, then the procedures

of this Section shall be implemented to resolve a dispute.

Nothing herein shall be construed as a limitation upon KNREPC's reservation of rights pursuant to Section XL (Covenant Not to Sue/Reservation of Rights) and KNREPC may exercise its reservation of rights after the Senior Executive Committee has concluded its deliberations (as set forth below in paragraph B. 5.).

A. Informal Dispute:

Subject to the limitations set forth elsewhere in this Agreement, informal dispute resolution may be invoked by any Party for any action which leads to or generates a dispute. A Party who wishes to invoke dispute resolution shall do so by first issuing a written statement of informal dispute. For disputes concerning review of a Primary Document, the disputing Party must issue the written statement of informal dispute within thirty (30) Days after the period established for review of a Primary Document pursuant to Section XX (Review/Comment On Draft/Primary Documents) of this Agreement. The written statement of informal dispute shall set forth the nature of the dispute, the work affected by the dispute, the disputing Party's position with respect to the dispute, and the information the disputing Party is relying upon to support its position. A Secondary Document may only be disputed at the time the corresponding D2 Primary Document is submitted.

During informal dispute, the disputing Party shall engage the other Parties in informal dispute resolution among the Project Managers and/or their immediate supervisors. During the informal dispute resolution process, the Parties shall meet as many times as are necessary to discuss and attempt resolution of the dispute. Except as otherwise set forth below, the informal dispute resolution period shall be limited to thirty (30) Days from receipt of the written statement of informal dispute by the Parties. The informal dispute resolution period may automatically be extended for an additional fifteen (15) Days if requested by any of the Parties.

B. Formal Dispute:

1. If agreement cannot be reached on any issue during the informal dispute resolution process, then the disputing Party shall forward, no later than fifteen (15) Days after the end of the informal dispute resolution period, a written statement of formal dispute to the Dispute Resolution Committee (DRC), thereby elevating the dispute to the DRC for resolution. The date of the written statement of formal dispute shall serve as the date for initiation of formal dispute.

2. The DRC will serve as a forum for resolution of disputes for which agreement has not been reached through informal dispute resolution. The Parties shall each designate one individual and an alternate to serve on the DRC. The

individuals designated to serve on the DRC shall be employed at a policy level (Senior Executive Service or equivalent). The EPA designated member on the DRC is the Waste Management Division (WMD) Director, EPA Region IV. DOE's designated member is the Site Manager, Paducah Site Office. The KNREPC designated member is the Kentucky Division of Waste Management, Director.

3. Following elevation of a dispute to the DRC, the DRC shall have twenty-eight (28) Days to unanimously resolve the dispute and issue a written decision. If the DRC is unable to unanimously resolve the dispute within this twenty-eight (28) Day period, then the KNREPC and EPA representatives on the DRC shall attempt to resolve the dispute. The KNREPC and EPA representatives shall have five (5) additional Days to resolve the dispute and issue a written decision. If the KNREPC and EPA DRC representatives are unable to reach a decision within this five Day period, then the written statement of dispute shall be forwarded to the Senior Executive Committee (SEC) for resolution. Alternatively, if DOE is not satisfied with the decision reached by KNREPC and EPA, then DOE may, within ten (10) days of receiving notice of the decision, elevate the dispute to the SEC for resolution.

4. The SEC will serve as the forum for resolution of disputes for which agreement has not been reached by the DRC or disputes elevated pursuant to Paragraph 3 above. The EPA

representative on the SEC is the Regional Administrator of EPA Region IV. The DOE representative on the SEC is the Manager of Oak Ridge Operations. The KNREPC representative on the SEC is the Commissioner of KDEP. The SEC members shall, as appropriate, confer, meet, and exert their best efforts to resolve the dispute and issue a written decision. If unanimous resolution of the dispute is not reached within twenty-eight (28) Days, then the KNREPC and EPA representatives on the SEC will attempt to resolve the dispute. The KNREPC and EPA representatives shall have five (5) additional Days to resolve the dispute and issue a written decision. If DOE is not satisfied with the decision reached by KNREPC and EPA, then DOE may, within ten (10) days of receiving notice of the decision, elevate the dispute to the EPA Administrator for resolution.

5. If the KNREPC and EPA representatives are unable to reach a decision, then KNREPC, may, within ten (10) days of the conclusion of the SEC's deliberations, issue a written notice to EPA and DOE, exercising its reservation of rights as set forth in Section XL (Covenant Not To Sue/Reservation of Rights). Provided, however, that in the event KNREPC elects to exercise its reservation of rights, KNREPC agrees to continue to participate informally (e.g., either in person, telephonically, in writing, etc., as appropriate) in discussions pertaining to the matter under dispute. The continued participation of the

Commonwealth shall in no way affect the Commonwealth's election of its reservation of rights and shall not be construed as limiting or affecting the Commonwealth's authority under RCRA and KRS 224, and the Commonwealth may, during the discussions, pursue any enforcement or other action it deems appropriate. Whether or not KNREPC elects to exercise its Reservation of Rights, the EPA Region IV Regional Administrator shall issue a written position on the dispute. DOE and/or KNREPC (if KNREPC has not exercised its reservation of rights) may, within ten (10) Days of the Regional Administrator's issuance of EPA's position, issue a written notice elevating the dispute to the Administrator of EPA for resolution in accordance with all applicable laws and procedures. In the event that neither DOE nor KNREPC (if KNREPC has not exercised its reservation of rights) elect to elevate the dispute to the EPA Administrator within the designated ten (10) Day elevation period, DOE and the KNREPC shall be deemed to have agreed with the Regional Administrator's written position with respect to the dispute.

6. Upon elevation of a dispute to the EPA Administrator pursuant to Subsection B.4 or B.5, the Administrator will review and resolve the dispute within twenty-eight (28) Days. Upon request and prior to resolving the dispute, the Administrator shall meet and confer with the Secretary of DOE and/or the Secretary of KNREPC to discuss the

issue(s) under dispute. Upon resolution, the Administrator shall provide all Parties with a written final decision setting forth resolution of the dispute. With the prior concurrence of DOE, the duties of the Administrator set forth in this Subsection may be delegated to the Assistant Administrator for Enforcement and Compliance Assurance.

7. The pendency of any dispute under this Section shall not affect DOE's responsibility for timely performance of the work required by this Agreement, except that the time period for completion of work affected by such dispute shall be extended for a period of time usually not to exceed the actual time taken to resolve any good faith dispute in accordance with the procedures specified herein. All elements of the work required by this Agreement which are not affected by the dispute shall continue and be completed in accordance with the applicable schedule.

8. When dispute resolution is in progress, work affected by the dispute will immediately be discontinued if the WMD Director for EPA, Region IV or the Director of the Kentucky Division of Waste Management (KDWM) requests, in writing, that work related to the dispute be stopped because, in EPA or KNREPC's opinion, such work is inadequate or defective, and such inadequacy or defect is likely to yield an adverse effect on human health or the environment, or is likely to have a

substantial adverse effect on the remedy selection or implementation process. To the extent possible, EPA or KNREPC shall give DOE prior notification that a work stoppage request is forthcoming. After stoppage of work, if DOE believes that the work stoppage is inappropriate or may have potential significant adverse impacts, then DOE may meet with the WMD Director or the Director of KDWM to discuss the work stoppage. The final written decision of the WMD Director or the Director of KDWM will be submitted to DOE within fifteen (15) Days and may be subject to formal dispute resolution immediately. Such dispute may be brought directly to either the DRC or the SEC, at the discretion of DOE, EPA or KNREPC.

9. Within thirty-five (35) Days of resolution of a dispute pursuant to the procedures specified in this Section, DOE shall incorporate the resolution and final determination into the appropriate plan, schedule or procedures and proceed to implement this Agreement according to the amended plan, schedule or procedures.

10. Resolution of a dispute pursuant to this Section of this Agreement constitutes a final resolution of said dispute. All Parties shall abide by all terms and conditions of any final resolution of dispute obtained pursuant to this Section of this Agreement (if KNREPC has not exercised its reservation of rights). Any final resolution of a dispute pursuant to this

Agreement shall be incorporated into this Agreement and shall become a term and condition of this Agreement. Nothing herein shall be construed as a limitation upon KNREPC's reservation of rights pursuant to Section XL (Covenant Not to Sue/Reservation of Rights) or DOE's reservation of removal authority as set forth in Section X (Removal Actions) of this Agreement. Provided, however, that in the event KNREPC exercises its reservation of rights under this Agreement, any final decision by EPA under this Section shall be binding and have effect only as between EPA and DOE, and DOE reserves its right to raise any and all defenses as to KNREPC that it might otherwise have in the absence of such decision.

11. Resolution of disputes may include a determination of the length of any time extensions which are necessary.

12. Pursuant to this Section, all or a portion of a dispute may be elevated.

13. Authorities set forth to members of the DRC or SEC may be delegated only to those persons acting for the designated member during a designated member's absence.

14. Resolution of disputes under this Section may be accelerated as provided in Section XL (Covenant Not to Sue/Reservation of Rights) of this Agreement. Moreover, for disputes relating to Emergency and Time Critical Removal Actions only, the informal dispute resolution period shall be limited to

fifteen (15) Days, with no extension. Furthermore, if, consensus is not reached amongst the parties during the informal dispute resolution period, then within five (5) Days of the end of the informal dispute resolution period, the disputing party shall forward a written statement of formal dispute directly to the SEC. The members of the SEC may agree to shorten their twenty-eight (28) day deliberation period to such time frame as is mutually agreed upon given the exigencies of the situation.

XXVI. DESIGNATED PROJECT MANAGERS

A. EPA, DOE, and KNREPC will each designate Project Managers to coordinate the implementation of this Agreement and shall notify each other in writing of the designation. Each Party may change its designated Project Manager by notifying the other Parties in writing.

B. Daily communications between EPA, DOE, and KNREPC shall be between Project Managers. All documents, including reports, agreements, and other correspondence, concerning the activities performed pursuant to the terms and conditions of this Agreement, shall be distributed in a manner consistent with Section XXIV (Notification) of this Agreement. EPA, DOE and KNREPC Project Managers will coordinate with the Managers identified under Section XXIV (Notification) of this Agreement to ensure timely submission of all documents subject to a schedule or deadline established under this Agreement. Each Project Manager shall be

responsible for assuring the internal dissemination and processing of all communications and documents received from the other Project Managers.

XXVII. QUALITY ASSURANCE/SAMPLING AVAILABILITY/DATA MANAGEMENT

A. The Parties shall make available to each other, upon request, results of sampling, tests, or other data generated by this Agreement. All quality-assured data, or summaries of all quality-assured data, from all samples collected, analyzed, and reported shall be available no later than thirty (30) Days after the analyses have been received and validated.

B. At the request of the EPA and/or the KNREPC Project Manager, DOE shall allow split or duplicate samples to be taken by EPA or KNREPC during sample collection conducted pursuant to this Agreement. Upon request by DOE, EPA and KNREPC shall submit to DOE copies of records and other documents, including sampling and monitoring data, that are relevant to oversight activities. All requirements of the AEA, 42 U.S.C. § 2011, et seq., and all Executive Orders concerning the handling of unclassified controlled nuclear information, restricted data, and national security information, including the "need to know" requirement, shall be applicable to any grant of access to classified information, including sample collection, under provisions of this Agreement.

C. The Parties intend to integrate all data and Release

characterization studies generated pursuant to this Agreement . All data and studies produced under this Agreement shall be managed and presented in accordance with the requirements contained in a D1 Data Management Plan (DMP) to be developed by DOE and submitted to EPA and KNREPC within ninety (90) Days of the effective date of this Agreement for review in accordance with Section XX (Review/Comment on Draft/Final Documents) of this Agreement. The Final DMP shall be appended to the SMP. DOE shall maintain one consolidated data base for the Site which includes all data/studies generated pursuant to this Agreement. Such data base(s) will be operational within six (6) months after the effective date of this Agreement. These data bases may be maintained in electronic form provided however, that hard copies of all data/studies and related documents are made available upon request.

XXVIII. ACCESS/DATA/DOCUMENT AVAILABILITY

A. Without limitation on any authority conferred on EPA or KNREPC by statute, regulation or other agreement, EPA, KNREPC and/or their authorized representatives shall have authority to enter the Site at all reasonable times, with or without advance notification for the purpose of inspecting records, logs, and other documents relevant to implementation of this Agreement; reviewing the progress of DOE, its contractors, and lessees in carrying out the activities under this Agreement; conducting,

sampling and analyses which EPA or KNREPC deem necessary; and verifying data submitted to EPA and KNREPC by DOE. DOE shall honor all reasonable requests for access to the Site made by EPA or KNREPC. When on-site, EPA and KNREPC shall comply with OSHA Hazardous Waste Operations and Emergency Response rules, where applicable, and DOE's site health and safety requirements. EPA and KNREPC access shall be subject to the applicable requirements of the AEA, 42 U.S.C. § 2011, et seq., and Executive Orders concerning the handling of unclassified controlled nuclear information, restricted data, and national security information. Upon request by EPA or KNREPC, DOE shall submit to EPA and KNREPC copies of records, and other documents, including sampling and monitoring data, that are relevant to oversight activities.

B. To the extent that activities pursuant to this Agreement must be carried out on property other than PGDP property, DOE agrees to use its best efforts, including exercising its authority, if necessary, to obtain access pursuant to Section 104(e) of CERCLA, 42 U.S.C. §6904(e), Section 3004(v) of RCRA and KRS 224.10-100(10) from the present owners and/or lessees. DOE shall use its best effort to obtain access agreements which shall provide reasonable access for DOE, EPA, and KNREPC and their representatives, and other appropriate state regulatory agencies. Pursuant to 40 CFR 264.101(c), DOE is not relieved of all responsibility to conduct off-site response actions when off-site

access is denied. The appropriateness of on-site measures to address such off-site Releases will be determined considering site-specific circumstances.

C. DOE shall use its best efforts to obtain written access agreements with respect to non-DOE property upon which monitoring wells, pumping wells, treatment facilities, or other facilities may be located, to carry out response actions under this Agreement. The agreements shall provide that no conveyance of title, easement, or other interest in the property shall be consummated without provisions for the continued operation of such wells, treatment facilities, or other response actions on the property. The access agreements shall also provide that the owners of any property where monitoring wells, pumping wells, treatment facilities or other response actions are located shall notify EPA, KNREPC and DOE by certified mail, at least thirty (30) Days prior to any conveyance of the property owner's interest in the property and of the provisions made for the continued operation of the monitoring wells, pumping wells, treatment facilities or other response actions installed pursuant to this Agreement. In the event DOE is unable to obtain access within sixty (60) Days after the access is sought, DOE shall promptly notify EPA and KNREPC regarding both the lack of access and the efforts undertaken to obtain such access. DOE shall submit proposed modification(s) to this Agreement to EPA and

KNREPC in response to such inability to obtain access.

D. Information, records, or other documents (including D1 primary and secondary documents) produced under the terms of this Agreement by EPA, KNREPC, and DOE shall be available to the public except (a) those identified to EPA and KNREPC by DOE as classified, or unclassified but controlled, within the meaning of and in conformance with the AEA or (b) those that could otherwise be withheld pursuant to the Freedom of Information Act, the Privacy Act, or the Kentucky Open Records Act, unless expressly authorized for Release by the originating agency. Documents or information so identified shall be handled in accordance with those regulations. If no claim of confidentiality accompanies information which is submitted to any Party, then the information may be made available to the public without further notice to the originating Party.

E. Notwithstanding any provision of this Agreement, all requirements of the AEA, as amended, and all Executive Orders concerning the handling of unclassified controlled nuclear information, restricted data and national security information, including the "need to know" requirement, shall be applicable to any access to information or facilities covered under the provisions of this Agreement. The EPA and KNREPC reserve their right to seek or to otherwise obtain access to such information or facilities in accordance with applicable law.

XXIX. EXTENSIONS

A. Either a timetable and deadline or a schedule including schedules within a Work Plan, shall be extended upon receipt of a timely request for extension and when good cause exists for the requested extension. If an extension due to good cause affects any enforceable deadline in Appendix C, the Agreement shall be modified according to Section XXXIX (Modification of Agreement). A request for an extension by a Party shall be timely if it is made in writing (or orally followed within ten (10) Days by a written request) prior to the deadline or scheduled deliverable date. Any oral or written request shall be provided to the other Parties pursuant to Section XXIV (Notification). The request shall specify:

1. The timetable and deadline or the schedule that is sought to be extended;
2. The length of the extension sought;
3. The good cause(s) for the extension; and
4. Any related timetable and deadline or schedule that would be affected if the extension were granted.

B. Good cause exists for an extension when sought in regard to:

1. An event of force majeure;
2. A delay caused by another Party's failure to meet any requirement of this Agreement;
3. A delay caused by the good faith invocation of

dispute resolution or the initiation of judicial action;

4. A delay caused, or which is likely to be caused, by the grant of an extension in regard to another timetable and deadline or schedule;

5. A delay caused by Additional Work agreed to by the Parties; and

6. Any other event or series of events mutually agreed to by the Parties as constituting good cause.

C. Delays caused by the failure of DOE to adequately coordinate its activities with the USEC shall not be considered good cause for an extension.

D. Absent agreement of the Parties with respect to the existence of good cause, the Parties may seek and obtain a determination through the dispute resolution process of whether or not good cause exists.

E. For extension requests by DOE, EPA and KNREPC shall use the following procedures:

1. Within twenty-one (21) Days of receipt of a written request for an extension of a timetable and deadline or a schedule, the EPA and KNREPC shall advise all Parties in writing of their respective positions on the request. To the extent that EPA and KNREPC fail to respond to DOE's request within the 21 Day period, then beginning on the 22nd Day, DOE shall have a day for day extension until such time as EPA and KNREPC either concur

with the extension request or issue a statement of nonconcurrency. If EPA or KNREPC do not concur with the requested extension, they shall include in their statement of nonconcurrency an explanation of the basis for their position.

2. If there is consensus among the Parties that the requested extension is warranted, then DOE shall extend the affected timetable and deadline or schedule accordingly. If there is no consensus among the Parties as to whether all or part of the requested extension is warranted, the timetable and deadline or schedule shall not be extended except in accordance with a determination resulting from the dispute resolution process.

3. Within fourteen (14) Days of receipt of a statement of nonconcurrency with the requested extension, DOE may invoke dispute resolution. If DOE does not invoke dispute resolution within fourteen (14) Days of receipt of a statement of nonconcurrency, then DOE shall be deemed to have accepted EPA's or KNREPC's nonconcurrency and the existing schedule.

4. A timely and good faith request for an extension shall suspend any assessment of stipulated penalties or application for judicial enforcement of the affected timetable and deadline or schedule until a decision is reached on whether the requested extension will be approved. If dispute resolution is invoked and the requested extension is denied because it was

not brought in good faith, stipulated penalties may be assessed and may accrue from the date of the original timetable, deadline, or schedule. Following the grant of an extension, an assessment of stipulated penalties, as defined in Section XLIII (Stipulated Penalties), or an application for judicial enforcement may be sought only to compel compliance with the timetable and deadline or schedule as most recently extended.

F. For extension requests by EPA and KNREPC, if no Party invokes dispute resolution within twenty-one (21) Days after receipt of written notice of the requested extension, the extension shall be deemed approved.

XXX. FIVE YEAR REVIEW

Consistent with Section 121(c) of CERCLA, 42 U.S.C. § 9621(c), and in accordance with this Agreement, DOE agrees that if the selected, final RAs for any operable unit, including selected alternatives entailing institutional controls with remedial action, result in Hazardous Substances, pollutants or contaminants, or Hazardous Wastes and Hazardous Constituents remaining at the Site above levels that allow for unlimited use and unrestricted exposure in accordance with Section 300.430(f)(4)(ii) of the NCP, DOE will submit to EPA and KNREPC a review of the RAs no less often than once every five (5) years (Five Year Review) after the initiation of such RAs (i.e., date of issuance of final-ROD) for as long as the site remains on the

NPL to assure that human health and the environment are being protected by the RAs being implemented. To facilitate the Five Year Review process for multiple OUs, the Five Year Reviews shall be synchronized as follows: reviews which are required for RA OUs will be conducted every five years starting from the initiation of the RA for the first OU. Every five years thereafter, all subject OU RAs which were started prior to the next Five Year Review date, shall be included in the next Five Year Review. For OU RAs which started after the most recent Five Year Review, the level of the review shall be commensurate to the completeness of the RA and the quantity of operation and maintenance data collected.

If, based on the Five Year Review, it is the judgment of EPA or KNREPC that additional action or modification of a RA is appropriate in accordance with Sections 104, 106 or 120 of CERCLA, 42 U.S.C. §§ 9604, 9606, or 9620, the RCRA Permits or KRS 224 Subchapter 46, then EPA or KNREPC shall require DOE to submit a proposal to implement such additional or modified actions, which shall be subject to review and approval by EPA and KNREPC.

Any dispute under this Section shall be resolved under Section XXV (Resolution of Disputes) of this Agreement.

XXXI. RETENTION OF RECORDS

DOE shall preserve, during the duration of this Agreement and for a minimum of ten (10) years after the termination and

satisfaction of this Agreement, the complete Administrative Record, post-ROD primary and secondary documents and reports. After this ten (10) year period, DOE shall notify EPA and KNREPC at least ninety (90) Days prior to the destruction of any such records or documents. Upon request by EPA or KNREPC, DOE shall make available any such records or copies of such records.

XXXII. ADMINISTRATIVE RECORD

A. DOE shall establish and maintain the CERCLA Administrative Record for the Site for each Operable Unit (hereinafter, collectively referred to as the "Administrative Record"). A complete copy of the Administrative Record shall be available to the public at DOE Environmental Information Center in Kevil, Kentucky. In addition, copies of the current index to the Administrative Record and selected documents from the Administrative Record shall be available at other locations, as specified in the approved Community Relations Plan.

B. EPA shall maintain its Administrative Record for the EPA RCRA Permit issued pursuant to HSWA, as required under 40 CFR §§124.9 and 124.18. KNREPC shall maintain its Administrative Record for the Kentucky Hazardous Waste Permit, as required under 401 KAR 38:050.

C. The selection of each response action shall be based on the CERCLA Administrative Record, in accordance with Section 113(k) of CERCLA, 42 U.S.C. § 9613(k), the NCP, and any

regulations promulgated pursuant to that Section, KRS 224 Subchapter 46 and any applicable guidance, and the Administrative Records referenced under Subparagraph B of this Section to the Agreement. A copy of the CERCLA Administrative Record or a complete index thereof shall be maintained at EPA's Region IV office in Atlanta, Georgia.

D. Upon request by EPA or KNREPC, DOE shall provide copies of documents generated or possessed by DOE which are included in the CERCLA Administrative Record to the requesting Party. EPA and KNREPC shall provide DOE with copies of documents generated by each agency which should be included within the CERCLA Administrative Record.

E. Upon establishment of the CERCLA Administrative Record, DOE shall provide EPA and KNREPC with an index of the Administrative Record. The index shall identify the documents which will comprise the Administrative Record including each decision document for each particular response action.

F. DOE shall provide EPA and KNREPC, in its fiscal year ~~quarterly~~ semiannual written progress reports, a periodic update of the index of the Administrative Record that includes any changes or additions to the Record. The Project Managers shall review the Administrative Record Index quarterly to ensure that the Administrative Record is current and complete.

G. EPA shall provide DOE with guidance on establishing and

maintaining the CERCLA Administrative Record as EPA develops guidance.

XXXIII. PUBLIC PARTICIPATION

A. The Parties agree that work conducted under this Agreement, including an Engineering Evaluation/Cost Analysis (as described in Appendix D to this Agreement) for a Removal Action or Proposed Plans for RA at the Site, shall comply with the public participation requirements of CERCLA, including Section 117 of CERCLA, 42 U.S.C. § 9617, the NCP, RCRA and KRS 224 (as applicable), all applicable guidance developed by EPA, all applicable Kentucky hazardous waste laws, and the principles of the Federal Facility Environmental Restoration Dialogue Committee Final report dated April 1996. This shall be achieved through implementation of the approved Community Relations Plan (CRP) prepared and implemented by DOE. A D1 CRP must be submitted to EPA and KNREPC within sixty (60) Days of the effective date of this Agreement for review in accordance with Section XX (Review/Comment On Draft/Primary Documents) of this Agreement and shall include procedures for solicitation of public comment and dissemination of information to the PGDP Site Specific Advisory Board. The Parties agree that the CRP shall, to the extent practicable, coordinate the public participation requirements of CERCLA, RCRA and KRS 224 for activities undertaken pursuant to this Agreement. A major permit modification, including the

required public participation procedures, to incorporate a final remedy upon completion of the RFI/CMS for a Potential OU, shall be carried out in accordance with Condition II.G. of the EPA RCRA Permit and Condition IV.G. of the Kentucky Hazardous Waste Permit. The Parties may integrate public participation requirements of other Federal and Kentucky environmental laws on a case-by-case basis.

B. Excluding imminent hazard situations, any Party issuing an official news release with reference to any of the work required by this Agreement shall advise the other Parties of such news release and the contents thereof at least two (2) business Days before the issuance of such news release.

C. Nothing in this Agreement shall be construed to preclude any Party from responding to public inquiries at any time.

XXXIV. RECOVERY OF EXPENSES

A. EPA Resources

EPA shall take all necessary steps and make efforts to obtain timely funding to meet its obligations under this Agreement. Notwithstanding any other provision of this Agreement, in the event that EPA determines that sufficient funds have not been appropriated to meet any post fiscal year 1996 commitments established by this Agreement, EPA may terminate this Agreement by written notice to DOE and KNREPC.

B. Reimbursement of KNREPC Expenses

1. DOE agrees to reimburse Kentucky for all costs incurred by Kentucky specifically related to the implementation of this Agreement at the Site, provided these costs either: 1) are not inconsistent with the NCP or 2) constitute fees payable to KNREPC. Costs to be reimbursed as described in this paragraph shall not be deemed inconsistent with the NCP solely because such costs are not specifically addressed in the NCP.

2. A separate funding agreement between DOE and Kentucky will be executed. The separate funding agreement between DOE and KNREPC is the specific mechanism for the transfer of funds between DOE and KNREPC for payment of the costs referred to in Subsection B.1. and provides a mechanism for the resolution of any disputed costs between DOE and Kentucky.

3. For the purposes of budget planning only, Kentucky shall provide to DOE, before the beginning of the fiscal year, a written estimate of Kentucky's projected costs to be incurred in implementing the Agreement in the upcoming fiscal year.

4. Kentucky reserves all rights it has to recover any other past and future costs incurred by Kentucky in connection with CERCLA activities conducted at PGDP.

5. In the event of a substantial change in Kentucky's costs incurred specifically related to the implementation of this Agreement, and a significant change in the scope of the project, KNREPC and DOE agree to renegotiate the amounts contained in the

separate funding agreement to reflect such change proportionate to the circumstances. The amount and schedule of payment of these costs will be negotiated with consideration for DOE's multi-year funding cycle.

XXXV. CLAIMS AND PUBLICATION

A. DOE agrees to assume full responsibility for the remediation of the Site in accordance with CERCLA, the NCP, RCRA Sections 3004(u) and (v) and 3008 (h), and KRS 224 Subchapter 46. However, nothing in this Agreement shall constitute or be construed as a release by KNREPC, DOE, or EPA of any claims, causes of action, or demand in law or equity against any person, firm, partnership, or corporation not a signatory to this Agreement for any liability which it may have arising out of or related in any way to the generation, storage, treatment, handling, transportation, Release, or disposal of any Hazardous Substances, pollutants or contaminants, or Hazardous Wastes and Hazardous Constituents found at, taken to, or taken from the Site.

B. This Agreement does not constitute any decision or preauthorization by EPA of funds under Section 111(a)(2) of CERCLA, 42 U.S.C. § 9611(a)(2), for any person, agent, contractor, or consultant acting for DOE.

C. EPA and KNREPC shall not be held as a party to any contract entered into by DOE to implement the requirements of

this Agreement.

D. This Agreement shall not restrict EPA or KNREPC from any legal, equitable, administrative, or response action for any matter not part of the work covered by this Agreement.

E. DOE, KNREPC and EPA shall provide a copy of this Agreement to appropriate contractors, subcontractors, laboratories, and consultants retained to conduct any portion of the work performed pursuant to this Agreement prior to beginning work to be conducted under this Agreement.

F. Nothing in this Agreement shall be considered an admission by any Party with respect to any unrelated claims by any Party or any claims by persons not a Party to this Agreement.

XXXVI. ORDER OF PREFERENCE

In the event of any inconsistency between the Sections of this Agreement and the Appendices to this Agreement, the Sections of this Agreement shall govern unless specifically stated otherwise in this Agreement.

XXXVII. COMPLIANCE WITH LAWS

Nothing in this Agreement shall be construed to relieve DOE or its representative(s) of the obligation to comply with all applicable Federal laws, regulations and Executive Orders, and all applicable Kentucky and local laws and regulations.

XXXVIII. FORCE MAJEURE

A. (i) A Force Majeure shall mean any event arising from causes beyond the control of a Party that could not have been overcome or avoided by due diligence of that Party and that causes a delay in or prevents the performance of any obligation under this Agreement, including, but not limited to:

1. Acts of God; fire; war; insurrection; civil disturbance; or explosion;

2. Unanticipated breakage or accident to machinery, equipment or lines of pipe despite reasonably diligent maintenance;

3. Adverse weather conditions that could not be reasonably anticipated; unusual delay in transportation;

4. Restraint by court order or order of public authority;

5. Inability to obtain, after exercise of reasonable diligence, any necessary authorizations, approvals, permits, or licenses due to action or inaction of any governmental agency or authority other than DOE; and

6. Delays caused by compliance with applicable statutes or regulations governing contracting, procurement or acquisition procedures, despite the exercise of reasonable diligence.

(ii) Delay caused in whole or in part by the United States Enrichment Corporation shall not be presumed to be a force

majeure event.

(iii) Failure to submit a timely Primary Document due to a delay in submission of a related Secondary Document shall not be presumed to be a force majeure event

B. A Force Majeure shall also include any strike or other labor dispute, whether or not within the control of the Parties affected thereby. Force Majeure shall not include increased costs or expenses of Response Actions, whether or not anticipated at the time such Response Actions were initiated.

C. The Parties agree that Subsection A.2 (entirely), Subsection A.3 ("delay in transportation" provision only), Subsection A.4 ("order of public authority"), and Subsection A.6 (entirely) above, do not create any presumptions that such events arise from causes beyond the control of a Party. KNREPC and EPA specifically reserve the right to withhold their concurrence to any extensions which are based on such events which are not entirely beyond the control of DOE pursuant to terms of Section XXIX (Extensions), or to contend that such events do not constitute Force Majeure in any action to enforce this Agreement.

D. Notwithstanding the provisions of Section XXIX (Extensions) hereof, if any event occurs or has occurred that may delay the performance of any obligation under this Agreement, whether or not caused by a force majeure event, DOE shall notify orally EPA and KNREPC within 72 hours of when DOE first knew or

should have known that the event might cause a delay. Within 10 Days thereafter, DOE shall provide in writing to EPA and KNREPC an explanation and description of the reasons for the delay; the anticipated duration of the delay; all actions taken or to be taken to prevent or minimize the delay; a schedule for implementation of any measures to be taken to prevent or mitigate the delay or the effect of the delay; DOE's rationale for attributing such delay to a force majeure event if it intends to assert such a claim; and a statement as to whether, in the opinion of DOE, such event may cause or contribute to an endangerment to public health, welfare or the environment. DOE shall include with any notice all available documentation supporting its claim that the delay was attributable to a force majeure. Failure to comply with the above requirements shall preclude DOE from asserting any claim of force majeure for that event. DOE shall be deemed to have notice of any circumstance of which their contractors or subcontractors had or should have had notice.

E. Extension requests based on a force majeure shall proceed pursuant to Section XXIX (Extensions) hereof.

XXXIX. MODIFICATION OF AGREEMENT

A. This Agreement may be modified by agreement of all the Parties. All major modifications shall be in writing and shall be effective upon the date on which such modifications are signed by EPA. EPA shall be the last signatory on any major modifications to this Agreement.

B. Except as provided in Subsection C, no informal advice, guidance, suggestions, or comments by EPA or KNREPC shall be construed as relieving DOE of any obligation required by this Agreement.

C. Modifications shall be considered major modifications under Subsection A, if designated "major" by any Party. If any party disagrees with the designation of a modification as major, it may invoke dispute resolution pursuant to Section XXV of this Agreement. A major modification is subject to public participation to the extent required by DOE's Community Relations Plan under Section XXXIII (Public Participation) of this Agreement. All other modifications shall not be considered major and can be made informally upon consent of those Parties designated to receive notice in accordance with Section XXIV (Notification) of this Agreement. Informal modifications shall be confirmed in writing within ten (10) Days following the consent of the Project Managers.

D. Any modification to this Agreement, its appendices,

or any primary or secondary document previously approved as final by EPA and KNREPC which incorporates new innovative technology shall be considered a major modification to this Agreement. The Parties agree that such modifications will be made in the future where appropriate to incorporate those new technologies which achieve compliance with this Agreement, either at reduced cost, or in a shorter period of time.

E. The Parties understand that changes in law or regulations may occur which affect the obligations or rights of the parties under this Agreement or change the nature of this Agreement. The Parties agree to consider modifications to this Agreement to address the effects of any such changes.

XL. COVENANT NOT TO SUE/RESERVATION OF RIGHTS

A. In consideration for DOE's compliance with this Agreement, and based on the information known to the Parties on the effective date of this Agreement, EPA agrees that compliance with this Agreement, including payment of stipulated penalties, shall stand in lieu of any administrative, legal and equitable remedies against DOE available to it regarding the currently known Releases or threatened Releases of Hazardous Substances, pollutants or contaminants, or Hazardous Wastes and Hazardous Constituents at the Site which are the subject of an RI/FS or Removal Notification and which will be addressed by a RA or Removal Action provided for under this Agreement. Except as

otherwise provided in this Agreement, and based on the information known to the Parties on the effective date of this Agreement, KNREPC agrees that compliance with this Agreement shall satisfy DOE's obligations arising under the RCRA Permits and the corrective action provisions of KRS 224 Subchapter 46 regarding the currently known releases or threatened releases of hazardous wastes or hazardous constituents at the Site which are the subject of an RI/FS or Removal Notification and which will be addressed by a Response Action approved by KNREPC and provided for under this Agreement. Provided, however, that this provision shall not apply where Kentucky has exercised its reservation of rights pursuant to paragraph B.5 of Section XXV (Resolution of Disputes) and Section L (Covenant Not to Sue/Reservation of Rights) of this Agreement. KNREPC agrees, at a minimum, to proceed through the SEC level of the dispute resolution process provided in Section XXV (Resolution of Disputes) of this Agreement prior to taking any other action available to it regarding the currently known Releases or threatened Releases of Hazardous Substances, pollutants or contaminants, or Hazardous Wastes and Hazardous Constituents at the Site which are the subject of an RI/FS or Removal Notification and which will be addressed by a RA or Removal Action provided for under this Agreement. Nothing in this Agreement shall preclude either the EPA or KNREPC from exercising any administrative, legal and

equitable remedies available (including the assessment of civil penalties and damages if such are otherwise legally assessable) to require additional response actions by the DOE in the event that the implementation of the requirements of this Agreement is no longer protective of public health and the environment or for matters not specifically part of the work covered by this Agreement. Moreover, nothing herein shall limit KNREPC's or EPA's authority to challenge a Removal Action pursuant to 42 U.S.C. §9622(e)(6) and KRS 224 Subchapter 46. Nothing in this Agreement shall be deemed to confer or waive authority reserved to DOE under the Atomic Energy Act, 42 U.S.C. 2011 et seq.. Additionally, in the event of enforcement action being taken against DOE under this Agreement, including, but not limited to actions under Sections X or XIV of this Agreement, DOE reserves all rights, including any appeal rights it may have.

B. Except to the extent expressly provided for elsewhere in this Agreement, this Agreement shall not be construed as waiving any right or authority that KNREPC may have and shall not be construed as a bar or release of any claim, cause of action or demand in law or equity including any right KNREPC may have to assess penalties for DOE's failure to comply with any term or condition of this Agreement or any timetable or deadline established pursuant to this Agreement. Notwithstanding the provisions of Section XXV (Resolution of Disputes) or any other

Section of this Agreement, in the event that KNREPC issues a written notice exercising its reservation of rights pursuant to Section XXV (Resolution of Disputes), paragraph B.5., or is dissatisfied with any final decision issued by the Administrator pursuant to Section XXV (Resolution of Disputes), KNREPC may take any action concerning the disputed matter which would be available in the absence of this Agreement, including imposing its requirements directly on DOE, defending the basis for those requirements, and contesting EPA's conflicting requirements, if any.

C. Notwithstanding this Section, or any other Section of this Agreement, KNREPC shall retain any right it may have to obtain judicial review of any final decision of EPA on selection of a remedial action or ARARs determination pursuant to any authority KNREPC may have under Sections 113, 121(e)(2), 121(f), and 310 of CERCLA, 42 U.S.C. §§ 9613, 9621(e)(2), 9621(f), and 9659.

D. If dispute resolution concerning any matter requires a decision by the Regional Administrator or the Administrator, the Parties may mutually agree to accelerate that matter through the dispute resolution procedures of Section XXV (Resolution of Disputes) under this Agreement to the Administrator. Notwithstanding the provisions of Section XXV (Resolution of Disputes) or any Section of this Agreement, in the event that

KNREPC elects to exercise its reservation of rights pursuant to Section XXV (Resolution of Disputes), paragraph B.5., or is dissatisfied with any final decision issued by the Administrator pursuant to Section XXV (Resolution of Disputes), KNREPC may take any action concerning the disputed matter which would be available in the absence of this Agreement.

E. This Covenant Not to Sue shall not be deemed to affect any rights which any non-party may have.

F. DOE is not released from any claim for damages for injury to, destruction of, or loss of natural resources pursuant to CERCLA Section 107. This Agreement does not in any way release DOE from any claims any party may have for natural resource damage assessments or for damages to natural resources.

G. Nothing in this Agreement shall preclude KNREPC from exercising any administrative or judicial remedies available in the event or upon the discovery of a violation of, or noncompliance with, any provision of RCRA or KRS 224 Chapter 46 including any disposal or release of hazardous waste or hazardous constituents which are not addressed by this Agreement. Moreover, nothing in this Agreement shall be interpreted to excuse DOE from complying with the requirements of RCRA, KRS 224 Subchapter 46 and the regulations promulgated thereunder for matters not addressed by this Agreement.

H. For matters within the scope of this Agreement,

KNREPC and EPA reserve the right to bring any enforcement action against other potentially liable parties, including contractors, subcontractors and/or operators, if DOE fails to comply with this Agreement. For matters outside this Agreement, and any actions related to response costs, KNREPC and EPA reserve the right to bring any enforcement action against other potentially responsible parties, including DOE's contractors, subcontractors and/or operators, regardless of DOE's compliance with this Agreement.

XLI. NATURAL RESOURCE DAMAGES

DOE and other Kentucky and Federal trustees shall act on behalf of the public as the trustees for the natural resources present at PGDP. In this capacity, DOE shall be responsible for notifying other Kentucky and Federal trustees and for assessing damages (injury, destruction or loss of natural resources) resulting from Releases of Hazardous Substances, pollutants or contaminants, or Hazardous Wastes and Hazardous Constituents on PGDP, and for implementation of measures designed to mitigate such damages. These authorities are vested in DOE (as specified in Executive Order 12580) pursuant to Section 107(f) of CERCLA and Section 311(f) of the Federal Water Pollution Control Act. As a trustee for natural resources on PGDP, DOE Kentucky, U.S. Fish and Wildlife Service, Tennessee Valley Authority and the Department of Interior, shall have the authority to:

1. Assess damages to public natural resources following the procedures provided by 43 CFR Part 11 and subsequent rule making; and

2. Devise and implement a plan to restore, replace or acquire the equivalent of such resource pursuant to CERCLA. Such a plan shall be consistent, to the degree possible, with applicable Record(s) of Decision under this Agreement.

DOE shall notify the appropriate Federal and Kentucky natural resource trustees as required by Section 104(b)(2) of CERCLA, 42 U.S.C. § 9604(b)(2), and Section 2(e)2 of Executive Order 12580. Except as provided herein, DOE is not released from any liability which it may have pursuant to any provisions of Kentucky and Federal law, including any claim for damages for liability to the destruction of, or loss of natural resources.

XLII. PROPERTY TRANSFER

In the event that DOE determines to enter into any contract for the sale or transfer of any of the Site, DOE shall comply with the requirements of Section 120(h) of CERCLA, 42 U.S.C. § 9620(h), in effectuating that sale or transfer, including all notice requirements. In addition, DOE shall include notice of this Agreement in any document transferring ownership or operation of the Site to any subsequent owner and/or operator of any portion of the Site and shall notify EPA and KNREPC of any such sale or transfer at least ninety (90) Days prior to such

sale or transfer. No change in ownership of the Site or any portion thereof or notice pursuant to Section 120(h)(3)(B) of CERCLA, 42 U.S.C. § 9620(h)(3)(B), shall relieve DOE of its obligation to perform pursuant to this Agreement. No change of ownership of the Site or any portion thereof shall be consummated by DOE without provision for continued maintenance of any containment system, treatment system, or other response action(s) installed or implemented pursuant to this Agreement. This provision does not relieve DOE of its obligations under 40 C.F.R. Part 270 and KRS 224 §46, 401 KAR Chapter 38.

XLIII. STIPULATED PENALTIES

A. In the event that DOE fails to submit a Primary Document, as identified in Section XX (Review/Comment On Draft/Primary Documents), to EPA and KNREPC pursuant to the appropriate enforceable timetable or deadline included in Appendix C in accordance with the requirements of this Agreement, or fails to comply with a term or condition of this Agreement which relates to the actual performance of an interim or final RA, or a Removal Action, DOE may be assessed a stipulated penalty in an amount not to exceed \$5,000 for the first week (or part thereof), and \$10,000 for each additional week (or part thereof) for which a failure set forth in this Subsection occurs. Stipulated penalties will accrue from the date of the missed deadline or the date the noncompliance occurs, as appropriate.

B. Upon determining that DOE has failed in a manner set forth in Subsection A, above, EPA and KNREPC shall jointly notify DOE in writing. If the failure in question is not already subject to dispute resolution at the time such notice is received, then DOE shall have fifteen (15) Days after receipt of the notice to invoke dispute resolution on the question of whether the failure did in fact occur or was caused by force majeure. DOE shall not be liable for the stipulated penalty assessed by EPA and KNREPC if the failure is determined, through the dispute resolution process, not to have occurred or to have occurred as the result of a force majeure event. In the case of a stipulated penalty assessed only by EPA or only by the Commonwealth, the assessing party shall notify DOE, in writing, of the failure. If the failure in question is not already subject to dispute resolution at the time such notice is received, then DOE shall have fifteen (15) Days after receipt of the notice to invoke dispute resolution on the question of whether the failure did in fact occur or was caused by force majeure. DOE shall not be liable for the stipulated penalty assessed by EPA or KNREPC if the failure is determined, through the dispute resolution process, not to have occurred or to have occurred as the result of a force majeure event. No assessment of a stipulated penalty pursuant to this Section shall be final until the conclusion of dispute resolution procedures related to

the assessment of the stipulated penalty. DOE's invocation of dispute resolution shall toll the obligation to pay the assessed penalty, but shall not toll the accrual of stipulated penalties. Assessment of a stipulated penalty by EPA and/or KNREPC shall preclude the agency (ies) assessing such stipulated penalty from seeking to also impose a statutory penalty arising from DOE's failure to meet the same regulatory milestone. Furthermore, in the event of a noncompliance or failure under this Agreement by DOE, neither EPA nor KNREPC individually shall seek penalties under both CERCLA and RCRA/KRS 224 for the same instance of noncompliance or failure.

C. DOE's annual report to Congress required by Section 120(e)(5) of CERCLA, 42 U.S.C. § 9620(e)(5), shall include, with respect to each final assessment of a stipulated penalty against DOE under this Agreement, each of the following:

1. The facility responsible for the failure;
 2. A statement of the facts and circumstances giving rise to the failure;
 3. A statement of any administrative or other corrective action taken at the relevant facility, or a statement of why such measures were determined to be inappropriate;
 4. A statement of any additional action taken by or at the facility to prevent recurrence of the same type of failure;
- and

5. The total dollar amount of the stipulated penalty assessed for the particular failure.

D. Stipulated penalties assessed pursuant to this Section shall be payable as follows:

Unless otherwise agreed between EPA and the State, any stipulated penalty assessed by both the State and EPA pursuant to this part shall be divided equally between the Hazardous Substances Response Trust Fund and KNREPC in accordance with KRS 224.10-250. Any stipulated penalty assessed only by EPA shall be payable to the Hazardous Substances Response Trust Fund. Any stipulated penalty assessed only by the Commonwealth shall be payable to KNREPC in accordance with KRS 224.10-250. The parties recognize that stipulated penalties assessed by KNREPC are assessed pursuant to RCRA and KRS 224, and not pursuant to CERCLA. Stipulated penalties payable to the Hazardous Substances Response Trust Fund shall be paid from funds authorized and appropriated for that purpose. DOE shall make specific budget requests for payment of assessed stipulated penalties. DOE shall pay stipulated penalties assessed by the Commonwealth of Kentucky under this part within 120 days of the date DOE receives the Commonwealth's demand for payment of a finally-assessed penalty unless KNREPC agrees to a longer schedule. DOE shall request, for stipulated penalties assessed by EPA, specific authorization and appropriation of any such penalty in its budget submission

for FY +1, unless DOE has already submitted its final budget for that budget year to OMB, in which case DOE shall request such specific authorization and appropriation in its FY +2 budget submittal.

E. Failure of DOE to comply with the requirements of Section XVIII.D. (Budget Planning) or Section XVIII.E. (Budget Execution for the Current FY) shall not be subject to stipulated penalties under this Section.

F. In no event shall this Section give rise to a stipulated penalty in excess of the amount set forth in Section 109 of CERCLA, 42 U.S.C. § 9609.

G. This Section shall not affect DOE's ability to obtain an extension of a timetable, deadline, or schedule pursuant to Section XXIX (Extensions) of this Agreement.

H. Nothing in this Agreement shall be construed to render any officer or employee of DOE personally liable for the payment of any stipulated penalty assessed pursuant to this Section.

I. Nothing in this Section shall preclude EPA or KNREPC from pursuing any other sanction that may be available to them, in lieu of stipulated penalties, for DOE's failure to meet any requirement of this Agreement. Nor shall anything in this Section preclude EPA or KNREPC from seeking or imposing any injunctive relief that may be available to them to compel DOE's

compliance with this Agreement.

XLIV. ENFORCEABILITY

A. The Parties agree that:

1. Upon the effective date of this Agreement, any standard, regulation, condition, requirement, or order which has become effective under CERCLA and is incorporated into this Agreement is enforceable by any person pursuant to Section 310 of CERCLA, 42 U.S.C. § 9659, and any violation of such standard, regulation, condition, requirement, or order will be subject to the civil penalty provisions under Sections 310(c) and 109 of CERCLA, 42 U.S.C. §§ 9659(c) and 9609; and

2. All Appendix C timetables or deadlines and Site Management Plan CS OU timetables or deadlines associated with the development, implementation and completion of the RI/FS shall be enforceable by any person pursuant to Section 310 of CERCLA, 42 U.S.C. § 9659, and any violation of such timetables or deadlines will be subject to civil penalties under Sections 310(c) and 109 of CERCLA, 42 U.S.C. §§ 9659(c) and 9609;

3. All terms and conditions of this Agreement which relate to interim or final RAs and removal actions (including IM and Corrective Actions), including corresponding timetables, deadlines, or schedules, and all work associated with interim or final RAs and removal actions (including IM and Corrective Actions), shall be enforceable by any person pursuant to Section

310(c) of CERCLA, 42 U.S.C. § 9659(c), and any violation of such terms or conditions will be subject to the civil penalties provisions under Sections 310(c) and 109 of CERCLA, 42 U.S.C. §§ 9659(c) and 9609; and

4. Any final resolution of a dispute pursuant to Section XXV (Resolution of Disputes) of this Agreement which establishes a term, condition, timetable, deadline, or schedule shall be enforceable by any person pursuant to Section 310(c) of CERCLA, 42 U.S.C. § 9659(c), and any violation of such term, condition, timetable, deadline or schedule will be subject to civil penalties under Section 310(c) and 109 of CERCLA, 42 U.S.C. §§ 9659(c) and 9609.

5. Requirements of this Agreement that are requirements of RCRA and KRS 224 Subchapter 46 shall be enforceable by any person, including the Commonwealth of Kentucky, pursuant to any rights which may exist under section 7002(a)(1)(A) of RCRA. DOE agrees that the Commonwealth of Kentucky or one of its agencies is a "person" within the meaning of section 7002(a) of RCRA. Nothing in this paragraph shall be construed as being in contravention of CERCLA §113(h).

6. Requirements of this Agreement that relate to RCRA or KRS 224 Subchapter 46 may be enforced by KNREPC as requirements of a Corrective Action Order on Consent issued pursuant to KRS 224.46-530.

B. Nothing in this Agreement shall be construed as authorizing any person to seek judicial review of any action or work where review is barred by any provisions of CERCLA, including Section 113(h) of CERCLA, 42 U.S.C. § 9613(h). However, nothing in this paragraph shall prevent KNREPC from taking any action or exercising any right KNREPC may have to enforce any requirement of RCRA or KRS 224 Subchapter 46 and its corresponding regulations.

C. The Parties agree that all Parties shall have the right to enforce the terms of this Agreement.

XLV. TERMINATION AND SATISFACTION

A. To the extent that remedial response actions are conducted in OUs under the provisions of this Agreement, following completion of all response actions at an OU, as specified in the ROD for that OU, and upon written request by DOE, EPA and KNREPC will send to DOE a written notice that the response actions selected in the ROD have been completed in accordance with the requirements for that operable unit. This notice shall not serve as written notice of termination and satisfaction of the entire Agreement described under Subsection B of this Section.

B. To the extent that remedial preliminary assessment actions are conducted pursuant to the provisions of this Agreement, following the completion of all response actions

(i.e., removal and RAs), including the comprehensive site-wide operable unit, and upon written request by DOE, EPA, and KNREPC will send to DOE a written notice of satisfaction of the terms of this Agreement within ninety (90) Days of the request. The notice shall state that, in the opinion of EPA and KNREPC, DOE has satisfied all the terms of this Agreement in accordance with the requirements of CERCLA, the NCP, Sections 3004(u) and (v), and 3008(h) of RCRA, 42 U.S.C. § 6928(h), and related guidance, KRS 224 Subchapter 46 and its implementing regulations and applicable state laws and that the work performed by DOE is consistent with the agreed-to response actions.

C. KNREPC may, in its sole discretion, terminate this Agreement upon sixty (60) Days written notice to the other Parties. Termination of the Agreement by KNREPC shall be effective on the 60th Day after such notice, unless KNREPC agrees otherwise in writing before such date. Once termination is effective pursuant to this paragraph, this Agreement shall have no further force or effect as to KNREPC; provided, however, that surviving requirements of this Agreement shall remain enforceable as requirements of a CERCLA § 120 Interagency Agreement between EPA and DOE.

XLVI. EFFECTIVE DATE

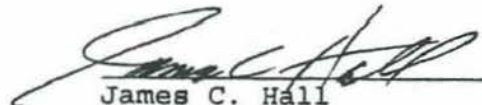
This Agreement shall become effective after it is executed by all the Parties and upon the date set by EPA in written

notification to all Parties that the Agreement has been finally executed and is effective.

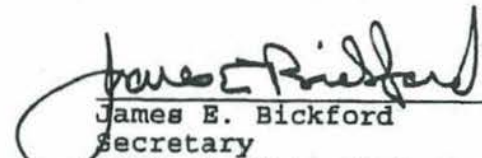
This Agreement will not be executed until such time as all public comment provided during a forty-five (45) day comment period has been addressed by the Parties and incorporated into the Agreement as appropriate.

IT IS SO AGREED:

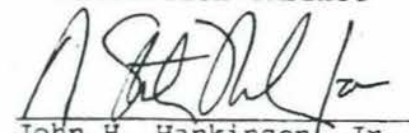
11/19/97
DATE


James C. Hall
Manager
United States Department of
Energy
Oak Ridge Operations Office

12 Dec 1998
DATE


James E. Bickford
Secretary
Kentucky Natural Resources
and Environmental
Protection Cabinet

FEB 12 1999
DATE


John H. Hankinson, Jr.
Regional Administrator
United States Environmental
Protection Agency

APPENDIX A

RCRA/CERCLA Process/Document Comparisons

General Response Process

INVESTIGATION

CERCLA

RI/FS Work Plan

RI Report

FS Report

RCRA

RFI Work Plan

RFI Report

CMS Work Plan

CMS Report

REMEDY
SELECTION

Proposed Plan

ROD

Statement of Basis

Permit Mod

REMEDIAL ACTION

RD Work Plan

RD Report

RA Work Plan

Post Con. Report

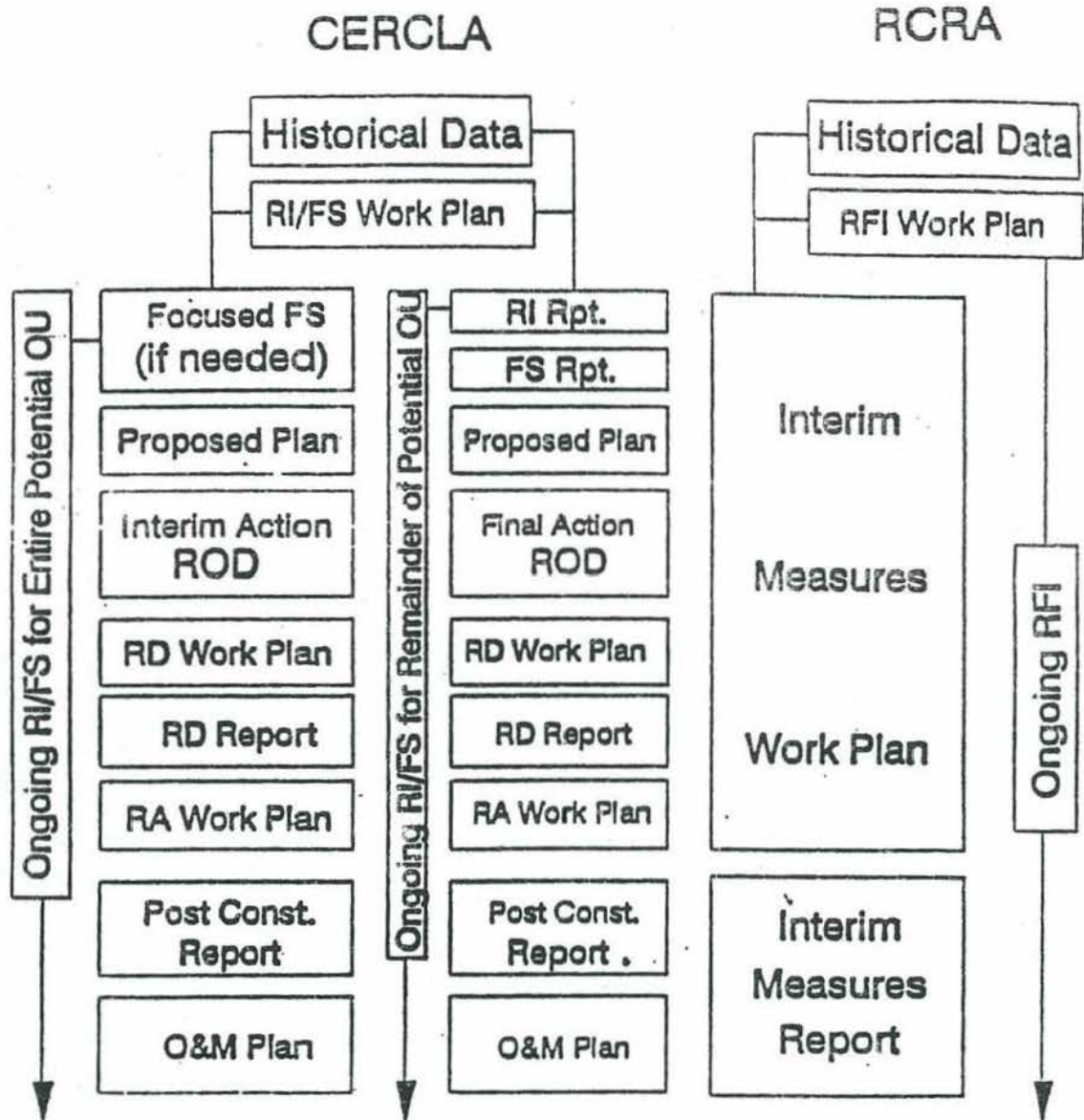
O&M Plan

Final Remed. Rpt

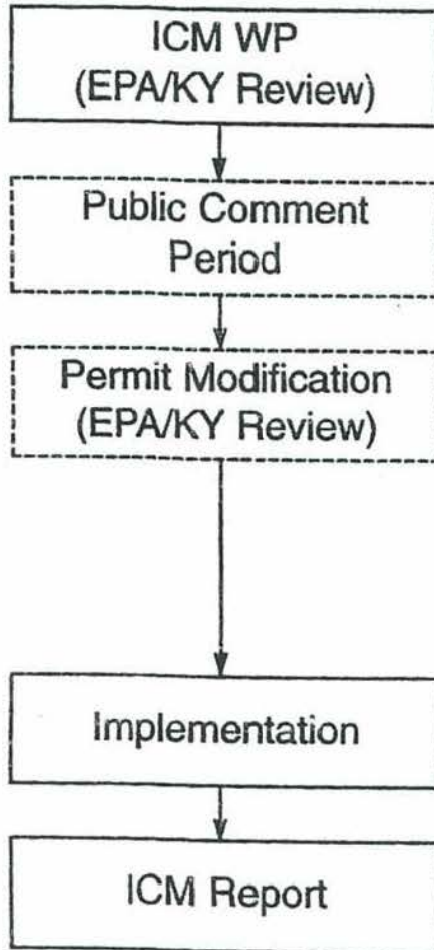
As Specified

In Permit Mod

INTERIM RESPONSE ACTIONS



RCRA



Common Requirement

- Alternative(s)/objective
- Schedule
- Design/Specifications

- Public Participation

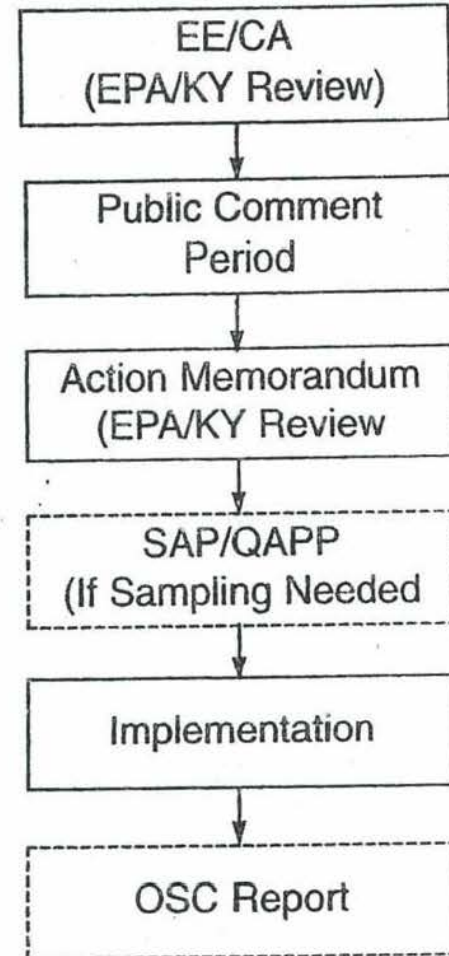
- Final Alternative Decision

- Perform Action

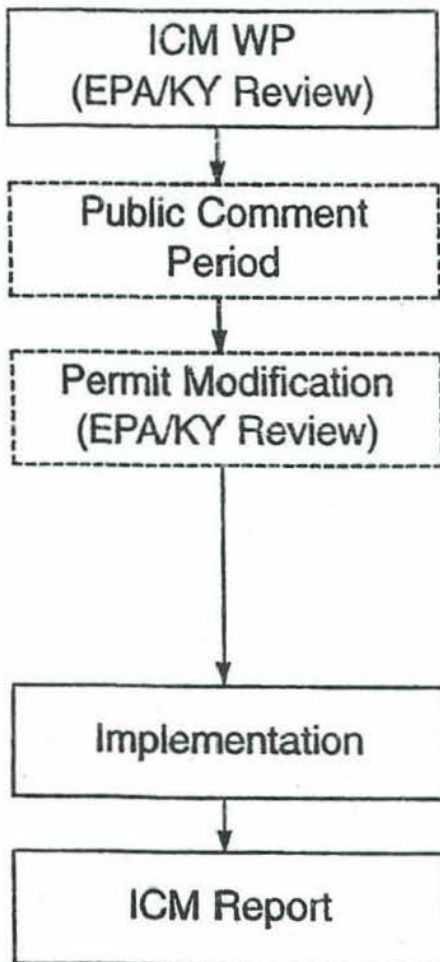
- Post-action Documentation

----- Optional
_____ Required

CERCLA (Non Time-critical)



RCRA



Common Requirement

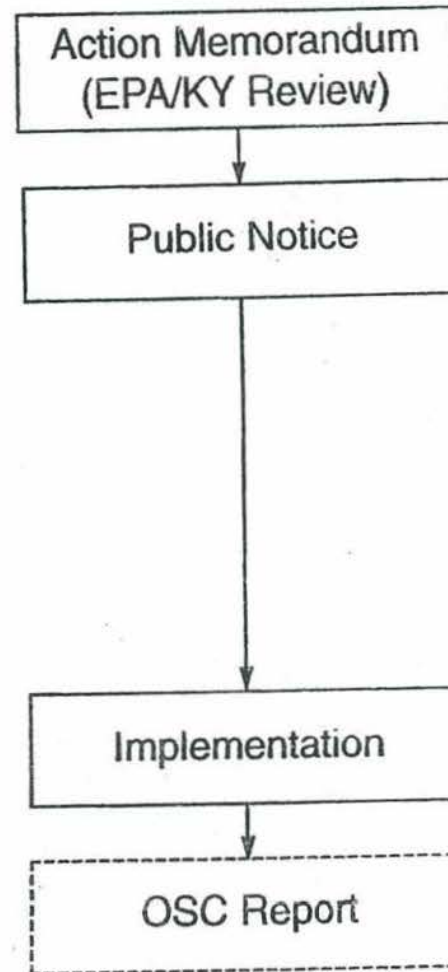
• Alternative(s)/objective

• Perform Action

• Post-action Documentation

----- Optional
———— Required

CERCLA (Time-critical)



APPENDIX B

RCRA/CERCLA Units List

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Solid Waste Management Units/Areas of Concern by Operable Unit

C-400 COMPLEX				
Operable Unit	Subproject	SWMU No.	Description	
C-400 Complex OU	C-400 D&D	Other	C-400 Building [building foundation (i.e., slab) will remain in place]	
	C-400 Final Remedial Action	11	C-400 TCE Leak Site	
		40	C-403 Neutralization Tank slab and underlying soils	
		47	C-400 Technetium Storage Tank Area	
		98	C-400 Basement Sump	
		203	C-400 Discard Waste System slab and underlying soils	
		480	C-402 Lime House building slab and underlying soils	
		533	TCE Spill Site from TCE Unloading Operations at C-400	
		Five SWMUs (349, 350, 351, 352, and 353) within the C-400 Building are DMSAs that were designated as SWMUs under the Kentucky Hazardous Waste Management Permit pursuant to a DOE-KDEP Agreed Order (October 2003) and were not identified for action under the FFA. Ten other SWMUs within the C-400 Building (48, 49, 50, 51, 52, 53, 54, 383, 384, and 537) have been designated as no further action (NFA) and are listed in the NFA section of Appendix 4.		
GROUNDWATER				
GWOU	C-400 Interim Remedial Action	11	C-400 TCE Leak Site	
		533	TCE Spill Site from TCE Unloading Operations at C-400	
	Southwest Plume Sources	1	C-747-C Oil Land Farm	
		211 A	C-720 TCE Spill Site Northeast	
		211 B	C-720 TCE Spill Site Southeast	
	Dissolved-Phase Plumes	201	Northwest Groundwater Plume	
		202	Northeast Groundwater Plume	
		210	Southwest Groundwater Plume	
	Potential Additional Groundwater Sources	NA	This operable unit is being reserved for remaining sources to groundwater contamination that may be identified in the future	
	SURFACE WATER			
SWOU	SWOU Remedial Action	Removal Action	58	North-South Diversion Ditch (NSDD) (Outside) (includes KPDES 003)
			60	C-375-E2 Effluent Ditch (KPDES 002) ¹
			61	C-375-E5 Effluent Ditch (KPDES 013) ¹
			62	C-375-S6 SW Ditch (KPDES 009) ¹
			63	C-375-W7 Oil Skimmer Ditch (KPDES 008 and KPDES 004)
			66	C-375-E3 Effluent Ditch (KPDES 010)
			67	C-375-E4 Effluent Ditch (C-340 Ditch) (KPDES 011)
			68	C-375-W8 Effluent Ditch (KPDES 015)
			69	C-375-W9 Effluent Ditch (KPDES 001)
			92	Fill Area for Dirt from the C-420 PCB Spill Site
			97	C-601 Diesel Spill

¹ The results of the Surface Water Operable Unit (SWOU) (On-Site) Site Investigation determined that there were no unacceptable levels of risk to current and anticipated future receptors that warranted inclusion of Solid Waste Management Unit (SWMU) 60 (Outfall 002), SWMU 168 (Outfall 012), or SWMU 102 [Paducah Gaseous Diffusion Plant (PGDP) storm sewer systems associated with C-333-A, C-337-A, C-340, C-535, and C-537]. As a result, no action will be taken for these SWMUs as originally planned under the SWOU removal action. These SWMUs will be evaluated further as part of the SWOU remedial action. It also should be noted that during development of the Sampling and Analysis Plan (SAP) for SWOU (On-Site) Removal Action, Outfall 009 and Outfall 013 were evaluated. This assessment of the outfalls, which included a review of historical data, indicated that Outfall 009 and Outfall 013 did not require an early action, and further assessment of Outfall 009 and Outfall 013 would be addressed during the Comprehensive Site Operable Unit (CSOU). Based upon current site strategy, Outfall 009 and Outfall 013 also will be addressed as part of the SWOU remedial action.

Solid Waste Management Units/Areas of Concern by Operable Unit (Continued)

SURFACE WATER (CONTINUED)			
Operable Unit	Subproject	SWMU No.	Description
SWOU	SWOU Remedial Action	102B	Plant Storm Sewer associated with C-333-A, C-337-A, C-340, C-535, and C-537 ¹
		168	KPDES Outfall Ditch 012 ¹
		526	Internal Plant Drainage Ditches (includes KPDES 016) ²
		64	Little Bayou Creek
		65	Bayou Creek
		93	Concrete Disposal Area East of Plant Security Area
		105	Concrete Rubble Pile (3)
		106	Concrete Rubble Pile (4)
		107	Concrete Rubble Pile (5)
		108	Concrete Rubble Pile (6)
		109	Concrete Rubble Pile (7)
		113	Concrete Rubble Pile (11)
		129	Concrete Rubble Pile (27)
		175	Concrete Rubble Pile (28)
		185	C-611-4 Horseshoe Lagoon (includes KPDES 014)
		199	Big Bayou Creek Monitoring Station
		205	Eastern Portion of Yellow Water Line
		549	Dirt/Concrete Rubble Pile near Outfall 008
		550	Concrete Culvert Sections Located on the West Bank of the Ditch Leading to Outfall 001
			Others
LAGOONS			
Lagoons OU	Process Lagoons	17	C-616-E Sludge Lagoon
		18	C-616-F Full-Flow Lagoon
		171	C-617-B Lagoon (formerly identified as C-617-A)
	Water Treatment System Lagoons	21	C-611-W Sludge Lagoon
		22	C-611-Y Overflow Lagoon (includes KPDES 006)
		23	C-611-V Lagoon (includes KPDES 005)
BURIAL GROUNDS			
BGOU	BGOU Remedial (10 SWMUs)	2	C-749 Uranium Burial Ground
		3	C-404 Low-Level Radioactive Waste Burial Ground
		4	C-747 Contaminated Burial Ground
		5	C-746-F Classified Burial Ground
		6	C-747-B Burial Area
		7	C-747-A Burial Ground
		9	C-746-S Residential Landfill
		10	C-746-T Inert Landfill
		30	C-747-A Burn Area
		145	Residential/Inert Landfill Borrow Area (P-Landfill)
	Additional Burial Grounds	472	C-746-B Pad
	520	Scrap Material West of C-746-A	

² Kentucky Pollutant Discharge Elimination System (KPDES) Outfall 016, in its entirety, will be addressed as part of the SWOU Remedial Investigation.

Solid Waste Management Units/Areas of Concern by Operable Unit (Continued)

SOILS			
Operable Unit	Subproject	SWMU No.	Description
Soils OU	Soils Remedial	1	C-747-C Oil Land Farm
		13	C-746-P Clean Scrap Yard ³
		14	C-746-E Contaminated Scrap Yard
		15	C-746-C Scrap Yard ³
		19	C-410-B HF Neutralization Lagoon
		26	C-400 to C-404 Underground Transfer Line ³
		56	C-540-A PCB Waste Staging Area ^{3, 4}
		57	C-541-A PCB Waste Staging Area ⁴
		76	C-632-B Sulfuric Acid Storage Tank
		77	C-634-B Sulfuric Acid Storage Tank ^{3, 5}
		80	C-540-A PCB Spill Site ³
		81	C-541-A PCB Spill Site
		99 B	C-745 Kellogg Bldg. Site—Septic Tank/Leach Field
		138	C-100 Southside Berm
		153	C-331 PCB Soil Contamination (West)
		156	C-310 PCB Soil Contamination (West Side)
		158	Chilled-Water System Leak Site
		160	C-745 Cylinder Yard Spoils (PCB Soils)
		163	C-304 Bldg./HVAC Piping System (Soil Backfill)
		165	C-616-L Pipeline & Vault Soil Contamination
		169	C-410-E HF Vent Surge Protection Tank
		170	C-729 Acetylene Bldg. Drain Pits
		180	Outdoor Firing Range (WKWMA)
		181	Outdoor Firing Range (PGDP)
		194	McGraw Construction Facilities (Southside)
		195	Curlee Road Contaminated Soil Mounds
		196	C-746-A Septic System
		200	Soil Contamination South of TSCA Waste Storage Facility
		204	Dykes Road Historical Staging Area ³
		211 A	C-720 TCE Spill Site Northeast ³
		212	C-745-A Radiological Contamination Area
		213	OS-02
		214	OS-03
215	OS-04		
216	OS-05		
217	OS-06		
219	OS-08		
221	OS-10		
222	OS-11		
224	OS-13 ³		
225A	OS-14 ³		

³ These SWMUs/areas of concern (AOCs) will be evaluated further under a Soils OU RI 2 and addressed by a subsequent Soils OU feasibility study.

⁴ SWMUs 56 and 57 are located within, and will be addressed as part of, SWMUs 80 and 81, respectively.

⁵ This SWMU was evaluated as part of the Soils Operable Unit. The soils and underlying slabs associated with this SWMU will be addressed under the Soils and Slabs OU as part of post-GDP shutdown activities.

Solid Waste Management Units/Areas of Concern by Operable Unit (Continued)

SOILS (CONTINUED)			
Operable Unit	Subproject	SWMU No.	Description
Soils OU (Continued)	Soils Remedial (Continued)	225 B	Contaminated Soil Area near C-533-1 DMSA OS-14 ³
		227	OS-16
		228	OS-17
		229	OS-18 ³
		486	Rubble Pile WKWMA (approximately 116 ft off roadside)
		487	Rubble Pile WKWMA (approximately 483 ft off roadside)
		488	PCB Contamination Area by the C-410 Trailer Complex
		489	Septic Tank North of C-710 Laboratory
		492	Contaminated Soil Area Near Outfall 010
		493	Concrete Rubble Piles Near Outfall 001
		517	Rubble and Debris Erosion Control Fill Area
		518	Field South of C-746-P1 Clean Scrap Yard
		520	Scrap Material West of C-746-A
		531	Aluminum Slag Reacting Area (C-746-H4) near the C-746-A Facility
		541	Contaminated Soil Area South of Outfall 011
		561	Soil Pile I
		562	Soil Piles C, D, E, F, G, H, J, K, and P in subunit 1 north of Soil Pile I on the west bank of Little Bayou Creek
		563	Soil Piles 20, CC, and BW in subunit 4 north of outfall 012 west of Little Bayou Creek
564	Soil Pile AT in subunit 5 that consists of three soil areas on the east side of the NSDD north of the P-, S-, and T-Landfills		
565	Rubble Area KY-19 (along Bayou Creek north of C-611 Water Treatment Plant) ³		
567	Soil Pile K013 near Outfall 013, West of Little Bayou Creek		
SOILS AND SLABS			
Soils and Slabs OU		16	C-746-D Classified Scrap Yard
		20	C-410-E HF Emergency Holding Pond slab and underlying soils
		27	C-722 Acid Neutralization Tank
		28	C-712 Laboratory Equalization Tank slab and underlying soils
		31	C-720 Compressor Pit Water Storage Tank slab and underlying soils
		32	C-728 Clean Waste Oil Tanks slab and underlying soils
		33	C-728 Motor Cleaning Facility slab and underlying soils
		38	C-615 Sewage Treatment Plant slab and underlying soils
		41	C-410-C Neutralization Tank slab and underlying soils
		42	C-616 Chromate Reduction Facility slab and underlying soils
		55	C-405 Incinerator building slab and underlying soils
		70	C-333-A Vaporizer slab and underlying soils
		71	C-337-A Vaporizer slab and underlying soils
		74	C-340 PCB Transformer Spill Site
75	C-633 PCB Spill Site		

Solid Waste Management Units/Areas of Concern by Operable Unit (Continued)

SOILS AND SLABS (CONTINUED)			
Operable Unit	Subproject	SWMU No.	Description
Soils and Slabs OU (Continued)		77	C-634-B-Sulfuric Acid Storage Tank slab and underlying soils
		78	C-420 PCB Spill Site
		79	C-611 PCB Spill Site
		82	C-531 Switchyard slab and underlying soils
		83	C-533 Switchyard slab and underlying soils
		84	C-535 Switchyard slab and underlying soils
		85	C-537 Switchyard slab and underlying soils
		86	C-631 Pumphouse and Cooling Tower slab and underlying soils
		87	C-633 Pumphouse and Cooling Tower slab and underlying soils
		88	C-635 Pumphouse and Cooling Tower slab and underlying soils
		89	C-637 Pumphouse and Cooling Tower slab and underlying soils
		99 A	C-745 Kellogg Bldg. Site–Cylinder Yard
		135	C-333 PCB Soil Contamination (North Side)
		137	C-746-A Inactive PCB Transformer Sump Area ⁶
		154	C-331 PCB Soil Contamination (Southeast)
		155	C-333 PCB Soil Contamination (West)
		159	C-746-H3 Storage Pad slab and underlying soils
		161	C-743-T-01 Trailer Site (Soil Backfill)
		162	C-617-A Sanitary Water Line (Soil Backfill)
		166	C-100 Trailer Complex Soil Contamination (East Side)
		167	C-720 White Room Sump slab and underlying soils
		172	C-726 Sandblasting Facility slab and underlying soils
		176	C-331 RCW Leak Northwest Side
		177	C-331 RCW Leak East Side
		178	C-724-A Paint Spray Booth slab and underlying soils
		179	Plant Sanitary Sewer System
		192	C-710 Acid Interceptor Pit slab and underlying soils
		198	C-410-D Area Soil Contamination slab and underlying soils
		209	C-720 Compressor Shop Pit Sump slab and underlying soils
		211 B	C-720 TCE Spill Site Southeast
		218	OS-07 slab and underlying soils
		220	OS-09 slab and underlying soils
		223	OS-12 slab and underlying soils
		226	OS-15
		463	C-746-A East End Smelter slab and underlying soils
		464	C-746-A West End Smelter building slab and underlying soils
		469	C-745-J Yard
		470	C-746-V Yard
		474	West of Vortec Site
		477	C-340 Metals Plant building slab and underlying soils
478	C-410/420 Feed Plant building slab and underlying soils		
482	C-415 Feed Plant Storage Building slab and underlying soils		
483	Nitrogen Generating Facilities slab and underlying soils		

⁶ SWMU 137 was evaluated as part of the American Recovery and Reinvestment Act and the Soils OU. SWMU 137 will be addressed as part of Soils and Slabs OU.

Solid Waste Management Units/Areas of Concern by Operable Unit (Continued)

SOILS AND SLABS (CONTINUED)			
Operable Unit	Subproject	SWMU No.	Description
Soils and Slabs OU (Continued)		498	C-410/420 Sump at Column D & E-1&2 slab and underlying soils
		499	C-410/420 Sump at Column H-9&10 slab and underlying soils
		500	C-410/420 Sump at Column U-10&11 slab and underlying soils
		501	C-410/420 UF ₆ Scale Pit Sumps A&B slab and underlying soils
		502	C-410/420 Sump at Column U-9 slab and underlying soils
		503	C-410/420 Sump at Column G-1 slab and underlying soils
		504	C-410/420 Sump at Column L-10 slab and underlying soils
		505	C-410/420 Sump at Column A-3N slab and underlying soils
		506	C-410/420 Sump at Column Wa-9 slab and underlying soils
		507	C-410/420 Condensate Tank Pit slab and underlying soils
		508	C-410/420 Settling Basin slab and underlying soils
		509	C-410/420 Drain pit slab and underlying soils
		510	C-410/420 Sump at Column P&Q-2 slab and underlying soils
		511	C-410/420 Sump at Column Q&R-2 slab and underlying soils
		512	C-410/420 Sump at Column R-2 slab and underlying soils
		513	C-411 Cell Maintenance Room Sump slab and underlying soils
		522	C-340 Work Pit at Ground Floor Level (B-7—B-9) slab and underlying soils
523	C-340 Metals Plant Pit at Ground Floor (F-6 to F-11) slab and underlying soils		
524	C-340 Pickling System Sump (B-10 to B-11) slab and underlying soils		
529	C-340 Powder Plant Sump at Ground Floor Level slab and underlying soils		
DECONTAMINATION AND DECOMMISSIONING			
Facility D&D OU	Remaining D&D	The following SWMUs/AOCs or facilities may include multiple smaller facilities. A more detailed listing is included in the following table entitled Detailed Facility D&D OU Facilities List. *Denotes facilities that have been identified as requiring a CERCLA NTCRA.	
		33*	C-728 Motor Cleaning Facility
		38*	C-615 Sewage Treatment Plant
		42*	C-616 Chromate Reduction Facility
		70*	C-333-A Vaporizer
		71*	C-337-A Vaporizer
		82*	C-531 Switchyard
		83*	C-533 Switchyard
		84*	C-535 Switchyard
		85*	C-537 Switchyard
		86*	C-631 Pumphouse and Cooling Tower
		87*	C-633 Pumphouse and Cooling Tower
		88*	C-635 Pumphouse and Cooling Tower
		89*	C-637 Pumphouse and Cooling Tower
		172*	C-726 Sandblasting Facility
		178*	C-724-A Paint Spray Booth
		482*	C-415 Feed Plant Storage Building

Solid Waste Management Units/Areas of Concern by Operable Unit (Continued)

DECONTAMINATION AND DECOMMISSIONING (CONTINUED)			
Facility D&D OU (Continued)	Remaining D&D (Continued)	Other Buildings (non-SWMUs)	C-310, C-310-A, C-315, C-331, C-333, C-333-A, C-335, C-337, C-337-A, C-350, C-360, C-360-A, C-409, C-600, C-606, C-611 facilities, C-620, C-709, C-710, C-720 facilities, C-724-A, C-724-B, C-724-C, C-725, C-729, C-744, and C-750 Process Building tie-lines and bridges will be included with the appropriate process building.
DUF₆ FOOTPRINT UNDERLYING SOILS			
DUF ₆ Footprint Underlying Soils OU		164	KPDES Outfall Ditch 017 Flume - Soil Backfill
		183	McGraw UST
		193	McGraw Construction Facilities (Southside Cylinder Yards)
		194	McGraw Construction Facilities (Southside)
FINAL COMPREHENSIVE SITE OPERABLE UNIT			
CSOU ^{7,8,9}	SWMU No.		Description
	8		C-746-K Inactive Sanitary Landfill
	59		NSDD (Inside)
	91		UF ₆ Cylinder Drop Test Area
	100 ¹⁰		Fire Training Area

PERMITTED		
	SWMU No.	Description
Permitted	3	C-404 Low-Level Radioactive Waste Burial Ground ¹¹
	9	C-746-S Residential Landfill
	10	C-746-T Inert Landfill
	44	C-733 Hazardous Waste Storage Area
	46A	C-746-Q Hazardous and Low-Level Mixed Waste Storage Facility ¹²
	207	C-752-A ER Waste Storage Bldg.
	208	C-746-U Solid Waste Contained Landfill

⁷ The FFA, as currently written, contemplates multiple CSOUs, consisting of those associated with integrator units (i.e., groundwater, surface water), and a final CSOU completed after issuance of all final RODs for the site. The FFA parties acknowledge that the scope description is intended to reflect a single CSOU to address all media, and a future FFA modification will be conducted to resolve any inconsistencies between the FFA and Site Management Plan strategy.

⁸ Historically, once an action has been completed for a particular SWMU whereby no additional active response actions are expected, such SWMUs have been placed in the CSOU for further evaluation; however, the FFA parties recognized the need to reach consensus on the criteria for assigning units to the CSOU. As a result, placement of SWMUs 8, 59, 91, and 100 in the CSOU is provisional pending the FFA parties reaching consensus on such criteria.

⁹ The scope of the GAs is sequenced to occur prior to the CSOU, and any actions taken under the GAs will be considered as part of the final CSOU.

¹⁰ Groundwater contamination associated with SWMU 100 is under evaluation by EPA in response to EPA's CY 2018 Five-Year Review independent assessment.

¹¹ SWMU 3 was issued only a post-closure permit, was not permitted for construction and operation, and was not an engineered hazardous waste landfill.

¹² The C-746-Q Facility also includes C-746-Q1.

Solid Waste Management Units/Areas of Concern by Operable Unit (Continued)

NO FURTHER ACTION¹³		
SWMU No.	Description	NFA Approval By
12	C-747-A UF ₄ Drum Yard	FFA Managers Agreement—11/17/2011; FFA Managers Meeting, 4/12/2012
24	C-750-D UST	KDWM (UST Branch) 11/23/1999
25	C-750 1,000-gal Waste Oil Tank (UST)	EPA HSWA Class 1 Permit Mod 3/17/1993—Regulated by RCRA Permit; KDWM (UST Branch) 6/20/1994
29	C-746-B TRU Storage Area	EPA HSWA Class 1 Permit Mod 3/17/1993
34	C-746-M PCB Waste Storage Area	EPA HSWA Class 1 Permit Mod 3/17/1993
35	C-337 PCB Waste Storage Area	EPA HSWA Class 1 Permit Mod 3/17/1993
36	C-337 PCB Waste Staging Area	EPA HSWA Class 1 Permit Mod 3/17/1993
37	C-333 PCB Waste Staging Area	EPA HSWA Class 1 Permit Mod 3/17/1993
39	C-746-B PCB Waste Storage Area	EPA HSWA Class 1 Permit Mod 3/17/1993
43	C-746-B Waste Chemical Storage Area	EPA HSWA Class 1 Permit Mod 3/17/1993; Closed after 1993
45	C-746-R Waste Solvent Storage Area	EPA HSWA Class 1 Permit Mod 3/17/1993; Closed after 1993
46	C-409 Hazardous Waste Pilot Plant ¹⁴	EPA HSWA Class 1 Permit Mod 3/17/1993—Regulated by RCRA Permit; KDWM (Mod #13) 9/26/1997
48	Gold Dissolver Storage Tank (DMSA C400-03)	EPA HSWA Class 1 Permit Mod 3/17/1993; KDWM 7/8/2010
49	C-400-B Waste Solution Storage Tank	EPA HSWA Class 1 Permit Mod 3/17/1993—Regulated by RCRA Permit; KDWM 9/26/1997
50	C-400-C Nickel Stripper Evaporation Tank	EPA HSWA Class 1 Permit Mod 3/17/1993—Regulated by RCRA Permit; KDWM (Mod #13) 9/26/1997
51	C-400-D Lime Precipitation Tank	EPA HSWA Class 1 Permit Mod 3/17/1993—Regulated by RCRA Permit; KDWM (ROC) 8/8/1994
52	C-400 Waste Decontamination Solution Storage Tanks	EPA HSWA Class 1 Permit Mod 3/17/1993
53	C-400 NaOH Precipitation Unit	EPA HSWA Class 1 Permit Mod 3/17/1993
54	C-400 Degreaser Solvent Recovery Unit	EPA HSWA Class 1 Permit Mod 3/17/1993; KDWM 7/8/2010
72	C-200 Underground Gasoline Tanks	EPA HSWA Class 1 Permit Mod 3/17/1993; KDWM (UST C-200A; UST Branch) 11/23/1999

¹³ The FFA Parties agree that, as a standard practice for waste management units (e.g., TSDs, SWMUs, and AOCs), KDWM's determination for NFA under both the RCRA permit (i.e., Kentucky Hazardous Waste Facility Permit, EPA HSWA Permit) and the FFA are accepted by all parties.

¹⁴ Radiological contamination associated with the sump in this unit will be addressed under the D&D program for the C-409 Stabilization Building.

Solid Waste Management Units/Areas of Concern by Operable Unit (Continued)

NO FURTHER ACTION (CONTINUED)		
SWMU No.	Description	NFA Approval By
73	C-710 Underground Gasoline Tanks	EPA HSWA Class 1 Permit Mod 3/17/1993; KDWM (UST C-200A; UST C-710; UST Branch) 2/19/2002
90	C-720 Petroleum Naphtha Pipe	KDWM 1/14/2015
94	KOW Trickling Filter and Leach Field	KDWM Superfund Branch 1/15/2020
96	C-333 Cooling Tower Scrap Wood Pile	EPA HSWA Class 1 Permit Mod 3/17/1993
101	C-340 Hydraulic System	EPA and KDWM 4/2/2015
102A	Plant Storm Sewer—between the south side of the C-400 Building and Outfall 008	EPA and KY via SW Plume ROD 3/16/2012; KDWM 1/14/2015
103	Concrete Rubble Pile (1)	EPA and KY via WAG 17 ROD 9/29/1997
104	Concrete Rubble Pile (2)	EPA and KY via WAG 17 ROD 9/29/1997
110	Concrete Rubble Pile (8)	EPA and KY via WAG 17 ROD 9/29/1997
111	Concrete Rubble Pile (9)	EPA and KY via WAG 17 ROD 9/29/1997
112	Concrete Rubble Pile (10)	EPA and KY via WAG 17 ROD 9/29/1997
114	Concrete Rubble Pile (12)	EPA and KY via WAG 17 ROD 9/29/1997
115	Concrete Rubble Pile (13)	EPA and KY via WAG 17 ROD 9/29/1997
116	Concrete Rubble Pile (14)	EPA and KY via WAG 17 ROD 9/29/1997
117	Concrete Rubble Pile (15)	EPA and KY via WAG 17 ROD 9/29/1997
118	Concrete Rubble Pile (16)	EPA and KY via WAG 17 ROD 9/29/1997
119	Concrete Rubble Pile (17)	EPA and KY via WAG 17 ROD 9/29/1997
120	Concrete Rubble Pile (18)	EPA and KY via WAG 17 ROD 9/29/1997
121	Concrete Rubble Pile (19)	EPA and KY via WAG 17 ROD 9/29/1997
122	Concrete Rubble Pile (20)	WAG 17 RI Work Plan
123	Concrete Rubble Pile (21)	EPA and KY via WAG 17 ROD 9/29/1997
124	Concrete Rubble Pile (22)	EPA and KY via WAG 17 ROD 9/29/1997
125	Concrete Rubble Pile (23)	EPA and KY via WAG 17 ROD 9/29/1997
126	Concrete Rubble Pile (24)	EPA and KY via WAG 17 ROD 9/29/1997
127	Concrete Rubble Pile (25)	EPA and KY via WAG 17 ROD 9/29/1997
128	Concrete Rubble Pile (26)	EPA and KY via WAG 17 ROD 9/29/1997

Solid Waste Management Units/Areas of Concern by Operable Unit (Continued)

NO FURTHER ACTION (CONTINUED)		
SWMU No.	Description	NFA Approval By
130	C-611 550-gal Gasoline UST	KDWM 12/6/1996 EPA and KY via WAG 1&7 ROD
131	C-611 50-gal Gasoline UST	KDWM 12/6/1996 EPA and KY via WAG 1&7 ROD 8/10/1998
132	C-611 2,000-gal Oil UST	KDWM 12/6/1996 EPA and KY via WAG 1&7 ROD 8/10/1998
133	C-611 (unknown size) Grouted UST	KDWM 12/6/1996 EPA and KY via WAG 1&7 ROD 8/10/1998
134	C-611 1,000-gal Diesel/Gasoline Tank	KDWM 12/6/1996 EPA and KY via WAG 1&7 ROD 8/10/1998
136	C-740 TCE Spill Site	EPA and KY via WAG 1&7 ROD 8/10/1998
139	C-746-A1 UST	KDWM 12/9/2005
140	C-746-A2 UST	KDWM 12/19/1996
141	C-720 Inactive TCE Degreaser	KDWM 8/11/1992; EPA HSWA Class 1 Permit Mod 3/17/1993—Regulated by RCRA Permit;
142	C-750-A 10,000-gal Gasoline Tank (UST)	EPA HSWA Class 1 Permit Mod 3/17/1993—Regulated by RCRA Permit; KDWM 3/25/1999
143	C-750-B 10,000-gal Diesel Tank (UST)	EPA HSWA Class 1 Permit Mod 3/17/1993; KDWM 3/25/1999
144	C-746-A Hazardous and Mixed Waste Storage Facility	EPA HSWA Class 1 Permit Mod 3/17/1993—Regulated by RCRA Permit; KDWM 10/10/2011
146	Concrete Rubble Pile (40)	EPA and KY via WAG 17 ROD 9/29/1997
147	Concrete Rubble Pile (41)	EPA and KY via WAG 17 ROD 9/29/1997
148	Concrete Rubble Pile (42)	EPA and KY via WAG 17 ROD 9/29/1997
149	Concrete Rubble Pile (43)	EPA and KY via WAG 17 ROD 9/29/1997
150	Concrete Rubble Pile (44)	EPA and KY via WAG 17 ROD 9/29/1997
151	Concrete Rubble Pile (45)	EPA and KY via WAG 17 ROD 9/29/1997
152	Concrete Rubble Pile (46)	EPA and KY via WAG 17 ROD 9/29/1997
157	KOW Toluene Spill Area	KDWM Superfund Branch 1/15/2020
173	C-746-A Trash-Sorting Facility	EPA HSWA Class 1 Permit Mod 3/17/1993; KDWM 12/18/1992
174	C-745-K Low-Level Storage Area	EPA HSWA Class 1 Permit Mod 3/17/1993; KDWM 2/22/1993
182	Western Portion of Yellow Water Line	KDWM Superfund Branch 1/15/2020

Solid Waste Management Units/Areas of Concern by Operable Unit (Continued)

NO FURTHER ACTION (CONTINUED)		
SWMU No.	Description	NFA Approval By
184	Concrete Rubble Pile (29)	EPA and KY via WAG 17 ROD 9/29/1997
186	C-751 Fuel Facility	KDWM 10/20/1993
187	C-611 Septic System	KDWM 10/20/1993
188	C-633 Septic System	KDWM 10/20/1993
189	C-637 Septic System	KDWM 10/20/1993
190	C-337A Sewage Treatment Aeration Tank	KDWM 10/20/1993
191	C-333-A Sewage Treatment Aeration Tank	KDWM 10/20/1993
197	Concrete Rubble Pile (30)	EPA and KY via WAG 17 ROD 9/29/1997
206	C-753-A Toxic Substances Control Act Waste Storage Bldg.	KDWM 3/7/1997
208	C-746-U Solid Waste Contained Landfill	KDWM 3/7/1997
360	C-535	KDWM 1/4/2006
361	C-727-90 day	KDWM 8/28/2007
362	G-310-04	KDWM 8/28/2007
363	G-331-03	KDWM 6/29/2004
364	G-331-05	KDWM 6/29/2004
365	G-333-02	KDWM 5/12/2003
366	G-333-03	KDWM 5/12/2003
367	G-333-04	KDWM 5/12/2003
368	G-333-08	KDWM 6/29/2004
369	G-333-10	KDWM 5/12/2003
370	G-333-20	KDWM 5/12/2003
371	G-335-01	KDWM 1/4/2006
372	G-337-02	KDWM 9/11/2003
373	G-337-03	KDWM 9/11/2003
374	G-337-13	KDWM 9/11/2003
375	G-337-14	KDWM 9/11/2003
376	G-337-15	KDWM 9/11/2003
377	C-337-22	KDWM 1/4/2006
378	G-340-01	EPA and KDWM 4/02/2015
379	G-340-03	EPA and KDWM 4/02/2015
380	G-340-04	EPA and KDWM 4/02/2015
381	G-340-05	EPA and KDWM 4/02/2015
382	G-340-06	KDWM 8/28/2007
383	G-400-01	KDWM 5/12/2003
384	G-400-02	KDWM 5/12/2003
385	G-409-25	KDWM 5/12/2003
386	G-410-01	KDWM 8/28/2007
387	C-416-01	KDWM 8/28/2007
388	C-416 Decontamination Pad	KDWM 4/12/2004
389	G-533-01	KDWM 6/29/2004
390	G-535-02	KDWM 6/29/2004
391	G-537-01	KDWM 1/4/2006
392	G-540-A-01	KDWM 2/14/2006
393	G-540-A-1-02	KDWM 2/14/2006
394	G-541-A-01	KDWM 4/12/2004
395	G-600-01	KDWM 3/8/2007
396	C-611-U-01	KDWM 3/8/2007
397	G-612-01	KDWM 3/8/2007
398	G-612-02	KDWM 3/8/2007

Solid Waste Management Units/Areas of Concern by Operable Unit (Continued)

NO FURTHER ACTION (CONTINUED)		
SWMU No.	Description	NFA Approval By
399	G-612-A-01	KDWM 3/8/2007
400	G-635-01	KDWM 3/8/2007
401	G-710	KDWM 1/4/2006
402	G-710-04	KDWM 9/11/2003
403	G-710-20	KDWM 1/4/2006
404	G-710-24	KDWM 9/11/2003
405	G-720-22	KDWM 2/14/2003
406	G-743-T-17-01	KDWM 6/29/2004
407	G-743-T-17-02	KDWM 3/8/2007
408	G-745-B-01	KDWM 3/8/2007
409	G-745-T-01	KDWM 2/14/2006
410	G-746-G-01	KDWM 6/29/2004
411	G-746-G-1-01	KDWM 3/8/2007
412	G-746-G-2-01	KDWM 11/1/2004
413	G-746-G-3-01	KDWM 11/1/2004
414	G-746-F-01	KDWM 1/4/2006
415	G-746-S-01	KDWM 8/28/2007
416	G-746-X-01 (PCBs)	KDWM 3/8/2007
417	G-746-X-01 (Asbestos)	KDWM 3/8/2007
418	G-748-B-01	KDWM 6/29/2004
419	G-752-C-01	KDWM 8/28/2007
420	G-752-C-02	KDWM 3/8/2007
421	G-754-01	KDWM 1/4/2006
422	G-755-A-01	KDWM 1/28/2004
423	G-755-C-01	KDWM 1/28/2004
424	G-755-T-07-01	KDWM 1/28/2004
425	G-755-T-08	KDWM 1/28/2004
426	G-755-T-2-3-01	KDWM 1/28/2004
427	G-755-T-3-1-01	KDWM 1/28/2004
428	G-755-T-3-2-01	KDWM 1/28/2004
429	S-310-04	KDWM 8/28/2007
430	S-331-02	KDWM 1/4/2006
431	S-333-12	KDWM 5/12/2003
432	S-335-09	KDWM 11/23/2004
433	S-337-11	KDWM 9/11/2003
434	S-340-01	EPA and KY 4/2/2015
435	S-409-100	KDWM 5/12/2003
436	S-409-20	KDWM 5/12/2003
437	S-409-40	KDWM 5/12/2003
438	S-409-60	KDWM 5/12/2003
439	S-409-80	KDWM 5/12/2003
440	S-410-05	KDWM 8/28/2007
441	S-540-A-2-01	KDWM 6/29/2004
442	S-612-01	KDWM 2/14/2006
443	S-709-01	KDWM 6/29/2004
444	S-709-02	KDWM 6/29/2004
445	S-710-05	KDWM 2/14/2006
446	S-710-06	KDWM 9/11/2003
447	S-710-09	KDWM 1/4/2006
448	S-710-16	KDWM 9/11/2003
449	S-710-18	KDWM 9/11/2003
450	S-710-32	KDWM 1/4/2006

Solid Waste Management Units/Areas of Concern by Operable Unit (Continued)

NO FURTHER ACTION (CONTINUED)		
SWMU No.	Description	NFA Approval By
451	S-710-41	KDWM 9/11/2003
452	S-710-44	KDWM 1/4/2006
453	S-710-46	KDWM 9/11/2003
454	S-743-T-17-01	KDWM 2/14/2006
455	S-755-T-16-01	KDWM 1/28/2004
456	S-755-T-16-02	KDWM 1/28/2004
457	S-755-T-16-03	KDWM 1/28/2004
458	S-755-T-2-3-01	KDWM 1/28/2004
459	S-755-T-3-1-01	KDWM 1/28/2004
460	S-755-T-3-2-01	KDWM 1/28/2004
461	S-755-T-3-2-02	KDWM 1/28/2004
462	S-755-T-3-2-03	KDWM 1/28/2004
465	Yard Rubble Pile and Crushate Storage Area (G-Yard)	KDWM 10/13/2009
466	South of Dyke Road, Pond Area	KDWM 8/17/2009
467	Concrete Cylinder Holders Storage Area on Western Kentucky Wildlife Management Area	KDWM 8/17/2009
468	Area Northwest of Outfall 015	KDWM 2/14/2006
471	Outside C-746-B South Storage Area	KDWM 8/17/2009
473	C-746-B Pad, West	KDWM 8/28/2007
475	C-745-G5-01 (Paint Enclosure)	KDWM 2/14/2006
476	Concrete Crusher	KDWM 2/14/2006
479	C-204 Disintegrator Building	KDWM 6/3/2002
481	C-410-A Hydrogen Holder	KDWM 4/2/2002
484	C-611-M Storage Tank	KDWM 8/30/2002
485	C-611-N Sanitary Water Storage	KDWM 2/18/2002
490	McGraw Fuel Facility Waste Oil Storage Tank	KDWM 12/21/2001
491	Mercury Spill at the C-611 Water Treatment Plant Vault	KDWM 3/22/2004
494	Ash Receiver Area in C-410/420	KDWM 6/3/2016; EPA 6/9/2016
495	C-410-I Ash Receiver Shed	KDWM 6/3/2016; EPA 6/9/2016
496	C-410 Fluorine/Hydrogen Filters (Northeast Mezzanine)	KDWM 6/3/2016; EPA 6/9/2016
497	C-410/420 F ₂ Cell Neutralization Room Vats	KDWM 6/3/2016; EPA 6/9/2016
514	C-340 Magnesium Fluoride Reject Silo	EPA and KY 4/2/2015
515	C-340 "Dirty" Dust Collection System	EPA and KY 4/2/2015
516	C-340 Derby Preparation Area Sludge Collection System	EPA and KY 4/2/2015
519	C-410 Sulfuric Acid Tank (C-634-B)	KDWM 1/10/2003
521	C-340 Saw System Degreaser	EPA and KY 4/2/2015
525	Concrete Water Tower Supports (KOW)	KDWM 8/28/2007
527	C-410 GSA/SAA at Column J-6	KDWM 8/28/2007
528	GSA/SAA at the Northwest corner of C-745-G3 Paint Enclosure	KDWM 2/14/2006
530	Soil and Debris Storage Area by C-745-T Yard	KDWM 3/8/2007
532	Photographic Solution Treatment Area in the C-102 Building	KDWM 5/21/2003
534	UST #18, within SWMU 193	KDWM (UST Branch) 12/4/2007
535	S-755-T08-01 (Satellite Accumulation Area at C-755, Trailer 8)	KDWM 2/14/2006
536	Concrete Truck Washout Area	KDWM 6/27/2002
537	S-400-001 (SAA Located Outside at the Southeast Corner of the C-400 Building)	KDWM 2/14/2006
538	S-MST-01-01 & S-MST-01-02 (Mobile Trailer 01)	KDWM 2/14/2006
539	S-MST-02-01 & S-MST-02-02 (Mobile Trailer 02)	KDWM 2/14/2006
540	S-MST-03-01 & S-MST-03-02 (Mobile Trailer 03)	KDWM 2/14/2006
542 A	G-746-B-01; S-746-B-01; S-746-B-02 (GSA/SAA's located outside C-746-A)	KDWM 1/28/2004

Solid Waste Management Units/Areas of Concern by Operable Unit (Continued)

NO FURTHER ACTION (CONTINUED)		
SWMU No.	Description	NFA Approval By
542 B	G-746-A-01; S-746-A-01; S-746-A-02 (GSA/SAs located outside C-746-A)	KDWM 1/28/2004
543	T-746-S-01 (90-Day Storage Area)	KDWM 1/28/2004
544	T-752-C-01 (90-Day Storage Area)	KDWM 1/28/2004
545	C-755-T-22-01 and G-755-T-22	KDWM 1/28/2004
546	PGDP Post 67 Diesel Fuel Spill Area	KDWM 2/14/2006
547	PGDP Post 38 Diesel Spill Area	KDWM 2/14/2006
548	Staging Area for Concrete Piers, Wood and Rubble North Side of C-745-B Cylinder Yard	KDWM 8/28/2007
551	C-755-GSA-23 Located at C-755 near the East Fence Line	KDWM 8/28/2007
552	C-760 90-Day Accumulation Area	KDWM 3/28/2007
566	H-340-01	KDWM 12/02/2010
568	C-340 ST-90 Boxes	KDWM 12/02/2010
569	C-743-T-17 Sample Return Refrigerator	KDWM 5/24/2012
570	Sample Return Sealand	KDWM 5/24/2012

PENDING NO FURTHER ACTION DECISION	
SWMU No.	Description
	Reserved
SWMUs THAT WILL BE INVESTIGATED AND REMEDIATED BY THE U.S. ARMY CORPS OF ENGINEERS¹⁵	
95	KOW Burn Area

CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act
 CSOU = Comprehensive Site Operable Unit
 D&D = decontamination and decommissioning
 EPA = U.S. Environmental Protection Agency
 ER = environmental remediation
 FFA = Federal Facility Agreement
 GDP = gaseous diffusion plant
 GSA = generator staging area
 HSWA = Hazardous and Solid Waste Amendments
 HVAC = heating, ventilating, and air-conditioning
 KDWM = Kentucky Division of Waste Management
 KOW = Kentucky Ordinance Works
 KPDES = Kentucky Pollutant Discharge Elimination System
 KY = Kentucky
 NFA = no further action

NSDD = North-South Diversion Ditch
 OU = operable unit
 PCB = polychlorinated biphenyl
 PGDP = Paducah Gaseous Diffusion Plant
 RCW = recirculating cooling water
 ROD = record of decision
 SAA = satellite accumulation area
 SAP = Sampling and Analysis Plan
 SWMU = solid waste management unit
 SWOU = Surface Water Operable Unit
 TBD = to be determined
 TCE = trichloroethene
 TSCA = Toxic Substances Control Act
 UST = underground storage tank
 WAG = waste area group
 WKWMA = West Kentucky Wildlife Management Area

¹⁵ The Corps of Engineers accepted responsibility for the investigation/remediation of this SWMU in a letter dated March 13 1996. EPA and Kentucky review/approval of the CERCLA documentation (not yet available) associated with this SWMU has not occurred.

Detailed Facility D&D OU Facilities List

Facility Number	Description	SWMU/AOC Number	Facility Status	Integrated Site Evaluation (SE) Complete	CERCLA NTCRA Required
Gaseous Diffusion Process Facilities and Process Building Tie Lines and Bridges					
C-310	Purge and Product Building	--	Deactivating	No	Pending SE
C-310-A	Product Withdrawal Building	--	Deactivating	No	Pending SE
C-315	Surge and Waste Building	--	Deactivating	No	Pending SE
C-331	Process Building	--	Deactivating	No	Pending SE
C-333	Process Building	--	Deactivating	No	Pending SE
C-333-A	Feed Vaporization Facility	70	Deactivating	8/24/1987	Yes
C-335	Process Building	--	Deactivating	No	Pending SE
C-337	Process Building	--	Deactivating	No	Pending SE
C-337-A	Feed Vaporization Facility	71	Deactivating	8/24/1987	Yes
C-310-331	Tie-Line	--	Deactivating	No	Pending SE
C-310-331-A	Bridge (Enclosed)	--	Deactivating	No	Pending SE
C-310-331-B	Tie-Line	--	Deactivating	No	Pending SE
C-315-331	Tie-Line	--	Deactivating	No	Pending SE
C-331-333-A	Bridge (Enclosed—300 ft)	--	Deactivating	No	Pending SE
C-331-333-B	Tie-Line (West)	--	Deactivating	No	Pending SE
C-331-333-C	Tie-Line (East)	--	Deactivating	No	Pending SE
C-331-335	Tie-Line	--	Deactivating	No	Pending SE
C-335-337-A	Bridge (Enclosed)	--	Deactivating	No	Pending SE
C-335-337-B	Tie-Line (North)	--	Deactivating	No	Pending SE
C-335-337-C	Tie-Line (South)	--	Deactivating	No	Pending SE
Process Support Facilities					
C-409	Stabilization Building	--	Deactivating	No	Pending SE
C-415	Feed Plant Storage	482	Shutdown	7/18/2001	Yes
C-600	Steam Plant	--	Shutdown	No	Pending SE
Switchyards					
C-531-1	Switch House ¹⁶	82	Operating	8/24/1987	Yes
C-531-2	Switchyard ¹⁶	82	Operating	8/24/1987	Yes
C-531-3A	Fire Valve House No. 1 ¹⁶	82	Operating	8/24/1987	Yes
C-531-3B	Fire Valve House No. 2 ¹⁶	82	Operating	8/24/1987	Yes
C-532	Relay House ¹⁶	82	Operating	8/24/1987	Yes
C-533-1	Switch House ¹⁷	83	Standby	8/24/1987	Yes
C-533-2	Switchyard ¹⁷	83	Standby	8/24/1987	Yes

¹⁶ The C-531 Switchyard and associated support facilities are currently in use until the TVA Substation (C-538 Substation) construction is complete. Some of these facilities will be placed in “Standby.”

¹⁷ These facilities have “Standby” status designation until the DOE Excess Screening process is complete. Once approval is received, these facilities will receive a status of “Shutdown” because the facility no longer will be maintained for future use.

Detailed Facility D&D OU Facilities List (Continued)

Facility Number	Description	SWMU/AOC Number	Facility Status	Integrated Site Evaluation (SE) Complete	CERCLA NTCRA Required
Switchyards (Continued)					
C-533-3A	Fire Valve House No. 1 ¹⁷	83	Standby	8/24/1987	Yes
C-533-3B	Fire Valve House No. 2 ¹⁷	83	Standby	8/24/1987	Yes
C-533-3C	Fire Valve House No. 3 ¹⁷	83	Standby	8/24/1987	Yes
C-533-3D	Fire Valve House No. 4 ¹⁷	83	Standby	8/24/1987	Yes
C-535-1	Switch House	84	Deactivation Complete	8/24/1987	Yes
C-535-2	Switchyard ¹⁷	84	Standby	8/24/1987	Yes
C-535-3A	Fire Valve House No. 1 ¹⁷	84	Standby	8/24/1987	Yes
C-535-3B	Fire Valve House No. 2 ¹⁷	84	Standby	8/24/1987	Yes
C-535-4	Test Shop (Maintenance Office) ¹⁷	84	Standby	8/24/1987	Yes
C-536	Relay House ¹⁷	84	Standby	8/24/1987	Yes
C-537-1	Switch House	85	Deactivation Complete	8/24/1987	Yes
C-537-2	Switchyard ¹⁷	85	Standby	8/24/1987	Yes
C-537-3A	Fire Valve House No. 1 ¹⁷	85	Standby	8/24/1987	Yes
C-537-3B	Fire Valve House No. 2 ¹⁷	85	Standby	8/24/1987	Yes
C-537-3C	Fire Valve House No. 3 ¹⁷	85	Standby	8/24/1987	Yes
C-537-3D	Fire Valve House No. 4 ¹⁷	85	Standby	8/24/1987	Yes
C-537-4	Test Shop ¹⁷	85	Standby	8/24/1987	Yes
C-540-A	Oil Pump House ¹⁶	83	Operating	8/24/1987	Yes
C-541-A	Oil Pump House ¹⁷	84	Standby	8/24/1987	Yes
Cooling Towers					
C-631-1	Pump House	86	Operating	8/24/1987	Yes
C-631-2	Cooling Tower	86	Operating	8/24/1987	Yes
C-631-3	Fire Water Pump House	86	Operating	8/24/1987	Yes
C-631-4	Blending Pump House	86	Shutdown	8/24/1987	Yes
C-631-5	Blending Cooling Tower (West) ¹⁷	86	Standby	8/24/1987	Yes
C-631-6	Blending Cooling Tower (East) ¹⁷	86	Standby	8/24/1987	Yes
C-633-1	Pump House	87	Shutdown	8/24/1987	Yes
C-633-2A	Cooling Tower (South) ¹⁷	87	Standby	8/24/1987	Yes
C-633-2B	Cooling Tower (North) ¹⁷	87	Standby	8/24/1987	Yes
C-633-3	Blending Pump House ¹⁷	87	Standby	8/24/1987	Yes
C-633-4	Blending Cooling Tower (North) ¹⁷	87	Standby	8/24/1987	Yes
C-633-5	Blending Cooling Tower (South) ¹⁷	87	Standby	8/24/1987	Yes
C-633-6	Sand Filter Building	87	Shutdown	8/24/1987	Yes
C-635-1	Pump House	88	Shutdown	8/24/1987	Yes
C-635-2	Cooling Tower ¹⁷	88	Standby	8/24/1987	Yes
C-635-3	Blending Pump House	88	Shutdown	8/24/1987	Yes
C-635-4	Blending Cooling Tower (North) ¹⁷	88	Standby	8/24/1987	Yes
C-635-5	Blending Cooling Tower (South) ¹⁷	88	Standby	8/24/1987	Yes
C-637-1	Pump House	89	Shutdown	8/24/1987	Yes
C-637-2A	Cooling Tower (South) ¹⁷	89	Standby	8/24/1987	Yes
C-637-2B	Cooling Tower (North) ¹⁷	89	Standby	8/24/1987	Yes
C-637-3	Blending Pump House	89	Shutdown	8/24/1987	Yes

Detailed Facility D&D OU Facilities List (Continued)

Facility Number	Description	SWMU/AOC Number	Facility Status	Integrated Site Evaluation (SE) Complete	CERCLA NTCRA Required
Cooling Towers (Continued)					
C-637-4	Blending Cooling Tower (North) ¹⁷	89	Standby	8/24/1987	Yes
C-637-5	Blending Cooling Tower (South) ¹⁷	89	Standby	8/24/1987	Yes
C-637-6	Sand Filter Building	89	Shutdown	8/24/1987	Yes
Phosphate (Former Chromate) Reduction System Facilities					
C-616-A	Chemical Feed Building	42	Operating	12/18/91	Yes
C-616-B	Clarifier-East	42	Operating	12/18/91	Yes
C-616-C	Effluent Control Vault	42	Operating	12/18/91	Yes
C-616-D	Sludge Vault and Valve Pit	42	Operating	12/18/91	Yes
C-616-H1	Ferrous Sulfate Storage Tank (East)	42	Standby	12/18/91	Yes
C-616-H2	Ferrous Sulfate Storage Tank (West)	42	Standby	12/18/91	Yes
C-616-J	Reduction Tank (East)	42	Standby	12/18/91	Yes
C-616-K	Service Building	42	Operating	12/18/91	Yes
C-616-L	Lift Station	42	Operating	12/18/91	Yes
C-616-M	Clarifier (West)	42	Operating	12/18/91	Yes
C-616-N	Reduction Tank (West)	42	Operating	12/18/91	Yes
C-616-P	Sludge Vault and Valve Pit	42	Operating	12/18/91	Yes
Sewage System and Water Treatment Ancillary Facilities					
C-611-A	Building and Shop Storage	--	Operating	No	Pending SE
C-611-B	Head House	--	Operating	No	Pending SE
C-611-B1	Polymer Feed System Enclosure	--	Operating	No	Pending SE
C-611-C	Flocculator Basin	--	Operating	No	Pending SE
C-611-F1	Secondary Coagulation Basin	--	Operating	No	Pending SE
C-611-H	Filter Building and Pump Station	--	Operating	No	Pending SE
C-611-J	Pump House (Settled Water)	--	Operating	No	Pending SE
C-611-P	Building – Pump House	--	Standby	No	Pending SE
C-611-T	Booster Pump Station Plant Water ¹⁸	--	Standby	No	Pending SE
C-611-U	Softening Facility (West)	--	Operating	No	Pending SE
C-611-X	Softening Facility (East)	--	Standby	No	Pending SE
C-611-Z	Flocculator Basin	--	Operating	No	Pending SE
C-615-A	Primary Settling Tank/Catch Basin	38	Operating	8/24/87	Yes
C-615-B	Final Settling Tank/Catch Basin	38	Operating	8/24/87	Yes
C-615-C	Sewage Plant Monitoring Building	38	Operating	8/24/87	Yes
C-615-D	Digester	38	Operating	8/24/87	Yes
C-615-E	Trickling Filter	38	Operating	8/24/87	Yes
C-615-F	Dry Bed for Trickling Filter	38	Operating	8/24/87	Yes
Process Laboratory and Maintenance Facilities					
C-709	Plant Laboratory Annex	--	Operating	No	Pending SE
C-710	Technical Services Building/Lab	--	Operating	No	Pending SE
C-720	Maintenance and Storage Building	--	Operating	No	Pending SE
C-720-A	Compressor Shop Addition	--	Standby	No	Pending SE
C-720-B	Machine Shop Addition	--	Shutdown	No	Pending SE
C-720-C	Converter Shop Addition	--	Operating	No	Pending SE
C-720-C1	Paint Shop	--	Operating	No	Pending SE

¹⁸ This facility will no longer be used for pumping water; however, it may be used by Fire Services in an emergency situation to fill the C-631 Basin.

Detailed Facility D&D OU Facilities List (Continued)

Facility Number	Description	SWMU/AOC Number	Facility Status	Integrated Site Evaluation (SE) Complete	CERCLA NTCRA Required
Process Laboratory and Maintenance Facilities (Continued)					
C-720-E	Change House Addition	--	Operating	No	Pending SE
C-720-K	Instrument Shop Addition	--	Operating	No	Pending SE
C-724-A	Carpenter Shop Annex	178	Operating	01/25/93	Yes
C-724-B	Carpenter Shop	--	Operating	No	Pending SE
C-724-C	Paint Shop	--	Operating	No	Pending SE
C-725	Paint Shop	--	Operating	No	Pending SE
C-726	Sandblast Building	172	Standby	10/29/92	Yes
C-728	Motor Cleaning Facility	33	Operating	6/2/15	Yes
Gaseous Diffusion Plant Support Facilities					
C-350	Drying Agent Storage Building	--	Deactivating	No	Pending SE
C-360	Toll Transfer and Sampling Building	--	Shutdown	No	Pending SE
C-360-A	Toll Transfer and Sampling Building Annex	--	Operating	No	Pending SE
C-606	Coal Crusher Building	--	Shutdown	No	Pending SE
C-620	Air Compressor Room	--	Operating	No	Pending SE
C-729	Acetylene Building	--	Shutdown	No	Pending SE
C-744	Material Handling Building	--	Operating	No	Pending SE
C-750	Garage	--	Operating	No	Pending SE

AOC = area of concern

D&D = Decontamination and Decommissioning

CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act

NTCRA = non-time-critical removal action

SE = site evaluation

SWMU = solid waste management unit

Operating—Facility is currently in use supporting U.S. Department of Energy mission activities.

Standby—Facility is currently not in use but may be utilized to support future U.S. Department of Energy mission activities.

Shutdown—Facility is not being maintained for future use and is awaiting disposition (excess property determination is pending).

Deactivating—Interim process where stabilization and deactivation activities have been initiated and are ongoing.

Deactivation Complete—Awaiting decommissioning.

APPENDIX C

Current Year Timetables and Deadlines

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**Paducah Federal Facility Agreement
Appendix C
FY 2021 Enforceable Timetables and Deadlines**

<u>Subproject</u>	<u>Deliverable</u>	<u>Submittal Date</u>
FFA	FFA Semiannual Progress Report ¹ Second Half of Fiscal Year 2020	10/30/2020
FFA	FFA Semiannual Progress Report ¹ First Half of Fiscal Year 2021	4/30/2021
FFA	D1 FY 2021 Site Management Plan	11/15/2020
Southwest Plume Sources— SWMU 211-A (Enhanced <i>In Situ</i> Bioremediation)	D1 Interim Remedial Action Completion Report	5/29/2021 ²

¹ Denotes Secondary Document

² A new timeframe will be established based on dispute resolution of the Remedial Action Work Plan

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APPENDIX D

Document Outlines

RI/FS SCOPING DOCUMENT

1. A summary of how the RI/FS is to be conducted in a manner consistent with §300.430(a) and (b) of the NCP.
2. A summary of the following information:
 - 2.1 Existing data pertaining to the characteristics of the release or potential release.
 - 2.1.1 Previous investigations
 - 2.1.2 Historical records
 - 2.2 Conceptual model of release
 - 2.2.1 Identify potential release and exposure pathways
 - 2.2.2 Identify potential contaminants of concern
 - 2.3 Identify likely response scenarios, potentially applicable and applicability of presumptive remedies and innovative technologies
 - 2.4 Identify need for limited data collection efforts to assist RI/FS scoping
 - 2.5 Identify the type, quality, and quantity (i.e., DQOs) of the data to be collected during the RI/FS
 - 2.6 Initiate the identification of potential federal and state ARARs and, as appropriate, other criteria, advisories, or guidance to be considered
3. Applicability of streamlined response actions:
 - 3.1 Removals
 - 3.2 Early remedial actions
 - 3.2.1 Interim remedial actions
 - 3.2.2 Final remedial actions

NOTE: Elements included in this outline shall be considered and incorporated, as appropriate, when developing the above-referenced document.

**INTEGRATED RI/FS, RFI, AND CORRECTIVE MEASURES STUDY (CMS) WORK PLAN
BASED UPON OUTLINE FROM THE
RFI WORK PLAN FOR WAG 13**

Executive Summary

1. Introduction
 - 1.1 Project Scope
 - 1.2 Project Objectives and Goals
 - 1.3 Project DQOs
 - 1.4 Observational Approach

2. Project Organization and Management Plan
 - 2.1 Organization, Responsibilities, and Staffing
 - 2.2 Project Coordination
 - 2.3 PGDP Tasks and Implementation Plan
 - 2.4 Project Schedule
 - 2.5 RFI Work Plan Activities
 - 2.6 Field Preparation Activities
 - 2.7 Field Support Facility

3. Regulatory Setting
 - 3.1 ACO
 - 3.2 Environmental Programs
 - 3.3 RCRA
 - 3.4 CERCLA/NPL
 - 3.5 NEPA
 - 3.6 Investigative Overview

4. Environmental Setting/Site Characterization
 - 4.1 Location
 - 4.2 Demography and Land Use
 - 4.3 General History
 - 4.4 Regional Geologic Setting
 - 4.5 Geology of PGDP
 - 4.6 Hydrogeology
 - 4.7 Surface Water Hydrology
 - 4.8 Ecological Setting
 - 4.9 Climatology

5. Characterization of Site/Previous Analytical Data
 - 5.1 Area 1
 - 5.2 Area 2
 - 5.3 Area 3

6. Initial Evaluation
 - 6.1 Risk Assessment
 - 6.1.1 Data Evaluation
 - 6.1.2 Exposure Assessment
 - 6.1.3 Toxicity Assessment
 - 6.1.4 Risk Characterization
 - 6.1.5 Preliminary Remediation Goals (RAGS Vol. 1, Part B)
 - 6.1.6 Evaluation of Uncertainties
 - 6.1.7 Ecological Assessment Methods
 - 6.2 Preliminary Data Evaluation
 - 6.2.1 Characterization and Inventory of Wastes
 - 6.2.2 Information Status of Key Assessment Factors
 - 6.2.3 Release Potential from Contaminant Sources
 - 6.3 Sampling Strategy
7. Treatability Studies
 - 7.1 Identification of Treatability Studies Needed
 - 7.2 Description of Study to be Performed
 - 7.3 Additional Site Data Needed for Study or Evaluation
 - 7.4 Schedule for Submission of Treatability Study Work Plan (Section 2 also)
8. Alternatives Development
 - 8.1 Description of the General Approach to Investigating and Evaluating Potential Remedies
 - 8.2 Overall Objectives of the Study
 - 8.3 Preliminary Identification of General Response Actions and Remedial Technologies
 - 8.4 Remedial Alternatives Development Screening
 - 8.5 Detailed Analysis of Remedial Alternatives
 - 8.6 Format for FS/CMS Report (Appendix Document Outlines)
 - 8.7 Schedule/Timing for Conducting the Study (Section 2 also)
9. Field Sampling Plan
 - 9.1 Sampling Media and Methods
 - 9.2 Sample Analysis
 - 9.3 Site-Specific Sampling Plans
 - 9.4 Sampling Procedures
 - 9.5 Documentation
 - 9.6 Sample Location Survey
10. Health and Safety Plan*
11. Quality Assurance Project Plan*
12. Data Base Management Plan*

13. Waste Management Plan*
 - 13.1 Types of Investigation Derived Waste
 - 13.2 Waste Management Tracking Responsibilities
 - 13.3 Investigation Derived Waste Request for Disposal, Storage, and Labelling
 - 13.4 Transportation and Storage of Investigation Derived Waste
 - 13.5 Screening of Analytical Samples
 - 13.6 Investigation Derived Waste Characterization Sampling and Analysis
 - 13.7 Sample Residuals and Miscellaneous Waste Management
 - 13.8 Effect of Land Disposal Restrictions
14. Community Relations Plan*
15. References

Appendices

- A. ARARs
- B. Statistical Evaluation Methods
- C. Miscellaneous Forms
- D. Document Outlines

*Programmatic plans will be submitted, rather than included, in each project work plan.

NOTE: Elements included in this outline shall be considered and incorporated, as appropriate, when developing the above-referenced document.

INTEGRATED RFI/RI REPORT**Executive Summary**

1. Introduction
 - 1.1 Purpose of Report
 - 1.2 Site Background
 - 1.2.1 Site Description
 - 1.2.2 Site History
 - 1.2.3 Previous Investigations
 - 1.3 Report Organization
2. Study Area Investigation
 - 2.1 Includes all field activities associated with site characterization. These may include physical and chemical monitoring of some of the following:
 - 2.1.1 Surface Features
 - 2.1.2 Contaminant Source Investigations
 - 2.1.3 Meteorological Investigations
 - 2.1.4 Surface Water and Sediment Investigations
 - 2.1.5 Geological Investigations
 - 2.1.6 Soil and Vadose Zone Investigations
 - 2.1.7 Groundwater Investigations
 - 2.1.8 Human Population Surveys
 - 2.1.9 Ecological Investigations
 - 2.2 If technical memoranda documenting field activities were prepared, they may be included in an appendix and summarized in this report section.
3. Physical Characteristics of the Study Area
 - 3.1 Includes results of the field activities to determine physical characteristics. These may include some of the following:
 - 3.1.1 Surface Features
 - 3.1.2 Meteorology
 - 3.1.3 Surface Water Hydrology
 - 3.1.4 Geology
 - 3.1.5 Soils
 - 3.1.6 Hydrogeology
 - 3.1.7 Demography and Land Use
 - 3.1.8 Ecology
4. Nature and Extent of Contamination
 - 4.1 Presents the results of site characterization, both natural chemical components and contaminants of the following media:
 - 4.1.1 Sources (Lagoons, Sludges, Tanks, etc.)
 - 4.1.2 Soils and Vadose Zone
 - 4.1.3 Groundwater
 - 4.1.4 Surface Water and Sediments
 - 4.1.5 Air

5. Fate and Transport
 - 5.1 Potential Routes of Migration (i.e., Air, Groundwater, etc.)
 - 5.2 Contaminant Persistence
 - 5.2.1 Describe estimated persistence in the study area environment and physical, chemical, and/or biological factors of importance for the media of interest.
 - 5.3 Contaminant Migration
 - 5.3.1 Describe factors affecting contaminant migration for the media of importance (e.g., sorption onto soils, solubility in water, movement of groundwater, etc.).
 - 5.3.2 Describe modeling methods and results, if applicable.

6. BRA
 - 6.1 Human Health Evaluation
 - 6.1.1 Exposure Assessment
 - 6.1.2 Toxicity Assessment
 - 6.1.3 Risk Characterization
 - 6.2 Environmental Evaluation

7. Summary and Conclusions
 - 7.1 Summary
 - 7.1.1 Nature and Extent of Contamination
 - 7.1.2 Fate and Transport
 - 7.1.3 Risk Assessment
 - 7.2 Conclusions
 - 7.2.1 Data Limitations and Recommendations for Future Work
 - 7.2.2 Recommended RA Objectives

Appendices

- A Technical Memoranda on Field Activities
- B Analytical Data and QA/QC Evaluation Results
- C Risk Assessment Methods

NOTE: Elements included in this outline shall be considered and incorporated, as appropriate, when developing the above-referenced document.

INTEGRATED FS/CMS REPORT

Executive Summary

1. Introduction
 - 1.1 Purpose and Organization of Report
 - 1.2 Background Information (Summarized from RI/RFI Report)
 - 1.2.1 Site Description
 - 1.2.2 Site History
 - 1.2.3 Nature and Extent of Contamination
 - 1.2.4 Contaminant Fate and Transport
 - 1.2.5 BRA
2. Identification and Screening of Technologies
 - 2.1 Introduction
 - 2.2 RA Objectives -
Presents the development of RA objectives for each medium of interest. For each medium, the following should be discussed:
 - 2.2.1 Contaminants of Interest
 - 2.2.2 Allowable Exposure Based upon Risk Assessment (including ARARs)
 - 2.2.3 Development of Remediation Goals
 - 2.3 General Response Actions -
For each medium of interest, describe the estimation of areas or volumes to which treatment, containment, or exposure technologies may be applied.
 - 2.4 Identification and Screening of Technology Types and Process Options -
For each medium of interest, describe:
 - 2.4.1 Identification and Screening of Technologies
 - 2.4.2 Evaluation of Technologies and Selection of Representative Technologies
3. Development and Screening of Alternatives
 - 3.1 Development of Alternatives -
Describes rationale for combination of technologies/media into alternatives.
 - 3.2 Screening of Alternatives (if conducted)
 - 3.2.1 Introduction
 - 3.2.2 Alternative 1
 - 3.2.2.1 Description
 - 3.2.2.2 Evaluation
 - 3.2.3 Alternative 2 (etc.)
 - 3.2.4 Alternative 3 (etc.)
4. Detailed Analysis of Alternatives
 - 4.1 Introduction
 - 4.2 Individual Analysis of Alternatives
 - 4.2.1 Alternative 1
 - 4.2.1.1 Description
 - 4.2.1.2 Assessment

- 4.2.2 Alternative 2 (etc.)
- 4.2.3 Alternative 3 (etc.)
- 4.3 Comparative Analysis

Bibliography
Appendices

NOTE: Elements included in this outline shall be considered and incorporated, as appropriate, when developing the above-referenced document.

PROPOSED PLAN/STATEMENT OF BASIS

1. Introduction
 - 1.1 Purpose
 - 1.2 Site Name and Location
 - 1.3 Lead and Support Agencies
 - 1.4 Objectives of the Proposed Plan
2. Site Background
 - 2.1 History of Site Activities that Led to Current Problems at the Site
 - 2.2 The Site Area or Media to be Addressed by the Selected Remedy
3. Scope and Role of the OU or Response Action
 - 3.1 Identify the principal threats posed by conditions at the site.
 - 3.2 Describe the scope of the problems addressed by the preferred alternative and its role within the overall site cleanup strategy.
4. Summary of Site Risks
 - 4.1 Provide a brief overview of the BRA, including the contaminated media, contaminants of concern, exposure pathways and populations, and potential or actual risks.
 - 4.2 Describe how current risks compare with remediation goals.
 - 4.3 Discuss environmental risks.
5. Summary of Alternatives
 - 5.1 Briefly describe each of the alternatives evaluated in the detailed analysis of the FS.
6. Evaluation of Alternatives and the Preferred Alternative
 - 6.1 Identify the preferred alternative.
 - 6.2 Introduce the nine evaluation criteria.
 - 6.3 Summarize the expected performance of the preferred alternative.
 - 6.4 Conformance of preferred alternative to statutory findings and preference for treatment
 - 6.5 Preliminary identification of preferred alternative design criteria and considerations
 - 6.5.1 Special technical problems
 - 6.5.2 Additional engineering/characterization data required
 - 6.5.3 Permits and regulatory requirement
 - 6.5.4 Access, easements, right of way
 - 6.5.5 Environmental impacts
 - 6.5.6 Health and safety requirements
 - 6.6 Time frame for design and implementation of preferred alternative
 - 6.7 General Operation and Maintenance and long-term monitoring requirements of preferred alternative
7. Community Participation
 - 7.1 Public Comment Period
 - 7.2 Public Meetings
 - 7.3 Contact Personnel
 - 7.4 Administrative Record Availability

NOTE: Elements included in this outline shall be considered and incorporated, as appropriate, when developing the above-referenced document.

RECORD OF DECISION

1. Declaration
 - Site Name and Location
 - Statement of Basis and Purpose
 - Assessment of the Site
 - Description of the Selected Remedy
 - Statutory Determinations
 - Signature and Support Agency Acceptance of the Remedy

2. Decision Summary
 - 2.1 Site Name and Location
 - 2.2 Site History and Enforcement Activities
 - 2.3 Highlights of Community Participation
 - 2.4 Scope and Role of OU
 - 2.5 Site Characteristics
 - 2.6 Summary of Site Risks
 - 2.8 Description of Alternatives
 - 2.9 Summary of Comparative Analysis of Alternatives
 - 2.10 Selected Remedy
 - 2.11 Statutory Determinations
 - 2.12 Documentation of Significant Changes
 - 2.13 Discussion of any hazardous substances, contaminants or pollutants left on-site and need for Five-Year Review of remedial action

3. Responsiveness Summary
 - 3.1 Community Preferences
 - 3.2 Integration of Comments

4. Remedial Design Schedule With Summary (intended to satisfy Remedial Design Work Plan)
 - 4.1 Purpose
 - 4.2 Implementation of Remedial Design Schedule
 - 4.3 30 Percent Scoping Meeting, 60 Percent Progress Meeting, and 90 Percent Design Report

NOTE: Elements included in this outline shall be considered and incorporated, as appropriate, when developing the above-referenced document.

**REMEDIAL DESIGN REPORT
(90 PERCENT DESIGN)**

Based upon 90 percent design:

1. Brief Summary of Action
2. Description of Key Design Features
3. Schedule for Remedial Construction
 - 3.1 Purpose
 - 3.2 Implementation Schedule (intended to satisfy Remedial Action Work Plan)

Appendix

90 Percent Design Drawings

NOTE: Elements included in this outline shall be considered and incorporated, as appropriate, when developing the above-referenced document.

POSTCONSTRUCTION REPORT

1. Brief description of how outstanding items noted in the Prefinal Inspection were resolved;
2. Explanation of modifications made during the RA to the original Remedial Design and RA Work Plans, and why these changes were made;
3. As-built and record drawings;
4. Synopsis of the construction work defined in this Agreement and certification that the construction work has been completed; and
5. Capital Cost Estimate.

NOTE: Elements included in this outline shall be considered and incorporated, as appropriate, when developing the above-referenced document.

OPERATION AND MAINTENANCE PLAN

1. Equipment start-up and operator training:
 - 1.1 Technical specifications governing treatment systems;
 - 1.2 Requirements for providing appropriate service visits by experienced personnel to supervise the installation, adjustment, start-up, and operation of the systems; and
 - 1.3 Schedule for training personnel regarding appropriate operational procedures once start-up has been successfully completed.
2. Description of normal O&M:
 - 2.1 Description of tasks required for system operation;
 - 2.2 Description of tasks required for system maintenance;
 - 2.3 Description of prescribed treatment or operating conditions; and
 - 2.4 Schedule showing the required frequency for each O&M task.
3. Description of potential operating problems:
 - 3.1 Description and analysis of potential operating problems;
 - 3.2 Sources or information regarding problems; and
 - 3.3 Common remedies or anticipated corrective actions.
4. Description of routine monitoring and laboratory testing:
 - 4.1 Description of monitoring tasks;
 - 4.2 Description of required laboratory tests and their interpretation;
 - 4.3 Required QA/QC; and
 - 4.4 Schedule of monitoring frequency and date, if appropriate, when monitoring may cease.
5. Description of alternate O&M:
 - 5.1 Should system fail, alternate procedures to prevent undue hazard; and
 - 5.2 Analysis of vulnerability and additional resource requirements should a failure occur.
6. Safety Plan:
 - 6.1 Description of precautions to be taken and required health and safety equipment, etc., for site personnel protection; and
 - 6.2 Safety tasks required in the event of systems failure.
7. Description of equipment:
 - 7.1 Equipment identification
 - 7.2 Installation of monitoring components
 - 7.3 Maintenance of site equipment
 - 7.4 Replacement schedule for equipment and installation components
8. Records and reporting:
 - 8.1 Daily operating logs,
 - 8.2 Laboratory records,
 - 8.3 Records of operating cost,
 - 8.4 Mechanism for reporting emergencies,

- 8.5 Personnel and maintenance records, and
- 8.6 Monthly reports to state/federal agencies (satisfied by the FFA Quarterly Reports).

9. Projected O&M Costs

NOTE: Elements included in this outline shall be considered and incorporated, as appropriate, when developing the above-referenced document.

FINAL REMEDIAL ACTION REPORT*

1. Introduction
 - 1.1 General description of site
 - 1.1.1 Location
 - 1.1.2 Description
 - 1.1.3 History
 - 1.2 General Description of Remedy
 - 1.2.1 Components of remedy
 - 1.2.2 Contaminants dealt with
2. Chronology of Events
3. Performance Standards and Construction Quality Control
 - 3.1 Standards
 - 3.2 Results of field sampling
 - 3.3 Location and frequency of tests
 - 3.4 Basis for determination that standards were met
4. Construction Activities
 - 4.1 Narrative description
 - 4.2 Tabular summaries
 - 4.2.1 Quantities excavated
 - 4.2.2 Cleanup levels achieved
 - 4.2.3 Material and equipment used
 - 4.3 Names and roles of major design and remedial action contractors
 - 4.4 Participation by other federal agencies
 - 4.5 Lessons learned
 - 4.5.1 Problems encountered
 - 4.5.2 Options considered
 - 4.5.3 Process used to select solutions
 - 4.5.4 Causes of delays
 - 4.5.5 Innovative solution
 - 4.5.6 Time- or cost-saving measures
5. Final Inspection
 - 5.1 List of inspection Attendees
 - 5.2 Deficiencies found
 - 5.3 Resolution of deficiencies
6. Certification That Remedy is Operational and Functional
 - 6.1 SOW was performed within desired specifications
 - 6.2 Affirmation that performance standards have been met
 - 6.3 Basis for determination

7. Operation and Maintenance
 - 7.1 Highlights of operation and maintenance plan
 - 7.2 Potential problems or concerns

8. Summary of Project Costs
 - 8.1 Final costs
 - 8.2 Comparison of final costs to original estimate
 - 8.3 Need for and cost of modifications
 - 8.4 Summary of regulatory agency oversight costs

*The Final Remedial Action Report shall be submitted after the O&M Period for each OU.

NOTE: Elements included in this outline shall be considered and incorporated, as appropriate, when developing the above-referenced document.

FINAL SITE REMEDIATION REPORT*

The Final Site Remediation Report shall include the following:

1. Synopsis of the work defined in this Agreement and a demonstration that the performance standards have been attained;
2. Certification that the RA has been completed in full satisfaction of the requirements of this Agreement; and
3. A description of how DOE will operate and maintain the RA.

*The Final Site Remediation Report shall be the Site Delisting Report.

NOTE: Elements included in this outline shall be considered and incorporated, as appropriate, when developing the above-referenced document.

SECONDARY DOCUMENT OUTLINES

PRELIMINARY CHARACTERIZATION SUMMARY REPORT

EXECUTIVE SUMMARY

1. Introduction
 - 1.1 Background
 - 1.2 RFI Process
 - 1.3 PCSR Organization

 2. Screening and Evaluation Methods
 - 2.1 Introduction
 - 2.2 Evaluation Methods
 - 2.3 Background Reference Values
 - 2.4 Risk-Based Screening Values (PRGs)
 - 2.4.1 Site-Specific Exposure Scenarios
 - 2.4.2 Target Risk Levels
 - 2.4.3 Toxicity Values
 - 2.5 Certainty Analysis

 3. PRG/Background Screening Results
 - 3.1 WAG 1
 - 3.1.1 SWMU 1
 - 3.1.2 SWMU 2
 - 3.1.3 SWMU 3
 - 3.2 WAG 2
 - 3.2.1 SWMU 4
 - 3.2.2 SWMU 5

 4. SWMU Summary and Recommendations

 5. References
- Appendix A: Figures
Appendix B: Tables
Appendix C: Preliminary Remediation Goal Calculations
Appendix D: Statistical Evaluation Method for Chemical Sample Results
From the Paducah Site
Appendix E: Laboratory Data Qualifier Definitions

NOTE: Elements included in this outline shall be considered and incorporated, as appropriate, when developing the above-referenced document.

**INTEGRATED QUARTERLY REPORTS
COMPILED FROM THE EPA HSWA PERMIT, DRAFT FFA**

- I. Work performed during previous quarter (include summaries of findings and any deviations from the Work Plan):**

- II. Schedules of activities to be taken during upcoming quarter (including projected work/crucial phases of construction):**

- III. Identity and assigned tasks of DOE Contractors for work to be performed for this project:**

- IV. Statement of the manner and extent to which the requirements and time schedules are being met:**

- V. Primary/Secondary Document Tracking System:**
 - A) Documents under review and or preparation for the previous quarter:**

 - B) Due dates for completion of review/modification tasks:**

- VI. Anticipated problems/delays (provide summary of problems, schedule, reason for delay, and actions taken to prevent or mitigate delay):**

- VII. Summary of all contacts with local community, public interest groups, or state government:**

- VIII. Changes in relevant personnel:**

- IX. Actual Cost for Operation & Maintenance, if appropriate:**

NOTE: Elements included in this outline shall be considered and incorporated, as appropriate, when developing the above-referenced document.

**PRELIMINARY ASSESSMENT/SITE INSPECTION REPORT
AND SWMU ASSESSMENT REPORT**

UNIT NUMBER:

UNIT NAME:

DATE:

REGULATORY STATUS:

LOCATION:

APPROXIMATE DIMENSION:

FUNCTION:

BRIEF HISTORY:

OPERATIONAL STATUS:

DATES OPERATED:

SITE/PROCESS DESCRIPTION:

WASTE DESCRIPTION:

WASTE QUANTITY:

SUMMARY OF ENVIRONMENTAL SAMPLING DATA:

DESCRIPTION OF RELEASE AND MEDIA AFFECTED:

DESCRIPTION OF RELEASE AND MEDIA AFFECTED:

GROUNDWATER:

SURFACE WATER:

SOIL:

ECOLOGY AFFECTED (i.e., endangered/threatened species)

DOCUMENTATION OF NO RELEASE:

IMPACT ON OR BY OTHER SWMU/AOC:

PRG COMPARISON:

RFI NECESSARY:

NOTE: Elements included in this outline shall be considered and incorporated, as appropriate, when developing the above-referenced document.

APPENDIX E

Prior Work

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**Environmental Restoration Program
Prior Work by Project**

10/16/96

WAG 27 NORTHWEST PLUME SOURCES

Description	Due Date	Submitted	Approved
RI/FS Scoping Document - WAG 27	07/03/96	07/18/96	Serves as precursor to the Data Quality Objectives (DQO) session scheduled for July 29-30, 1996.

ADMINISTRATIVE CONSENT ORDER (ACO)

Description	Due Date	Submitted	Approved
Administrative Consent Order (ACO)			Effective date of 11/23/88.

GROUNDWATER NORTHWEST IRA1

Description	Due Date	Submitted	Approved
D1 Phase I Site Investigation Work Plan	01/22/89	01/20/89	EPA KY 4/10/89 03/30/89 Conditional
D1 Phase I Site Investigation Report	12/21/90	12/20/90	Approved 1991
D1 Phase II Site Investigation Work Plan		07/17/90	EPA KY 12/04/90 12/04/90
D1 Phase II Site Investigation Report	10/28/91	10/25/91	EPA required no further revisions; however, the Final Report would not be approved until a complete schedule for implementation of post-Phase II activities is approved.
D1 Phase II Public Health and Ecological Assessment	12/29/91	12/19/91	Review comments to be addressed in post-Phase II documents submitted in accordance with approved schedules. Draft report not required to be finalized but to support the final documents developed in accordance with the ACO/Site Management Plan.
D1 Phase II Preliminary Alternatives Evaluation	12/29/91	12/19/91	Review comments to be addressed in post-Phase II documents submitted in accordance with approved schedules.
D1 ICM Work Plan - Northwest Plume IRA1	05/22/92	05/21/92	EPA KY 07/26/93 07/26/93
D1 FS/PP - Northwest Plume IRA1	03/08/93	03/03/93	Received EPA concurrence on 04/15/93.

**Environmental Restoration Program
Prior Work by Project**

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D1 IROD - Northwest Plume IRA1	05/03/93	04/22/93	Signature Dates: DOE 07/16/93 EPA 07/22/93 KY concurred 08/13/93	
D1 RD Work Plan - Northwest Plume IRA1	05/10/93	05/10/93	EPA 09/01/93	KY 09/01/93
D1 Remedial Design Report - Northwest Plume IRA1	10/30/93	10/27/93	EPA 02/14/94	KY 03/15/94
D1 Remedial Action Work Plan - Northwest Plume IRA1	11/05/93	11/05/93	EPA 03/28/94	KY 03/28/94
D1 Northwest Plume Groundwater Screening Risk Assessment	12/20/93	12/17/93	Comments will be addressed as part of the Risk Assessment Strategy included in the SMP.	
D1 Treatability Study Work Plan (Iron Filings) - Northwest Plume IRA1	08/01/94	07/29/94	EPA 04/19/95	KY
D1 O&M Plan - Northwest Plume IRA1	05/31/94	05/27/94	EPA 03/06/96	KY 12/08/95
D1 Remedial Action Report (Postconstruction Report) - Northwest Plume IRA1	08/06/95	08/05/95	EPA 09/28/95	KY 09/11/95

GROUNDWATER NORTHWEST IRA 2

Description	Due Date	Submitted	Approved	
D1 Focused Feasibility Study - Northwest Plume Source Containment	01/28/94	01/19/94	Agreements made to further delay action on the Northwest Plume	
D1 Proposed Plan - Northwest Plume Source Containment	09/09/94	09/07/94	Received letter on 12/02/94 disapproving the report based on agreements made to delay further action on the Northwest Plume.	
D1 Record of Decision - Northwest Plume IRA-2	04/04/95		On hold based on EPA/KY negotiations.	

GROUNDWATER NORTHWEST FRA

Description	Due Date	Submitted	Approved	
D1 Feasibility Study Work Plan - Dissolved Phase Northwest Plume	04/28/94	04/26/94	EPA	KY 03/14/95 Response
D1 RI Report (Baseline RA) - Dissolved Phase Risk Assessment	08/01/94	07/29/94	On hold based on EPA/Ky negotiations	

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GROUNDWATER NORTHEAST IRA

Description	Due Date	Submitted	Approved
D1 ICM Work Plan - Northeast Plume	10/05/93	10/04/93	EPA KY 03/07/94 02/18/94
D1 Field Sampling Plan - Northeast Plume	01/13/94	01/12/94	EPA KY 03/07/94 03/14/94
D1 Preliminary Characterization Summary Report - Northeast Plume	02/07/95	02/06/95	EPA KY 05/01/95 11/06/95
D1 Technical Memorandum for Northeast Plume	02/02/95	01/31/95	EPA KY 03/09/95 04/07/96
D1 Proposed Plan for Northeast Plume	02/02/95	01/31/95	EPA KY 03/09/95 03/10/95
D1 ROD - Northeast Plume	05/24/95	05/23/95	Signature Dates: DOE 06/06/95 EPA 06/15/95 KY concurrence by permit modification 06/26/95
95% Design Package for construction of pipeline from extraction wells to security fence - Northeast Plume	07/26/96	07/22/96	This is in place of the CFC that was due on 07/02/96 that was changed due to changes in design.
90% Design Document for construction of pipelines from extraction wells to security fence - Northeast Plume	06/04/96	06/11/96	Dates and structure have been changed per ROC dated 12/28/95 from DOE to EPA and KY which outlines such agreements
30% Design Document for construction of pipelines from cooling towers to security fence - Northeast Plume	03/12/96	02/27/96	Dates and structure have been changed per ROC dated 12/28/95 from DOE to EPA and KY which outlines such agreements.
Certified for Construction (CFC) for construction of pipelines from cooling towers to security fence - Northeast Plume	06/04/96	06/03/96	Pursuant to letter from DOE to EPA/KY dated 02/27/96.
90% Design Document for construction of pipelines from cooling towers to security fence - Northeast Plume	04/16/96	04/05/96	Dates and structure have been changed per ROC dated 12/28/95 from DOE to EPA and KY which outlines such agreements.
30% Design for extraction well field complete - Northeast Plume	01/04/96	12/28/95	Dates and structure have been changed per ROC dated 12/28/95 from DOE to EPA and KY which outlines such an agreement.

Environmental Restoration Program Prior Work by Project

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30% Design Document for construction of pipelines from extraction wells to security fence - Northeast Plume

04/30/96 04/22/96

Dates and structure have been changed per ROC dated 12/28/95 from DOE to EPA and KY which outlines such an agreement.

GROUNDWATER GENERAL

Description	Due Date	Submitted	Approved
D1 Water Policy EE/CA	05/19/93	05/17/93	EPA KY 08/13/93 08/25/93
D1 Groundwater Strategy Document	06/30/93	06/28/93	This document will be an appendix to the SMP.
D1 Action Memorandum - Water Policy	10/26/93	10/22/93	EPA KY 09/02/95 09/25/95
D1 Postconstruction Report for Water Policy Implementation	07/30/95	07/27/95	EPA KY 08/25/95 10/31/95

SURFACE WATER

Description	Due Date	Submitted	Approved
D1 ICM Work Plan for Institutional Controls	05/21/92	05/21/92	EPA KY 10/13/92 10/13/92 Conditional
D1 Surface Water Strategy Document	04/30/93	04/27/93	Document will be included as an appendix to the Site Management Plan
D1 O&M Plan for Institutional Controls	08/15/93	10/04/93	EPA KY 11/05/93 11/08/93
D1 ICM Report for Institutional Controls	10/13/93	10/12/93	EPA KY 11/05/93 11/08/93

WAG 22

Description	Due Date	Submitted	Approved
D1 RI Addendum - WAG 22 Burial Grounds	06/23/93	06/22/93	EPA KY 10/25/94 01/17/95
D1 Feasibility Study - SWMUs 2 and 3 of WAG 22 Burial Grounds	10/12/94	10/11/94	EPA KY 04/12/95 05/26/95
D1 Proposed Plan - SWMUs 2 and 3 of WAG 22 Burial Grounds	03/24/95	03/21/95	EPA KY 05/26/95 08/31/95

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D1 Record of Decision - SWMUs 2 and 3 of WAG 22 Burial Grounds	07/30/95	07/28/95	Signature Dates: EPA 08/22/95 DOE 08/16/95 KY concurrence 08/31/95	
D1 Field Sampling Plan - SWMUs 7 and 30 of WAG 22 Burial Grounds	03/31/95	03/29/95	The Field Sampling Plan, combined with the CERCLA ACO Phase I and Phase II Work Plans, constitutes the RI/FS Work Plan (RFI/CMS Work Plan).	
D1 Sampling Plan - SWMUs 2 and 3 of WAG 22 Burial Grounds	09/01/95	08/31/95	EPA	KY 06/17/96
Addendum to D1 Field Sampling Plan - SWMUs 7 and 30 of WAG 22 Burial Grounds. Required in 05/04/95 Data Quality Objectives meeting.	06/02/95	06/02/95	EPA	KY 07/11/95 07/21/95

WAG 23

Description	Due Date	Submitted	Approved	
D1 Proposed Plan - WAG 23	04/29/96	04/15/96	Originally scheduled for 04/29/96 but pushed forward to 04/14/96. Due to some problems with certification, pushed back to original date of 04/29/96.	
D1 RI Addendum - WAG 23 PCB Spill Sites	07/23/93	07/22/93	EPA	KY 01/26/95 02/16/95
D1 Treatability Study Program Plan - WAG 23	03/26/94	03/24/94	EPA	KY 01/12/95
D1 Treatability Study Report - WAG 23	09/29/95	09/27/95	In review (extension requested and approved by EPA and KY on 08/10/95 and 08/08/95, respectively.)	
D1 Feasibility Study Report - WAG 23	01/25/96	01/23/96	EPA	KY 06/10/96 05/09/96

WAG 11

Description	Due Date	Submitted	Approved	
D1 RFI Work Plan - WAGs 5 and 11	06/14/92	06/01/92	Resubmission moved to outyear pursuant to WAG restructuring included in Mod #10 to the RCRA Permit.	

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WAGS 1 AND 7

Description	Due Date	Submitted	Approved
D1 ICM Work Plan - C-746-K	08/10/92	08/14/92	EPA KY 03/02/93 03/02/93
D1 RFI Work Plan - WAGs 1 and 7	09/12/92	09/11/92	EPA KY 09/28/93 09/28/93
D1 Feasibility Study Work Plan (CMS Work Plan) - WAGs 1 and 7	01/28/95	01/25/95	EPA KY 03/08/95 03/06/95 RI Report submitted 09/11/95
D1 Preliminary Characterization Summary Report and FSP Addendum- WAGs 1 and 7	01/28/95	01/25/95	
D1 RFI Report - WAGs 1 and 7	11/01/95	10/30/95	EPA KY 06/10/96 06/03/96 Also includes the RFI Report for KOW SMWUs 94, 95, and 157.
D1 Feasibility Study Report - WAGs 1 and 7	12/14/95	12/14/95	EPA KY 06/10/96 06/03/96 w/comments
D1 Proposed Plan - WAGs 1 and 7	05/20/96	05/16/96	EPA KY 06/03/96

WAG 3

Description	Due Date	Submitted	Approved
D1 RFI Work Plan - WAGs 2, 3, and 14	04/10/93	04/07/93	Resubmission moved to 11/15/97 pursuant to WAG restructuring in Mod #10 to RCRA Permit.

WAG 13

Description	Due Date	Submitted	Approved
D1 RFI Work Plan - WAG 13	07/09/93	07/07/93	Resubmission moved to outyear pursuant to WAG restructuring in Mod #10 to RCRA Permit.

WAG 17

Description	Due Date	Submitted	Approved
D1 RFI Work Plan - WAG 17	01/30/94	01/28/94	EPA KY 01/12/95 08/02/95

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D1 CMS Work Plan - WAG 17	06/06/94	06/03/94	EPA 03/09/95	KY 01/17/95
Addendum II to WAG 17 RFI Work Plan	06/26/95	06/26/95	EPA 07/12/95	KY 08/02/95
Modification to WAG 17 RFI Work Plan	03/13/95	03/13/95	EPA 04/03/95	KY 04/03/95
Additional information requested in addition to Addendum II to WAG 17 RFI Work Plan	07/21/95	07/21/95	KY 08/02/95	
D1 Action Memorandum for WAG 17, SWMU 124	06/14/96	06/14/96	EPA 07/08/96	KY 06/25/96
D2 Action Memorandum for WAG 17, AOC 124		07/26/96	The removal action will proceed as scheduled with the notice of completion projected for 09/06/96.	

WAG 6 - C-400

Description	Due Date	Submitted	Approved	
D1 RI/FS Work Plan - WAG 6	07/27/94	07/25/94	In review	
D3 RI/FS Work Plan - WAG 6 - C-400	08/30/96	08/28/96		
Industrial Hydrogeology Study (IHS) Report - WAG 6 - C-400	07/13/96	07/12/96	EPA	KY
D1 Industrial Hydrogeology Utilities Survey - WAG 6 - C-400	09/15/95	09/13/95	EPA 11/2/95	KY 11/03/95

WAG 15

Description	Due Date	Submitted	Approved	
D1 SAP for Site Evaluation at WAG 15		05/28/96	EPA	KY 09/09/96

WAG 24

Description	Due Date	Submitted	Approved	
D1 ICM Work Plan - Containment of Scrapyard Sediment Runoff	02/02/93	02/01/93	EPA 07/23/93	KY 07/23/93
D1 ICM Report (Postconstruction) - Scrapyards	08/04/94	08/02/94	EPA 01/30/95	KY

**Environmental Restoration Program
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D1 O&M Plan - Scrapyards	08/04/94	08/02/94	EPA	KY
			01/30/95	

WAG 18

Description	Due Date	Submitted	Approved
D1 ICM Work Plan - North-South Diversion Ditch	03/26/93	03/24/93	EPA KY 03/28/94 03/28/94
D1 Proposed Plan - North-South Diversion Ditch	10/04/93	09/10/93	Approved upon signature of ROD.
Public Notice for Proposed Plan and ICM Work Plan - North-South Diversion Ditch	11/08/93	11/07/93	
Draft Strawman ROD - North-South Diversion Ditch	11/12/93	11/12/93	Signatures DOE 03/15/94 EPA 03/28/94 KY concurred 03/28/94
ICM Report - North-South Diversion Ditch	11/18/95	11/15/95	
O&M Plan - North-South Diversion Ditch	11/18/95	11/15/95	EPA KY 01/30/96 02/14/96 w/comments

MISCELLANEOUS DOCUMENTS

Description	Due Date	Submitted	Approved
D1 Program Site Management Plan	08/23/95	08/22/95	
D2 Program Site Management Plan	07/15/96	07/15/96	
D1 Data Management Plan	03/31/94	03/30/94	In review
D0 Community Relations Master Plan	02/01/94	01/31/94	As agreed by all Parties, a D1 will be developed once the FFA is signed.

APPENDIX F

Primary Document Review Periods

PRIMARY DOCUMENT D1 REVIEW/COMMENT/REVISION PERIODS¹

D1 PRIMARY DOCUMENT	ACTIVITY	PERIOD (Days)
Community Relations Plan	EPA/KY Review	90
	DOE Revise	60
RI/FS Work Plan	EPA/KY Review	90
	DOE Revise	60
RI Report	EPA/KY Review	90
	DOE Revise	60
Baseline Risk Assessment	EPA/KY Review	90
	DOE Revise	60
FS Report	EPA/KY Review	90
	DOE Revise	60
Proposed Plan	EPA/KY Review	45
	DOE Revise	30
Removal Notification	EPA/KY Review	30
	DOE Revise	30
RD Work Plan	EPA/KY Review	30
	DOE Revise	15
Final RD Report	EPA/KY Review	30
	DOE Revise	30

¹Pursuant to Section XIV.D. of the FFA, the Draft Primary Review Process does not apply to RODs. Instead, DOE will submit a Draft-Final (D2) ROD to EPA and KNREPC within 30 days of the close of the public comment period. In accordance with Section XX.G.2. of the FFA, this D2 document will be subject to a 30 Day period of review.

DI PRIMARY DOCUMENT	ACTIVITY	PERIOD (Days)
RA Work Plan	EPA/KY Review	30
	DOE Revise	30
Data Management Plan	EPA/KY Review	60
	DOE Revise	30
Final Remediation Report	EPA/KY Review	90
	DOE Revise	60
Site Management Plan	EPA/KY Review	30
	DOE Revise	15
Removal Work Plan	EPA/KY Review	30
	DOE Revise	30
Engineering Evaluation/Cost Analysis	EPA/KY Review	30
	DOE Revise	30
Action Memorandum	EPA/KY Review	30
	DOE Revise	30
Site Evaluation Report	EPA/KY Review	30
	DOE Revise	30
Time-Critical Removal Responsiveness Summary	EPA/KY Review	30
	DOE Revise	30

APPENDIX G

Site Management Plan

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**DOE/LX/07-2450&D1
Primary Document**

**Site Management Plan
Paducah Gaseous Diffusion Plant
Paducah, Kentucky**

Annual Revision—FY 2021



CLEARED FOR PUBLIC RELEASE

**DOE/LX/07-2450&D1
Primary Document**

**Site Management Plan
Paducah Gaseous Diffusion Plant
Paducah, Kentucky**

Annual Revision—FY 2021

Date Issued—November 2020

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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FIGURES

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ACRONYMS

AOC	area of concern
BGOU	Burial Grounds Operable Unit
bgs	below ground surface
BRA	baseline risk assessment
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
COC	contaminant of concern
COPC	chemical or radionuclide of potential concern
CSOU	Comprehensive Site Operable Unit
D&D	decontamination and decommissioning
DMP	data management plan
DNAPL	dense nonaqueous-phase liquid
DOE	U.S. Department of Energy
DUF ₆	Depleted Uranium Hexafluoride
ELCR	excess lifetime cancer risk
EM	environmental management
EPA	U.S. Environmental Protection Agency
ERH	electrical resistance heating
ESD	explanation of significant difference
FFA	Federal Facility Agreement
FS	feasibility study
FY	fiscal year
GA	geographical area
GDP	gaseous diffusion plant
GSA	generator staging area
GWOU	Groundwater Operable Unit
HI	hazard index
HSWA	Hazardous and Solid Waste Amendment
HVAC	heating, ventilating, and air conditioning
IRA	interim remedial action
KOW	Kentucky Ordnance Works
KPDES	Kentucky Pollutant Discharge Elimination System
KY	Commonwealth of Kentucky
LLW	low-level waste
LUC	land use controls
LUCAP	land use controls assurance plan
LUCIP	land use control implementation plan
MCL	maximum contaminant level
MOA	memorandum of agreement
NA	not applicable
NCP	National Contingency Plan
NFA	no further action
NPL	National Priorities List
NSDD	North-South Diversion Ditch
NTCRA	non-time-critical removal action
O&M	operation and maintenance
OSWDF	on-site waste disposal unit
OU	operable unit
PGDP	Paducah Gaseous Diffusion Plant

PTW	principal threat waste
RACR	remedial action completion report
RAO	remedial action objective
RCRA	Resource Conservation and Recovery Act
RCW	recirculating cooling water
RDSI	remedial design support investigation
RGA	Regional Gravel Aquifer
RI	remedial investigation
ROD	record of decision
SAA	satellite accumulation area
SAP	sampling and analysis plan
SE	site evaluation
SEE	steam-enhanced extraction
SMP	Site Management Plan
SWMU	solid waste management unit
SWOU	Surface Water Operable Unit
TBD	to be determined
TS	treatability study
TSCA	Toxic Substances Control Act
UCRS	Upper Continental Recharge System
USEC	United States Enrichment Corporation
UST	underground storage tank
VOC	volatile organic compound
WAG	waste area group
WDA	waste disposal alternative
WKWMA	West Kentucky Wildlife Management Area

1. INTRODUCTION

The Paducah Gaseous Diffusion Plant (PGDP) was placed on the National Priorities List (NPL) on May 31, 1994. In accordance with Section 120 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), the U.S. Department of Energy (DOE) entered into a Federal Facility Agreement (FFA) with the U.S. Environmental Protection Agency (EPA) and Kentucky on February 13, 1998. The FFA established one set of consistent requirements for achieving comprehensive site remediation in accordance with the Resource Conservation and Recovery Act (RCRA) and CERCLA, including stakeholder involvement.

Section XVIII of the FFA requires that DOE submit an annual Site Management Plan (SMP), which outlines DOE's strategic approach for achieving cleanup under the FFA, to EPA and the Energy and Environment Cabinet (formerly known as the Kentucky Environmental and Public Protection Cabinet) by November 15th of each year. The FFA states that the purpose of the SMP is to coordinate and document the potential and selected operable units (OUs), including removal actions; to define cleanup priorities; to identify work activities that will serve as the basis for enforceable timetables and deadlines under the agreement; and to establish long-term cleanup goals.

During fiscal year (FY) 2012, based on projected near-term flat funding assumptions (5 years) and reasonable future funding assumptions for the Paducah Site, the FFA Senior Managers commissioned the FFA Managers to review and reprioritize FFA work, as needed, to achieve continuous progress while ensuring a bias for action. A series of meetings were held among the FFA Managers to evaluate options. The FFA Managers and FFA Senior Managers agreed to the following prioritization for work implementation:

- Optimize plume containment (Northeast Plume);
- Address groundwater sources [C-400; Southwest Plume Sources; Burial Grounds OU Solid Waste Management Unit (SWMU) 4];

- Complete decontamination and decommissioning (D&D) of C-340 and C-410/C-420;
- Continue and prioritize CERCLA Waste Disposal Alternatives activities to support future disposal needs;
- Realign the OUs schedules to coordinate disposal of waste with the availability of a potential CERCLA On-site Waste Disposal Facility (if selected); and
- Implement other work (e.g., Sitewide Evaluation) ensuring continuous progress/bias for action.

At that time, the reprioritization of projects based on projected near-term flat funding assumptions (5-years) and reasonable future funding assumptions for the Paducah Site resulted in the rescheduling of milestones, including out-year completion dates for the pre-gaseous diffusion plant (GDP) shutdown scope OUs. The FY 2013 SMP officially incorporated the changes agreed to by the FFA parties and moved completion dates for the pre-GDP shutdown scope OUs from 2019 to 2032.

In October of 2014, the United States Enrichment Corporation (USEC) terminated its lease agreement for operation of the GDP and returned the leased facilities to DOE. Some of these previously leased facilities contain SWMUs that had not been readily accessible during USEC operation. Because DOE now has control of the formerly leased GDP facilities, DOE has reassessed site cleanup priorities to identify areas offering the greatest opportunity to address significant sources of environmental media contamination. As a result, in 2016, DOE identified that a comprehensive characterization and final response action of the C-400 Building and its adjacent areas (see Appendix 3), hereafter referred to as the C-400 Complex, as its highest cleanup priority at the site. The C-400 Complex contains numerous SWMUs and is the largest source of off-site trichloroethene (TCE) groundwater contamination. The implementation of C-400 Complex as Paducah DOE's highest cleanup priority has resulted in resequencing of other cleanup work at the site to align with the new cleanup priorities and revised time frames projected for implementation. The FY 2016 and

FY 2017 SMPs were not finalized in order to allow the FFA Senior Managers time to evaluate DOE's proposed reprioritization strategy and to reach a consensus on the path forward for the cleanup of the site.

The FFA Senior Managers signed a Memorandum of Agreement (MOA) for the C-400 Complex under the FFA for the PGDP, on August, 8, 2017, to document key aspects of the new strategy for incorporation into the FY 2018 SMP.

The new strategy from the MOA included the following:

- Addition of the C-400 Complex OU with enforceable milestones and planning dates for all the CERCLA activities under the OU, including the out-year enforceable milestone for the C-400 Remedial Action field start;
- Integration of the pre- and post-GDP shutdown projects and schedules into the overall cleanup scope of the FFA;
- Continuation of the SWMU 211-A groundwater remedial action; and
- Resequencing of all other projects (e.g., CERCLA Waste Disposal Alternatives, Burial Grounds OU, Soils OU, Dissolved-Phase Plumes OU, Surface Water OU, Comprehensive Site OU).

In FY 2018, the FFA parties entered into dispute resolution regarding the FY 2018 SMP. The FFA Senior Executive Committee signed an MOA for the FY 2018 SMP on March 29, 2019, (reflects date of final signature) that resolved the DOE and Kentucky disputes. The FY 2018 SMP was revised consistent with the terms of the MOA, including incorporation of priority project schedules and milestone dates to satisfy the FY 2019 Annual SMP update requirements per the FFA. The FY 2018 SMP was renamed as the FY 2018/FY 2019 SMP, consistent with the MOA and approved by EPA and Kentucky (August 2019). The FY 2018/FY 2019 SMP superseded the previously approved FY 2015 SMP.

In FY 2018, the FFA parties also entered into dispute resolution regarding the C-400 Removal Action. On August 1, 2019 (reflects date of final

signature), the FFA Senior Executive Committee signed an MOA for the C-400 Building Non-Time-Critical Removal Action (NTCRA). Although the specific issues disputed by DOE were not resolved, the MOA documents suspension of the demolition project (including document reviews), agreement that the C-400 Complex Operable Unit Remedial Investigation/Feasibility Study would proceed, and the delay of physical demolition of the C-400 Building down to slab as an NTCRA until after the C-400 Remedial Investigation Field Start date. The removal action field start date for the C-400 Building demolition is included in Appendix 5.

This annual update of the SMP (FY 2021 SMP) sets forth enforceable milestones for FY 2021, FY 2022, and FY 2023, with near-term emphasis on the C-400 Complex and Southwest Plume SWMU 211-A, consistent with the MOAs signed in August 2017 and August 2019 and the FY 2018/FY 2019 SMP. The scope associated with the overall cleanup strategy for the site includes a series of prioritized response actions, site characterization activities to support future response action decisions, and cleanup and decommissioning of the GDP. After completion of these activities, the Comprehensive Site OU (CSOU) evaluation will be conducted, with implementation of additional actions, as needed, to ensure long-term protectiveness of human health and the environment. CERCLA Five-Year Review evaluations are and will continue to be conducted to determine if any modifications to actions are required prior to the CSOU evaluation. The current time frame for the completion of site cleanup is 2065.

Appendix 1 of this SMP contains a summary of the status of all actions taken to date relative to the signed Records of Decision or Action Memoranda (including both interim and final response actions). This appendix also serves to meet the requirements of Section X.A of the FFA to submit an annual removal action report describing a summary of removal actions performed during the previous FY. More detailed information on the status of each OU is available in the FFA Semiannual Progress Report.

2. LAND USE

The planning assumptions for current land use are depicted in Figure 1, and the reasonably foreseeable future use is depicted in Figure 2. Potential future uses include recreational, industrial, and waste management. Several factors were considered in establishing the land-use assumptions under this cleanup strategy, including current and past land use, stakeholder input, and interest expressed by outside entities for the industrial use of areas on and adjacent to PGDP. DOE, EPA, and Kentucky have been working collaboratively through the data quality objective process in preparation for the potential future sale or transfer of property in accordance with 120(h) of CERCLA. Section XLII of the FFA further states that DOE shall provide notice to the FFA parties at least 90 days prior to any such sale or transfer and include notice of the FFA requirements in any document transferring ownership or operation of any portion of the site to any subsequent owner or operator.

2.1 LAND USE CONTROLS

The site cleanup strategy recognizes that the long-term protectiveness of some response actions might rely upon or be supplemented by engineering barriers, institutional controls, and/or other land use controls (LUCs). To ensure that these controls remain protective, CERCLA five-year reviews, in conjunction with monitoring of requirements contained in the Land Use Control Assurance Plan (LUCAP), are implemented.

A Land Use Control Implementation Plan (LUCIP) is developed for each remedy that includes LUCs. The LUCIPs include a detailed explanation of the implementation and long-term maintenance of the LUCs. The LUCAP requires annual certification in the SMP that the LUCIPs are being implemented. This certification also will identify any noncompliance with a LUCIP and the steps taken to correct any such noncompliance, any nonmajor changes in land use, and any changes in designated officials. Appendix 2 contains the annual certification of LUCIPs implemented at PGDP.

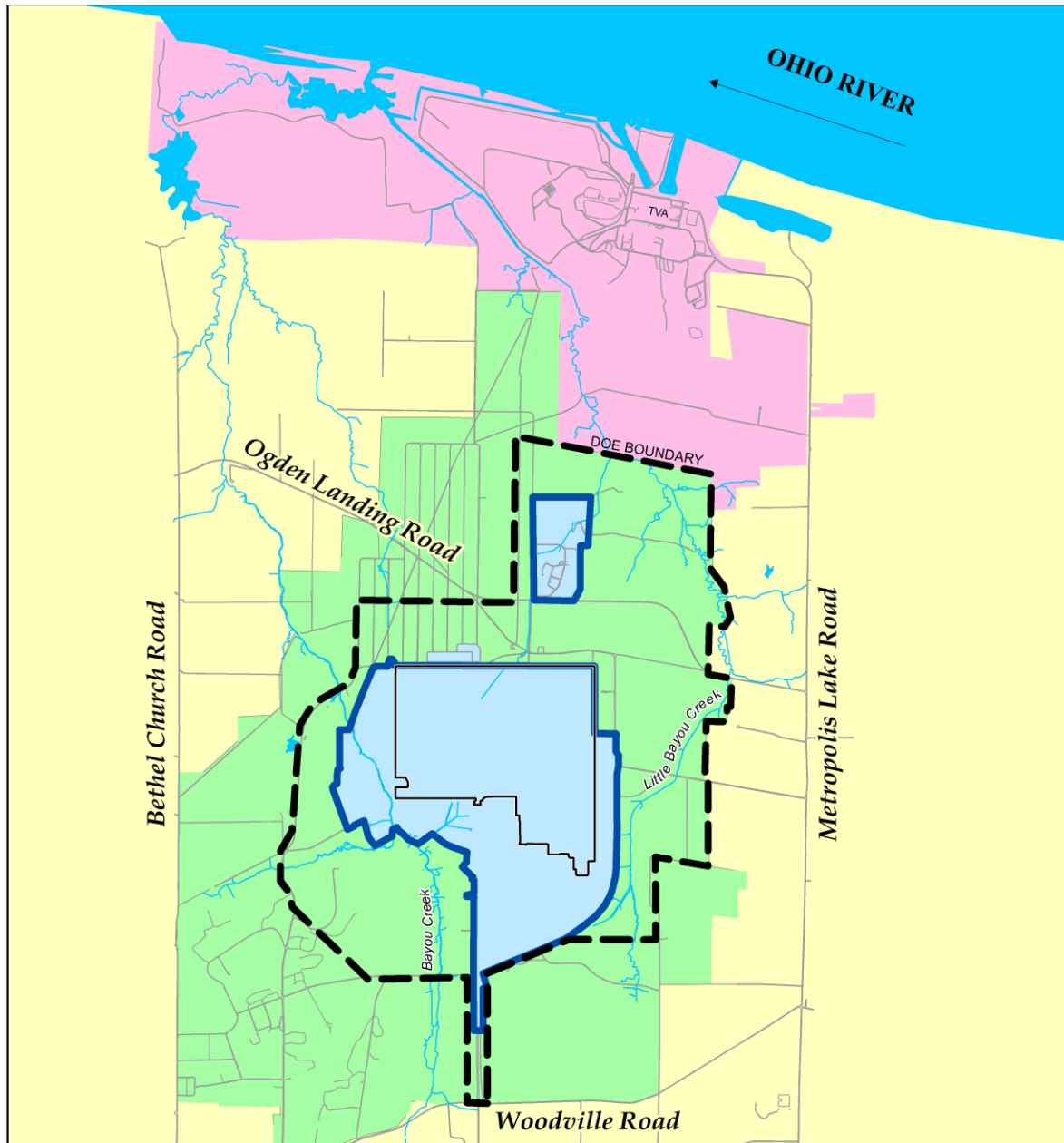
3. OPERABLE UNITS

In past SMPs, the site cleanup activities were divided as follows: (1) pre-GDP shutdown scope, (2) post-GDP shutdown scope, and (3) CSOU scope. The pre-GDP shutdown scope was associated with media-specific OUs initiated prior to shutdown of the operating GDP (i.e., Pre-GDP shutdown Activities).

In the FY 2018/FY 2019 SMP, the site cleanup OUs were integrated and no longer distinguished between pre- and post-GDP scope. Completion of these OUs is required to achieve delisting of the site from the NPL and the decommissioning of the GDP. Prior to final deletion from the NPL, partial delisting may occur if conditions are met to support potential property transfers. Appendix 3 includes additional information regarding scope and planning assumptions for each of the defined OUs. Appendix 4 contains lists of SWMUs and areas of concern (AOCs) sorted by OUs.

- C-400 Complex OU
- Groundwater OU
- Surface Water OU
- Lagoons OU
- Burial Grounds OU
- Soils OU
- Soils and Slabs OU
- Facility D&D OU
- Depleted Uranium Hexafluoride (DUF₆) Footprint Underlying Soils OU
- CSOU
- CERCLA Waste Disposal Alternatives OU

In addition, DOE currently is implementing deactivation and utility optimization activities outside of the FFA scope to prepare the site for effective implementation of all future mission activities, including cleanup activities. While the FFA parties have agreed to focus cleanup efforts



MAP SOURCE INFORMATION
 Map Generation Date and Location: 9/21/2020 G:\GIS\ARCVIEWS\PROJECTS\SMP\LandUse_Current_20200918.mxd
 WKWMA Boundary: G:\GIS\SHAPES\BOUNDS\Wildlife_Management_Areas.shp (4/5/2011)
 DOE Property Boundary: G:\GIS\ARCVIEWS\geodatabases\cercla.gdb
 TVA Boundary: G:\GIS\SHAPES\BOUNDS\tvabnd_official.shp (11/12/2019)
 229 Boundary: G:\GIS\SHAPES\BOUNDS\229 and LA - R2\229_Boundary.shp (11/5/2018)
 Security Fence: G:\GIS\SHAPES\BOUNDS\229 and LA - R2\Limited_Area.shp (11/5/2018)
 Industrial Use: based on 229 boundary and lagoons

Figure 1. Current Land Use at PGDP

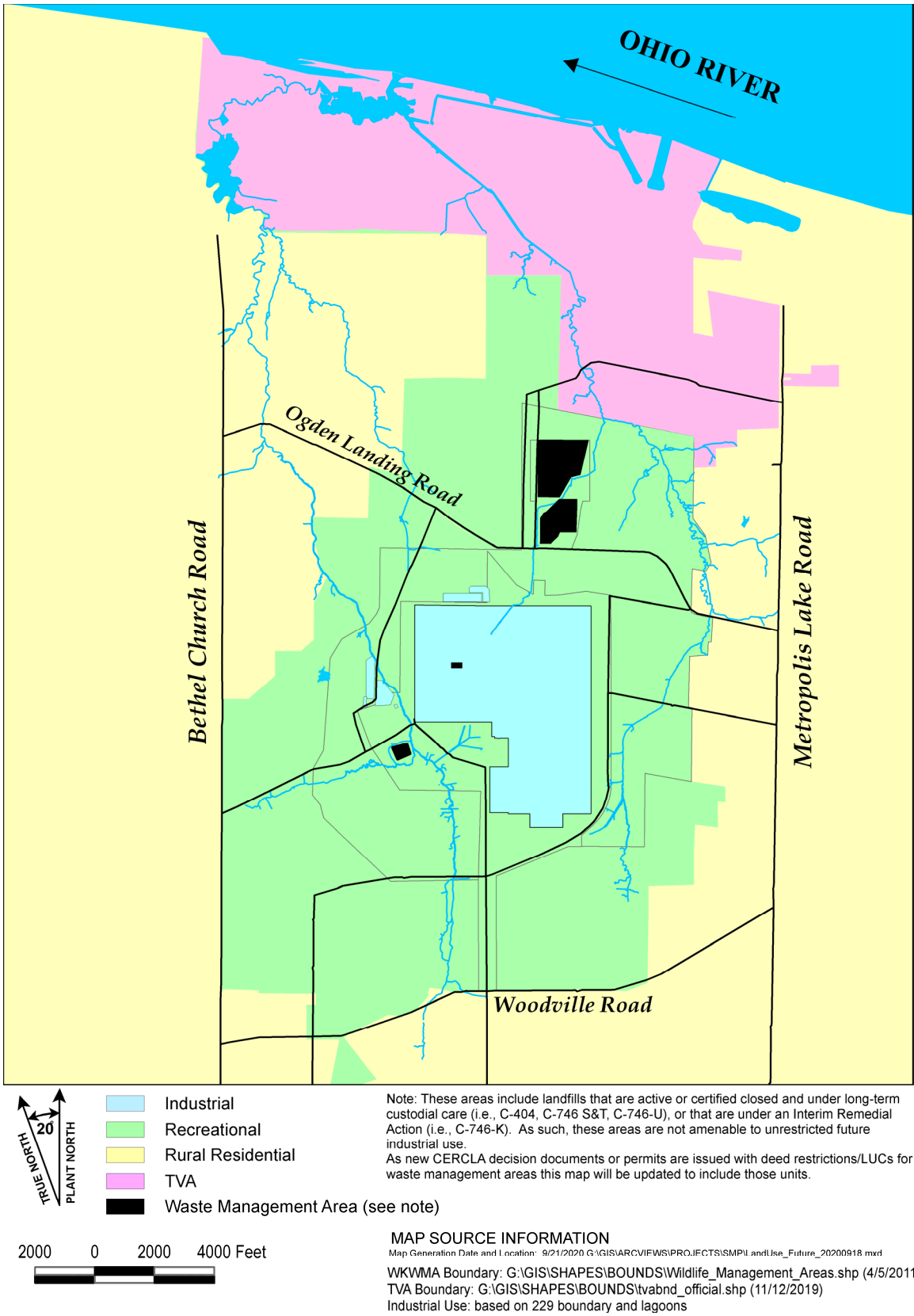


Figure 2. Reasonably Anticipated Future Land Use at PGDP

on the C-400 Complex and Southwest Plume SWMU 211-A, long-term plans and strategies for cleanup continue to be refined for future decommissioning of the GDP and cleanup of other OUs.

The final CSOU evaluation will support the final remedial decision for the site following completion of all OUs. Any required environmental monitoring of remedy performance and/or progress toward achieving the remedial action objectives (RAOs) will be conducted and reported in accordance with the selected remedies. Once no further response is appropriate and all RAOs have been achieved, the site (remaining property not previously deleted and/or transferred) would be eligible for deletion from the NPL.

4. SITE PRIORITIZATION

DOE uses a combination of factors to prioritize work being implemented under the Environmental Management (EM) program at PGDP. These include considerations such as regulator expectations; risk-based decision making; compliance with other program; technical considerations associated with GDP transition/turnover; funding projections; mortgage reduction; and demonstrated progress toward completing the EM mission. The site prioritization is evaluated each year as part of the annual update to the SMP. Additionally, the FFA parties are committed to working together to identify projects that could be addressed in the event that additional funding becomes available or cost savings are realized.

The risk prioritization criteria incorporate the general program-management principles of the National Contingency Plan (NCP), which emphasize the use of accelerated actions to address imminent threats and reduce migration of off-site contamination.

Enforceable milestones for FY 2021, FY 2022, FY 2023, and out-year enforceable completion dates consistent with these prioritization criteria are included in Appendix 5. Any enforceable completion dates for remedial actions shall be considered satisfied upon issuance of a D1 Remedial Action Completion Report (RACR) (i.e., Final Remedial Action Report, as specified in

FFA) for those areas where RAOs have been achieved. In cases where a period of operation and maintenance (O&M) may be required to achieve RAOs, such as groundwater, a D1 Interim RACR will be issued upon completion of remedial construction and a determination by DOE that the remedy is operating as intended.

Risk Prioritization Criteria
<ul style="list-style-type: none">• Mitigate immediate threats, both on- and off-site.• Reduce further migration of off-site contamination.• Address sources contributing to off-site contamination.• Address remaining sources contributing to on-site contamination.• Perform D&D of the GDP/Address Remediation Scope OUs.• Address soils within the DUF₆ Plant footprint once it ceases operations and D&D of the DUF₆ plant is complete.• Evaluate the final CSOU.

Decommissioning of surplus DOE facilities is described in the 1995 DOE and EPA Memorandum: *Policy on Decommissioning DOE Facilities under CERCLA*. A total of 681 properties/structures was reviewed and evaluated to identify facilities that should be evaluated under the CERCLA process for decommissioning (Appendix 8 of the FY 2018/FY 2019 SMP). The Facility D&D OU identifies industrial facilities (listed in Appendix 4) that, in some cases, already have been determined to pose a potential threat of release of hazardous substances to the environment that warrants a CERCLA NTCRA for decommissioning. For the other facilities included in Appendix 4, a removal site evaluation (SE) is required to determine if a NTCRA is necessary. Additional facilities at PGDP (listed in Appendix 6) are undergoing evaluation to determine if there is a release threat to the environment that would warrant a site evaluation

to determine if decommissioning should proceed under CERCLA. If it is determined during a facility review that there is a potential release threat, the facility will be included in the Facility D&D OU in Appendix 4. The FFA parties have agreed to continue collaboration in FY 2021 to discuss the timing for Appendix 4 facilities Removal Site Evaluation, and the timing and process for screening the remaining facilities in Appendix 6 for possible inclusion in Appendix 4.

All data collected in support of any removal or remedial action shall be managed in accordance with an approved Data Management Plan (DMP). In accordance with Section XXVII.C of the FFA, Appendix 7 contains the final DMP for the Paducah Site.

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APPENDIX 1

ACTIONS TAKEN TO DATE

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Operable Unit Summary

WAGs/Media	Response Type	ROD/Action Memorandum	Response Description	Status ¹
GROUNDWATER OPERABLE UNIT				
WAG 26/Groundwater	Emergency removal action	Administrative Order by Consent under Sections 104 and 106 of Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) November 4, 1988	Provided temporary water to local residences where private wells are contaminated by TCE and Tc-99.	Complete
WAG 26/Groundwater	Removal action	August 30, 1994 DOE/OR/06-1201&D2	Extended municipal water line to residences affected by off-site groundwater contamination. 2013 Five-Year Review required additional actions for vapor intrusion.	Construction Complete/Operational The Water Policy Screening Study was completed on June 30, 2015. The Water Policy Screening Study Report was approved by KY on November 8, 2017; EPA approved on November 14, 2017.
WAG 26/Groundwater (Northwest Plume)	Interim Remedial Action (IRA)	July 23, 1993 DOE/OR/06-1143&D4	Hydraulic containment and treatment of high concentrations of off-site TCE contamination in the Northwest Plume.	Construction Complete/Operational
	Explanation of Significant Differences (ESD)	January 27, 2011 DOE/LX/07-0343&D2	Optimization of the Northwest Plume system through placing existing southern extraction wells (EWs) on standby and installing two new EWs east of original southern extraction field.	Construction Complete/Operational

¹ Detailed information on the status of each project or operable unit is available in the FFA Semiannual Report.

Operable Unit Summary (Continued)

WAGs/Media	Response Type	ROD/Action Memorandum	Response Description	Status ¹
GROUNDWATER OPERABLE UNIT (Continued)				
WAG 26/Groundwater (Northeast Plume)	IRA	June 15, 1995 DOE/OR/06-1356&D1	Hydraulic containment and treatment of high concentrations of off-site TCE contamination in the Northeast Plume.	Construction Complete/Operational
	ESD	January 13, 2016 DOE/LX/07-1291&D2/R2	An ESD has been submitted for optimization of the Northeast Plume system through placing existing EWs on standby, installing two new EWs in the upgradient high concentration area of the Northeast Plume near the eastern edge of the PGDP facility, and installing new treatment units for air stripping as an alternative to the cooling towers.	Construction of an alternate treatment unit was completed on May 30, 2013. The unit became operational on September 4, 2013. The ESD and RAWP were in dispute until July 2015 at which time the Memorandum of Agreement (MOA) ² for resolution was signed. Optimization, including startup and batch testing, has been completed, and the system became fully operational in October 2017. FFA parties established and documented transect well baseline determinations in an addendum to the RAWP. Hydraulic assessment is complete. Beginning in 2018, Tc-99 and TCE concentration trends in the transect wells indicated potential changes in groundwater flow or source impacts. As a result, contaminant mobilization decision rules in the MOA were triggered. The FFA parties agreed in 2018 to adjust extraction well pumping rates; to continue operating under MOA Condition #3; and to review transect well results on a quarterly basis, considering additional adjustments as necessary, which may include an agreement to move into MOA Condition #4. Detailed Northeast Plume optimization information is included in the FFA Semiannual Progress Report, and an evaluation of remedy protectiveness is addressed as part of the Five-Year Review.

² Memorandum of Agreement for Resolution of Formal Dispute of the Explanation of Significant Differences to the Record of Decision for the Interim Remedial Action of the Northeast Plume at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky (DOE/LX/07-1291&D2), and Remedial Action Work Plan for Optimization of the Northeast Plume Interim Remedial Action at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky (DOE/LX/07-1280&D2), August 4, 2015.

Operable Unit Summary (Continued)

WAGs/Media	Response Type	ROD/Action Memorandum	Response Description	Status ¹
GROUNDWATER OPERABLE UNIT (Continued)				
SWMU 91/Soil	IRA	August 10, 1998 DOE/OR/06-1527&D2	<i>In situ</i> treatment of TCE-contaminated soils using the LASAGNA™ technology.	Complete
SWMU 11 and SWMU 533/Groundwater (C-400 Source Action)	IRA	August 9, 2005 DOE/OR/07-2150&D2/R2	<i>In situ</i> treatment of TCE source areas in the UCRS and RGA located in the southeast and southwest corners of the C-400 Building using electrical resistance heating technology.	Field operations for Phase I completed FY 2011. Parties agreed to divide Phase II into Phase IIa and Phase IIb. Phase IIa operations began July 22, 2013, and ceased November 5, 2014. A treatability study for steam-enhanced extraction conducted and completed June 30, 2015. Treatability Study Report approved June 2016. As a result of the DOE proposed strategy and reprioritization agreed to by the FFA Senior Managers in the August 8, 2017, MOA, ³ the remaining VOC source in the Phase IIb area will be addressed by the C-400 Complex OU. Phase I and Phase IIa activities are documented in a Remedial Action Completion Report for the C-400 Interim Remedial Action (ROD, 2005).

³ Memorandum of Agreement on the C-400 Complex under the Federal Facility Agreement for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky, August 8, 2017.

Operable Unit Summary (Continued)

WAGs/Media	Response Type	ROD/Action Memorandum	Response Description	Status¹
GROUNDWATER OPERABLE UNIT (Continued)				
SWMU 11 and SWMU 533/Groundwater (C-400 Source Action) (Continued)				The 2013 Five-Year Review resulted in a deferred protectiveness status from EPA as stated in a letter from R. Chaffins dated September 30, 2014. DOE conducted a vapor intrusion study for the C-400 Building and results are documented in the 2013 Five-Year Review Addendum dated November 9, 2018. The C-400 Vapor Intrusion Study Addendum to the 2013 Five-Year Review was approved by KY on November 21, 2018; EPA approved on December 4, 2018.

Operable Unit Summary (Continued)

WAGs/Media	Response Type	ROD/Action Memorandum	Response Description	Status ¹
GROUNDWATER OPERABLE UNIT (Continued)				
SWMU 1; SWMU 211-A; and SWMU 211-B (Southwest Plume Sources)	Remedial Action	March 20, 2012 DOE/LX/07-0365&D2/R1	<p>SWMU 1—<i>In situ</i> source treatment using deep soil mixing with interim LUCs.</p> <p>SWMU 211-A—<i>In situ</i> source treatment using enhanced <i>in situ</i> bioremediation with interim LUCs or long-term monitoring with interim LUCs based upon RDSI results.</p> <p>SWMU 211-B—<i>In situ</i> source treatment using enhanced <i>in situ</i> bioremediation with interim LUCs or long-term monitoring with interim LUCs based upon RDSI results.</p>	<p>ROD signed; RDSI field activities initiated on July 18, 2012. Completed RDSI field activities on April 26, 2013. Additional sampling was requested by EPA and completed by DOE. The Final Characterization Report Addendum and Letter Notification proposing remedy for 211-A and 211-B have been evaluated by the FFA parties. The FFA parties have agreed to move forward with 211-A and will determine an appropriate remedial action for 211-B based on a revised conceptual site model consistent with the data in the Final Characterization Report. Mobilization activities for SWMU 1 deep soil mixing were initiated on February 9, 2015, and soil mixing completed October 8, 2015. Soil sampling, monitoring wells installation, and Remedial Action Completion Report for SWMU 1 completed in FY 2016. The Remedial Action Completion Report approved by EPA and KY February 2017.</p>

Operable Unit Summary (Continued)

WAGs/Media	Response Type	ROD/Action Memorandum	Response Description	Status ¹
GROUNDWATER OPERABLE UNIT (Continued)				
SWMU 1; SWMU 211-A; and SWMU 211-B (Southwest Plume Sources) (Continued)				Long-term monitoring continues at SWMU 1 in accordance with the ROD. The Remedial Design for SWMU 211-A was approved by EPA and KY in December 2019. The Remedial Action Work Plan for SWMU 211-A currently is in dispute and pending EPA and KY approval. A decision concerning a remedy for SWMU 211-B will be made by the FFA parties after the C-720 Building has been removed and the investigation is complete for the C-720 Building Soils and Slabs action.
SURFACE WATER OPERABLE UNIT				
WAG 25/Surface water (NSDD)	IRA	March 28, 1994 DOE/OR/06-1213&D3	Instituted action to treat certain plant effluent and control the migration of contaminated sediment associated with the NSDD.	Construction Complete/Operational
WAGs 18 & 25/Surface water and sediment (Surface Water/Ditches)	IRA	N/A	Institutional controls (fencing/posting) for off-site contamination in surface water, outfalls, and lagoons.	Construction Complete/Operational
WAG 24/Scrap (Scrapyards)	IRA	N/A	Installation of sediment controls to mitigate surface water/sediment runoff from scrap yards.	Construction Complete/Operational

Operable Unit Summary (Continued)

WAGs/Media	Response Type	ROD/Action Memorandum	Response Description	Status¹
SURFACE WATER OPERABLE UNIT (Continued)				
WAGs 1 & 7 WAG 1: SWMU 100 (Fire Training Area) and SWMU 136 (C-740 TCE Spill Site) WAG 7: SWMU 8 (C-746-K Landfill), SWMU 130 (C-611 550-gal Gasoline UST), SWMU 131 (C-611 50-gal Gasoline UST), SWMU 132 (C-611 2,000-gal. Oil UST), SWMU 133 (C-611 Grouted UST), and SWMU 134 (C-611 1,000-gal Diesel/Gasoline Tank)	IRA	August 10, 1998 DOE/OR/06-1470&D3	Interim remedial action installed riprap along creek bank to prevent direct contact, implemented institutional controls, and long-term monitoring for SWMU 8. All other SWMUs were determined to require “no further action” (NFA) under the IRA. It should be noted that at SWMU 100, institutional controls (i.e., security fencing and patrols to prevent unknowing and unauthorized entry to the plant, and risk management procedures to prevent worker exposure to contaminated media) were selected as part of the remedy.	Construction Complete/Operational
Drum Mountain (Scrap)	Non-time-critical removal action	March 27, 2000 DOE/OR/07-1863&D2	Removed and disposed of Drum Mountain.	Complete
WAG 24, WAG 14, and SWMU 99/Scrap	Non-time-critical removal action	September 26, 2001 DOE/OR/07-1965&D2	Removed and disposed of scrap metal with enhanced sediment control measures.	Complete
SWMU 59/Sediment	IRA	September 25, 2002 DOE/OR/07-1948&D2	Remedial action for Sections 1 and 2 of the NSDD.	Complete
SWMU 58 (Sections 3, 4, and 5 of the NSDD); SWMU 69 (Outfall 001); SWMU 63 (Outfall 008); SWMU 66 (Outfall 010); SWMU 67 (Outfall 011); and SWMU 68 (Outfall 015) and their associated internal ditches and areas (including SWMUs 92 and 97)	Non-time-critical removal action	April 23, 2009 DOE/LX/07-0119&D2/R1	Removal action for contaminants associated with sediment in Sections 3, 4, and 5 of the NSDD and KPDES Outfalls 001, 008, 010, 011, and 015, and associated internal ditches and areas of PGDP.	Complete

Operable Unit Summary (Continued)

WAGs/Media	Response Type	ROD/Action Memorandum	Response Description	Status ¹
BURIAL GROUNDS OPERABLE UNIT				
WAG 22/Waste and soil (SWMU 2- Burial Ground)	IRA	September 11, 1995 DOE/OR/06-1351&D1	The interim ROD selected an impermeable cap to reduce leachate migration from surface infiltration, groundwater monitoring, and institutional controls. Through agreement of the parties, an impermeable cap was not constructed [<i>Waste Area Grouping (WAG) 22 Post-Record of Decision (ROD) Change</i> , October 23, 1996]. This change also will be documented in the Final Remedial Decision for SWMU 2.	Final remedial action for SWMU 2 will be selected as part of the BGOU CERCLA process. Institutional controls and groundwater monitoring are ongoing pending final remedy selection.

Operable Unit Summary (Continued)

WAGs/Media	Response Type	ROD/Action Memorandum	Response Description	Status¹
SOILS OPERABLE UNIT				
C-750-A, -B, and -C USTs	N/A	N/A	Tank removal.	Complete
WAG 7 SWMU 8 (C-746-K Landfill)	IRA	N/A	Enhanced existing cap to reduce leachate migration from surface infiltration.	Complete
AOC 124 WAG 17/Soil (Concrete Rubble Piles)	Removal action	N/A DOE/OR/07-1477&D2	Excavated soil associated with AOC 124.	Complete
WAG 23/Soil	Removal action	September 11, 1997 DOE/OR/06-1626&D1	Excavated PCB and dioxin-contaminated surface soils to reduce risks to plant industrial workers.	Complete
SWMU 193/Soil	Time-critical removal action	February 19, 2002 DOE/OR/07-1999&D2	Removed petroleum-contaminated soils.	Complete
SWMUs 76 and 519/Soil	Time-critical removal action	July 1, 2002 DOE/OR/07-2007&D2	Removed empty sulfuric acid tanks, size reduced for containerization and dispositioned.	Complete
SWMU 19 [C-410-B Hydrogen Fluoride (HF) Neutralization Lagoon], SWMU 40 (C-403) and SWMU 181 (C-218 Firing Range)	Non-time-critical removal action	May 11, 2009 DOE/LX/07-0121&D2/R1	Removal of lead-contaminated soil at the C-218 Firing Range (SWMU 181). Removal of contamination within the respective SWMU boundaries of C-410-B (SWMU 19). Removal of contamination within the respective SWMU boundaries of C-403 (SWMU 40).	SWMU 19 and SWMU 181 are complete. SWMU 40 removal action was not completed as part of the NTCRA, and SWMU 40 will be addressed as part of the C-400 Complex OU final remedial action.
SWMU 27 (Acid Neutralization Tank)	Time Critical Removal Action	September 9, 2016 DOE/LX/07-2406&D2	Removed liquid and sludge to the extent practicable within the acid neutralization tank. Filled the tank with flowable fill.	Fieldwork for SWMU 27 completed in September 2016. The final Removal Action Report was submitted in June 2017 and was approved by EPA and Kentucky in July 2017. Final cleanup decision for this SWMU will be addressed as part of the Soils and Slabs OU.

Operable Unit Summary (Continued)

WAGs/Media	Response Type	ROD/Action Memorandum	Response Description	Status¹
PRE-GDP SHUTDOWN D&D OPERABLE UNIT				
SWMU 478/Infrastructure (C-410)	Non-time-critical removal action	August 3, 2002 DOE/OR/07-2002&D1/R1	Remove process equipment and piping.	Completed December 2013.
SWMU 478/Infrastructure (C-410)	Non-time-critical removal action	November 23, 2009 DOE/LX/07-0273&D2	Addendum to document a change in scope of the removal action to 1) expand the scope of the existing NTCRA to include facility structure demolition to the slabs and disposition of demolition debris and 2) 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.	Fieldwork for C-410/C-420 completed in December 2015. Removal Action Report approved in June 2016.
SWMU 477/Infrastructure (C-340 Metals Plant) and SWMU 137 (C-746-A East End Smelter)	Non-time-critical removal action	May 18, 2010 DOE/LX/07-0290&D2	Decommissioning of the C-340 Metals Plant and C-746-A East End Smelter, which entails the demolition of C-340-A, -B, and -C structures as well as the C-746-A East End Smelter. The slabs and soils underlying these structures will be addressed in future CERCLA response actions.	Fieldwork for C-746-A East End Smelter completed in FY 2010. Removal Action Report approved in November 2011. Fieldwork for C-340 completed in September 2013. Removal Action Report approved in May 2014.
SWMU 480 (C-402 Lime House); SWMU 55 (C-405 Incinerator); and SWMU 464 (C-746-A West End Smelter)	Non-time-critical removal action	December 5, 2005 DOE/OR/07-2237&D2	Removed, characterized, and disposed of building structure and contents.	Complete

AOC = area of concern; BGOU = Burial Grounds Operable Unit; ESD = explanation of significant differences; FY = fiscal year; IRA = interim remedial action; KPDES = Kentucky Pollutant Discharge Elimination System; LUCs = land use controls; N/A = not applicable; NSDD = North-South Diversion Ditch; NTCRA = non-time-critical removal action; PGDP = Paducah Gaseous Diffusion Plant; PCB = polychlorinated biphenyl; RDSI = remedial design/support investigation; RGA = Regional Gravel Aquifer; ROD = Record of Decision; SWMU = solid waste management unit; Tc-99 = technetium-99; TCE = trichloroethene; UCRS = Upper Continental Recharge System; UST = underground storage tank; WAG = waste area group

APPENDIX 2

CERTIFICATION OF LUCIPS

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CERTIFICATION OF LUCIPS

In March 2000, the Federal Facility Agreement (FFA) parties signed the *Memorandum of Agreement for Implementation of a Land Use Control Assurance Plan (LUCAP) for the United States Department of Energy Paducah Gaseous Diffusion Plant*, March 30, 2000. The purpose of this memorandum of agreement (MOA), together with the approved *Land Use Control Assurance Plan for the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*, DOE/OR/07-1799&D2, (LUCAP) is to establish and implement procedures to assure the long-term effectiveness of land use controls being relied upon to protect human health and the environment at certain contaminated portions of the Paducah Gaseous Diffusion Plant (PGDP) that are undergoing remediation pursuant to the *Federal Facility Agreement for the Paducah Gaseous Diffusion Plant*. Subsequent to the finalization of the March 2000 MOA, the U.S. Department of Energy (DOE) Paducah Site developed two unit-specific land use control implementation plans (LUCIPs): one for the North-South Diversion Ditch (NSDD) and one for the interim remedial action at the C-400 Cleaning Building. In addition to the unit-specific LUCIPs, the FFA parties entered into a Record of Decision (ROD) for the Southwest Groundwater Plume that contained land use controls. Per FFA party agreement, a unit-specific LUCIP was not developed subsequent to issuance of the Southwest Groundwater Plume ROD. In July 2020, a memorandum was issued that documented an update to Table B-1 of Appendix B of the LUCAP to include the two unit-specific LUCIPs, along with the Southwest Groundwater Plume ROD.

In accordance with Section 2.9 of the LUCAP, DOE annually certifies that requirements of the *Land Use Control Implementation Plan for the North-South Diversion Ditch at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*, DOE/OR/07-1949&D2/R2, (NSDD LUCIP) and the *Land Use Control Implementation Plan for Interim Remedial Action for the Groundwater Operable Unit for the Volatile Organic Compound Contamination at the C-400 Cleaning Building at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*, DOE/OR/07-2151&D2/R2, (C-400 LUCIP) are being implemented by DOE at PGDP. The NSDD LUCIP was submitted as a stand-alone document, and the C-400 LUCIP was submitted as an appendix (Appendix H) to the *Remedial Design Report, Certified for Construction Design Drawings and Technical Specifications Package, for the Groundwater Operable Unit for the Volatile Organic Compound Contamination at the C-400 Cleaning Building at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*, DOE/LX/07-0005&D2/R1.

There have been no changes in the designated officials identified under the LUCIP/LUCAP. There have been no major or “nonmajor” changes of land use.

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APPENDIX 3

**OPERABLE UNIT SCOPE DESCRIPTIONS AND
KEY PROJECT ASSUMPTIONS**

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OPERABLE UNIT SCOPE DESCRIPTIONS AND KEY DOE PLANNING ASSUMPTIONS FROM LIFE CYCLE BASELINE

INTRODUCTION

Pursuant to Section XVIII of the Federal Facility Agreement (FFA), the following operable unit (OU)-specific descriptions document the FFA Managers' common understanding of the expected scope of work for each of the OUs as well as U.S. Department of Energy's (DOE) key planning assumptions. The FFA Managers acknowledge that both the scope and associated assumptions may change as each project progresses; however, this appendix represents the best understanding, given existing information. The milestone dates associated with executing the scope of work are defined in Appendix 5 (Enforceable Timetables and Deadlines; Planning Dates with Long-Term Targets). The milestone dates are based on the scope and associated assumptions described in the following sections. Schedules are based on Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) documentation and review/comment time frames established in the FFA.

Paducah Gaseous Diffusion Plant (PGDP) ceased operations in May 2013, and leased property was returned to DOE in October 2014. Prior to release, site cleanup activities had been divided as (1) pre-Gaseous Diffusion Plant (GDP) shutdown scope, and (2) post-GDP shutdown scope, and (3) Comprehensive Site OU (CSOU) scope. The pre-shutdown scope was associated with media-specific OUs initiated prior to shutdown of the operating GDP. In October of 2014, the United States Enrichment Corporation (USEC) terminated its lease agreement for operation of the GDP and returned the leased facilities to DOE. Some of these previously leased facilities contain solid waste management units (SWMUs) that had not been readily accessible during USEC operation. Because DOE now has control of the formerly leased GDP facilities, DOE has reassessed site cleanup priorities to identify areas offering the greatest opportunity to address significant sources of environmental media contamination. As a result, in 2016, DOE identified a comprehensive characterization and final response action of the C-400 Building and its adjacent areas, hereafter referred to as the C-400 Complex, as its highest cleanup priority at the site. The C-400 Complex contains numerous SWMUs and is the largest source of off-site trichloroethene (TCE) groundwater contamination. The implementation of C-400 Complex as Paducah DOE's highest cleanup priority has resulted in resequencing other cleanup work at the site to align with the new cleanup priorities and revising time frames projected for implementation. The fiscal year (FY) 2018/FY 2019 Site Management Plan (SMP) also integrated all OUs to support a comprehensive cleanup strategy for PGDP. This FY 2021 SMP provides the latest updates to the cleanup strategy.

Scope and Key DOE Planning Assumptions from Life Cycle Baseline have been established based on the current understanding of site conditions and to achieve compliance with CERCLA, the National Contingency Plan (NCP), and the FFA. The actual scope of any given remedy will be developed with the U.S. Environmental Protection Agency (EPA) and the Commonwealth of Kentucky (KY) in compliance with the CERCLA process and documented in the appropriate decision document, each of which is subject to public participation in accordance with the FFA, CERCLA, and the NCP. Goals have been established for each OU to guide the development of project-specific remedial action objectives (RAOs).

Key DOE assumptions from the 2018 Life Cycle Baseline included in this appendix are for DOE's planning purposes. The 2018 Paducah Life Cycle Baseline integrates and logically sequences site projects to remediate environmental media (including slabs); complete operating missions; deactivate facilities and systems; remove equipment and disposition small structures; decommission and demolish facilities; complete the CSOU; achieve National Priorities De-listing; and turnover the site for future use. The 2018 Life Cycle Baseline was established utilizing DOE constraints in funding and schedule. Changes in funding levels or site conditions are uncertainty or risks that are monitored as part of DOE management of the baseline. If risks or opportunities are realized, they may have an impact on the end date for

completion (FY 2065) of the 2018 Paducah Life Cycle Baseline scope of work. DOE's internal baseline change process will capture any necessary cost or schedule changes as a result of project risk management (scope, schedule, and cost). The milestone dates associated with executing the scope of work listed in Appendix 3 are defined in Appendix 5 (Enforceable Timetables and Deadlines; Planning Dates with Long-Term Targets).

While DOE maintains that the assumptions are reasonable for bounding cost and schedule forecasts based on existing information, regulatory approval of the SMP does not constitute approval of assumptions. In the event there is a conflict between an assumption in this SMP and an OU primary document, the OU primary document shall govern.

GROUNDWATER OPERABLE UNIT

The Groundwater Operable Unit (GWOU) is being implemented in a phased approach consisting of sequenced response actions designed to accomplish the following goals:

- (1) Prevent human exposure to contaminated groundwater;
- (2) Prevent or minimize further migration of contaminant plumes;
- (3) Prevent, reduce, or control contaminant sources contributing to groundwater contamination; and
- (4) Restore the groundwater to its beneficial uses wherever practicable.

A series of actions already have been completed toward meeting these goals, as depicted in Figure 3.1. These previous actions are summarized in Appendix 1 (Actions Taken to Date).

The scope of the GWOU consists of potential sources [e.g., dense nonaqueous-phase liquid (DNAPL) or buried wastes] that are contributing to groundwater contamination and the dissolved-phase groundwater plumes. The dissolved-phase groundwater consists of contaminated groundwater primarily in the Regional Gravel Aquifer (RGA), but also includes limited areas in the Upper Continental Recharge System (UCRS) that typically are associated with source areas. Remedies documented in signed records of decision (RODs) have been selected for the identified C-400 source areas and Southwest Plume source areas to address volatile organic compound (VOC) contamination. The remedy in the Southwest Plume ROD for SWMU 1 has been completed, with long-term monitoring in place. The remaining scope of that ROD related to SWMU 211-A and SWMU 211-B was subject to a remedial design site investigation.

C-400 Interim Remedial Action

The success of the Six-Phase Heating project conducted in 2003 led to a ROD signed in 2005 that required mass removal of TCE source material within the UCRS and RGA using electrical resistance heating (ERH). The scope of the interim remedy for the C-400 source action was limited to accessible areas located around the outside perimeter of the east and southwest portions of the C-400 Building due to on-going USEC operations that occupied the C-400 Building. Implementation of the ERH remedy was designed using a two-phase approach. Phase I was completed in 2010 and focused on selected treatment areas around C-400 (east and southwest areas) where the majority of the TCE was confined to the UCRS; however, an important objective of Phase I also was to evaluate the heating performance of the ERH design in the underlying RGA down to the McNairy Formation. During implementation of Phase I, temperature goals were not attained in the lower RGA in the southwest treatment area, particularly in the lower RGA. Because of the inability of ERH to reach target temperatures in the lower RGA, the FFA parties agreed to divide Phase II into Phase IIa (using ERH to address the UCRS and upper RGA to a depth of 60 ft bgs) and Phase IIb (using a technology to be decided to address the lower RGA). Phase IIa operations were completed successfully in fall of 2014 and consisted of the implementation of ERH in the

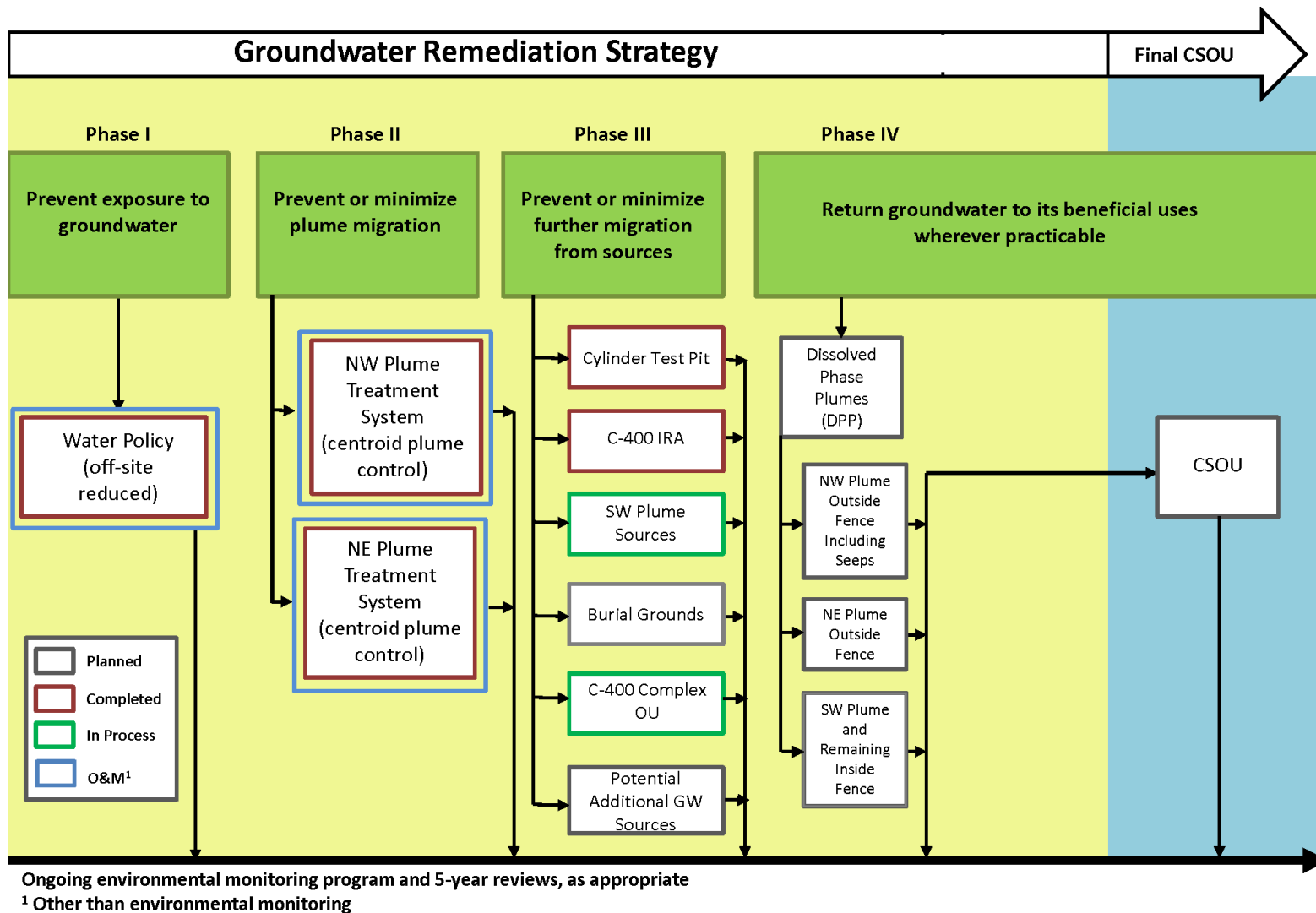


Figure 3.1. Groundwater Remediation Strategy

UCRS and upper RGA in the southeast treatment area. To help evaluate applicable technologies for potential use in the lower RGA during Phase IIB, a Steam-enhanced Extraction (SEE) Treatability Study (TS) was performed in 2015 to obtain data specific to understanding the behavior of steam injected into the RGA under variable injection scenarios. The TS Report for Phase IIB, dated May 2016, demonstrated the technology would be technically implementable in the hydrogeological conditions tested, although several uncertainties remained regarding the full nature and extent of the Phase II source area, particularly whether a portion of the source extends beneath the C-400 Building.

Prior to moving forward with implementation of the interim remedial action, DOE approached EPA and KY and proposed reprioritization of the DOE mission based on the return of the enrichment facilities (including C-400); the need to perform work in a comprehensive manner at the C-400 Complex; and the expected impacts of anticipated future funding limitations across the DOE Complex. In June 2016, DOE provided a written proposal for the entire C-400 Complex that included acceleration of the investigation and cleanup of the C-400 Complex for all sources of contamination associated with and underlying the C-400 Building. This OU also will address the remaining VOC source in the Phase IIB area. On August 8, 2017, the FFA Senior Managers signed a memorandum of agreement (MOA) for the C-400 Complex that proposed the C-400 Complex as a separate OU identified as the C-400 Complex OU. Additionally, the path forward for the C-400 Complex also is documented in the *Memorandum of Agreement for Resolution of Formal Dispute Regarding the Non-concurrence by EPA and KDEP on the DOE Milestone Modification Request for Submittal of the Revised Proposed Plan for the Volatile Organic Compound Contamination at the C-400 Cleaning Building at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*, (DOE/LX/07-2407&D1), September 28, 2017, and *Memorandum of Agreement for Resolution of Formal Disputes on EPA Conditional Concurrence on the Removal Notification for Demolition of the C-400 Cleaning Building in the C-400 Complex Operable Unit at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*, DOE/LX/07-2420&D2 and the *Engineering Evaluation/Cost Analysis for Demolition of the C-400 Cleaning Building in the C-400 Complex Operable Unit at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*, DOE/LX/07-2425&D2, August 1, 2019.

As a result, the prior work performed under the C-400 Interim Remedial Action for Phase I and Phase IIA was documented in the final *Remedial Action Completion Report for the Interim Remedial Action for the Groundwater Operable Unit for the Volatile Organic Compound Contamination at the C-400 Cleaning Building*, completing the remediation work under the 2005 *Record of Decision for Interim Remedial Action for the Groundwater Operable Unit for the Volatile Organic Compound Contamination at the C-400 Cleaning Building at the Paducah Gaseous Diffusion Plant Paducah, Kentucky*, DOE/OR/07-2150&D2/R2.

Southwest Plume Sources Remedial Action

Scope

This project addresses the following three areas in the Southwest Plume: the C-747-C Oil Landfarm (SWMU 1), the areas near the southeast and northeast (SWMU 211) areas of the C-720 Building, and part of the storm sewer between the south side of the C-400 Building and Outfall 008 (SWMU 102). TCE and its breakdown products [*cis*-1,2-dichloroethene (DCE), *trans*-1,2-DCE, and vinyl chloride] and 1,1-DCE are the primary contaminants of concern (COCs) associated with these sources. The remedy in the Southwest Plume ROD for SWMU 1 has been completed, with long-term monitoring and land use controls (LUCs) in place. The remaining scope of the Southwest Plume ROD related to SWMU 211-A and SWMU 211-B was subject to a remedial design site investigation.

During the remedial design site investigation for SWMU 211-A and SWMU 211-B, it was determined that there was a potential of DNAPL in the RGA associated with SWMU 211-B that was directly adjacent to and potentially underneath the C-720 Building, resulting in a conceptual site model that is invalid and making the selected remedial alternatives of the ROD for SWMU 211-B no longer applicable. As a result, the SWMU 211-B remedy will be reevaluated and implemented after the C-720 Building has been removed and the investigation is completed for the C-720 Building Soils and Slabs action. In the interim, the LUCs associated with SWMU 211-B will remain in place until future reevaluation of SWMU 211-B is complete. In accordance with the signed MOA for the C-400 Complex dated August 8, 2017, the remedy for SWMU 211-A will be implemented in FY 2021 (pending resolution on the SWMU 211-A Remedial Action Work Plan).

Evaluation of a final remedial action for non-VOCs COCs associated with direct contact exposure risks will be addressed as part of the Soils OU (see Appendix 4).

Key DOE Planning Assumptions from Life Cycle Baseline

- (1) A remedy will be implemented in source areas [i.e., Oil Land Farm (SWMU 1) and Northeast and Southeast of the C-720 Building (SWMU 211 A & B)].
- (2) The SWMU 1 remedy is soil mixing with interim LUCs. Implementation of this remedy has been completed.
- (3) The SWMU 211-A remedy is *in situ* bioremediation with interim LUCs or long-term monitoring with interim LUCs.
- (4) The SWMU 211-B remedy will be reevaluated and implemented after the C-720 Building has been removed and the investigation is completed for the C-720 Building Soils and Slabs action to address fully any identified sources under the slab.
- (5) No further action (NFA) will be required for SWMU 102 (Plant Storm Sewer).
- (6) The action will fulfill the requirements of the *Memorandum of Agreement for Resolution of Informal Dispute for the Focused Feasibility Study for the Southwest Plume Volatile Organic Compound Sources Oil Landfarm and C-720 Northeast and Southeast Sites) at the Paducah Gaseous Diffusion Plant, Paducah, KY* (DOE/LX/07-0186&D2), May 20, 2010.

Dissolved-Phase Plumes Remedial Action⁴

Scope

This project includes conducting a remedial investigation (RI) [including a baseline risk assessment (BRA)], feasibility study (FS), and selecting a remedy and implementing any necessary response actions for the dissolved-phase groundwater contamination. The RI will evaluate dissolved-phase groundwater contamination, including, but not limited to, the Northwest Plume (SWMU 201), Northeast Plume (SWMU 202), Southwest Plume (SWMU 210), and the groundwater contamination contributing to the Little Bayou Creek seeps. The RI also may determine whether any follow-up actions or modifications to response actions for the GWOU are necessary and would be evaluated further in a FS. The primary RAO

⁴ The scope and planning assumptions are consistent with the March 24, 2008, DOE/OR/07-2180&D2, and May 20, 2010, DOE/LX/07-0186&D2, SW Plume Dispute Resolutions.

for this project is based on the resolution of dispute for the Southwest Plume dated March 24, 2008, as follows:

- Return contaminated groundwaters to their beneficial use(s) and attain chemical-specific applicable or relevant and appropriate requirements [e.g., maximum contaminant levels (MCLs)] and/or risk-based concentrations for all identified COCs throughout the plume (or at the edge of the waste management area depending on whether the waste source is removed), consistent with CERCLA, the NCP (including the Preamble), and any pertinent EPA guidance.

DOE will develop a Plant Industrial Area Vapor Intrusion Preliminary Risk Assessment Work Plan and Report to focus on PGDP buildings located over the groundwater plumes, consistent with EPA vapor intrusion guidance, with input from EPA and Kentucky Department for Environmental Protection (KDEP) utilizing a project team developed from the technical working groups established to evaluate and make recommendations to FFA Managers on programmatic issues at the PGDP. Work plan development began in FY 2019 and was completed in FY 2020. The work plan identifies the information to be obtained and decision criteria for responding to the question of whether vapor intrusion from volatile organic compounds in soils and groundwater poses a potential threat to human health in buildings located over these areas at the Paducah Site and if human exposure to vapor intrusion is under control. Upon completion of the assessment, a Plant Industrial Area Vapor Intrusion Preliminary Risk Assessment Report will be issued by DOE (scheduled in FY 2021). The Work Plan and Report will be FFA Secondary Documents subject to regulatory review and concurrence, and DOE written responses to comments, consistent with FFA Section XX, Review/Comment on Draft/Final Documents. The report will specify whether any additional actions are necessary to satisfy the question of potential threat to human health from vapor intrusion and/or to bring human exposure to vapor intrusion under control. Additional FFA actions may include Remedial Investigation, Removal Actions, and early (remedial) actions. EPA and KY reserve the right to request Additional Work (FFA Section XIX) in the absence of either party's concurrence on the Work Plan or Report.

Because plume conditions are dynamic and will change over the next several decades, the Dissolved Phase Operable Unit will include a data quality objective to address the site-wide vapor intrusion pathway for the site. Prior to the Dissolved Phase Operable Unit, a data quality objective to address vapor intrusion will be included in other operable units' project RI scoping and subsequent investigations and decision-making, as appropriate.

Additionally, DOE has developed a sitewide groundwater strategy in collaboration with EPA and KY, that identifies both short- and long-term tasks, including additional sampling, to help refine the PGDP groundwater conceptual site model to address conceptual site model uncertainties and support forthcoming five-year reviews of groundwater actions. Activities include colloidal borescope studies, manual water-level measurements, and continuous water-level measurements using pressure transducers. DOE plans to continue with quarterly Groundwater Modeling Working Group meetings that include EPA and KY, to discuss the results of ongoing activities and the planning for other near- and long-term sitewide groundwater strategy activities.

Key DOE Planning Assumptions from Life Cycle Baseline

The following elements summarize DOE's key planning assumptions and are illustrated in Figure 3.2.

- (1) TCE and Tc-99 are expected to be the primary COCs that will drive the remediation approach.
- (2) Continue operations of the Northwest Plume and the Northeast Plume pump-and-treat systems in accordance with the completed optimizations.

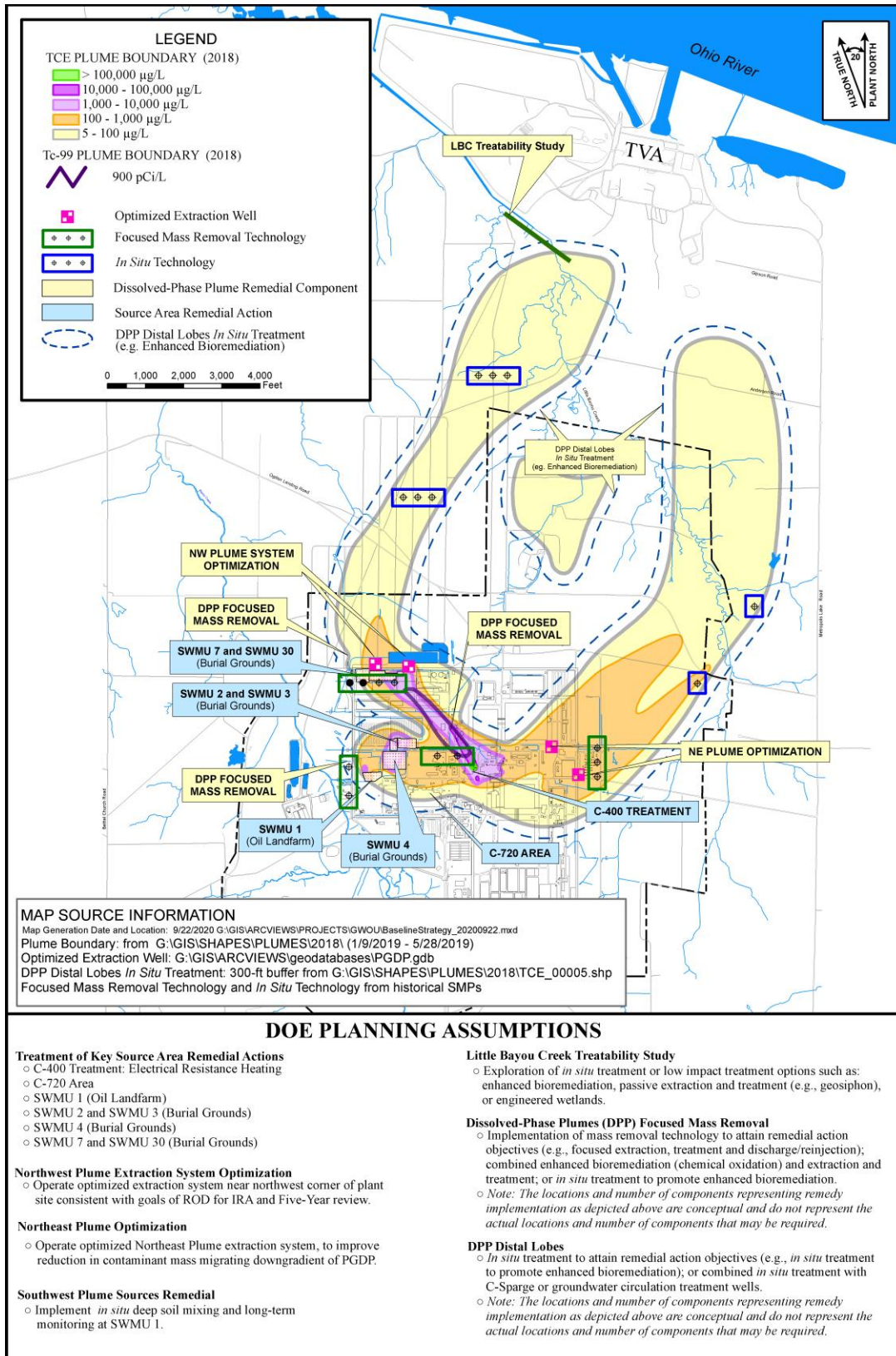


Figure 3.2. GWOU Baseline Strategy

- (3) Conduct a technology demonstration/treatability study at Little Bayou Creek seeps to address the TCE concentrations in surface water contamination resulting from groundwater discharge. The treatability study may include testing technologies that will have broader application to other areas of the dissolved-phase plumes.
- (4) Data collected from the Northwest Plume extraction system optimization; the Northeast Plume extraction system optimization; the TS at the Little Bayou Creek seeps; TCE degradation study; and the groundwater flow/transport model will be used to support the RI/FS process and will be documented accordingly.
- (5) The remedial action for the dissolved-phase plumes will include the following: (a) focused mass removal technology to address “high” mass residual volatile organic compounds (VOCs) and Tc-99 in the RGA near source areas in the plant vicinity; (b) operation of groundwater extraction system(s) until they meet shut-down criteria established in the final dissolved-phase plume ROD; and (c) *in situ* treatment (e.g., enhanced bioremediation or alternative technology) for distal lobes of dissolved-phase plumes.
- (6) The extent of dissolved-phase plume groundwater contamination is expected to be limited to those areas already defined, consisting of the Northeast Plume, Northwest Plume, and Southwest Plume.
- (7) A single RI/FS Work Plan will be developed, encompassing all components of the Dissolved-Phase Plume remedial action; however, the remedial investigations may be conducted separately, and the results may be reported in three separate RI Reports—(1) Northwest Plume Outside Fence Including Seeps, (2) Northeast Plume Outside Fence, and (3) Southwest Plume and Remaining Inside Fence.
- (8) In addition to the development and submittal of three separate RI Reports, three separate Feasibility Studies, Proposed Plans, RODs, Remedial Design Work Plans, Remedial Design Reports, Remedial Action Work Plans, and Remedial Action Completion Reports also may be developed and submitted for each subproject—(1) Northwest Plume Outside Fence Including Seeps, (2) Northeast Plume Outside Fence, and (3) Southwest Plume and Remaining Inside Fence.
- (9) Investigation and remediation of the seep areas along Little Bayou Creek will be addressed as part of the Dissolved-Phase Plume remedial action.

Potential Additional Groundwater Sources

Scope

This project consists of potential sources (e.g., DNAPL) that are contributing to groundwater contamination and the dissolved-phase groundwater plumes under a building structure or newly identified sources not addressed under the other GWOU projects. The project scope includes the management, planning, assessments, CERCLA documents, remedial investigations, final remedial actions per an approved ROD, and preparation of required completion documentation.

This project is being reserved for other sources to groundwater contamination that may be identified in the future similar to the area south of the C-400 Complex that is planned to be evaluated as part of the C-400 RI/FS fieldwork.

Key DOE Planning Assumptions from Life Cycle Baseline

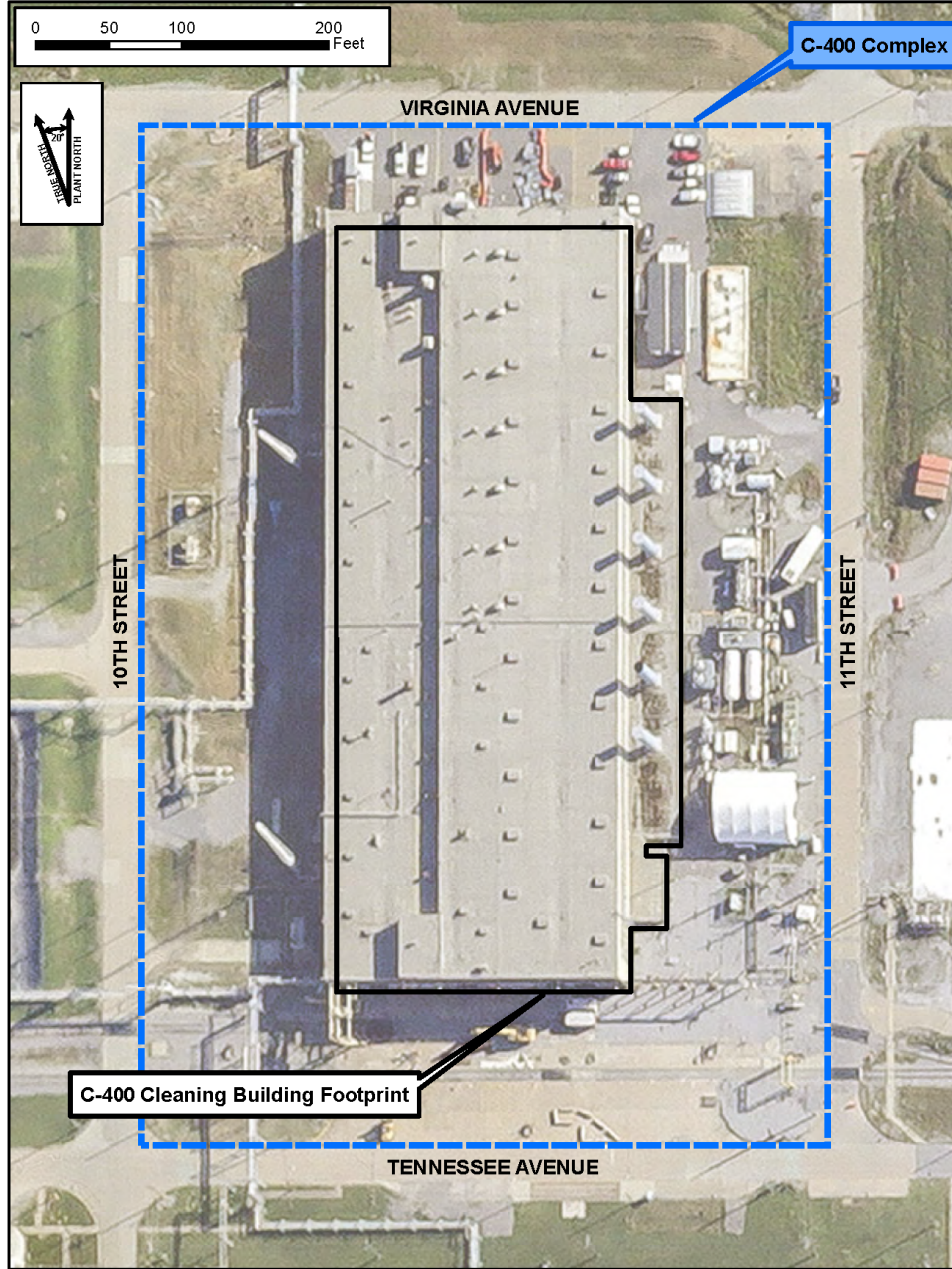
- (1) A site evaluation (SE) will be conducted to determine if additional unknown sources to groundwater contamination are present based on historical and current groundwater data, process knowledge, interviews, and other documentation that suggest a release to groundwater has occurred.
- (2) Conduct an RI and FS (including fieldwork) following completion of the SE for identified sources.
- (3) Complete the necessary CERCLA documents supporting remedy selection (e.g., Proposed Plan, Record of Decision) and remedial design.
- (4) Implementation of the final remedial action for the identified sources, which are planned for VOCs, radionuclides, and polychlorinated biphenyls (PCBs).

C-400 COMPLEX OPERABLE UNIT

Scope

This project is intended to evaluate fully and take the necessary actions to address all environmental contamination in order to achieve a final remedial action for the entire C-400 Complex as shown in Figure 3.3. This scope is defined to include building demolition, a RI/FS for the entire C-400 Complex, and final remedial action that includes soils, groundwater sources, and slabs. The C-400 Complex action will address all sources of contamination, including, but not limited to, principal threat waste (PTW) (e.g., TCE DNAPL and high concentration TCE contamination). There are 22 SWMUs located within the boundaries of the C-400 Complex OU. Five of the 22 SWMUs (349, 350, 351, 352, and 353) are DMSAs that were under the sole oversight authority of Kentucky pursuant to a DOE-KDEP Agreed Order (October 2003) and excluded from cleanup under the FFA pursuant to Section IV.F of the FFA. Ten of the SWMUs (48, 49, 50, 51, 52, 53, 54, 383, 384, and 537) have been designated as NFA and are listed in the No Further Action section of Appendix 4. As a result, only seven of the 22 SWMUs (11, 40, 47, 98, 203, 480, and 533) located within the boundaries of the C-400 Complex OU will require further CERCLA evaluation under the FFA. These seven SWMUs are listed in the C-400 Complex OU section of Appendix 4. The C-400 Complex action has been prioritized in the cleanup schedule. The following is the scope.

- CERCLA Final Remedial Action consists of the following:
 - Conduct a combined Remedial Investigation/Feasibility Study (RI/FS) for the C-400 Complex area that includes an investigation of all remaining building structure(s) (e.g., slab and subsurface structures) and releases of any hazardous substances to soils and groundwater associated with the C-400 Building and C-400 Complex area operations (including, but not limited to, TCE DNAPL and high concentration TCE contamination areas considered PTW).
 - RI characterization to define the full nature and extent of all contamination from the surface down through the RGA and to include the upper McNairy.
 - Remedy selection (proposed plan and ROD) to document a final remedial action(s) for all source areas and COCs requiring remediation for the entire C-400 Complex.
 - Post-ROD documents (e.g., remedial design report, remedial action work plan) and implementation of a final remedial action(s) as specified in the ROD.



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10/31/2018

Source: Remedial Investigation/Feasibility Study Work Plan for the C-400 Complex Operable Unit at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky, DOE/LX/07-2433&D2/R1

Figure 3.3. C-400 Complex—Scope of Final Action

BURIAL GROUNDS OPERABLE UNIT

In order to facilitate the development of subsequent documents, the FFA parties have agreed to group the Burial Grounds OU (BGOU) SWMUs into more manageable remedial action subprojects.

The BGOU will employ the CERCLA remedial process to accomplish the following goals (based on February 10, 2012, BGOU dispute resolution):

- Contribute to protection of groundwater by eliminating, reducing, or controlling sources of groundwater contamination;
- Prevent exposure to waste and contaminated soils that present an unacceptable risk from direct contact; and
- Treat or remove PTW wherever practicable, consistent with 40 *CFR* § 300.430(a)(1)(iii)(A).

The following are the SWMU-specific RAOs for SWMUs 5 and 6.

- Contribute to the protection of groundwater by eliminating, reducing, or controlling sources of groundwater contamination that will result in an exceedance of the MCL or risk-based concentration for residential use of groundwater in the absence of an MCL in RGA groundwater.
- Prevent exposure to waste or waste-related contaminated soils that exceed target cumulative excess lifetime cancer risks (ELCRs) and cumulative noncancer hazard indices (HIs) for the future industrial and future outdoor worker receptors. The acceptable cumulative risk levels for this RAO are defined as follows:
 - Surface Soil: cumulative ELCR < 1E-05 and cumulative HI ≤ 1 for a future industrial worker
 - Subsurface Soil: cumulative ELCR < 1E-04 and cumulative HI ≤ 1 for an future outdoor worker

The following are the SWMU-specific RAOs for SWMUs 2, 3, 7, and 30.

- Contribute to the protection of groundwater by eliminating, reducing, or controlling sources of groundwater contamination that could result in an exceedance in RGA groundwater of the MCL (or risk-based concentration for residential use of groundwater in the absence of an MCL).
- Prevent exposure to waste that exceeds target cumulative ELCRs and cumulative noncancer HIs for the future excavation worker receptor. The acceptable cumulative risk levels for this RAO are defined as follows:
 - Waste: cumulative ELCR < 1E-05 and cumulative HI ≤ 1 for a future excavation worker [considering a five-year exposure based upon the outdoor worker scenario in the 2013 Risk Methods Document]
- Prevent exposure to contaminated soils that exceed target cumulative ELCRs and cumulative noncancer HIs for the future industrial and future excavation worker receptors. The acceptable cumulative risk levels for this RAO are defined as follows:
 - Surface Soil: cumulative ELCR < 1E-05 and cumulative HI ≤ 1 for a future industrial worker [considering default exposures in the 2013 Risk Methods Document]
 - Surface and Subsurface Soil: cumulative ELCR < 1E-05 and cumulative HI ≤ 1 for a future excavation worker [considering a five-year exposure based on the outdoor worker scenario in the 2013 Risk Methods Document]
- Treat or remove PTW wherever practicable, consistent with 40 § *CFR* 300.430 (a)(1)(iii)(A).

The SWMU-specific RAOs for SWMU 4 that have been included in the FS are defined as follows:

- Contribute to the protection of groundwater by eliminating, reducing, or controlling sources of groundwater contamination that will result in an exceedance in RGA groundwater of the MCL (or risk-based concentration for residential use of groundwater in the absence of an MCL).
- Prevent exposure to waste that exceeds target cumulative ELCRs and cumulative non-cancer HIs for the future excavation worker receptor. The acceptable cumulative risk levels for this RAO are defined as follows:
 - Waste: Cumulative ELCR < 1E-05 and cumulative HI ≤ 1 for a future excavation.
- Prevent exposure to contaminated soils that exceed target cumulative ELCRs and cumulative non-cancer HIs for the current and future industrial worker and future excavation worker receptors. The acceptable cumulative risk levels for this RAO are defined as follows:
 - Surface Soil: Cumulative ELCR < 1E-05 and cumulative HI ≤ 1 for a current and future industrial worker (considering default exposures in the Risk Methods Document).
 - Surface and Subsurface Soil: Cumulative ELCR < 1E-05 and cumulative HI ≤ 1 for a future excavation worker.
- Treat or remove PTW wherever practicable, consistent with 40 *CFR* § 300.430(a)(iii)(A).

BGOU Remedial (10 SWMUs)

Scope

The BGOU consists of the following 10 SWMUs.

- C-749: Uranium Burial Ground (SWMU 2)
- C-404: Low-Level Radioactive Waste Burial Ground (SWMU 3)
- C-747/748-B: Contaminated Burial Ground (SWMU 4)
- C-746-F: Burial Ground (SWMU 5)
- C-747-B: Burial Area (SWMU 6)
- C-747-A: Burial Ground and Burn Area (SWMUs 7 and 30)
- Residential/Inert Borrow Area/Old North-South Diversion Ditch (NSDD) Disposal Trench (SWMU 145)
- C-746-S: Residential Landfill (SWMU 9)⁵
- C-746-T: Inert Landfill (SWMU 10)⁶

⁵ Previously closed under solid waste regulations (C-746-T closed on 2/9/95; C-746-S closed on 8/4/95).

Based on review of existing disposal records and sample data, the burial grounds contain various types of materials such as sanitary and/or hazardous waste; however, the known contents of each individual burial ground are specific to the material that was disposed of within the burial ground and are described in the specific CERCLA documents for each burial ground. Some of the burial grounds contain PTW that has released or may in the future release to soils and groundwater. Surface soil within BGOU SWMUs is being addressed by BGOU rather than Soils OU.

This burial grounds project is grouped as follows: (1) SWMUs 5 and 6; (2) SWMUs 2, 3, 7, and 30; (3) SWMU 4; and (4) SWMUs 9, 10, and 145. To facilitate phased implementation of remedial action, SWMUs 2, 3, 7, and 30 will be divided further, and separate CERCLA documents (i.e., proposed plan, ROD, remedial design work plan, remedial design report, remedial action work plan, and remedial action completion report) will be developed for SWMUs 2 and 3 and SWMUs 7 and 30.

Key DOE Planning Assumptions from Life Cycle Baseline

- (1) Based on DOE's recent reprioritization and proposal to focus near-term cleanup efforts on the C-400 Complex, finalization of the decision documents and implementation of any necessary CERCLA response actions for the BGOU have been resequenced to an out-year activity. The resequencing provides for any excavation activities (if that alternative is selected) to coincide with availability of a potential on-site waste disposal facility (OSWDF). The resequencing also assumes the OSWDF alternative would be identified and selected as the preferred alternative under the waste disposal alternatives (WDA) project.
- (2) A supplemental RI and the associated RI Report Addendum will precede the SWMUs 9, 10, and 145 FS.
- (3) SWMU 2, SWMU 3, SWMU 4, and SWMU 7 contain PTW.
- (4) Soil cover (18-inch) is expected to be included in the remedy selected for SWMU 145.
- (5) SWMUs 5 and 6 are expected to implement a Kentucky Subtitle D cap if containment is selected as the final remedy.
- (6) SWMUs 7 and 30 are expected to implement a Kentucky Subtitle D cap if containment is selected as the final remedy.
- (7) SWMUs 9 and 10 will be evaluated as part of the CERCLA process. Currently only limited actions (e.g., continue current solid waste landfill closure activities) are assumed to be required in the baseline for SWMUs 9 and 10.
- (8) Post-closure monitoring data are assumed to substantiate that capping remedies will provide long-term effectiveness, and supplemental remedial actions will not be required.
- (9) A groundwater monitoring system at each SWMU (e.g., upgradient and downgradient) will be employed to provide indication of future unanticipated releases and collect data on the effectiveness of the caps and *in situ* actions.

Additional Burial Grounds

Scope

This project includes the remaining burial grounds, as identified in Appendix 4 under Additional Burial Grounds. Currently there are two units identified: SWMU 472 and SWMU 520. The project scope includes the management, planning, assessments, CERCLA documents, RIs, final remedial actions per an approved ROD, and preparation of required completion documentation.

Key DOE Planning Assumptions from Life Cycle Baseline

- (1) Based on DOE's recent reprioritization and proposal to focus near-term cleanup efforts on the C-400 Complex, finalization of the decision documents and implementation of any necessary CERCLA response actions for the BGOU have been resequenced to an out-year activity. The resequencing provides for any excavation activities (if that alternative is selected) to coincide with availability of a potential OSWDF. The resequencing also assumes the OSWDF alternative would be identified and selected as the preferred alternative under the WDA project.
- (2) Conduct an RI and FS (including fieldwork) for SWMU 472 and SWMU 520.
- (3) Complete the necessary CERCLA documents supporting remedy selection (e.g., Proposed Plan, ROD) and remedial design.
- (4) It is assumed that these SWMUs are not contributing to groundwater contamination.
- (5) The assumed remedial action for these SWMUs is excavation and disposal in a potential OSWDF (if selected).

SURFACE WATER OPERABLE UNIT

The Surface Water Operable Unit (SWOU) is being implemented in a phased approach consisting of a series of sequenced remedial and removal actions designed to accomplish the following goals:

- (1) Prevent human exposure to contaminated sediments presenting an unacceptable risk to on-site workers and off-site recreational users of surface water;
- (2) Prevent or minimize further off-site migration of contaminated sediments and surface water;
- (3) Reduce, control, or minimize contaminant sources contributing to sediment and surface water contamination; and
- (4) Evaluate and select long-term solutions for off-site surface water contamination to protect recreational users and ecological receptors.

A series of actions already have been completed toward meeting these goals, as depicted in Figure 3.4. The previous actions are summarized in Appendix 1 (Actions Taken to Date).

The SWOU consists of the specific SWMUs and areas of concern (AOCs) identified in Appendix 4 (Source Area by Operable Unit), and includes the soils/sediments and storm water corresponding with the points of discharge from facility piping to ditches, outfalls and Bayou and Little Bayou Creeks. Metals, radionuclides, and PCBs are the likely contaminants of interest for the SWOU.

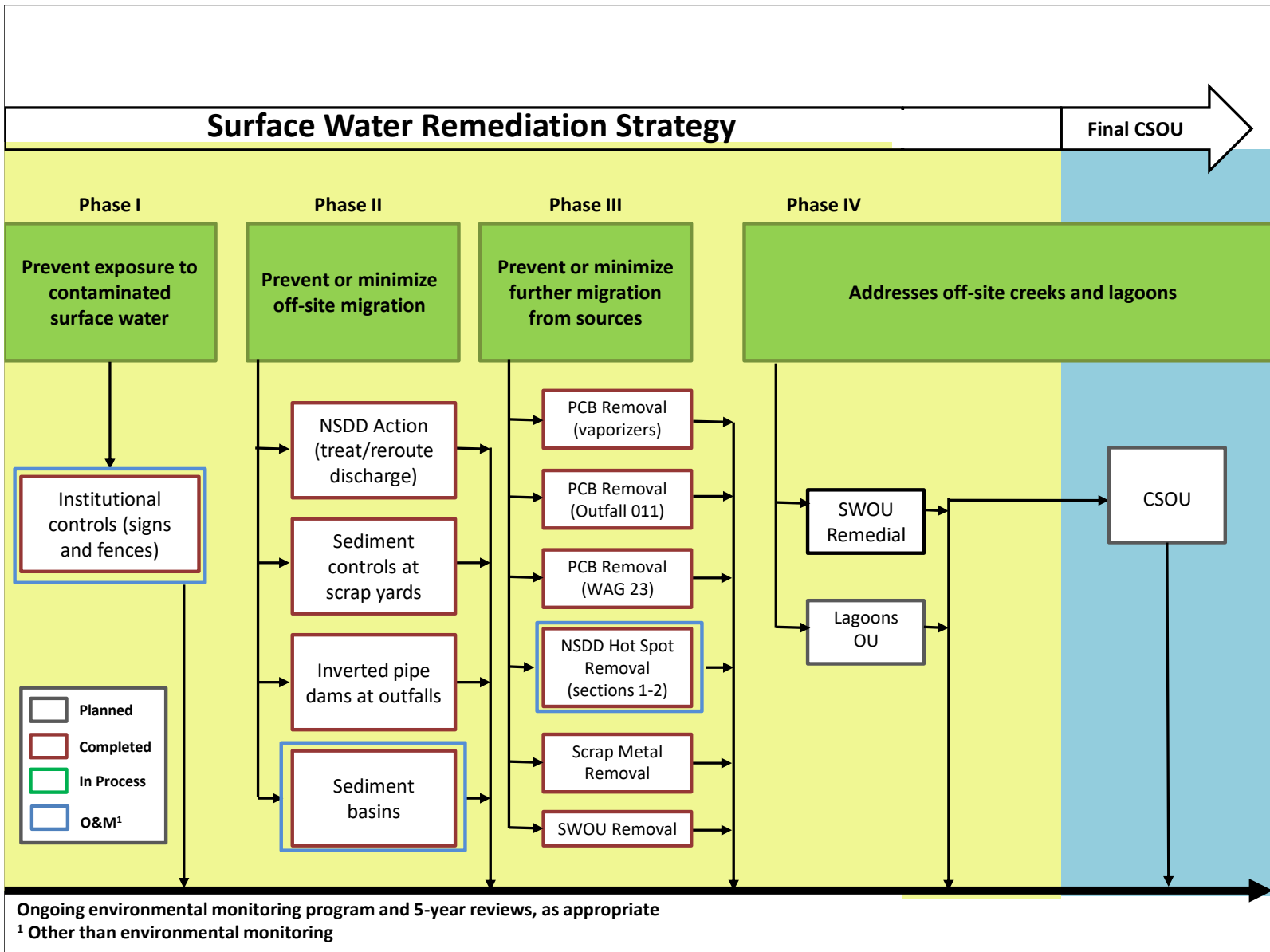


Figure 3.4. Surface Water Remediation Strategy

Surface Water Remedial Action

Scope

The scope of this project includes an RI and FS remedy selection and implementation of any necessary response actions for on- and off-site areas, including Bayou Creek; Little Bayou Creek; Outfalls 001, 002, 008, 009, 010, 011, 012, 013, 015, and 016 and associated internal ditches; and Sections 3, 4, and 5 of the North-South Diversion Ditch; as well as scoping for and completion of a baseline ecological risk assessment for PGDP. This OU also will address the five outfalls formerly identified in the Lagoons and Ditches OU (Outfalls 005, 006, 017, 019 and 020). The Surface Water Remedial Action includes evaluation of all areas with ditches from PGDP that drain to Bayou and Little Bayou Creeks to the Ohio River, including those areas previously addressed in the SWOU Removal Action. The timing and sequence of any remedial actions will require coordination with ongoing site activities, including Depleted Uranium Hexafluoride (DUF₆) operations to prevent recontamination and consideration of ongoing permitted discharges. The SWOU will address contaminated media (e.g., surface water and sediments) associated with ditches and creeks as part of the remedial action consistent with the NCP and EPA guidance. A final remedial action decision for the lagoons will be addressed as part of the Lagoons OU.

Key DOE Planning Assumptions from Life Cycle Baseline

- (1) Based on DOE's recent reprioritization and proposal to focus near-term cleanup efforts on the C-400 Complex, finalization of the decision documents and implementation of any necessary CERCLA response actions for the SWOU have been resequenced to an out-year activity. The resequencing provides for any excavation activities (if that alternative is selected) to coincide with availability of a potential OSWDF. The resequencing also assumes the OSWDF alternative would be identified and selected as the preferred alternative under the WDA project.
- (2) RI characterization will be conducted in a phased approach, with uranium-238, cesium-137, and Total PCBs being used as indicator parameters during the first phase, and will be followed by a more comprehensive list of analyte sampling (i.e., PCBs, metals, radionuclides, and volatile organic analytes during the second phase to be used for risk assessment).
- (3) DOE's current baseline and budget assume that the use of existing data will be sufficient for final characterization; however, EPA and Kentucky have raised concerns, based upon the extended time frame for implementation of the RI and FS and the potential for changing site conditions as a result of plant activities, that the collection of additional samples is warranted. The FFA parties agree to revisit the scope of characterizing the internal ditches prior to implementation of the RI/FS Work Plan.⁶
- (4) Little Bayou Creek and Bayou Creek will be investigated to the confluence with the Ohio River.
- (5) Biota sampling will be required to support an ecological risk assessment for off-site portions of the SWOU.
- (6) The assumed remedial action is excavation of contaminated sediments in outfalls and creeks and will involve coordination with the U.S. Army Corps of Engineers. No operation and maintenance (O&M) period is assumed to be needed to achieve RAOs.

⁶ Existing information for internal ditches will be used for characterization. Additional sampling will focus primarily on areas between the KPDES compliance points and drainage into Little Bayou Creek and Bayou Creek.

- (7) The RI/FS Work Plan is comprehensive, encompassing all components of the SWOU remedial action; however, the document is divided by watershed (Little Bayou Creek and Bayou Creek) to support independent execution of sampling and documentation of results by watershed.
- (8) A sitewide ecological risk assessment will be completed for both watersheds and included within the RI/FS Report.
- (9) Individual FSs, Proposed Plans, RODs, Remedial Design Work Plans, Remedial Design Reports, Remedial Action Work Plans, and Remedial Action Completion Reports may be developed and submitted per watershed.
- (10) Investigation and remediation of the seep areas along Little Bayou Creek will be addressed as part of the GWOU.

LAGOONS OPERABLE UNIT

Scope

This OU consists of the specific SWMUs and AOCs identified in Appendix 4 (Source Area by OU). It includes both process and water treatment system lagoons and associated soils/sediments. This OU includes the lagoons identified in Appendix 4 under Lagoons OU. Currently, six lagoons are identified (SWMU 17, SWMU 18, SWMU 21, SWMU 22, SWMU 23, and SWMU 171). This OU will address the primary inputs to the outfalls to ensure no risk pathway will continue to contribute contamination to the PGDP outfalls once the remedial actions are completed. For example, the C-613 Sedimentation Basin will be addressed to the extent that no recontamination pathway exists. The project scope includes the management, planning, assessments, CERCLA documents, RIs, final remedial actions per an approved ROD, and preparation of required completion documentation.

Key DOE Planning Assumptions from Life Cycle Baseline

- (1) Based on DOE's recent reprioritization and proposal to focus near-term cleanup efforts on the C-400 Complex, finalization of the decision documents and implementation of any necessary CERCLA response actions for the Lagoons OU have been resequenced to an out-year activity. The resequencing provides for any excavation activities (if that alternative is selected) to coincide with availability of a potential OSWDF. The resequencing also assumes the OSWDF alternative would be identified and selected as the preferred alternative under the WDA project.
- (2) Radionuclides, metals, and PCBs are the primary COCs. Other COCs will be considered on a case-by-case basis.
- (3) RI characterization will be conducted for each lagoon to determine the individual contaminants or radionuclides of potential concern (COPCs).
- (4) The assumed remedial action is excavation of contaminated sediments in the lagoons and disposed in a potential OSWDF (if selected). The areas may be backfilled with clean soil or graded for natural sloping and runoff, depending on the verification sampling results. No O&M period is assumed to be needed to achieve RAOs.
- (5) The RI/FS Work Plan is comprehensive, encompassing all components of the remedial action.

- (6) The RI data will support the sitewide ecological risk assessment conducted as part of the SWOU Remedial Action.
- (7) Complete the necessary CERCLA documents supporting remedy selection (e.g., Proposed Plan, ROD) and remedial design.
- (8) The OU may be divided further into OUs for the C-616-E and C-616-F Lagoons and the C-611 Water Treatment Plant Lagoons due to the timing of shutdown for the two systems being independent of each other. The outfalls formerly under this OU have been moved and will be addressed as part of the SWOU Remedial Action.

SOILS OPERABLE UNIT

The Soils OU has been implemented in a phased approach consisting of remedial and removal actions to accomplish the following goals:

- Prevent human exposure to contamination presenting an unacceptable risk;
- Prevent or minimize further off-site migration; and
- Reduce, control, or minimize contaminated soil hot spots contributing to off-site contamination.

The original scope of the Soils OU consisted of 86 SWMUs/AOCs; three inactive facilities (SWMUs 181, SWMU 40, and SWMU 19); and the soil/rubble areas that have been identified to date. The scope of the removal action for two of the three inactive facilities has been completed, except excavation of contaminated soil at the C-403 Neutralization Tank (SWMU 40). SWMU 40 will be addressed as part of the C-400 OU Complex. The scope for the soil/rubble areas also has been completed. During the development of the RI/FS Work Plan/Report, it was determined that only 63 of the 86 SWMUs/AOCs included within the original scope could be addressed under this OU, based upon accessibility. Those SWMUs/AOCs identified as inaccessible will be addressed as part of the Soils and Slabs OU scope.

The Soils OU scope focuses on plant surface soils (ground surface to 10 ft bgs and 16 ft bgs in the vicinity of pipelines). Sequencing of the work will be determined based on OU-specific circumstances, as mutually agreed by the FFA parties.

A series of Soils OU actions has been completed to date (See Figure 3.5). These previous actions are summarized in Appendix 1 (Actions Taken to Date).

Soils OU Remedial Action

Scope

The scope of this project includes an RI and FS remedy selection, and implementation of any necessary response actions for the 63 SWMUs/AOCs listed in Appendix 4. Sites are included in this OU based on the expectation that they primarily pose a direct contact threat to on-site industrial workers and likely are not a migration threat to groundwater or surface water. The project has incorporated results from previous actions and sitewide evaluations/surveys. Results of the Soils OU RI will be used in scoping for and completion of the baseline ecological risk assessment conducted under the SWOU.

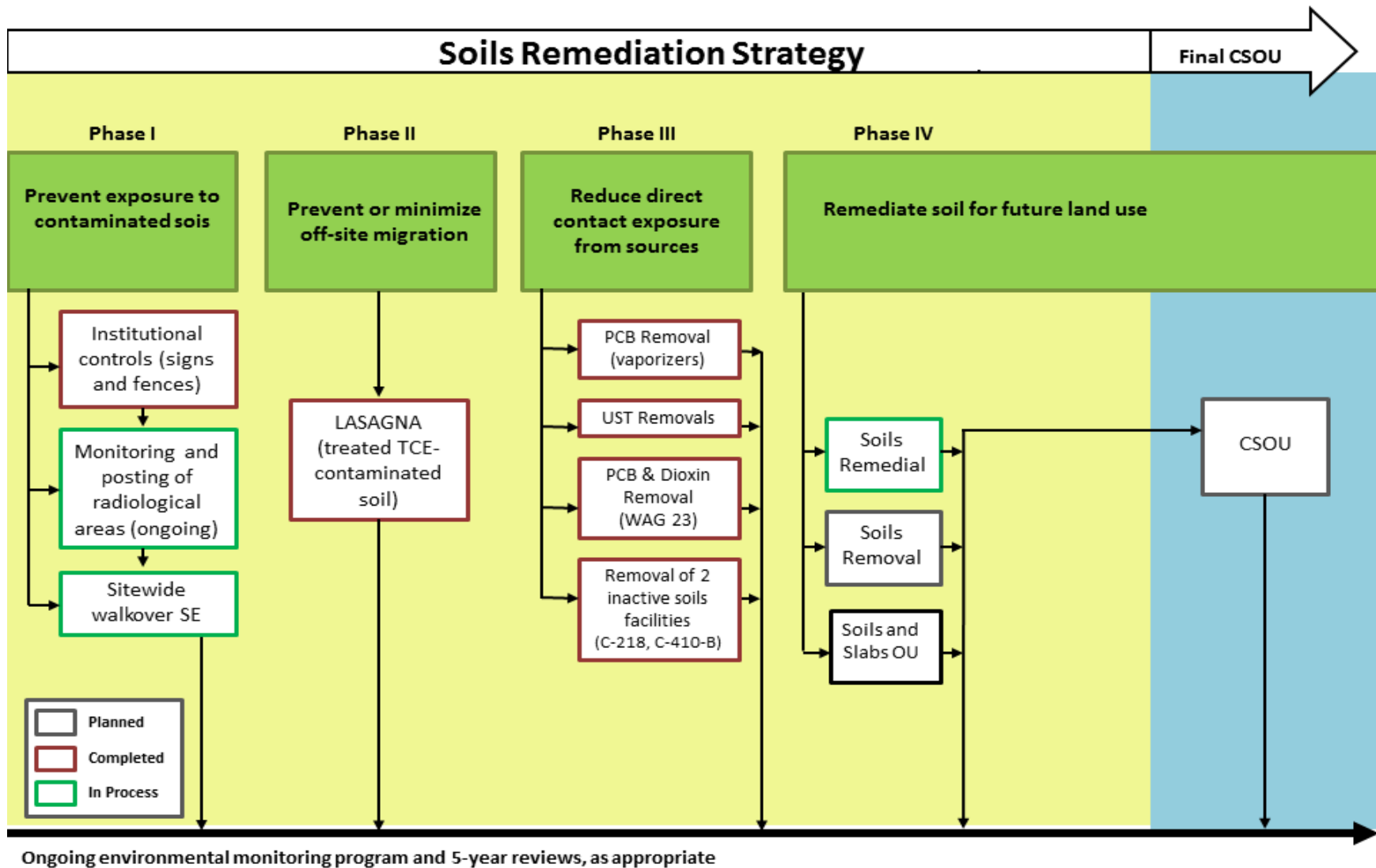


Figure 3.5. Soils Remediation Strategy

Key DOE Planning Assumptions from Life Cycle Baseline

- (1) Based on DOE's recent reprioritization and proposal to focus near-term cleanup efforts on the C-400 Complex, finalization of the decision documents and implementation of any necessary CERCLA response actions for the Soils OU have been resequenced to an out-year activity. The resequencing provides for any excavation activities (if that alternative is selected) to coincide with availability of a potential OSWDF. The resequencing also assumes the OSWDF alternative would be identified and selected as the preferred alternative under the WDA project.
- (2) SWMU 27 was sampled as part of Soils RI. Based upon the sampling results, the contents of the tank were removed to the extent practicable and disposed of in accordance with the approved Time-Critical Removal Notification. A remedial decision for SWMU 27 will be selected as part of the Soils and Slabs OU.
- (3) SWMUs requiring action will be evaluated in multiple FSs that will focus on the following likely response actions: no action, institutional controls, and excavation. Individual Proposed Plans, RODs, Remedial Design Work Plans, Remedial Design Reports, Remedial Action Work Plans, and Remedial Action Completion Reports may be developed and submitted per grouping. It is currently anticipated that the Soils Remedial Action may be divided into two groupings based upon investigation results. Once the RI data are evaluated, the proposed two groupings may be combined or divided further.
- (4) Targeted excavation to a depth of 10 ft below ground surface is the assumed remedy with the majority of the waste being placed in a potential OSWDF (if selected).

Soils OU Removal Action

Scope

This project is contingent upon new sampling results of the RI or newly identified release information for the Soils OU Remedial Action. Scope will include addressing any of the Soils OU SWMUs/AOCs that warrant a removal action. SWMU 27 was the only soil SWMU/AOC that had been identified that required removal action. The following assumptions will remain for project planning purposes should additional soil removal actions be required in the future.

Key DOE Planning Assumptions from Life Cycle Baseline

- (1) A single engineering evaluation/cost analysis and Action Memorandum will be developed and submitted for those SWMUs requiring removal action.
- (2) Separate Removal Action Reports may be developed.
- (3) A time-critical removal action is not warranted.

SOILS AND SLABS OPERABLE UNIT

Scope

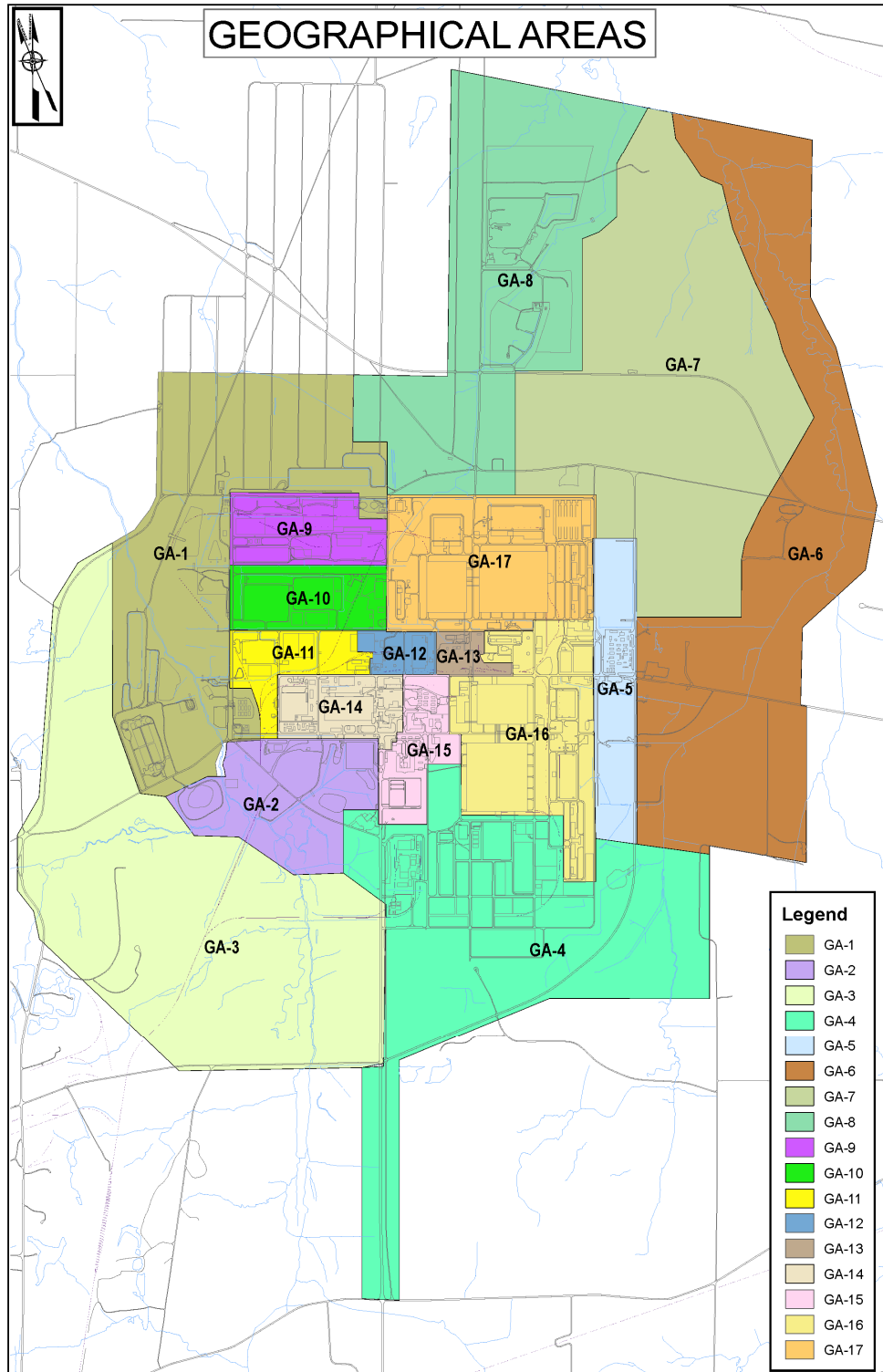
This OU includes the units identified in Appendix 4 Soils and Slabs OU. This OU also includes soil units that were determined to be inaccessible during development of the Soils OU RI/FS Work Plan/Report. Other units have been included in this OU for slabs and underlying soils for demolished facilities. The

project scope includes the management, planning, assessments, CERCLA documents, RIs, final remedial actions per an approved ROD, and preparation of required completion closure documentation. Each unit in this OU will be evaluated through the CERCLA process. This OU will be segregated into multiple subprojects. The combination and number of units within each will be defined prior to implementation to take advantage of opportunities that may arise to address a limited subset of units.

For planning purposes, the property under control of DOE has been divided into 17 geographical areas (GAs) to assist in the focus of long-term planning efforts for DOE property (See Figure 3.6). GAs are artificial boundaries established for the purpose of planning and evaluating areas for DOE property transfer consistent with 120(h) of CERCLA, deactivation and decommissioning, and remediation integration. No facilities or SWMUs/AOCs are located completely within GA 7. GA 6 does not contain any facilities and GA 8 includes a minimal number of facilities associated with permitted landfill operations. Figure 3.6 also includes five sites that have been considered for a potential on-site waste disposal facility (Site 1, 5A, 3A, 9, 11). These have been included for reference purposes only. For planning purposes, the Soils and Slabs OU is using these geographical divisions to plan and group the actions that will address the remaining balance of plant soils and slabs. Tunnels at PGDP that link buildings together, slabs, and subgrade structures (i.e., utilities, Underground Radiological Material Areas) will be addressed within their applicable GA as part of the Soils and Slab OU.

Key DOE Planning Assumptions from Life Cycle Baseline

- (1) Based on DOE's recent reprioritization and proposal to focus near-term cleanup efforts on the C-400 Complex, finalization of the decision documents and implementation of any necessary CERCLA response actions for the Soils and Slabs OU have been resequenced to an out-year activity. The resequencing provides for any excavation activities (if that alternative is selected) to coincide with availability of a potential OSWDF. The resequencing also assumes the OSWDF alternative would be identified and selected as the preferred alternative under the WDA project.
- (2) Radionuclides, metals, VOCs, and PCBs are the primary COCs. Other COCs will be considered on a case-by-case basis, based on process knowledge.
- (3) The SWMUs that require an RI will be evaluated in multiple FSs that will focus on the following likely response actions: no action, institutional controls, and excavation. Additional SWMUs may be identified as facilities are demolished, based on analytical data of the slab and/or surrounding soils or process knowledge that there was a release or high probability of release that would have impacted the soils around or under the slab. SEs will be conducted for those GAs where there has been a known or potential threat of release.
- (4) RI characterization will be conducted to identify the individual COPCs.
- (5) The assumed remedial action is excavation of contaminated soils and slab and disposed in a potential OSWDF (if selected). The assumption includes soils within 3 ft of the slab perimeter and extending to a depth of 10 ft below slab. The areas may be backfilled with clean soil or graded for natural sloping and runoff, depending on the verification sampling results. No O&M period is assumed to be needed to achieve RAOs.
- (6) The RI/FS Work Plan is comprehensive, encompassing all components of the remedial action.



Source: Site Management Plan, Paducah Gaseous Diffusion Plant, Paducah, Kentucky, Annual Revision—FY 2020, DOE/LX/07-2444&D2/R1

Figure 3.6. DOE Property Geographical Areas

- (7) Complete the necessary CERCLA documents supporting remedy selection (e.g., Proposed Plan, ROD) and remedial design.
- (8) The baseline assumption for the CERCLA remedial action scope for GAs includes identified SWMUs/AOCs in the Soils and Slabs OU and facility slabs and associated soils where there was a potential threat of release. The results of the SE and scoping will determine the appropriate CERCLA action; however, for planning purposes, the RI and FS process through Remedial Action Completion is assumed for GAs, except for GA 6, GA 7, and GA 8. GA 7 does not have facilities or currently identified SWMU/AOCs; therefore, no planning documents are included. GA 6 and GA 8 include a few discrete SWMUs/AOCs that are covered by other OUs; therefore, no planning documents are included. The scope of the GAs is sequenced to occur prior to the CSOU, and any actions taken under the GAs will be considered as part of the final CSOU.
- (9) For those facilities (previously or currently identified in Appendix 6 of the SMP) where the FFA parties have agreed, through consultation, to remove the aboveground structure outside of CERCLA, the concrete pad/soils associated with those facilities will be evaluated as part of their appropriate GA or OU (e.g., C-400-A, C-742-B, and C-745-B1).
- (10) Settling basins (e.g., C-611-D, C-611-E, C-611-F, and C-611-G) are in-ground basins (i.e., not an unlined lagoon); these units will be addressed by their appropriate GA or OU. Additionally, C-611-I, a clear well, will be addressed in its appropriate GA or OU.
- (11) In general, aboveground portions of sewage lift stations (e.g., C-615-G, C-615-H1, C-615-H2, C-615-H3, etc.) are operational control panels associated with underground piping and are not facilities. The underground portion of the sewage lift stations will be addressed by their appropriate GA or OU.

FACILITY D&D OPERABLE UNIT

For the Facility Decontamination and Decommissioning (D&D) OU under the SMP, this OU includes decommissioning activities as defined in the joint policy issued under a DOE and EPA Memorandum dated May 22, 1995, *Policy on Decommissioning DOE Facilities under CERCLA*. Disposition of the GDP consists of two phases: 1) the DOE facilities that were inactive and scheduled for D&D Pre-GDP shutdown, and 2) the facilities previously leased to USEC and/or other DOE facilities planned for D&D after shutdown of the GDP. As part of the lease turnover requirements, USEC (1) shutdown the GDP properly; (2) performed limited deactivation of the USEC leased operations; (3) placed the leased operations into a safe, secure condition and removed any immediate threats to human health and safety; (4) removed all USEC waste, including any hazardous waste; and (5) removed USEC-owned property not accepted by DOE under the terms of the lease turnover.

D&D PRE-GDP SHUTDOWN (Formerly Referenced as Pre-GDP Shutdown Operable Unit)

This OU consisted of 17 inactive facilities (15 small inactive facilities, C-340 Complex, and C-410/C-420 Complex). The completion of the C-410/C-420 Complex in FY 2016 marks the completion of the D&D OU Pre-GDP shutdown scope (“Paducah Federal Facility Agreement—Decontamination and Decommissioning Operable Unit Completion Notification Letter,” PPP0-02-3334049-16, dated April 11, 2016). Decommissioning of CERCLA facilities completed to date is summarized in Appendix 1 (Actions Taken to Date).

REMAINING D&D

DOE is proceeding with deactivation work of the remaining facilities not operating to support DOE site activities. The joint policy issued under a DOE and EPA Memorandum dated May 22, 1995, *Policy on Decommissioning DOE Facilities under CERCLA*, establishes a framework for conducting of decommissioning of DOE facilities and provides guidance to EPA Regions and DOE Operations Offices on the use of CERCLA response authority to decommission DOE facilities. Key elements of the Policy provide for the following:

- DOE to conduct CERCLA removal SEs to determine whether a substantial threat of a release exists that warrants a CERCLA NTCRA to protect public health, welfare, or the environment, unless the circumstances at the facilities make in inappropriate;
- DOE to consult with EPA in attempt to reach consensus on decisions regarding the use of CERCLA response actions; and
- Conducting demolition of facilities that pose a substantial release threat as CERCLA NTCRA.

The Policy states that DOE is required to conduct a removal SE in accordance with the NCP and the requirements of any interagency agreements (i.e., FFA). Section IX. (Site Evaluation) of the FFA requires that DOE conduct integrated SEs upon discovery of an area with potential or known release. The FFA further requires DOE to provide the removal SE Reports as part of the removal notification to EPA and KY for review and approval for NTCRAs.

For purposes of implementing this OU strategy, the “facilities” DOE will evaluate for inclusion in the Facility D&D OU will consist of those permanent structures supported by a concrete slab and/or foundation that have a history of industrial operations. To support this process, 681 DOE properties/structures listed on the PGDP Site Map (Rev. 6) were reviewed and underwent an evaluation to identify those properties/structures that met the above definition of “facilities” [See Appendix 8 (FY 2018/FY 2019 SMP)]. The following categories were established as a result of the evaluation.

- Industrial Facilities that DOE has determined pose a potential threat of release of hazardous substances to the environment that warrant demolition or a removal SE. These facilities are listed as part of the Facility D&D OU in Appendix 4.
- Administrative, nonindustrial, support facilities that have no potential for release and are not subject to a CERCLA response action under the FFA.
- Balance of Plant Facilities are those facilities undergoing future CERCLA determinations regarding a release or potential threat of release. The FFA parties will continue collaborating in FY 2021 to discuss the timing and process for these facilities. These facilities are listed in Appendix 6.

For those facilities that require a CERCLA response action, NTCRAs will be utilized for demolition, where warranted.⁷

⁷ The Facility D&D OU will employ the CERCLA removal action process to administer decommissioning activities of excess buildings (i.e., inactive with no reuse potential) that have a known or potential release of contamination to the environment. The 1995 DOE and EPA “Memorandum: Policy on Decommissioning DOE Facilities under CERCLA,” establishes that decommissioning activities will be conducted as NTCRAs, unless the circumstances at the facilities make it inappropriate.

For those industrial facilities in Appendix 4 that require a removal SE, DOE will submit a report within 120 days (or other time frame agreed to by the FFA parties) after completion of deactivation. The SE Report will document any known release or threat of any release from those buildings and the magnitude of the threat of release (i.e., whether there is a substantial threat of release). The SE Report shall state whether demolition of the facility should be conducted using a CERCLA NTCRA and will serve to designate any facility or portions thereof that are related to any identified release as a SWMU and/or AOC. If a facility was designated previously in its entirety as a SWMU/AOC requiring CERCLA Action, DOE may use the existing SE, update or conduct a new SE, or include the SE as part of the removal notification for the NTCRA.

Administrative, nonindustrial support facilities have been identified as having no potential for release. Consequently, these administrative, nonindustrial support facilities will not be included as part of the Facility D&D OU scope. DOE reviewed and evaluated the historical and current information to support the conclusion that these facilities do not pose a threat of release. DOE has documented those facilities and relevant information (e.g., description, historical and current use, year constructed) in a listing that has been placed into the administrative record file via the FY 2018/FY 2019 SMP as Appendix 8. These facilities will not be decommissioned under CERCLA. DOE will complete demolition of these administrative/support facilities under applicable laws, regulations, and DOE requirements. As agreed to by the FFA parties, no further consultation with the agencies under the FFA will be conducted for these facilities.

Because DOE is in the early stages of deactivation, the listing and categorization in the appendices will be updated to reflect the current status and information with each SMP update. For planning purposes, the Facility D&D OU is using the same geographical divisions described in the Soils and Slabs OU to plan and group the actions that will address the balance of plant facilities determined to be in the Facility D&D OU.

Key DOE Planning Assumptions from Life Cycle Baseline

- (1) Based on DOE's recent reprioritization and proposal to focus near-term cleanup efforts on the C-400 Complex, finalization of the decision documents and implementation of any necessary CERCLA response actions for the Facility D&D OU have been resequenced to an out-year activity. The resequencing provides for any excavation activities (if that alternative is selected) to coincide with availability of a potential OSWDF. The resequencing also assumes the OSWDF alternative would be identified and selected as the preferred alternative under the WDA project.
- (2) Radionuclides, metals, and PCBs are the primary COCs. Other COCs will be considered on a case-by-case basis based on process knowledge.
- (3) An SE will be conducted for facilities in Appendix 4 within 120 days from completion of deactivation for each facility.
- (4) CERCLA NTCRAs will be conducted for Appendix 4 facilities that already have been designated for demolition down to slab. Contaminated slabs and associated underlying soils will be incorporated into the Soils and Slabs OU. Waste will be dispositioned in either a potential OSWDF (if selected) or non-CERCLA disposal facility.
- (5) CERCLA NTCRAs will be conducted for a portion of Appendix 6 facilities demolition down to slab. Contaminated slabs and associated underlying soils will be incorporated into the Soils and Slabs OU for those facilities requiring CERCLA NTCRAs, based on information from the SE. Waste from Appendix 6 facilities that are dispositioned under CERCLA will be disposed in a potential OSWDF

(if selected) or non-CERCLA disposal facility. Waste from Appendix 6 facilities that are not dispositioned under CERCLA will be disposed in a non-CERCLA disposal facility as the most cost effective option.

- (6) Administrative, nonindustrial support facilities will not undergo demolition under CERCLA; however, these facilities will be demolished and dispositioned under applicable laws, regulations, and DOE requirements. Facility waste will be disposed of in non-CERCLA disposal facility as the most cost-effective option.
- (7) The CERCLA scope for GAs will include only those facilities that have been determined to pose a potential threat of release. GA 1, GA 10, GA 13, and GA 14 currently are the only ones that include facilities where a potential threat of release during demolition has been determined. The remaining GAs plus Buildings C-750 and C-360 have not undergone deactivation, and the evaluation is not yet complete. GA 3, GA 6, and GA 7 do not have facilities. GA 8 includes only C-746-U Landfill support buildings determined not to pose a threat of release, and the buildings will be completed with the landfill closure activities.

DUF₆ FOOTPRINT UNDERLYING SOILS OPERABLE UNIT

Scope

This OU includes the units identified in Appendix 4 under DUF₆ Footprint Underlying Soils OU. This OU currently has 5 SWMUs that are located beneath or immediately adjacent to the DUF₆ facility. These units existed prior to construction of the DUF₆ facility; as such, the scope of this OU is limited only to those SWMUs. The scope does not include D&D or remediation of the currently operating DUF₆ facility. The project is planned to occur after D&D of DUF₆ facility. The length of time that the facility will be required to operate to process all of the cylinders for which DOE has disposition responsibility directly impacts the timing for completion of the DUF₆ OU and the follow-on CSOU. The current baseline estimates that all cylinders at the Paducah Site will be processed by the end of 2050; however, uncertainty remains as to whether other cylinders that DOE is responsible for (additional cylinders that might be sent to Paducah for processing) will impact the DUF₆ facility completion date. Delays in completing the cylinder processing scope could have a potential effect on completion of overall Paducah Site cleanup by 2065.

The project scope includes the management, planning, assessments, CERCLA documents, RIs, final remedial actions per an approved ROD, and preparation of required completion closure documentation. Each unit in this OU will be evaluated through the CERCLA process.

Key DOE Planning Assumptions from Life Cycle Baseline

- (1) Based on DOE's recent reprioritization and proposal to focus near-term cleanup efforts on the C-400 Complex, finalization of the decision documents and implementation of any necessary CERCLA response actions for the DUF₆ OU have been resequenced to an out-year activity. The resequencing provides for any excavation activities (if that alternative is selected) to coincide with availability of a potential OSWDF. The resequencing also assumes the OSWDF alternative would be identified and selected as the preferred alternative under the WDA project.
- (2) The RI investigation for this OU will be sequenced and scheduled for implementation after the DUF₆ facility has ceased operation and undergone D&D.

- (3) Radionuclides, metals, VOCs, and PCBs are the primary COPCs. Other COPCs will be considered on a case-by-case basis, based on process knowledge.
- (4) The RI/FS Work Plan is comprehensive, encompassing all components of the remedial action.
- (5) Complete the necessary CERCLA documents supporting remedy selection (e.g., FS, Proposed Plan, ROD) and remedial design.
- (6) The assumed remedial action is excavation of contaminated soils and slab media and disposed in a potential OSWDF (if selected). The areas may be backfilled with clean soil or graded for natural sloping and runoff, depending on the verification sampling results. No O&M period is assumed to be needed to achieve RAOs.

FINAL COMPREHENSIVE SITE OPERABLE UNIT⁸

The final CSOU evaluation will occur following completion of the Facility D&D OU, Soils and Slabs OU, completion of the DUF₆ Footprint Underlying Soils OU, and completion of cleanup of each of the specific OUs (i.e., C-400 Complex OU, GWOU, SWOU, Lagoons OU, BGOU, and Soils OU). As final actions for SWMUs and GAs are completed, those SWMUs and GAs will be placed in the CSOU section of Appendix 4 of the SMP to ensure that the results of the completed action are accounted for in the overall CSOU evaluation. The final CSOU will maximize use of the relevant data from previous cleanup activities and document the residual contamination and risk. Circumstances may dictate additional field activities as a result of evaluating existing information; however, it is the assumption of DOE that any SWMUs or GAs entered into the CSOU will not require any additional response action. A work plan will compile and evaluate the existing information to determine if any data gaps exist related to conducting a sitewide evaluation. The RI will include a sitewide baseline human health and ecological risk assessment to evaluate residual risks and ensure all actions taken to date, when considered collectively, are protective of human health and the environment from a sitewide perspective. If the results of the final CSOU BRA conclude that overall protection of human health and the environment has been achieved, a final Proposed Plan and NFA ROD will be developed. If the BRA concludes that residual contamination still poses an unacceptable risk that exceeds the criteria established in Section XII of the FFA, a final FS will be developed, followed by a final Proposed Plan, ROD, and implementation of the final remedy. DOE intends to conduct necessary long-term monitoring to evaluate progress toward achieving RAOs. When no further response is appropriate and all the RAOs for all remedies have been achieved, PGDP will be eligible for deletion from the National Priorities List (NPL). It should be noted that partial NPL delisting may be pursued for eligible areas prior to the CSOU.

Key DOE Planning Assumptions from Life Cycle Baseline

- (1) The scope of the GAs is sequenced to occur prior to the CSOU, and any actions taken under the GAs will be considered as part of the final CSOU.
- (2) The FFA parties will reevaluate residual risk for the Paducah Site as part of the CSOU.

⁸ The FFA, as currently written, contemplates multiple CSOUs, consisting of those associated with integrator units (i.e., groundwater, surface water) and a final CSOU completed after issuance of all final RODs for the site. The FFA parties acknowledge that the scope description above is intended to reflect a single final CSOU to address all media, and a future FFA modification will address any inconsistencies between the FFA and SMP strategy.

OTHER PROJECTS

CERCLA Waste Disposal Alternatives Operable Unit

Scope

The scope of this project is to evaluate disposal options for CERCLA waste that will be generated as a result of implementing removal and remedial actions for all of the OUs. The evaluation of disposal options will be conducted using the CERCLA remedial decision-making process. Accordingly, the scope of the RI/FS will be focused and tailored to the nature of this project (i.e., this is not a typical project where potential releases are investigated, evaluated, and remediated). Additionally, due to significant public interest in the project, frequent interactions with the public are expected throughout the project life cycle. The decision about whether to implement an on-site disposal facility will be documented in a ROD.

Key DOE Planning Assumptions from Life Cycle Baseline

- (1) Based on DOE's recent reprioritization and proposal to focus near-term cleanup efforts on the C-400 Complex, preparation/finalization of the decision documents (i.e., Proposed Plan, ROD) and construction of any OSWDF (if selected as the preferred option under the WDA project) have been resequenced to an out-year activity to coincide with the timing of when waste generation from decommissioning of GDP facilities and remediation of the burial grounds is projected to occur.
- (2) A revised D1 RI/FS Report will be issued with updated information on waste types and volumes and other related data pertinent to remedy selection. Assumed waste types include the following categories: low-level waste (LLW), Resource Conservation and Recovery Act (RCRA), Toxic Substances Control Act (TSCA), LLW/RCRA, LLW/TSCA, LLW/RCRA/TSCA, classified wastes, asbestos containing materials, and nonhazardous solid.
- (3) A potential OSWDF (if selected) will not accept transuranic waste or waste from facilities other than PGDP.
- (4) The DUF₆ facility will not be disposed of in the OSWDF (if selected); however, any contamination in the previously defined SWMUs/AOCs that lie beneath the DUF₆ facility will be placed in the OSWDF (if selected).
- (5) Implementation of the ROD⁹ may require resequencing of other site work.
- (6) Final waste acceptance criteria will be defined during the post-ROD design phase.
- (7) The project will fulfill the requirements of the *Memorandum of Agreement for Resolution of the Formal Dispute for the Remedial Investigation/Feasibility Study Report for CERCLA Waste Disposal Alternatives Evaluation at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*, DOE/LX/07-0244&D2, February 8, 2017, and the *Memorandum of Agreement for Resolution of Formal Dispute of the Remedial Investigation/Feasibility Study Report for CERCLA Waste Disposal Alternatives Evaluation at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky*, DOE/LX/07-0244&D2, February 27, 2018.

⁹ Regulatory expectations are that sufficient design and waste acceptance criteria information will be available to support the ROD.

APPENDIX 4

SOURCE AREA BY OPERABLE UNIT

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Solid Waste Management Units/Areas of Concern by Operable Unit

C-400 COMPLEX				
Operable Unit	Subproject	SWMU No.	Description	
C-400 Complex OU	C-400 D&D	Other	C-400 Building [building foundation (i.e., slab) will remain in place]	
	C-400 Final Remedial Action	11	C-400 TCE Leak Site	
		40	C-403 Neutralization Tank slab and underlying soils	
		47	C-400 Technetium Storage Tank Area	
		98	C-400 Basement Sump	
		203	C-400 Discard Waste System slab and underlying soils	
		480	C-402 Lime House building slab and underlying soils	
		533	TCE Spill Site from TCE Unloading Operations at C-400	
				Five SWMUs (349, 350, 351, 352, and 353) within the C-400 Building are DMSAs that were designated as SWMUs under the Kentucky Hazardous Waste Management Permit pursuant to a DOE-KDEP Agreed Order (October 2003) and were not identified for action under the FFA. Ten other SWMUs within the C-400 Building (48, 49, 50, 51, 52, 53, 54, 383, 384, and 537) have been designated as no further action (NFA) and are listed in the NFA section of Appendix 4.
	GROUNDWATER			
GWOU	C-400 Interim Remedial Action	11	C-400 TCE Leak Site	
		533	TCE Spill Site from TCE Unloading Operations at C-400	
	Southwest Plume Sources	1	C-747-C Oil Land Farm	
		211 A	C-720 TCE Spill Site Northeast	
		211 B	C-720 TCE Spill Site Southeast	
	Dissolved-Phase Plumes	201	Northwest Groundwater Plume	
		202	Northeast Groundwater Plume	
		210	Southwest Groundwater Plume	
	Potential Additional Groundwater Sources	NA	This operable unit is being reserved for remaining sources to groundwater contamination that may be identified in the future	
	SURFACE WATER			
SWOU	SWOU Remedial Action	Removal Action	58	North-South Diversion Ditch (NSDD) (Outside) (includes KPDES 003)
			60	C-375-E2 Effluent Ditch (KPDES 002) ¹
			61	C-375-E5 Effluent Ditch (KPDES 013) ¹
			62	C-375-S6 SW Ditch (KPDES 009) ¹
			63	C-375-W7 Oil Skimmer Ditch (KPDES 008 and KPDES 004)
			66	C-375-E3 Effluent Ditch (KPDES 010)
			67	C-375-E4 Effluent Ditch (C-340 Ditch) (KPDES 011)
			68	C-375-W8 Effluent Ditch (KPDES 015)
			69	C-375-W9 Effluent Ditch (KPDES 001)
			92	Fill Area for Dirt from the C-420 PCB Spill Site
			97	C-601 Diesel Spill

¹ The results of the Surface Water Operable Unit (SWOU) (On-Site) Site Investigation determined that there were no unacceptable levels of risk to current and anticipated future receptors that warranted inclusion of Solid Waste Management Unit (SWMU) 60 (Outfall 002), SWMU 168 (Outfall 012), or SWMU 102 [Paducah Gaseous Diffusion Plant (PGDP) storm sewer systems associated with C-333-A, C-337-A, C-340, C-535, and C-537]. As a result, no action will be taken for these SWMUs as originally planned under the SWOU removal action. These SWMUs will be evaluated further as part of the SWOU remedial action. It also should be noted that during development of the Sampling and Analysis Plan (SAP) for SWOU (On-Site) Removal Action, Outfall 009 and Outfall 013 were evaluated. This assessment of the outfalls, which included a review of historical data, indicated that Outfall 009 and Outfall 013 did not require an early action, and further assessment of Outfall 009 and Outfall 013 would be addressed during the Comprehensive Site Operable Unit (CSOU). Based upon current site strategy, Outfall 009 and Outfall 013 also will be addressed as part of the SWOU remedial action.

Solid Waste Management Units/Areas of Concern by Operable Unit (Continued)

SURFACE WATER (CONTINUED)			
Operable Unit	Subproject	SWMU No.	Description
SWOU	SWOU Remedial Action	102B	Plant Storm Sewer associated with C-333-A, C-337-A, C-340, C-535, and C-537 ¹
		168	KPDES Outfall Ditch 012 ¹
		526	Internal Plant Drainage Ditches (includes KPDES 016) ²
		64	Little Bayou Creek
		65	Bayou Creek
		93	Concrete Disposal Area East of Plant Security Area
		105	Concrete Rubble Pile (3)
		106	Concrete Rubble Pile (4)
		107	Concrete Rubble Pile (5)
		108	Concrete Rubble Pile (6)
		109	Concrete Rubble Pile (7)
		113	Concrete Rubble Pile (11)
		129	Concrete Rubble Pile (27)
		175	Concrete Rubble Pile (28)
		185	C-611-4 Horseshoe Lagoon (includes KPDES 014)
		199	Big Bayou Creek Monitoring Station
		205	Eastern Portion of Yellow Water Line
		549	Dirt/Concrete Rubble Pile near Outfall 008
		550	Concrete Culvert Sections Located on the West Bank of the Ditch Leading to Outfall 001
			Others
LAGOONS			
Lagoons OU	Process Lagoons	17	C-616-E Sludge Lagoon
		18	C-616-F Full-Flow Lagoon
		171	C-617-B Lagoon (formerly identified as C-617-A)
	Water Treatment System Lagoons	21	C-611-W Sludge Lagoon
		22	C-611-Y Overflow Lagoon (includes KPDES 006)
		23	C-611-V Lagoon (includes KPDES 005)
BURIAL GROUNDS			
BGOU	BGOU Remedial (10 SWMUs)	2	C-749 Uranium Burial Ground
		3	C-404 Low-Level Radioactive Waste Burial Ground
		4	C-747 Contaminated Burial Ground
		5	C-746-F Classified Burial Ground
		6	C-747-B Burial Area
		7	C-747-A Burial Ground
		9	C-746-S Residential Landfill
		10	C-746-T Inert Landfill
		30	C-747-A Burn Area
		145	Residential/Inert Landfill Borrow Area (P-Landfill)
	Additional Burial Grounds	472	C-746-B Pad
	520	Scrap Material West of C-746-A	

² Kentucky Pollutant Discharge Elimination System (KPDES) Outfall 016, in its entirety, will be addressed as part of the SWOU Remedial Investigation.

Solid Waste Management Units/Areas of Concern by Operable Unit (Continued)

SOILS			
Operable Unit	Subproject	SWMU No.	Description
Soils OU	Soils Remedial	1	C-747-C Oil Land Farm
		13	C-746-P Clean Scrap Yard ³
		14	C-746-E Contaminated Scrap Yard
		15	C-746-C Scrap Yard ³
		19	C-410-B HF Neutralization Lagoon
		26	C-400 to C-404 Underground Transfer Line ³
		56	C-540-A PCB Waste Staging Area ^{3, 4}
		57	C-541-A PCB Waste Staging Area ⁴
		76	C-632-B Sulfuric Acid Storage Tank
		77	C-634-B Sulfuric Acid Storage Tank ^{3, 5}
		80	C-540-A PCB Spill Site ³
		81	C-541-A PCB Spill Site
		99 B	C-745 Kellogg Bldg. Site—Septic Tank/Leach Field
		138	C-100 Southside Berm
		153	C-331 PCB Soil Contamination (West)
		156	C-310 PCB Soil Contamination (West Side)
		158	Chilled-Water System Leak Site
		160	C-745 Cylinder Yard Spoils (PCB Soils)
		163	C-304 Bldg./HVAC Piping System (Soil Backfill)
		165	C-616-L Pipeline & Vault Soil Contamination
		169	C-410-E HF Vent Surge Protection Tank
		170	C-729 Acetylene Bldg. Drain Pits
		180	Outdoor Firing Range (WKWMA)
		181	Outdoor Firing Range (PGDP)
		194	McGraw Construction Facilities (Southside)
		195	Curlee Road Contaminated Soil Mounds
		196	C-746-A Septic System
		200	Soil Contamination South of TSCA Waste Storage Facility
		204	Dykes Road Historical Staging Area ³
		211 A	C-720 TCE Spill Site Northeast ³
		212	C-745-A Radiological Contamination Area
		213	OS-02
		214	OS-03
215	OS-04		
216	OS-05		
217	OS-06		
219	OS-08		
221	OS-10		
222	OS-11		
224	OS-13 ³		
225A	OS-14 ³		

³ These SWMUs/areas of concern (AOCs) will be evaluated further under a Soils OU RI 2 and addressed by a subsequent Soils OU feasibility study.

⁴ SWMUs 56 and 57 are located within, and will be addressed as part of, SWMUs 80 and 81, respectively.

⁵ This SWMU was evaluated as part of the Soils Operable Unit. The soils and underlying slabs associated with this SWMU will be addressed under the Soils and Slabs OU as part of post-GDP shutdown activities.

Solid Waste Management Units/Areas of Concern by Operable Unit (Continued)

SOILS (CONTINUED)			
Operable Unit	Subproject	SWMU No.	Description
Soils OU (Continued)	Soils Remedial (Continued)	225 B	Contaminated Soil Area near C-533-1 DMSA OS-14 ³
		227	OS-16
		228	OS-17
		229	OS-18 ³
		486	Rubble Pile WKWMA (approximately 116 ft off roadside)
		487	Rubble Pile WKWMA (approximately 483 ft off roadside)
		488	PCB Contamination Area by the C-410 Trailer Complex
		489	Septic Tank North of C-710 Laboratory
		492	Contaminated Soil Area Near Outfall 010
		493	Concrete Rubble Piles Near Outfall 001
		517	Rubble and Debris Erosion Control Fill Area
		518	Field South of C-746-P1 Clean Scrap Yard
		520	Scrap Material West of C-746-A
		531	Aluminum Slag Reacting Area (C-746-H4) near the C-746-A Facility
		541	Contaminated Soil Area South of Outfall 011
		561	Soil Pile I
		562	Soil Piles C, D, E, F, G, H, J, K, and P in subunit 1 north of Soil Pile I on the west bank of Little Bayou Creek
		563	Soil Piles 20, CC, and BW in subunit 4 north of outfall 012 west of Little Bayou Creek
564	Soil Pile AT in subunit 5 that consists of three soil areas on the east side of the NSDD north of the P-, S-, and T-Landfills		
565	Rubble Area KY-19 (along Bayou Creek north of C-611 Water Treatment Plant) ³		
567	Soil Pile K013 near Outfall 013, West of Little Bayou Creek		
SOILS AND SLABS			
Soils and Slabs OU		16	C-746-D Classified Scrap Yard
		20	C-410-E HF Emergency Holding Pond slab and underlying soils
		27	C-722 Acid Neutralization Tank
		28	C-712 Laboratory Equalization Tank slab and underlying soils
		31	C-720 Compressor Pit Water Storage Tank slab and underlying soils
		32	C-728 Clean Waste Oil Tanks slab and underlying soils
		33	C-728 Motor Cleaning Facility slab and underlying soils
		38	C-615 Sewage Treatment Plant slab and underlying soils
		41	C-410-C Neutralization Tank slab and underlying soils
		42	C-616 Chromate Reduction Facility slab and underlying soils
		55	C-405 Incinerator building slab and underlying soils
		70	C-333-A Vaporizer slab and underlying soils
		71	C-337-A Vaporizer slab and underlying soils
		74	C-340 PCB Transformer Spill Site
75	C-633 PCB Spill Site		

Solid Waste Management Units/Areas of Concern by Operable Unit (Continued)

SOILS AND SLABS (CONTINUED)			
Operable Unit	Subproject	SWMU No.	Description
Soils and Slabs OU (Continued)		77	C-634-B-Sulfuric Acid Storage Tank slab and underlying soils
		78	C-420 PCB Spill Site
		79	C-611 PCB Spill Site
		82	C-531 Switchyard slab and underlying soils
		83	C-533 Switchyard slab and underlying soils
		84	C-535 Switchyard slab and underlying soils
		85	C-537 Switchyard slab and underlying soils
		86	C-631 Pumphouse and Cooling Tower slab and underlying soils
		87	C-633 Pumphouse and Cooling Tower slab and underlying soils
		88	C-635 Pumphouse and Cooling Tower slab and underlying soils
		89	C-637 Pumphouse and Cooling Tower slab and underlying soils
		99 A	C-745 Kellogg Bldg. Site–Cylinder Yard
		135	C-333 PCB Soil Contamination (North Side)
		137	C-746-A Inactive PCB Transformer Sump Area ⁶
		154	C-331 PCB Soil Contamination (Southeast)
		155	C-333 PCB Soil Contamination (West)
		159	C-746-H3 Storage Pad slab and underlying soils
		161	C-743-T-01 Trailer Site (Soil Backfill)
		162	C-617-A Sanitary Water Line (Soil Backfill)
		166	C-100 Trailer Complex Soil Contamination (East Side)
		167	C-720 White Room Sump slab and underlying soils
		172	C-726 Sandblasting Facility slab and underlying soils
		176	C-331 RCW Leak Northwest Side
		177	C-331 RCW Leak East Side
		178	C-724-A Paint Spray Booth slab and underlying soils
		179	Plant Sanitary Sewer System
		192	C-710 Acid Interceptor Pit slab and underlying soils
		198	C-410-D Area Soil Contamination slab and underlying soils
		209	C-720 Compressor Shop Pit Sump slab and underlying soils
		211 B	C-720 TCE Spill Site Southeast
		218	OS-07 slab and underlying soils
		220	OS-09 slab and underlying soils
		223	OS-12 slab and underlying soils
		226	OS-15
		463	C-746-A East End Smelter slab and underlying soils
		464	C-746-A West End Smelter building slab and underlying soils
		469	C-745-J Yard
		470	C-746-V Yard
		474	West of Vortec Site
		477	C-340 Metals Plant building slab and underlying soils
		478	C-410/420 Feed Plant building slab and underlying soils
482	C-415 Feed Plant Storage Building slab and underlying soils		
483	Nitrogen Generating Facilities slab and underlying soils		

⁶ SWMU 137 was evaluated as part of the American Recovery and Reinvestment Act and the Soils OU. SWMU 137 will be addressed as part of Soils and Slabs OU.

Solid Waste Management Units/Areas of Concern by Operable Unit (Continued)

SOILS AND SLABS (CONTINUED)			
Operable Unit	Subproject	SWMU No.	Description
Soils and Slabs OU (Continued)		498	C-410/420 Sump at Column D & E-1&2 slab and underlying soils
		499	C-410/420 Sump at Column H-9&10 slab and underlying soils
		500	C-410/420 Sump at Column U-10&11 slab and underlying soils
		501	C-410/420 UF ₆ Scale Pit Sumps A&B slab and underlying soils
		502	C-410/420 Sump at Column U-9 slab and underlying soils
		503	C-410/420 Sump at Column G-1 slab and underlying soils
		504	C-410/420 Sump at Column L-10 slab and underlying soils
		505	C-410/420 Sump at Column A-3N slab and underlying soils
		506	C-410/420 Sump at Column Wa-9 slab and underlying soils
		507	C-410/420 Condensate Tank Pit slab and underlying soils
		508	C-410/420 Settling Basin slab and underlying soils
		509	C-410/420 Drain pit slab and underlying soils
		510	C-410/420 Sump at Column P&Q-2 slab and underlying soils
		511	C-410/420 Sump at Column Q&R-2 slab and underlying soils
		512	C-410/420 Sump at Column R-2 slab and underlying soils
		513	C-411 Cell Maintenance Room Sump slab and underlying soils
		522	C-340 Work Pit at Ground Floor Level (B-7—B-9) slab and underlying soils
523	C-340 Metals Plant Pit at Ground Floor (F-6 to F-11) slab and underlying soils		
524	C-340 Pickling System Sump (B-10 to B-11) slab and underlying soils		
529	C-340 Powder Plant Sump at Ground Floor Level slab and underlying soils		
DECONTAMINATION AND DECOMMISSIONING			
Facility D&D OU	Remaining D&D	The following SWMUs/AOCs or facilities may include multiple smaller facilities. A more detailed listing is included in the following table entitled Detailed Facility D&D OU Facilities List. *Denotes facilities that have been identified as requiring a CERCLA NTCRA.	
		33*	C-728 Motor Cleaning Facility
		38*	C-615 Sewage Treatment Plant
		42*	C-616 Chromate Reduction Facility
		70*	C-333-A Vaporizer
		71*	C-337-A Vaporizer
		82*	C-531 Switchyard
		83*	C-533 Switchyard
		84*	C-535 Switchyard
		85*	C-537 Switchyard
		86*	C-631 Pumphouse and Cooling Tower
		87*	C-633 Pumphouse and Cooling Tower
		88*	C-635 Pumphouse and Cooling Tower
		89*	C-637 Pumphouse and Cooling Tower
		172*	C-726 Sandblasting Facility
		178*	C-724-A Paint Spray Booth
		482*	C-415 Feed Plant Storage Building

Solid Waste Management Units/Areas of Concern by Operable Unit (Continued)

DECONTAMINATION AND DECOMMISSIONING (CONTINUED)			
Facility D&D OU (Continued)	Remaining D&D (Continued)	Other Buildings (non-SWMUs)	C-310, C-310-A, C-315, C-331, C-333, C-333-A, C-335, C-337, C-337-A, C-350, C-360, C-360-A, C-409, C-600, C-606, C-611 facilities, C-620, C-709, C-710, C-720 facilities, C-724-A, C-724-B, C-724-C, C-725, C-729, C-744, and C-750 Process Building tie-lines and bridges will be included with the appropriate process building.
DUF₆ FOOTPRINT UNDERLYING SOILS			
DUF ₆ Footprint Underlying Soils OU		164	KPDES Outfall Ditch 017 Flume - Soil Backfill
		183	McGraw UST
		193	McGraw Construction Facilities (Southside Cylinder Yards)
		194	McGraw Construction Facilities (Southside)
FINAL COMPREHENSIVE SITE OPERABLE UNIT			
CSOU ^{7,8,9}	SWMU No.		Description
	8		C-746-K Inactive Sanitary Landfill
	59		NSDD (Inside)
	91		UF ₆ Cylinder Drop Test Area
	100 ¹⁰		Fire Training Area

PERMITTED		
	SWMU No.	Description
Permitted	3	C-404 Low-Level Radioactive Waste Burial Ground ¹¹
	9	C-746-S Residential Landfill
	10	C-746-T Inert Landfill
	44	C-733 Hazardous Waste Storage Area
	46A	C-746-Q Hazardous and Low-Level Mixed Waste Storage Facility ¹²
	207	C-752-A ER Waste Storage Bldg.
	208	C-746-U Solid Waste Contained Landfill

⁷ The FFA, as currently written, contemplates multiple CSOUs, consisting of those associated with integrator units (i.e., groundwater, surface water), and a final CSOU completed after issuance of all final RODs for the site. The FFA parties acknowledge that the scope description is intended to reflect a single CSOU to address all media, and a future FFA modification will be conducted to resolve any inconsistencies between the FFA and Site Management Plan strategy.

⁸ Historically, once an action has been completed for a particular SWMU whereby no additional active response actions are expected, such SWMUs have been placed in the CSOU for further evaluation; however, the FFA parties recognized the need to reach consensus on the criteria for assigning units to the CSOU. As a result, placement of SWMUs 8, 59, 91, and 100 in the CSOU is provisional pending the FFA parties reaching consensus on such criteria.

⁹ The scope of the GAs is sequenced to occur prior to the CSOU, and any actions taken under the GAs will be considered as part of the final CSOU.

¹⁰ Groundwater contamination associated with SWMU 100 is under evaluation by EPA in response to EPA's CY 2018 Five-Year Review independent assessment.

¹¹ SWMU 3 was issued only a post-closure permit, was not permitted for construction and operation, and was not an engineered hazardous waste landfill.

¹² The C-746-Q Facility also includes C-746-Q1.

Solid Waste Management Units/Areas of Concern by Operable Unit (Continued)

NO FURTHER ACTION¹³		
SWMU No.	Description	NFA Approval By
12	C-747-A UF ₄ Drum Yard	FFA Managers Agreement—11/17/2011; FFA Managers Meeting, 4/12/2012
24	C-750-D UST	KDWM (UST Branch) 11/23/1999
25	C-750 1,000-gal Waste Oil Tank (UST)	EPA HSWA Class 1 Permit Mod 3/17/1993—Regulated by RCRA Permit; KDWM (UST Branch) 6/20/1994
29	C-746-B TRU Storage Area	EPA HSWA Class 1 Permit Mod 3/17/1993
34	C-746-M PCB Waste Storage Area	EPA HSWA Class 1 Permit Mod 3/17/1993
35	C-337 PCB Waste Storage Area	EPA HSWA Class 1 Permit Mod 3/17/1993
36	C-337 PCB Waste Staging Area	EPA HSWA Class 1 Permit Mod 3/17/1993
37	C-333 PCB Waste Staging Area	EPA HSWA Class 1 Permit Mod 3/17/1993
39	C-746-B PCB Waste Storage Area	EPA HSWA Class 1 Permit Mod 3/17/1993
43	C-746-B Waste Chemical Storage Area	EPA HSWA Class 1 Permit Mod 3/17/1993; Closed after 1993
45	C-746-R Waste Solvent Storage Area	EPA HSWA Class 1 Permit Mod 3/17/1993; Closed after 1993
46	C-409 Hazardous Waste Pilot Plant ¹⁴	EPA HSWA Class 1 Permit Mod 3/17/1993—Regulated by RCRA Permit; KDWM (Mod #13) 9/26/1997
48	Gold Dissolver Storage Tank (DMSA C400-03)	EPA HSWA Class 1 Permit Mod 3/17/1993; KDWM 7/8/2010
49	C-400-B Waste Solution Storage Tank	EPA HSWA Class 1 Permit Mod 3/17/1993—Regulated by RCRA Permit; KDWM 9/26/1997
50	C-400-C Nickel Stripper Evaporation Tank	EPA HSWA Class 1 Permit Mod 3/17/1993—Regulated by RCRA Permit; KDWM (Mod #13) 9/26/1997
51	C-400-D Lime Precipitation Tank	EPA HSWA Class 1 Permit Mod 3/17/1993—Regulated by RCRA Permit; KDWM (ROC) 8/8/1994
52	C-400 Waste Decontamination Solution Storage Tanks	EPA HSWA Class 1 Permit Mod 3/17/1993
53	C-400 NaOH Precipitation Unit	EPA HSWA Class 1 Permit Mod 3/17/1993
54	C-400 Degreaser Solvent Recovery Unit	EPA HSWA Class 1 Permit Mod 3/17/1993; KDWM 7/8/2010
72	C-200 Underground Gasoline Tanks	EPA HSWA Class 1 Permit Mod 3/17/1993; KDWM (UST C-200A; UST Branch) 11/23/1999

¹³ The FFA Parties agree that, as a standard practice for waste management units (e.g., TSDs, SWMUs, and AOCs), KDWM's determination for NFA under both the RCRA permit (i.e., Kentucky Hazardous Waste Facility Permit, EPA HSWA Permit) and the FFA are accepted by all parties.

¹⁴ Radiological contamination associated with the sump in this unit will be addressed under the D&D program for the C-409 Stabilization Building.

Solid Waste Management Units/Areas of Concern by Operable Unit (Continued)

NO FURTHER ACTION (CONTINUED)		
SWMU No.	Description	NFA Approval By
73	C-710 Underground Gasoline Tanks	EPA HSWA Class 1 Permit Mod 3/17/1993; KDWM (UST C-200A; UST C-710; UST Branch) 2/19/2002
90	C-720 Petroleum Naphtha Pipe	KDWM 1/14/2015
94	KOW Trickling Filter and Leach Field	KDWM Superfund Branch 1/15/2020
96	C-333 Cooling Tower Scrap Wood Pile	EPA HSWA Class 1 Permit Mod 3/17/1993
101	C-340 Hydraulic System	EPA and KDWM 4/2/2015
102A	Plant Storm Sewer—between the south side of the C-400 Building and Outfall 008	EPA and KY via SW Plume ROD 3/16/2012; KDWM 1/14/2015
103	Concrete Rubble Pile (1)	EPA and KY via WAG 17 ROD 9/29/1997
104	Concrete Rubble Pile (2)	EPA and KY via WAG 17 ROD 9/29/1997
110	Concrete Rubble Pile (8)	EPA and KY via WAG 17 ROD 9/29/1997
111	Concrete Rubble Pile (9)	EPA and KY via WAG 17 ROD 9/29/1997
112	Concrete Rubble Pile (10)	EPA and KY via WAG 17 ROD 9/29/1997
114	Concrete Rubble Pile (12)	EPA and KY via WAG 17 ROD 9/29/1997
115	Concrete Rubble Pile (13)	EPA and KY via WAG 17 ROD 9/29/1997
116	Concrete Rubble Pile (14)	EPA and KY via WAG 17 ROD 9/29/1997
117	Concrete Rubble Pile (15)	EPA and KY via WAG 17 ROD 9/29/1997
118	Concrete Rubble Pile (16)	EPA and KY via WAG 17 ROD 9/29/1997
119	Concrete Rubble Pile (17)	EPA and KY via WAG 17 ROD 9/29/1997
120	Concrete Rubble Pile (18)	EPA and KY via WAG 17 ROD 9/29/1997
121	Concrete Rubble Pile (19)	EPA and KY via WAG 17 ROD 9/29/1997
122	Concrete Rubble Pile (20)	WAG 17 RI Work Plan
123	Concrete Rubble Pile (21)	EPA and KY via WAG 17 ROD 9/29/1997
124	Concrete Rubble Pile (22)	EPA and KY via WAG 17 ROD 9/29/1997
125	Concrete Rubble Pile (23)	EPA and KY via WAG 17 ROD 9/29/1997
126	Concrete Rubble Pile (24)	EPA and KY via WAG 17 ROD 9/29/1997
127	Concrete Rubble Pile (25)	EPA and KY via WAG 17 ROD 9/29/1997
128	Concrete Rubble Pile (26)	EPA and KY via WAG 17 ROD 9/29/1997

Solid Waste Management Units/Areas of Concern by Operable Unit (Continued)

NO FURTHER ACTION (CONTINUED)		
SWMU No.	Description	NFA Approval By
130	C-611 550-gal Gasoline UST	KDWM 12/6/1996 EPA and KY via WAG 1&7 ROD
131	C-611 50-gal Gasoline UST	KDWM 12/6/1996 EPA and KY via WAG 1&7 ROD 8/10/1998
132	C-611 2,000-gal Oil UST	KDWM 12/6/1996 EPA and KY via WAG 1&7 ROD 8/10/1998
133	C-611 (unknown size) Grouted UST	KDWM 12/6/1996 EPA and KY via WAG 1&7 ROD 8/10/1998
134	C-611 1,000-gal Diesel/Gasoline Tank	KDWM 12/6/1996 EPA and KY via WAG 1&7 ROD 8/10/1998
136	C-740 TCE Spill Site	EPA and KY via WAG 1&7 ROD 8/10/1998
139	C-746-A1 UST	KDWM 12/9/2005
140	C-746-A2 UST	KDWM 12/19/1996
141	C-720 Inactive TCE Degreaser	KDWM 8/11/1992; EPA HSWA Class 1 Permit Mod 3/17/1993—Regulated by RCRA Permit;
142	C-750-A 10,000-gal Gasoline Tank (UST)	EPA HSWA Class 1 Permit Mod 3/17/1993—Regulated by RCRA Permit; KDWM 3/25/1999
143	C-750-B 10,000-gal Diesel Tank (UST)	EPA HSWA Class 1 Permit Mod 3/17/1993; KDWM 3/25/1999
144	C-746-A Hazardous and Mixed Waste Storage Facility	EPA HSWA Class 1 Permit Mod 3/17/1993—Regulated by RCRA Permit; KDWM 10/10/2011
146	Concrete Rubble Pile (40)	EPA and KY via WAG 17 ROD 9/29/1997
147	Concrete Rubble Pile (41)	EPA and KY via WAG 17 ROD 9/29/1997
148	Concrete Rubble Pile (42)	EPA and KY via WAG 17 ROD 9/29/1997
149	Concrete Rubble Pile (43)	EPA and KY via WAG 17 ROD 9/29/1997
150	Concrete Rubble Pile (44)	EPA and KY via WAG 17 ROD 9/29/1997
151	Concrete Rubble Pile (45)	EPA and KY via WAG 17 ROD 9/29/1997
152	Concrete Rubble Pile (46)	EPA and KY via WAG 17 ROD 9/29/1997
157	KOW Toluene Spill Area	KDWM Superfund Branch 1/15/2020
173	C-746-A Trash-Sorting Facility	EPA HSWA Class 1 Permit Mod 3/17/1993; KDWM 12/18/1992
174	C-745-K Low-Level Storage Area	EPA HSWA Class 1 Permit Mod 3/17/1993; KDWM 2/22/1993
182	Western Portion of Yellow Water Line	KDWM Superfund Branch 1/15/2020

Solid Waste Management Units/Areas of Concern by Operable Unit (Continued)

NO FURTHER ACTION (CONTINUED)		
SWMU No.	Description	NFA Approval By
184	Concrete Rubble Pile (29)	EPA and KY via WAG 17 ROD 9/29/1997
186	C-751 Fuel Facility	KDWM 10/20/1993
187	C-611 Septic System	KDWM 10/20/1993
188	C-633 Septic System	KDWM 10/20/1993
189	C-637 Septic System	KDWM 10/20/1993
190	C-337A Sewage Treatment Aeration Tank	KDWM 10/20/1993
191	C-333-A Sewage Treatment Aeration Tank	KDWM 10/20/1993
197	Concrete Rubble Pile (30)	EPA and KY via WAG 17 ROD 9/29/1997
206	C-753-A Toxic Substances Control Act Waste Storage Bldg.	KDWM 3/7/1997
208	C-746-U Solid Waste Contained Landfill	KDWM 3/7/1997
360	C-535	KDWM 1/4/2006
361	C-727-90 day	KDWM 8/28/2007
362	G-310-04	KDWM 8/28/2007
363	G-331-03	KDWM 6/29/2004
364	G-331-05	KDWM 6/29/2004
365	G-333-02	KDWM 5/12/2003
366	G-333-03	KDWM 5/12/2003
367	G-333-04	KDWM 5/12/2003
368	G-333-08	KDWM 6/29/2004
369	G-333-10	KDWM 5/12/2003
370	G-333-20	KDWM 5/12/2003
371	G-335-01	KDWM 1/4/2006
372	G-337-02	KDWM 9/11/2003
373	G-337-03	KDWM 9/11/2003
374	G-337-13	KDWM 9/11/2003
375	G-337-14	KDWM 9/11/2003
376	G-337-15	KDWM 9/11/2003
377	C-337-22	KDWM 1/4/2006
378	G-340-01	EPA and KDWM 4/02/2015
379	G-340-03	EPA and KDWM 4/02/2015
380	G-340-04	EPA and KDWM 4/02/2015
381	G-340-05	EPA and KDWM 4/02/2015
382	G-340-06	KDWM 8/28/2007
383	G-400-01	KDWM 5/12/2003
384	G-400-02	KDWM 5/12/2003
385	G-409-25	KDWM 5/12/2003
386	G-410-01	KDWM 8/28/2007
387	C-416-01	KDWM 8/28/2007
388	C-416 Decontamination Pad	KDWM 4/12/2004
389	G-533-01	KDWM 6/29/2004
390	G-535-02	KDWM 6/29/2004
391	G-537-01	KDWM 1/4/2006
392	G-540-A-01	KDWM 2/14/2006
393	G-540-A-1-02	KDWM 2/14/2006
394	G-541-A-01	KDWM 4/12/2004
395	G-600-01	KDWM 3/8/2007
396	C-611-U-01	KDWM 3/8/2007
397	G-612-01	KDWM 3/8/2007
398	G-612-02	KDWM 3/8/2007

Solid Waste Management Units/Areas of Concern by Operable Unit (Continued)

NO FURTHER ACTION (CONTINUED)		
SWMU No.	Description	NFA Approval By
399	G-612-A-01	KDWM 3/8/2007
400	G-635-01	KDWM 3/8/2007
401	G-710	KDWM 1/4/2006
402	G-710-04	KDWM 9/11/2003
403	G-710-20	KDWM 1/4/2006
404	G-710-24	KDWM 9/11/2003
405	G-720-22	KDWM 2/14/2003
406	G-743-T-17-01	KDWM 6/29/2004
407	G-743-T-17-02	KDWM 3/8/2007
408	G-745-B-01	KDWM 3/8/2007
409	G-745-T-01	KDWM 2/14/2006
410	G-746-G-01	KDWM 6/29/2004
411	G-746-G-1-01	KDWM 3/8/2007
412	G-746-G-2-01	KDWM 11/1/2004
413	G-746-G-3-01	KDWM 11/1/2004
414	G-746-F-01	KDWM 1/4/2006
415	G-746-S-01	KDWM 8/28/2007
416	G-746-X-01 (PCBs)	KDWM 3/8/2007
417	G-746-X-01 (Asbestos)	KDWM 3/8/2007
418	G-748-B-01	KDWM 6/29/2004
419	G-752-C-01	KDWM 8/28/2007
420	G-752-C-02	KDWM 3/8/2007
421	G-754-01	KDWM 1/4/2006
422	G-755-A-01	KDWM 1/28/2004
423	G-755-C-01	KDWM 1/28/2004
424	G-755-T-07-01	KDWM 1/28/2004
425	G-755-T-08	KDWM 1/28/2004
426	G-755-T-2-3-01	KDWM 1/28/2004
427	G-755-T-3-1-01	KDWM 1/28/2004
428	G-755-T-3-2-01	KDWM 1/28/2004
429	S-310-04	KDWM 8/28/2007
430	S-331-02	KDWM 1/4/2006
431	S-333-12	KDWM 5/12/2003
432	S-335-09	KDWM 11/23/2004
433	S-337-11	KDWM 9/11/2003
434	S-340-01	EPA and KY 4/2/2015
435	S-409-100	KDWM 5/12/2003
436	S-409-20	KDWM 5/12/2003
437	S-409-40	KDWM 5/12/2003
438	S-409-60	KDWM 5/12/2003
439	S-409-80	KDWM 5/12/2003
440	S-410-05	KDWM 8/28/2007
441	S-540-A-2-01	KDWM 6/29/2004
442	S-612-01	KDWM 2/14/2006
443	S-709-01	KDWM 6/29/2004
444	S-709-02	KDWM 6/29/2004
445	S-710-05	KDWM 2/14/2006
446	S-710-06	KDWM 9/11/2003
447	S-710-09	KDWM 1/4/2006
448	S-710-16	KDWM 9/11/2003
449	S-710-18	KDWM 9/11/2003
450	S-710-32	KDWM 1/4/2006

Solid Waste Management Units/Areas of Concern by Operable Unit (Continued)

NO FURTHER ACTION (CONTINUED)		
SWMU No.	Description	NFA Approval By
451	S-710-41	KDWM 9/11/2003
452	S-710-44	KDWM 1/4/2006
453	S-710-46	KDWM 9/11/2003
454	S-743-T-17-01	KDWM 2/14/2006
455	S-755-T-16-01	KDWM 1/28/2004
456	S-755-T-16-02	KDWM 1/28/2004
457	S-755-T-16-03	KDWM 1/28/2004
458	S-755-T-2-3-01	KDWM 1/28/2004
459	S-755-T-3-1-01	KDWM 1/28/2004
460	S-755-T-3-2-01	KDWM 1/28/2004
461	S-755-T-3-2-02	KDWM 1/28/2004
462	S-755-T-3-2-03	KDWM 1/28/2004
465	Yard Rubble Pile and Crushate Storage Area (G-Yard)	KDWM 10/13/2009
466	South of Dyke Road, Pond Area	KDWM 8/17/2009
467	Concrete Cylinder Holders Storage Area on Western Kentucky Wildlife Management Area	KDWM 8/17/2009
468	Area Northwest of Outfall 015	KDWM 2/14/2006
471	Outside C-746-B South Storage Area	KDWM 8/17/2009
473	C-746-B Pad, West	KDWM 8/28/2007
475	C-745-G5-01 (Paint Enclosure)	KDWM 2/14/2006
476	Concrete Crusher	KDWM 2/14/2006
479	C-204 Disintegrator Building	KDWM 6/3/2002
481	C-410-A Hydrogen Holder	KDWM 4/2/2002
484	C-611-M Storage Tank	KDWM 8/30/2002
485	C-611-N Sanitary Water Storage	KDWM 2/18/2002
490	McGraw Fuel Facility Waste Oil Storage Tank	KDWM 12/21/2001
491	Mercury Spill at the C-611 Water Treatment Plant Vault	KDWM 3/22/2004
494	Ash Receiver Area in C-410/420	KDWM 6/3/2016; EPA 6/9/2016
495	C-410-I Ash Receiver Shed	KDWM 6/3/2016; EPA 6/9/2016
496	C-410 Fluorine/Hydrogen Filters (Northeast Mezzanine)	KDWM 6/3/2016; EPA 6/9/2016
497	C-410/420 F ₂ Cell Neutralization Room Vats	KDWM 6/3/2016; EPA 6/9/2016
514	C-340 Magnesium Fluoride Reject Silo	EPA and KY 4/2/2015
515	C-340 "Dirty" Dust Collection System	EPA and KY 4/2/2015
516	C-340 Derby Preparation Area Sludge Collection System	EPA and KY 4/2/2015
519	C-410 Sulfuric Acid Tank (C-634-B)	KDWM 1/10/2003
521	C-340 Saw System Degreaser	EPA and KY 4/2/2015
525	Concrete Water Tower Supports (KOW)	KDWM 8/28/2007
527	C-410 GSA/SAA at Column J-6	KDWM 8/28/2007
528	GSA/SAA at the Northwest corner of C-745-G3 Paint Enclosure	KDWM 2/14/2006
530	Soil and Debris Storage Area by C-745-T Yard	KDWM 3/8/2007
532	Photographic Solution Treatment Area in the C-102 Building	KDWM 5/21/2003
534	UST #18, within SWMU 193	KDWM (UST Branch) 12/4/2007
535	S-755-T08-01 (Satellite Accumulation Area at C-755, Trailer 8)	KDWM 2/14/2006
536	Concrete Truck Washout Area	KDWM 6/27/2002
537	S-400-001 (SAA Located Outside at the Southeast Corner of the C-400 Building)	KDWM 2/14/2006
538	S-MST-01-01 & S-MST-01-02 (Mobile Trailer 01)	KDWM 2/14/2006
539	S-MST-02-01 & S-MST-02-02 (Mobile Trailer 02)	KDWM 2/14/2006
540	S-MST-03-01 & S-MST-03-02 (Mobile Trailer 03)	KDWM 2/14/2006
542 A	G-746-B-01; S-746-B-01; S-746-B-02 (GSA/SAA's located outside C-746-A)	KDWM 1/28/2004

Solid Waste Management Units/Areas of Concern by Operable Unit (Continued)

NO FURTHER ACTION (CONTINUED)		
SWMU No.	Description	NFA Approval By
542 B	G-746-A-01; S-746-A-01; S-746-A-02 (GSA/SAs located outside C-746-A)	KDWM 1/28/2004
543	T-746-S-01 (90-Day Storage Area)	KDWM 1/28/2004
544	T-752-C-01 (90-Day Storage Area)	KDWM 1/28/2004
545	C-755-T-22-01 and G-755-T-22	KDWM 1/28/2004
546	PGDP Post 67 Diesel Fuel Spill Area	KDWM 2/14/2006
547	PGDP Post 38 Diesel Spill Area	KDWM 2/14/2006
548	Staging Area for Concrete Piers, Wood and Rubble North Side of C-745-B Cylinder Yard	KDWM 8/28/2007
551	C-755-GSA-23 Located at C-755 near the East Fence Line	KDWM 8/28/2007
552	C-760 90-Day Accumulation Area	KDWM 3/28/2007
566	H-340-01	KDWM 12/02/2010
568	C-340 ST-90 Boxes	KDWM 12/02/2010
569	C-743-T-17 Sample Return Refrigerator	KDWM 5/24/2012
570	Sample Return Sealand	KDWM 5/24/2012

PENDING NO FURTHER ACTION DECISION	
SWMU No.	Description
	Reserved
SWMUs THAT WILL BE INVESTIGATED AND REMEDIATED BY THE U.S. ARMY CORPS OF ENGINEERS¹⁵	
95	KOW Burn Area

CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act
 CSOU = Comprehensive Site Operable Unit
 D&D = decontamination and decommissioning
 EPA = U.S. Environmental Protection Agency
 ER = environmental remediation
 FFA = Federal Facility Agreement
 GDP = gaseous diffusion plant
 GSA = generator staging area
 HSWA = Hazardous and Solid Waste Amendments
 HVAC = heating, ventilating, and air-conditioning
 KDWM = Kentucky Division of Waste Management
 KOW = Kentucky Ordinance Works
 KPDES = Kentucky Pollutant Discharge Elimination System
 KY = Kentucky
 NFA = no further action

NSDD = North-South Diversion Ditch
 OU = operable unit
 PCB = polychlorinated biphenyl
 PGDP = Paducah Gaseous Diffusion Plant
 RCW = recirculating cooling water
 ROD = record of decision
 SAA = satellite accumulation area
 SAP = Sampling and Analysis Plan
 SWMU = solid waste management unit
 SWOU = Surface Water Operable Unit
 TBD = to be determined
 TCE = trichloroethene
 TSCA = Toxic Substances Control Act
 UST = underground storage tank
 WAG = waste area group
 WKWMA = West Kentucky Wildlife Management Area

¹⁵ The Corps of Engineers accepted responsibility for the investigation/remediation of this SWMU in a letter dated March 13 1996. EPA and Kentucky review/approval of the CERCLA documentation (not yet available) associated with this SWMU has not occurred.

Detailed Facility D&D OU Facilities List

Facility Number	Description	SWMU/AOC Number	Facility Status	Integrated Site Evaluation (SE) Complete	CERCLA NTCRA Required
Gaseous Diffusion Process Facilities and Process Building Tie Lines and Bridges					
C-310	Purge and Product Building	--	Deactivating	No	Pending SE
C-310-A	Product Withdrawal Building	--	Deactivating	No	Pending SE
C-315	Surge and Waste Building	--	Deactivating	No	Pending SE
C-331	Process Building	--	Deactivating	No	Pending SE
C-333	Process Building	--	Deactivating	No	Pending SE
C-333-A	Feed Vaporization Facility	70	Deactivating	8/24/1987	Yes
C-335	Process Building	--	Deactivating	No	Pending SE
C-337	Process Building	--	Deactivating	No	Pending SE
C-337-A	Feed Vaporization Facility	71	Deactivating	8/24/1987	Yes
C-310-331	Tie-Line	--	Deactivating	No	Pending SE
C-310-331-A	Bridge (Enclosed)	--	Deactivating	No	Pending SE
C-310-331-B	Tie-Line	--	Deactivating	No	Pending SE
C-315-331	Tie-Line	--	Deactivating	No	Pending SE
C-331-333-A	Bridge (Enclosed—300 ft)	--	Deactivating	No	Pending SE
C-331-333-B	Tie-Line (West)	--	Deactivating	No	Pending SE
C-331-333-C	Tie-Line (East)	--	Deactivating	No	Pending SE
C-331-335	Tie-Line	--	Deactivating	No	Pending SE
C-335-337-A	Bridge (Enclosed)	--	Deactivating	No	Pending SE
C-335-337-B	Tie-Line (North)	--	Deactivating	No	Pending SE
C-335-337-C	Tie-Line (South)	--	Deactivating	No	Pending SE
Process Support Facilities					
C-409	Stabilization Building	--	Deactivating	No	Pending SE
C-415	Feed Plant Storage	482	Shutdown	7/18/2001	Yes
C-600	Steam Plant	--	Shutdown	No	Pending SE
Switchyards					
C-531-1	Switch House ¹⁶	82	Operating	8/24/1987	Yes
C-531-2	Switchyard ¹⁶	82	Operating	8/24/1987	Yes
C-531-3A	Fire Valve House No. 1 ¹⁶	82	Operating	8/24/1987	Yes
C-531-3B	Fire Valve House No. 2 ¹⁶	82	Operating	8/24/1987	Yes
C-532	Relay House ¹⁶	82	Operating	8/24/1987	Yes
C-533-1	Switch House ¹⁷	83	Standby	8/24/1987	Yes
C-533-2	Switchyard ¹⁷	83	Standby	8/24/1987	Yes

¹⁶ The C-531 Switchyard and associated support facilities are currently in use until the TVA Substation (C-538 Substation) construction is complete. Some of these facilities will be placed in “Standby.”

¹⁷ These facilities have “Standby” status designation until the DOE Excess Screening process is complete. Once approval is received, these facilities will receive a status of “Shutdown” because the facility no longer will be maintained for future use.

Detailed Facility D&D OU Facilities List (Continued)

Facility Number	Description	SWMU/AOC Number	Facility Status	Integrated Site Evaluation (SE) Complete	CERCLA NTCRA Required
Switchyards (Continued)					
C-533-3A	Fire Valve House No. 1 ¹⁷	83	Standby	8/24/1987	Yes
C-533-3B	Fire Valve House No. 2 ¹⁷	83	Standby	8/24/1987	Yes
C-533-3C	Fire Valve House No. 3 ¹⁷	83	Standby	8/24/1987	Yes
C-533-3D	Fire Valve House No. 4 ¹⁷	83	Standby	8/24/1987	Yes
C-535-1	Switch House	84	Deactivation Complete	8/24/1987	Yes
C-535-2	Switchyard ¹⁷	84	Standby	8/24/1987	Yes
C-535-3A	Fire Valve House No. 1 ¹⁷	84	Standby	8/24/1987	Yes
C-535-3B	Fire Valve House No. 2 ¹⁷	84	Standby	8/24/1987	Yes
C-535-4	Test Shop (Maintenance Office) ¹⁷	84	Standby	8/24/1987	Yes
C-536	Relay House ¹⁷	84	Standby	8/24/1987	Yes
C-537-1	Switch House	85	Deactivation Complete	8/24/1987	Yes
C-537-2	Switchyard ¹⁷	85	Standby	8/24/1987	Yes
C-537-3A	Fire Valve House No. 1 ¹⁷	85	Standby	8/24/1987	Yes
C-537-3B	Fire Valve House No. 2 ¹⁷	85	Standby	8/24/1987	Yes
C-537-3C	Fire Valve House No. 3 ¹⁷	85	Standby	8/24/1987	Yes
C-537-3D	Fire Valve House No. 4 ¹⁷	85	Standby	8/24/1987	Yes
C-537-4	Test Shop ¹⁷	85	Standby	8/24/1987	Yes
C-540-A	Oil Pump House ¹⁶	83	Operating	8/24/1987	Yes
C-541-A	Oil Pump House ¹⁷	84	Standby	8/24/1987	Yes
Cooling Towers					
C-631-1	Pump House	86	Operating	8/24/1987	Yes
C-631-2	Cooling Tower	86	Operating	8/24/1987	Yes
C-631-3	Fire Water Pump House	86	Operating	8/24/1987	Yes
C-631-4	Blending Pump House	86	Shutdown	8/24/1987	Yes
C-631-5	Blending Cooling Tower (West) ¹⁷	86	Standby	8/24/1987	Yes
C-631-6	Blending Cooling Tower (East) ¹⁷	86	Standby	8/24/1987	Yes
C-633-1	Pump House	87	Shutdown	8/24/1987	Yes
C-633-2A	Cooling Tower (South) ¹⁷	87	Standby	8/24/1987	Yes
C-633-2B	Cooling Tower (North) ¹⁷	87	Standby	8/24/1987	Yes
C-633-3	Blending Pump House ¹⁷	87	Standby	8/24/1987	Yes
C-633-4	Blending Cooling Tower (North) ¹⁷	87	Standby	8/24/1987	Yes
C-633-5	Blending Cooling Tower (South) ¹⁷	87	Standby	8/24/1987	Yes
C-633-6	Sand Filter Building	87	Shutdown	8/24/1987	Yes
C-635-1	Pump House	88	Shutdown	8/24/1987	Yes
C-635-2	Cooling Tower ¹⁷	88	Standby	8/24/1987	Yes
C-635-3	Blending Pump House	88	Shutdown	8/24/1987	Yes
C-635-4	Blending Cooling Tower (North) ¹⁷	88	Standby	8/24/1987	Yes
C-635-5	Blending Cooling Tower (South) ¹⁷	88	Standby	8/24/1987	Yes
C-637-1	Pump House	89	Shutdown	8/24/1987	Yes
C-637-2A	Cooling Tower (South) ¹⁷	89	Standby	8/24/1987	Yes
C-637-2B	Cooling Tower (North) ¹⁷	89	Standby	8/24/1987	Yes
C-637-3	Blending Pump House	89	Shutdown	8/24/1987	Yes

Detailed Facility D&D OU Facilities List (Continued)

Facility Number	Description	SWMU/AOC Number	Facility Status	Integrated Site Evaluation (SE) Complete	CERCLA NTCRA Required
Cooling Towers (Continued)					
C-637-4	Blending Cooling Tower (North) ¹⁷	89	Standby	8/24/1987	Yes
C-637-5	Blending Cooling Tower (South) ¹⁷	89	Standby	8/24/1987	Yes
C-637-6	Sand Filter Building	89	Shutdown	8/24/1987	Yes
Phosphate (Former Chromate) Reduction System Facilities					
C-616-A	Chemical Feed Building	42	Operating	12/18/91	Yes
C-616-B	Clarifier-East	42	Operating	12/18/91	Yes
C-616-C	Effluent Control Vault	42	Operating	12/18/91	Yes
C-616-D	Sludge Vault and Valve Pit	42	Operating	12/18/91	Yes
C-616-H1	Ferrous Sulfate Storage Tank (East)	42	Standby	12/18/91	Yes
C-616-H2	Ferrous Sulfate Storage Tank (West)	42	Standby	12/18/91	Yes
C-616-J	Reduction Tank (East)	42	Standby	12/18/91	Yes
C-616-K	Service Building	42	Operating	12/18/91	Yes
C-616-L	Lift Station	42	Operating	12/18/91	Yes
C-616-M	Clarifier (West)	42	Operating	12/18/91	Yes
C-616-N	Reduction Tank (West)	42	Operating	12/18/91	Yes
C-616-P	Sludge Vault and Valve Pit	42	Operating	12/18/91	Yes
Sewage System and Water Treatment Ancillary Facilities					
C-611-A	Building and Shop Storage	--	Operating	No	Pending SE
C-611-B	Head House	--	Operating	No	Pending SE
C-611-B1	Polymer Feed System Enclosure	--	Operating	No	Pending SE
C-611-C	Flocculator Basin	--	Operating	No	Pending SE
C-611-F1	Secondary Coagulation Basin	--	Operating	No	Pending SE
C-611-H	Filter Building and Pump Station	--	Operating	No	Pending SE
C-611-J	Pump House (Settled Water)	--	Operating	No	Pending SE
C-611-P	Building – Pump House	--	Standby	No	Pending SE
C-611-T	Booster Pump Station Plant Water ¹⁸	--	Standby	No	Pending SE
C-611-U	Softening Facility (West)	--	Operating	No	Pending SE
C-611-X	Softening Facility (East)	--	Standby	No	Pending SE
C-611-Z	Flocculator Basin	--	Operating	No	Pending SE
C-615-A	Primary Settling Tank/Catch Basin	38	Operating	8/24/87	Yes
C-615-B	Final Settling Tank/Catch Basin	38	Operating	8/24/87	Yes
C-615-C	Sewage Plant Monitoring Building	38	Operating	8/24/87	Yes
C-615-D	Digester	38	Operating	8/24/87	Yes
C-615-E	Trickling Filter	38	Operating	8/24/87	Yes
C-615-F	Dry Bed for Trickling Filter	38	Operating	8/24/87	Yes
Process Laboratory and Maintenance Facilities					
C-709	Plant Laboratory Annex	--	Operating	No	Pending SE
C-710	Technical Services Building/Lab	--	Operating	No	Pending SE
C-720	Maintenance and Storage Building	--	Operating	No	Pending SE
C-720-A	Compressor Shop Addition	--	Standby	No	Pending SE
C-720-B	Machine Shop Addition	--	Shutdown	No	Pending SE
C-720-C	Converter Shop Addition	--	Operating	No	Pending SE
C-720-C1	Paint Shop	--	Operating	No	Pending SE

¹⁸ This facility will no longer be used for pumping water; however, it may be used by Fire Services in an emergency situation to fill the C-631 Basin.

Detailed Facility D&D OU Facilities List (Continued)

Facility Number	Description	SWMU/AOC Number	Facility Status	Integrated Site Evaluation (SE) Complete	CERCLA NTCRA Required
Process Laboratory and Maintenance Facilities (Continued)					
C-720-E	Change House Addition	--	Operating	No	Pending SE
C-720-K	Instrument Shop Addition	--	Operating	No	Pending SE
C-724-A	Carpenter Shop Annex	178	Operating	01/25/93	Yes
C-724-B	Carpenter Shop	--	Operating	No	Pending SE
C-724-C	Paint Shop	--	Operating	No	Pending SE
C-725	Paint Shop	--	Operating	No	Pending SE
C-726	Sandblast Building	172	Standby	10/29/92	Yes
C-728	Motor Cleaning Facility	33	Operating	6/2/15	Yes
Gaseous Diffusion Plant Support Facilities					
C-350	Drying Agent Storage Building	--	Deactivating	No	Pending SE
C-360	Toll Transfer and Sampling Building	--	Shutdown	No	Pending SE
C-360-A	Toll Transfer and Sampling Building Annex	--	Operating	No	Pending SE
C-606	Coal Crusher Building	--	Shutdown	No	Pending SE
C-620	Air Compressor Room	--	Operating	No	Pending SE
C-729	Acetylene Building	--	Shutdown	No	Pending SE
C-744	Material Handling Building	--	Operating	No	Pending SE
C-750	Garage	--	Operating	No	Pending SE

AOC = area of concern

D&D = Decontamination and Decommissioning

CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act

NTCRA = non-time-critical removal action

SE = site evaluation

SWMU = solid waste management unit

Operating—Facility is currently in use supporting U.S. Department of Energy mission activities.

Standby—Facility is currently not in use but may be utilized to support future U.S. Department of Energy mission activities.

Shutdown—Facility is not being maintained for future use and is awaiting disposition (excess property determination is pending).

Deactivating—Interim process where stabilization and deactivation activities have been initiated and are ongoing.

Deactivation Complete—Awaiting decommissioning.

APPENDIX 5

ENFORCEABLE TIMETABLES AND DEADLINES; PLANNING DATES WITH LONG-TERM TARGETS

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Operable Unit Sequencing

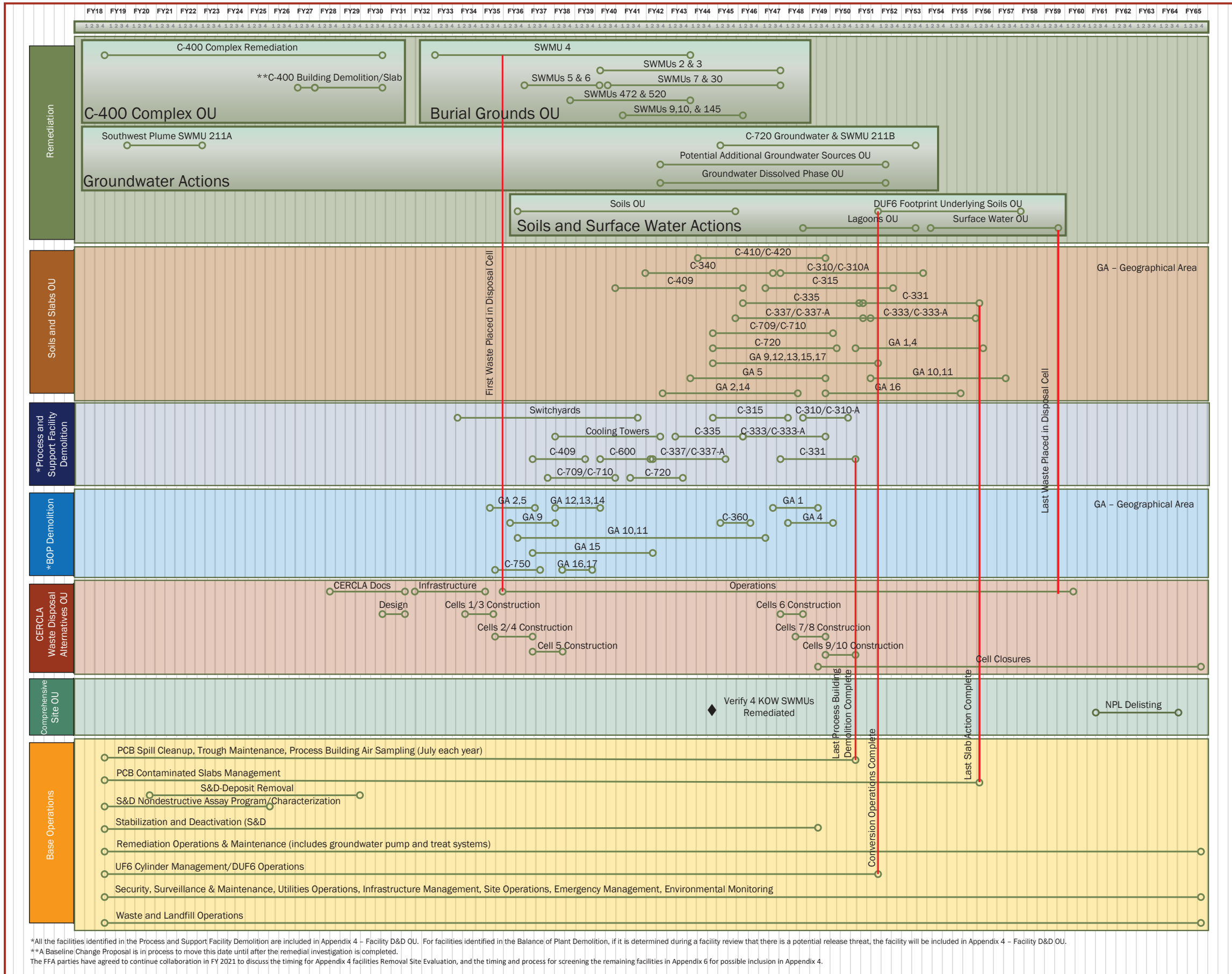
The Paducah Life Cycle Baseline is a non-public U.S. Department of Energy (DOE) document that integrates DOE assumptions regarding technical scope, schedule, and cost for both Federal Facility Agreement (FFA) and non-FFA activities. The Paducah Life Cycle Baseline is a planning and performance monitoring tool that is approved by DOE Headquarters. The Paducah Life Cycle Baseline is considered by DOE when proposing schedules for FFA cleanup activities. Actual funding levels enacted by Congress each year or unexpected site conditions are risks that are monitored by the FFA parties. If risks or opportunities are realized, they may accelerate or delay the end date for completion cleanup at the Paducah Site. The FFA provides collaboration mechanisms, such as consultation on budget and the annual update to the Site Management Plan (SMP), to manage changes in cleanup priorities, scope, and schedule in support of final cleanup of the Paducah Site.

The Paducah Life Cycle Baseline was updated in 2018 to integrate and logically sequence site projects to remediate environmental media (including slabs); complete operating missions; deactivate facilities and systems; remove equipment and disposition small structures; decommission and demolish facilities; complete the Comprehensive Site Operable Unit (CSOU); achieve National Priorities De-listing; and turn over the site for future use. The 2018 Paducah Life Cycle Baseline was established utilizing DOE constraints in funding and schedule. Changes in funding levels or site conditions are uncertainties or risks that are monitored as part of DOE management of the baseline. If risks or opportunities are realized, they may have an impact on the end date for completion (FY 2065) of the 2018 Paducah Life Cycle Baseline scope of work. DOE's internal baseline change process will capture any necessary cost or schedules changes as a result of project risk management (scope, schedule, and cost). Key DOE planning assumptions regarding project technical scope are described in Appendix 3 for each operable unit. The milestone dates associated with executing the scope of work are defined in Appendix 5 (Enforceable Timetables and Deadlines; Planning Dates with Long-Term Targets).

The following figure shows the major projects and activities in the Paducah Life Cycle Schedule, their sequence, and inter-relationships among projects. This figure shows both non-Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) site activities and CERCLA activities that are required to complete the decommissioning and remediation scope at the Paducah Site.

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Paducah Project Life Cycle Summary Schedule



*All the facilities identified in the Process and Support Facility Demolition are included in Appendix 4 - Facility D&D OU. For facilities identified in the Balance of Plant Demolition, if it is determined during a facility review that there is a potential release threat, the facility will be included in Appendix 4 - Facility D&D OU.
 **A Baseline Change Proposal is in process to move this date until after the remedial investigation is completed.
 The FFA parties have agreed to continue collaboration in FY 2021 to discuss the timing for Appendix 4 facilities Removal Site Evaluation, and the timing and process for screening the remaining facilities in Appendix 6 for possible inclusion in Appendix 4.

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Enforceable Timetables and Deadlines; Planning Dates with Long-Term Targets

C-400 Complex Operable Unit					
Subproject	Deliverable	Enforceable Timetable and Deadlines¹		Planning Dates with Long-Term Targets for Decision Documents²	Comments
		FY 2021–FY 2023	Out-Year		
C-400 D&D	Removal Notification			2 nd Quarter 2025	Per the Memorandum, <i>Suspension of D1 and D2 Comprehensive Environmental Response, Compensation, and Liability Act Documents Associated with the C-400 Cleaning Building Non-Time-Critical Removal Action at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky</i> (PPPO-02-5786835-20), dated October 2, 2019, the original documents were not approved and the non-time-critical removal action (NTCRA) was suspended. The FFA parties will determine the appropriate document version (i.e., D1 or D2) and document review process upon resuming the NTCRA.
	Engineering Evaluation/Cost Analysis (EE/CA)			3 rd Quarter 2025	See comment for Removal Notification for document version (i.e., D1 or D2) and document review process upon resuming the NTCRA. D1 EE/CA is submitted upon approval of the RN and in accordance with the schedule in the RN [Federal Facility Agreement (FFA) Section X.E].
	Action Memorandum			1 st Quarter 2026	See comment for Removal Notification for document version (i.e., D1 or D2) and document review process upon resuming the NTCRA. D1 AM is submitted 30 days after close of public comment period on the EE/CA (FFA Section X.E).

Enforceable Timetables and Deadlines; Planning Dates with Long-Term Targets (Continued)

C-400 Complex Operable Unit (Continued)					
Subproject	Deliverable	Enforceable Timetable and Deadlines¹		Planning Dates with Long-Term Targets for Decision Documents²	Comments
		FY 2021–FY 2023	Out-Year		
C-400 D&D (Cont.)	Removal Action Work Plan			2 nd Quarter 2026	See comment for Removal Notification for document version (i.e., D1 or D2) and document review process upon resuming the NTCRA. D1 RAWP is submitted 30 days after approval of the AM (FFA Section X.E).
	Removal Action Field Start			3 rd Quarter 2026	Commencement within 15 days after approval of the RAWP (FFA Section X.E).
C-400 Final Remedial Action	D1 Remedial Investigation/Feasibility Study Report	10/7/2022			
	D1 Proposed Plan	4/6/2023			The Proposed Plan is submitted for public comment within two weeks of approval.
	D1 Record of Decision (ROD)			1 st Quarter 2024	D1 ROD is submitted 30 days after close of public comment period on the Proposed Plan (FFA Section XIV.D).
	D1 Remedial Design Work Plan			1 st Quarter 2024	
	D1 Remedial Design Report (90% Design)			1 st Quarter 2025	
	D1 Remedial Action Work Plan			1 st Quarter 2025	
	Remedial Action Field Start			2 nd Quarter 2025	Commencement within 15 months of ROD signature (FFA Section XV).
D1 Remedial Action Completion Report			1 st Quarter 2032	D1 Remedial Action Completion Report is submitted 150 days after Remedial Action is completed.	

Enforceable Timetables and Deadlines; Planning Dates with Long-Term Targets (Continued)

Groundwater Operable Unit					
Subproject	Deliverable	Enforceable Timetable and Deadlines ¹		Planning Dates with Long-Term Targets for Decision Documents ²	Comments
		FY 2021–FY 2023	Out-Year		
Southwest Plume Sources—SWMU 211-A (Enhanced <i>In Situ</i> Bioremediation)	D1 Interim Remedial Action Completion Report	5/29/2021			<p>A new timeframe will be established based on dispute resolution of the Remedial Action Work Plan.</p> <p>D1 Interim Remedial Action Completion Report is submitted 150 days after Remedial Action is completed.</p> <p>The D1 Interim Remedial Action Completion Report will include components of a Postconstruction Report.</p>

Enforceable Timetables and Deadlines; Planning Dates with Long-Term Targets (Continued)

CERCLA Waste Disposal Alternatives Operable Unit					
Subproject	Deliverable	Enforceable Timetable and Deadlines ¹		Planning Dates with Long-Term Targets for Decision Documents ²	Comments
		FY 2021–FY 2023	Out-Year		
CERCLA Waste Disposal Alternatives	D1 Remedial Investigation/Feasibility Study			4 th Quarter 2027	
	D1 Proposed Plan			2 nd Quarter 2028	D1 Proposed Plan is submitted 45 days after EPA and KY approval of the FS. ³ The Proposed Plan is submitted for public comment within two weeks of approval.
	D1 ROD			4 th Quarter 2028	D1 ROD is submitted 30 days after close of public comment period on the Proposed Plan (FFA Section XIV.D).
	D1 Remedial Design Work Plan			3 rd Quarter 2029	
	D1 Remedial Design Report			3 rd Quarter 2030	FFA schedule logic has been modified to account for the complexity of the project.
	D1 Remedial Action Work Plan			3 rd Quarter 2031	FFA schedule logic has been modified to account for the complexity of the project.
	D1 Interim Remedial Action Completion Report			4 th Quarter 2035	The D1 Interim Remedial Action Completion Report is a post-construction report to be issued prior to the start of operations. A D1 Final Remedial Action Completion Report will be issued when operations cease and closure has been completed.

Enforceable Timetables and Deadlines; Planning Dates with Long-Term Targets (Continued)

Burial Grounds Operable Unit					
Subproject	Deliverable	Enforceable Timetable and Deadlines¹		Planning Dates with Long-Term Targets for Decision Documents²	Comments
		FY 2021–FY 2023	Out-Year		
SWMU 4 Remedial Action	D1 Proposed Plan			4 th Quarter 2033	
	D1 ROD			2 nd Quarter 2034	
	D1 Remedial Design Work Plan (Waste Portion)			4 th Quarter 2034	
	D1 Remedial Design Report (Waste Portion)			1 st Quarter 2035	
	D1 Remedial Action Work Plan (Waste Portion)			1 st Quarter 2035	
	D1 Interim Remedial Action Completion Report (Waste Portion)			4 th Quarter 2038	
	D1 Remedial Design Work Plan (Groundwater Treatment)			2 nd Quarter 2038	
	D1 Remedial Design Report (Groundwater Treatment)			4 th Quarter 2038	
	D1 Remedial Action Work Plan (Groundwater Treatment)			1 st Quarter 2039	
	D1 Remedial Action Completion Report (Groundwater Treatment)			3 rd Quarter 2041	

Enforceable Timetables and Deadlines; Planning Dates with Long-Term Targets (Continued)

Burial Grounds Operable Unit (Continued)					
Subproject	Deliverable	Enforceable Timetable and Deadlines¹		Planning Dates with Long-Term Targets for Decision Documents²	Comments
		FY 2021 FY 2023	Out-Year		
SWMUs 2 and 3 Remedial Action	D1 Proposed Plan			1 st Quarter 2040	The Feasibility Study may require revisions to reflect current costs or change in technologies prior to issuing the D1 Proposed Plan due to the significant amount of time that will have passed since approval of the Feasibility Study.
	D1 ROD			3 rd Quarter 2040	
	SWMU 2 D1 Remedial Design Work Plan (Waste Portion)			1 st Quarter 2041	
	SWMU 2 D1 Remedial Design Report (Waste Portion)			2 nd Quarter 2041	
	SWMU 2 D1 Remedial Action Work Plan (Waste Portion)			2 nd Quarter 2041	
	SWMU 2 D1 Interim Remedial Action Completion Report (Waste Portion)			3 rd Quarter 2042	
	SWMU 2 D1 Remedial Design Work Plan (Groundwater Treatment)			2 nd Quarter 2043	
	SWMU 2 D1 Remedial Design Report (Groundwater Treatment)			3 rd Quarter 2043	
	SWMU 2 D1 Remedial Action Work Plan (Groundwater Treatment)			4 th Quarter 2043	
	SWMU 2 D1 Remedial Action Completion Report			2 nd Quarter 2045	
	SWMU 3 D1 Remedial Design Work Plan			1 st Quarter 2041	
	SWMU 3 D1 Remedial Design Report			2 nd Quarter 2041	
	SWMU 3 D1 Remedial Action Work Plan			2 nd Quarter 2041	
	SWMU 3 D1 Remedial Action Completion Report			4 th Quarter 2043	

Enforceable Timetables and Deadlines; Planning Dates with Long-Term Targets (Continued)

Burial Grounds Operable Unit (Continued)					
Subproject	Deliverable	Enforceable Timetable and Deadlines¹		Planning Dates with Long-Term Targets for Decision Documents²	Comments
		FY 2021–FY 2023	Out-Year		
SWMUs 5 and 6 Remedial Action	D1 Proposed Plan			2 nd Quarter 2037	
	D1 ROD			4 th Quarter 2037	
	D1 Remedial Design Work Plan			2 nd Quarter 2038	
	D1 Remedial Design Report			3 rd Quarter 2038	
	D1 Remedial Action Work Plan			4 th Quarter 2038	
	D1 Remedial Action Completion Report			1 st Quarter 2040	
SWMUs 7 and 30 Remedial Action	D1 Proposed Plan			2 nd Quarter 2041	The Feasibility Study may require revisions to reflect current costs or change in technologies prior to issuing the D1 Proposed Plan due to the significant amount of time that will have passed since approval of the Feasibility Study.
	D1 ROD			4 th Quarter 2041	
	D1 Remedial Design Work Plan (Waste Portion)			2 nd Quarter 2042	
	D1 Remedial Design Report (Waste Portion)			3 rd Quarter 2042	
	D1 Remedial Action Work Plan (Waste Portion)			4 th Quarter 2042	
	D1 Interim Remedial Action Completion Report (Waste Portion)			2 nd Quarter 2044	
	D1 Remedial Design Work Plan (Groundwater Treatment)			2 nd Quarter 2044	
	D1 Remedial Design Report (Groundwater Treatment)			3 rd Quarter 2044	
	D1 Remedial Action Work Plan (Groundwater Treatment)			3 rd Quarter 2044	
	D1 Remedial Action Completion Report			1 st Quarter 2047	

Enforceable Timetables and Deadlines; Planning Dates with Long-Term Targets (Continued)

Burial Grounds Operable Unit (Continued)					
Subproject	Deliverable	Enforceable Timetable and Deadlines¹		Planning Dates with Long-Term Targets for Decision Documents²	Comments
		FY 2021– FY 2023	Out-Year		
SWMUs 9, 10, and 145 Remedial Action	D1 Remedial Investigation Work Plan Addendum			4 th Quarter 2040	
	D1 Remedial Investigation Report Addendum			1 st Quarter 2042	
	D1 Feasibility Study			3 rd Quarter 2042	
	D1 Proposed Plan			1 st Quarter 2043	
	D1 ROD			3 rd Quarter 2043	
	D1 Remedial Design Work Plan			1 st Quarter 2044	
	D1 Remedial Design Report			3 rd Quarter 2044	
	D1 Remedial Action Work Plan			4 th Quarter 2044	
	D1 Remedial Action Completion Report			1 st Quarter 2046	

Enforceable Timetables and Deadlines; Planning Dates with Long-Term Targets (Continued)

Burial Grounds Operable Unit (Continued)					
Subproject	Deliverable	Enforceable Timetable and Deadlines¹		Planning Dates with Long-Term Targets for Decision Documents²	Comments
		FY 2021–FY 2023	Out-Year		
Additional Burial Grounds	SWMU 472 Remedial Investigation Work Plan			1 st Quarter 2039	
	SWMU 472 Remedial Investigation Report			1 st Quarter 2040	
	SWMU 472 D1 Feasibility Study			3 rd Quarter 2040	
	SWMU 472 D1 Proposed Plan			1 st Quarter 2041	
	SWMU 472 D1 ROD			3 rd Quarter 2041	
	SWMU 472 D1 Remedial Design Work Plan			1 st Quarter 2042	
	SWMU 472 D1 Remedial Design Report			2 nd Quarter 2042	
	SWMU 472 D1 Remedial Action Work Plan			2 nd Quarter 2042	
	SWMU 472 D1 Remedial Action Completion Report			4 th Quarter 2043	
	SWMU 520 Remedial Investigation Work Plan			1 st Quarter 2039	
	SWMU 520 Remedial Investigation Report			1 st Quarter 2040	
	SWMU 520 D1 Feasibility Study			3 rd Quarter 2040	
	SWMU 520 D1 Proposed Plan			1 st Quarter 2041	
	SWMU 520 D1 ROD			3 rd Quarter 2041	
	SWMU 520 D1 Remedial Design Work Plan			1 st Quarter 2042	
	SWMU 520 D1 Remedial Design Report			2 nd Quarter 2042	
	SWMU 520 D1 Remedial Action Work Plan			2 nd Quarter 2042	
	SWMU 520 D1 Remedial Action Completion Report			4 th Quarter 2043	
BGOU	BGOU Remedial Action Completion Report		12/31/2046		This date reflects the completion report for the last BGOU subproject (SWMUs 7 and 30 Remedial Action).

Enforceable Timetables and Deadlines; Planning Dates with Long-Term Targets (Continued)

Groundwater Operable Unit					
Subproject	Deliverable	Enforceable Timetable and Deadlines ¹		Planning Dates with Long-Term Targets for Decision Documents ²	Comments
		FY 2021–FY 2023	Out-Year		
Southwest Plume Sources—SWMU 211-B	D1 Remedial Design Work Plan			4 th Quarter 2044	Note: Additional environmental media investigation under the C-720 Soils and Slabs OU will be conducted that will support remedy selection. If additional CERCLA documents are required to modify the remedy, then they will be added as agreed to by the FFA parties.
	D1 Remedial Design Report (90% Design)			2 nd Quarter 2048	
	D1 Remedial Action Work Plan			2 nd Quarter 2048	
	D1 Remedial Action Completion Report			2 nd Quarter 2052	
Potential Additional Groundwater Sources	D1 Site Investigation Work Plan			3 rd Quarter 2042	
	D1 Site Investigation Report			3 rd Quarter 2043	
	D1 Remedial Investigation Work Plan			4 th Quarter 2043	
	D1 Remedial Investigation Report			3 rd Quarter 2044	
	D1 Feasibility Study Report			1 st Quarter 2045	
	D1 Proposed Plan			4 th Quarter 2045	
	D1 Record of Decision			1 st Quarter 2046	
	D1 Remedial Design Work Plan			4 th Quarter 2046	
	D1 Remedial Design Report (90% Design)			2 nd Quarter 2047	
	D1 Remedial Action Work Plan			2 nd Quarter 2047	
	D1 Remedial Action Completion Report			4 th Quarter 2048	

Enforceable Timetables and Deadlines; Planning Dates with Long-Term Targets (Continued)

Groundwater Operable Unit (Continued)					
Subproject	Deliverable	Enforceable Timetable and Deadlines¹		Planning Dates with Long-Term Targets for Decision Documents²	Comments
		FY 2021– FY 2023	Out-Year		
Dissolved-Phase Plumes	D1 Remedial Investigation Work Plan			1 st Quarter 2042	
	D1 Remedial Investigation Report			1 st Quarter 2044	
	D1 Feasibility Study Report			3 rd Quarter 2044	
	D1 Proposed Plan			2 nd Quarter 2045	
	D1 ROD			4 th Quarter 2045	
	D1 Treatability Work Plan			2 nd Quarter 2043	
	D1 Treatability Study Report			1 st Quarter 2045	
	D1 Remedial Design Work Plan			1 st Quarter 2046	
	D1 Remedial Design Report			2 nd Quarter 2046	
	D1 Remedial Action Work Plan			3 rd Quarter 2046	
GWOU	D1 Interim Remedial Action Completion Report		9/30/2048		The D1 interim Remedial Action Completion Report will include components of a Postconstruction Report.

Enforceable Timetables and Deadlines; Planning Dates with Long-Term Targets (Continued)

Soils Operable Unit					
Subproject	Deliverable	Enforceable Timetable and Deadlines¹		Planning Dates with Long-Term Targets for Decision Documents²	Comments
		FY 2021–FY 2023	Out-Year		
Remedial Action 1	D1 Feasibility Study			2 nd Quarter 2039	
	D1 Proposed Plan			4 th Quarter 2039	
	D1 ROD			2 nd Quarter 2040	
	D1 Remedial Design Work Plan			4 th Quarter 2040	
	D1 Remedial Design Report			1 st Quarter 2041	
	D1 Remedial Action Work Plan			2 nd Quarter 2041	
Remedial Action 2	D1 Feasibility Study			4 th Quarter 2040	
	D1 Proposed Plan			2 nd Quarter 2041	
	D1 ROD			4 th Quarter 2041	
	D1 Remedial Design Work Plan			2 nd Quarter 2042	
	D1 Remedial Design Report			3 rd Quarter 2042	
	D1 Remedial Action Work Plan			4 th Quarter 2042	
Soils OU	D1 Remedial Action Completion Report		12/31/2044		

Enforceable Timetables and Deadlines; Planning Dates with Long-Term Targets (Continued)

DUF₆ Footprint Underlying Soils Operable Unit					
Subproject	Deliverable	Enforceable Timetable and Deadlines¹		Planning Dates with Long-Term Targets for Decision Documents²	Comments
		FY 2021– FY 2023	Out-Year		
N/A	D1 Remedial Investigation Work Plan			4 th Quarter 2051	
	D1 Remedial Investigation Report			4 th Quarter 2052	
	D1 Feasibility Study			3 rd Quarter 2053	
	D1 Proposed Plan			1 st Quarter 2054	
	D1 ROD			4 th Quarter 2055	
	D1 Remedial Design Work Plan			4 th Quarter 2055	
	D1 Remedial Design Report			4 th Quarter 2056	
	D1 Remedial Action Work Plan			4 th Quarter 2056	
	D1 Remedial Action Completion Report			2 nd Quarter 2057	

Enforceable Timetables and Deadlines; Planning Dates with Long-Term Targets (Continued)

Facility Decontamination and Decommissioning Operable Unit⁴					
Subproject	Deliverable	Enforceable Timetable and Deadlines¹		Planning Dates with Long-Term Targets for Decision Documents²	Comments
		FY 2021–FY 2023	Out-Year		
Switchyards D&D	D1 Removal Notification (Site Evaluation) Switchyards slabs and soils			2 nd Quarter 2036	
	D1 EE/CA Switchyards slabs and soils			3 rd Quarter 2036	
	D1 Action Memorandum Switchyards slabs and soils			4 th Quarter 2036	
	D1 Removal Action Work Plan Switchyards slabs and soils			1 st Quarter 2037	
Cooling Towers D&D	D1 Removal Notification (Site Evaluation) Cooling Tower Buildings			3 rd Quarter 2038	
	D1 EE/CA Cooling Tower Buildings			4 th Quarter 2038	
	D1 Action Memorandum Cooling Tower Buildings			1 st Quarter 2039	
	D1 Removal Action Work Plan Cooling Tower Buildings			2 nd Quarter 2039	
C-409 D&D	D1 Removal Notification (Site Evaluation) C-409			1 st Quarter 2038	
	D1 EE/CA C-409			2 nd Quarter 2038	
	D1 Action Memorandum C-409			3 rd Quarter 2038	
	D1 Removal Action Work Plan C-409			4 th Quarter 2038	
C-709/C-710 D&D	D1 Removal Notification (Site Evaluation) C-709/C-710			1 st Quarter 2038	
	D1 EE/CA C-709/C-710			2 nd Quarter 2038	
	D1 Action Memorandum C-709/C-710			4 th Quarter 2038	
	D1 Removal Action Work Plan C-709/C-710			1 st Quarter 2039	

Enforceable Timetables and Deadlines; Planning Dates with Long-Term Targets (Continued)

Facility Decontamination and Decommissioning Operable Unit⁴ (Continued)					
Subproject	Deliverable	Enforceable Timetable and Deadlines¹		Planning Dates with Long-Term Targets for Decision Documents²	Comments
		FY 2021–FY 2023	Out-Year		
C-600 D&D	D1 Removal Notification (Site Evaluation) C-600			1 st Quarter 2040	
	D1 EE/CA C-600			2 nd Quarter 2040	
	D1 Action Memorandum C-600			3 rd Quarter 2040	
	D1 Removal Action Work Plan C-600			4 th Quarter 2040	
C-720 D&D	D1 Removal Notification (Site Evaluation) C-720 and C-720-A, B, C, C1, E, K			4 th Quarter 2040	
	D1 EE/CA C-720 and C-720-A, B, C, C1, E, K			1 st Quarter 2041	
	D1 Action Memorandum C-720 and C-720-A, B, C, C1, E, K			2 nd Quarter 2041	
	D1 Removal Action Work Plan C-720 and C-720-A, B, C, C1, E, K			3 rd Quarter 2041	
C-337/C-337-A D&D	D1 Removal Notification (Site Evaluation) C-337/C-337A			4 th Quarter 2041	
	D1 EE/CA C-337/C-337A			1 st Quarter 2042	
	D1 Action Memorandum C-337/C-337A			2 nd Quarter 2042	
	D1 Removal Action Work Plan C-337/C-337A			3 rd Quarter 2042	
C-335 D&D	D1 Removal Notification (Site Evaluation) C-335			3 rd Quarter 2043	
	D1 EE/CA C-335			3 rd Quarter 2043	
	D1 Action Memorandum C-335			1 st Quarter 2044	
	D1 Removal Action Work Plan C-335			2 nd Quarter 2044	
C-315 D&D	D1 Removal Notification (Site Evaluation) C-315 and C-620			1 st Quarter 2045	
	D1 EE/CA C-315 and C-620			2 nd Quarter 2045	
	D1 Action Memorandum C-315 and C-620			4 th Quarter 2045	
	D1 Removal Action Work Plan C-315 and C-620			1 st Quarter 2046	

Enforceable Timetables and Deadlines; Planning Dates with Long-Term Targets (Continued)

Facility Decontamination and Decommissioning Operable Unit⁴ (Continued)					
Subproject	Deliverable	Enforceable Timetable and Deadlines¹		Planning Dates with Long-Term Targets for Decision Documents²	Comments
		FY 2021–FY 2023	Out-Year		
C-333/C-333-A D&D	D1 Removal Notification (Site Evaluation) C-333/C-333-A			1 st Quarter 2047	
	D1 EE/CA C-333/C-333A			2 nd Quarter 2047	
	D1 Action Memorandum C-333/C-333-A			3 rd Quarter 2047	
	D1 Removal Action Work Plan C-333/C-333-A			4 th Quarter 2047	
C-331 D&D	D1 Removal Notification (Site Evaluation) C-331			4 th Quarter 2047	
	D1 EE/CA C-331			1 st Quarter 2048	
	D1 Action Memorandum C-331			3 rd Quarter 2048	
	D1 Removal Action Work Plan C-331			4 th Quarter 2048	
C-310/C-310-A D&D	D1 Removal Notification (Site Evaluation) C-310/C-310-A			1 st Quarter 2048	
	D1 EE/CA C-310/C-310-A			2 nd Quarter 2048	
	D1 Action Memorandum C-310/C-310-A			4 th Quarter 2048	
	D1 Removal Action Work Plan C-310/C-310-A			1 st Quarter 2049	
GA 1 D&D	D1 Removal Notification (Site Evaluation) GA 1 (includes C-615 Sewage Treatment Plant, C-611 Water Treatment Plant, and C-616 Former Chromate Treatment System)			1 st Quarter 2047	
	D1 EE/CA GA 1 (includes C-615 Sewage Treatment Plant, C-611 Water Treatment Plant, and C-616 Former Chromate Treatment System)			2 nd Quarter 2047	
	D1 Action Memorandum GA 1 (includes C-615 Sewage Treatment Plant, C-611 Water Treatment Plant, and C-616 Former Chromate Treatment System)			4 th Quarter 2047	

Enforceable Timetables and Deadlines; Planning Dates with Long-Term Targets (Continued)

Facility Decontamination and Decommissioning Operable Unit⁴ (Continued)					
Subproject	Deliverable	Enforceable Timetable and Deadlines¹		Planning Dates with Long-Term Targets for Decision Documents²	Comments
		FY 2021–FY 2023	Out-Year		
GA 1 D&D (continued)	D1 Removal Action Work Plan GA 1 (includes C-615 Sewage Treatment Plant, C-611 Water Treatment Plant, and C-616 Former Chromate Treatment System)			1 st Quarter 2048	
GA 10 D&D	D1 Removal Notification (Site Evaluation) GA 10 (includes C-726)			2 nd Quarter 2041	
	D1 EE/CA GA 10 (includes C-726)			3 rd Quarter 2041	
	D1 Action Memorandum GA-10 (includes C-726)			1 st Quarter 2042	
	D1 Removal Action Work Plan GA 10 (includes C-726)			2 nd Quarter 2042	
GA 12, GA 13 D&D	D1 Removal Notification (Site Evaluation) GA 12 and GA13 (includes C-415 and C-606)			1 st Quarter 2041	
	D1 EE/CA GA 12 and GA 13 (includes C-415 and C-606)			2 nd Quarter 2041	
	D1 Action Memorandum GA 12 and GA 13 (includes C-415 and C-606)			3 rd Quarter 2041	
	D1 Removal Action Work Plan GA 12 and GA 13 (includes C-415 and C-606)			4 th Quarter 2041	
GA 14 D&D	D1 Removal Notification (Site Evaluation) GA 14 (includes C-724-A, B, C; C-725; C-729; C-744; C-750; and C-728)			2 nd Quarter 2037	
	D1 EE/CA GA 14 (includes C-724-A, B, C; C-725; C-729; C-744; C-750; and C-728)			3 rd Quarter 2037	
	D1 Action Memorandum GA 14 (includes C-724-A, B, C; C-725; C-729; C-744; C-750; and C-728)			1 st Quarter 2038	
	D1 Removal Action Work Plan GA 14 (includes C-724-A, B, C; C-725; C-729; C-744; C-750; and C-728)			2 nd Quarter 2038	

Enforceable Timetables and Deadlines; Planning Dates with Long-Term Targets (Continued)

Facility Decontamination and Decommissioning Operable Unit⁴ (Continued)					
Subproject	Deliverable	Enforceable Timetable and Deadlines¹		Planning Dates with Long-Term Targets for Decision Documents²	Comments
		FY 2021–FY 2023	Out-Year		
GA 16, GA 17 D&D	D1 Removal Notification (Site Evaluation) GA 16 and GA 17 (includes C-350, C-360, and C-360-A)			3 rd Quarter 2037	
	D1 EE/CA GA 16 and GA 17 (includes C-350, C-360, and C-360-A)			4 th Quarter 2037	
	D1 Action Memorandum GA 16 and GA 17 (includes C-350, C-360, and C-360-A)			2 nd Quarter 2038	
	D1 Removal Action Work Plan GA 16 and GA 17 (includes C-350, C-360, and C-360-A)			3 rd Quarter 2038	

Enforceable Timetables and Deadlines; Planning Dates with Long-Term Targets (Continued)

Soils and Slabs Operable Unit					
Subproject	Deliverable	Enforceable Timetable and Deadlines¹		Planning Dates with Long-Term Targets for Decision Documents²	Comments
		FY 2021–FY 2023	Out-Year		
C-409 Slab	D1 Remedial Investigation Work Plan C-409 Slab			4 th Quarter 2040	
	D1 Remedial Investigation Report C-409 Slab			2 nd Quarter 2042	
	D1 Feasibility Study C-409 Slab			4 th Quarter 2042	
	D1 Proposed Plan C-409 Slab			2 nd Quarter 2043	
	D1 ROD C-409 Slab			4 th Quarter 2043	
	D1 Remedial Design Work Plan C-409 Slab			2 nd Quarter 2044	
	D1 Remedial Design Report C-409 Slab			3 rd Quarter 2044	
	D1 Remedial Action Work Plan C-409 Slab			4 th Quarter 2044	
	D1 Remedial Action Completion Report C-409 Slab			1 st Quarter 2046	
C-340 Slab	D1 Remedial Investigation Work Plan C-340 Slab			3 rd Quarter 2042	
	D1 Remedial Investigation Report C-340 Slab			1 st Quarter 2044	
	D1 Feasibility Study C-340 Slab			3 rd Quarter 2044	
	D1 Proposed Plan C-340 Slab			1 st Quarter 2045	
	D1 ROD C-340 Slab			3 rd Quarter 2045	
	D1 Remedial Design Work Plan C-340 Slab			1 st Quarter 2046	
	D1 Remedial Design Report C-340 Slab			2 nd Quarter 2046	
	D1 Remedial Action Work Plan C-340 Slab			2 nd Quarter 2046	
	D1 Remedial Action Completion Report C-340 Slab			3 rd Quarter 2047	

Enforceable Timetables and Deadlines; Planning Dates with Long-Term Targets (Continued)

Soils and Slabs Operable Unit (Continued)					
Subproject	Deliverable	Enforceable Timetable and Deadlines¹		Planning Dates with Long-Term Targets for Decision Documents²	Comments
		FY 2021–FY 2023	Out-Year		
C-709/C-710 Slab	D1 Remedial Investigation Work Plan C-709/C-710 Slab			2 nd Quarter 2044	
	D1 Remedial Investigation Report C-709/C-710 Slab			4 th Quarter 2045	
	D1 Feasibility Study C-709/C-710 Slab			2 nd Quarter 2046	
	D1 Proposed Plan C-709/C-710 Slab			4 th Quarter 2046	
	D1 ROD C-709/C-710 Slab			2 nd Quarter 2047	
	D1 Remedial Design Work Plan C-709/C-710 Slab			4 th Quarter 2047	
	D1 Remedial Design Report C-709/C-710 Slab			1 st Quarter 2048	
	D1 Remedial Action Work Plan C-709/C-710 Slab			1 st Quarter 2048	
	D1 Remedial Action Completion Report C-709/C-710 Slab			3 rd Quarter 2049	
C-720 Slab	D1 Remedial Investigation Work Plan C-720 Slab (includes SWMU 211-B)			2 nd Quarter 2044	
	D1 Remedial Investigation Report C-720 Slab (includes SWMU 211-B)			3 rd Quarter 2045	
	D1 Feasibility Study C-720 Slab (includes SWMU 211-B)			1 st Quarter 2046	
	D1 Proposed Plan C-720 Slab			3 rd Quarter 2046	
	D1 ROD C-720 Slab			1 st Quarter 2047	
	D1 Remedial Design Work Plan C-720 Slab			3 rd Quarter 2047	
	D1 Remedial Design Report C-720 Slab			4 th Quarter 2047	
	D1 Remedial Action Work Plan C-720 Slab			4 th Quarter 2047	
	D1 Remedial Action Completion Report C-720 Slab			2 nd Quarter 2049	

Enforceable Timetables and Deadlines; Planning Dates with Long-Term Targets (Continued)

Soils and Slabs Operable Unit (Continued)					
Subproject	Deliverable	Enforceable Timetable and Deadlines¹		Planning Dates with Long-Term Targets for Decision Documents²	Comments
		FY 2021–FY 2023	Out-Year		
C-410/C-420 Slabs	D1 Remedial Investigation Work Plan C-410/C-420 Slab			4 th Quarter 2043	
	D1 Remedial Investigation Report C-410/C-420 Slab			2 nd Quarter 2045	
	D1 Feasibility Study C-410/C-420 Slab			4 th Quarter 2045	
	D1 Proposed Plan C-410/C-420 Slab			2 nd Quarter 2046	
	D1 ROD C-410/C-420 Slab			4 th Quarter 2046	
	D1 Remedial Design Work Plan C-410/C-420 Slab			2 nd Quarter 2047	
	D1 Remedial Design Report C-410/C-420 Slab			3 rd Quarter 2047	
	D1 Remedial Action Work Plan C-410/C-420 Slab			3 rd Quarter 2047	
	D1 Remedial Action Completion Report C-410/C-420 Slab			1 st Quarter 2049	
C-337/C-337-A Slab	D1 Remedial Investigation Work Plan C-337/C-337A Slab			4 th Quarter 2046	
	D1 Remedial Investigation Report C-337/C-337A Slab			3 rd Quarter 2047	
	D1 Feasibility Study C-337/C-337A Slab			1 st Quarter 2048	
	D1 Proposed Plan C-337/C-337A Slab			3 rd Quarter 2048	
	D1 ROD C-337/C-337A Slab			1 st Quarter 2050	
	D1 Remedial Design Work Plan C-337/C-337A Slab			3 rd Quarter 2050	
	D1 Remedial Design Report C-337/C-337A Slab			4 th Quarter 2050	
	D1 Remedial Action Work Plan C-337/C-337A Slab			1 st Quarter 2051	
	D1 Remedial Action Completion Report C-337/C-337A Slab			3 rd Quarter 2052	

Enforceable Timetables and Deadlines; Planning Dates with Long-Term Targets (Continued)

Soils and Slabs Operable Unit (Continued)					
Subproject	Deliverable	Enforceable Timetable and Deadlines¹		Planning Dates with Long-Term Targets for Decision Documents²	Comments
		FY 2021–FY 2023	Out-Year		
C-335 Slab	D1 Remedial Investigation Work Plan C-335 Slab			1 st Quarter 2047	
	D1 Remedial Investigation Report C-335 Slab			4 th Quarter 2047	
	D1 Feasibility Study C-335 Slab			3 rd Quarter 2048	
	D1 Proposed Plan C-335 Slab			1 st Quarter 2049	
	D1 ROD C-335 Slab			3 rd Quarter 2049	
	D1 Remedial Design Work Plan C-335 Slab			1 st Quarter 2050	
	D1 Remedial Design Report C-335 Slab			2 nd Quarter 2050	
	D1 Remedial Action Work Plan C-335 Slab			3 rd Quarter 2050	
	D1 Remedial Action Completion Report C-335 Slab			3 rd Quarter 2051	
C-310 Slab	D1 Remedial Investigation Work Plan C-310 Slab			4 th Quarter 2048	
	D1 Remedial Investigation Report C- C-310 Slab			4 th Quarter 2049	
	D1 Feasibility Study C-310 Slab			2 nd Quarter 2050	
	D1 Proposed Plan C-310 Slab			4 th Quarter 2050	
	D1 ROD C-310 Slab			2 nd Quarter 2051	
	D1 Remedial Design Work Plan C-310 Slab			4 th Quarter 2051	
	D1 Remedial Design Report C-310 Slab			1 st Quarter 2052	
	D1 Remedial Action Work Plan C-310 Slab			1 st Quarter 2052	
	D1 Remedial Action Completion Report C-310 Slab			2 nd Quarter 2053	

Enforceable Timetables and Deadlines; Planning Dates with Long-Term Targets (Continued)

Soils and Slabs Operable Unit (Continued)					
Subproject	Deliverable	Enforceable Timetable and Deadlines¹		Planning Dates with Long-Term Targets for Decision Documents²	Comments
		FY 2021–FY 2023	Out-Year		
C-315 Slab	D1 Remedial Investigation Work Plan C-315 Slab			4 th Quarter 2047	
	D1 Remedial Investigation Report C-315 Slab			2 nd Quarter 2049	
	D1 Feasibility Study C-315 Slab			4 th Quarter 2049	
	D1 Proposed Plan C-315 Slab			2 nd Quarter 2050	
	D1 ROD C-315 Slab			4 th Quarter 2050	
	D1 Remedial Design Work Plan C-315 Slab			2 nd Quarter 2051	
	D1 Remedial Design Report C-315 Slab			3 rd Quarter 2051	
	D1 Remedial Action Work Plan C-315 Slab			3 rd Quarter 2051	
	D1 Remedial Action Completion Report C-315 Slab			4 th Quarter 2052	
C-333/C-333-A Slab	D1 Remedial Investigation Work Plan C-333/C-333-A Slab			3 rd Quarter 2050	
	D1 Remedial Investigation Report C-333/C-333-A Slab			2 nd Quarter 2051	
	D1 Feasibility Study C-333/C-333-A Slab			4 th Quarter 2051	
	D1 Proposed Plan C-333/C-333-A Slab			2 nd Quarter 2052	
	D1 ROD C-333/C-333-A Slab			4 th Quarter 2052	
	D1 Remedial Design Work Plan C-333/C-333-A Slab			2 nd Quarter 2053	
	D1 Remedial Design Report C-333/C-333-A Slab			3 rd Quarter 2053	
	D1 Remedial Action Work Plan C-333/C-333-A Slab			3 rd Quarter 2053	
	D1 Remedial Action Completion Report C-333/C-333-A Slab			1 st Quarter 2055	

Enforceable Timetables and Deadlines; Planning Dates with Long-Term Targets (Continued)

Soils and Slabs Operable Unit (Continued)					
Subproject	Deliverable	Enforceable Timetable and Deadlines¹		Planning Dates with Long-Term Targets for Decision Documents²	Comments
		FY 2021–FY 2023	Out-Year		
C-331 Slab	D1 Remedial Investigation Work Plan C-331 Slab			1 st Quarter 2051	
	D1 Remedial Investigation Report C-331 Slab			1 st Quarter 2052	
	D1 Feasibility Study C-331 Slab			3 rd Quarter 2052	
	D1 Proposed Plan C-331 Slab			1 st Quarter 2053	
	D1 ROD C-331 Slab			3 rd Quarter 2053	
	D1 Remedial Design Work Plan C-331 Slab			1 st Quarter 2054	
	D1 Remedial Design Report C-331 Slab			2 nd Quarter 2054	
	D1 Remedial Action Work Plan C-331 Slab			2 nd Quarter 2054	
	D1 Remedial Action Completion Report C-331 Slab			3 rd Quarter 2055	
GA 9, GA 12, GA 13, GA 15, GA 17 Slabs	D1 Remedial Investigation Work Plan GA 9, GA 12, GA 13, GA 15, GA 17 Slabs			1 st Quarter 2044	
	D1 Remedial Investigation Report GA 9, GA 12, GA 13, GA 15, GA 17 Slabs			3 rd Quarter 2045	
	D1 Feasibility Study GA 9, GA 12, GA 13, GA 15, GA 17 Slabs			1 st Quarter 2046	
	D1 Proposed Plan GA 9, GA 12, GA 13, GA 15, GA 17 Slabs			3 rd Quarter 2046	
	D1 ROD GA 9, GA 12, GA 13, GA 15, GA 17 Slabs			1 st Quarter 2047	
	D1 Remedial Design Work Plan GA 9, GA 12, GA 13, GA 15, GA 17 Slabs			3 rd Quarter 2047	
	D1 Remedial Design Report GA 9, GA 12, GA 13, GA 15, GA 17 Slabs			4 th Quarter 2047	
	D1 Remedial Action Work Plan GA 9, GA 12, GA 13, GA 15, GA 17 Slabs			4 th Quarter 2047	

Enforceable Timetables and Deadlines; Planning Dates with Long-Term Targets (Continued)

Soils and Slabs Operable Unit (Continued)					
Subproject	Deliverable	Enforceable Timetable and Deadlines¹		Planning Dates with Long-Term Targets for Decision Documents²	Comments
		FY 2021–FY 2023	Out-Year		
GA 9, GA 12, GA 13, GA 15, GA 17 Slabs (Continued)	D1 Remedial Action Completion Report GA 9, GA 12, GA 13, GA 15, GA 17 Slabs			1 st Quarter 2050	
GA 10, GA 11 Slabs	D1 Remedial Investigation Work Plan GA 10, GA 11 Slabs			4 th Quarter 2049	
	D1 Remedial Investigation Report GA 10, GA 11 Slabs			2 nd Quarter 2051	
	D1 Feasibility Study GA 10, GA 11 Slabs			4 th Quarter 2051	
	D1 Proposed Plan GA 10, GA 11 Slabs			2 nd Quarter 2052	
	D1 ROD GA 10, GA 11 Slabs			4 th Quarter 2052	
	D1 Remedial Design Work Plan GA 10, GA 11 Slabs			2 nd Quarter 2053	
	D1 Remedial Design Report GA 10, GA 11 Slabs			3 rd Quarter 2053	
	D1 Remedial Action Work Plan GA 10, GA 11 Slabs			3 rd Quarter 2053	
	D1 Remedial Action Completion Report GA 10, GA 11 Slabs			4 th Quarter 2054	
GA 5 Slabs	D1 Remedial Investigation Work Plan GA 5 Slabs			4 th Quarter 2041	
	D1 Remedial Investigation Report GA 5 Slabs			2 nd Quarter 2043	
	D1 Feasibility Study GA 5 Slabs			4 th Quarter 2043	
	D1 Proposed Plan GA 5 Slabs			2 nd Quarter 2044	
	D1 ROD GA 5 Slabs			4 th Quarter 2044	
	D1 Remedial Design Work Plan GA 5 Slabs			1 st Quarter 2045	
	D1 Remedial Design Report GA 5 Slabs			2 nd Quarter 2045	
	D1 Remedial Action Work Plan GA 5 Slabs			3 rd Quarter 2045	
D1 Remedial Action Completion Report GA 5 Slabs			4 th Quarter 2046		

Enforceable Timetables and Deadlines; Planning Dates with Long-Term Targets (Continued)

Soils and Slabs Operable Unit (Continued)					
Subproject	Deliverable	Enforceable Timetable and Deadlines¹		Planning Dates with Long-Term Targets for Decision Documents²	Comments
		FY 2021–FY 2023	Out-Year		
GA 16 Slabs	D1 Remedial Investigation Work Plan GA 16 Slabs			3 rd Quarter 2048	
	D1 Remedial Investigation Report GA 16 Slabs			1 st Quarter 2049	
	D1 Feasibility Study GA 16 Slabs			3 rd Quarter 2050	
	D1 Proposed Plan GA 16 Slabs			1 st Quarter 2051	
	D1 ROD GA 16 Slabs			3 rd Quarter 2051	
	D1 Remedial Design Work Plan GA 16 Slabs			1 st Quarter 2052	
	D1 Remedial Design Report GA 16 Slabs			2 nd Quarter 2052	
	D1 Remedial Action Work Plan GA 16 Slabs			3 rd Quarter 2052	
	D1 Remedial Action Completion Report GA 16 Slabs			3 rd Quarter 2053	
GA 2, GA 3, GA 14 Slabs	D1 Remedial Investigation Work Plan GA 2, GA 3, GA 14 Slabs			1 st Quarter 2041	
	D1 Remedial Investigation Report GA 2, GA 3, GA 14 Slabs			3 rd Quarter 2042	
	D1 Feasibility Study GA 2, GA 3, GA 14 Slabs			1 st Quarter 2043	
	D1 Proposed Plan GA 2, GA 3, GA 14 Slabs			2 nd Quarter 2043	
	D1 ROD GA 2, GA 3, GA 14 Slabs			4 th Quarter 2043	
	D1 Remedial Design Work Plan GA 2, GA 3, GA 14 Slabs			2 nd Quarter 2044	
	D1 Remedial Design Report GA 2, GA 3, GA 14 Slabs			3 rd Quarter 2044	
	D1 Remedial Action Work Plan GA 2, GA 3, GA 14 Slabs			4 th Quarter 2044	
D1 Remedial Action Completion Report GA 2, GA 3, GA 14 Slabs			1 st Quarter 2046		

Enforceable Timetables and Deadlines; Planning Dates with Long-Term Targets (Continued)

Soils and Slabs Operable Unit (Continued)					
Subproject	Deliverable	Enforceable Timetable and Deadlines¹		Planning Dates with Long-Term Targets for Decision Documents²	Comments
		FY 2021–FY 2023	Out-Year		
GA 1, GA 4 Slabs	D1 Remedial Investigation Work Plan GA 1, GA 4 Slabs			2 nd Quarter 2050	
	D1 Remedial Investigation Report GA 1, GA 4 Slabs			3 rd Quarter 2052	
	D1 Feasibility Study GA 1, GA 4 Slabs			1 st Quarter 2053	
	D1 Proposed Plan GA 1, GA 4 Slabs			3 rd Quarter 2053	
	D1 ROD GA 1, GA 4 Slabs			1 st Quarter 2054	
	D1 Remedial Design Work Plan GA 1, GA 4 Slabs			3 rd Quarter 2054	
	D1 Remedial Design Report GA 1, GA 4 Slabs			4 th Quarter 2054	
	D1 Remedial Action Work Plan GA 1, GA 4 Slabs			4 th Quarter 2054	
	D1 Remedial Action Completion Report GA 1, GA 4 Slabs			4 th Quarter 2055	

Enforceable Timetables and Deadlines; Planning Dates with Long-Term Targets (Continued)

Lagoons Operable Unit					
Subproject	Deliverable	Enforceable Timetable and Deadlines¹		Planning Dates with Long-Term Targets for Decision Documents²	Comments
		FY 2021–FY 2023	Out-Year		
Process Lagoons	D1 Remedial Investigation Work Plan			4 th Quarter 2048	
	D1 Remedial Investigation Report			2 nd Quarter 2050	
	D1 Feasibility Study			4 th Quarter 2050	
	D1 Proposed Plan			1 st Quarter 2051	
	D1 ROD			3 rd Quarter 2051	
	D1 Remedial Design Work Plan			2 nd Quarter 2052	
	D1 Remedial Design Report			3 rd Quarter 2052	
	D1 Remedial Action Work Plan			3 rd Quarter 2052	
D1 Remedial Action Completion Report			3 rd Quarter 2053		
Water Treatment System Lagoons	D1 Remedial Investigation Work Plan			4 th Quarter 2048	
	D1 Remedial Investigation Report			2 nd Quarter 2050	
	D1 Feasibility Study			4 th Quarter 2050	
	D1 Proposed Plan			2 nd Quarter 2051	
	D1 ROD			4 th Quarter 2051	
	D1 Remedial Design Work Plan			2 nd Quarter 2052	
	D1 Remedial Design Report			3 rd Quarter 2052	
	D1 Remedial Action Work Plan			3 rd Quarter 2052	
D1 Remedial Action Completion			3 rd Quarter 2053		

Enforceable Timetables and Deadlines; Planning Dates with Long-Term Targets (Continued)

Surface Water Operable Unit					
Subproject	Deliverable	Enforceable Timetable and Deadlines¹		Planning Dates with Long-Term Targets for Decision Documents²	Comments
		FY 2021–FY 2023	Out-Year		
Remedial Action (Little Bayou and Bayou Creek Watersheds)	D1 Remedial Investigation Report			3 rd Quarter 2054	
	D1 Feasibility Study Report			1 st Quarter 2055	
	D1 Proposed Plan			3 rd Quarter 2055	
	D1 ROD			1 st Quarter 2056	
	D1 Remedial Design Work Plan			3 rd Quarter 2056	
	D1 Remedial Design Report			2 nd Quarter 2057	
	D1 Remedial Action Work Plan			2 nd Quarter 2057	
SWOU	D1 Remedial Action Completion Report		9/30/2058		
Comprehensive Site Operable Unit					
Subproject	Deliverable	Enforceable Timetable and Deadlines¹		Planning Dates with Long-Term Targets for Decision Documents²	Comments
		FY 2021–FY 2023	Out-Year		
N/A	D1 Remedial Investigation Work Plan			1 st Quarter 2062	
	D1 Remedial Investigation/Feasibility Study Report			3 rd Quarter 2062	
	D1 Proposed Plan			1 st Quarter 2063	
	D1 ROD			3 rd Quarter 2063	

Enforceable Timetables and Deadlines; Planning Dates with Long-Term Targets (Continued)

Other FFA Planning Dates					
Subproject	Deliverable	Enforceable Timetable and Deadlines¹		Planning Dates with Long-Term Targets for Decision Documents²	Comments
		FY 2021–FY 2023	Out-Year		
N/A	D1 Five-Year Review (2023) (Fifth Synchronized Review)			7/16/2023	This is a statutorily required document that must be approved by 6/4/2024. EPA and KY identified additional actions and deferred protectiveness for Northwest Plume Interim Remedial Action, the Northeast Plume Interim Remedial Action, Water Policy Removal Action, and the Fire Training Interim Remedial Action (SWMU 100) during the CY 2018 Five-Year Review that will be addressed as part of the CY 2023 Five-Year Review.

¹ Enforceable Timetables and Deadlines are based on the planning scope assumptions contained in Appendix 3 and DOE assumptions regarding funding levels. Approval of the SMP planning scope assumptions does not constitute decision making for the response actions described in this table.

² Not enforceable dates. These planning dates are internal DOE dates used for planning purposes only. The parties further agree that DOE can adjust the planning dates as part of the annual SMP update without having to submit an official request or justify “good cause” in accordance with Section XXIX of the FFA.

³ Assumes that final approval is received on the D2 document.

⁴ A removal action report, which is a secondary document under the FFA, will be completed for each facility or groups of facilities contained within the Facility D&D OU, using the outline and content that was developed and agreed to by the FFA Managers in April 2010.

BGOU = Burial Grounds Operable Unit
 D&D = decontamination and decommissioning
 EPA = U.S. Environmental Protection Agency
 FY = fiscal year
 GA = geographical area
 GWOU = Groundwater Operable Unit

N/A = not applicable
 OU = operable unit
 RI = remedial investigation
 SWOU = Surface Water Operable Unit
 SWMU = solid waste management unit

APPENDIX 6

FACILITIES UNDERGOING CERCLA DETERMINATION

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FACILITIES UNDERGOING CERCLA DETERMINATION

Facility Number	Description	SWMU/ AOC Number	GA	Facility Status	Determination Status
Sewage System and Water Treatment Ancillary Facilities					
C-611-A1	Activated Carbon Storage Facility	--	1	Operating	This facility is pending further CERCLA determination; FFA parties will continue to evaluate this facility in FY 2021.
C-611-F2	Chemical Feed Building for C-611-F1	--	1	Operating	This facility is pending further CERCLA determination; FFA parties will continue to evaluate this facility in FY 2021.
C-611-F3	Feed Facility	--	1	Operating	This facility is pending further CERCLA determination; FFA parties will continue to evaluate this facility in FY 2021.
C-611-Q	36" Raw Water Line Booster Station	--	8	Shutdown	This facility is pending further CERCLA determination; FFA parties will continue to evaluate this facility in FY 2021.
C-611-S	Storage and Chlorine Facility	--	1	Operating	This facility is pending further CERCLA determination; FFA parties will continue to evaluate this facility in FY 2021.
C-615-H	Sewage Lift Station	--	17	Operating	This facility is pending further CERCLA determination; FFA parties will continue to evaluate this facility in FY 2021.
C-615-O	Oil Control Building	--	11	Shutdown	This facility is pending further CERCLA determination; FFA parties will continue to evaluate this facility in FY 2021.
Gaseous Diffusion Plant Support Facilities					
C-100	Administrative Building		15	Operating	This facility is pending further CERCLA determination; FFA parties will continue to evaluate this facility in FY 2021.
C-101	Former Cafeteria		15	Operating	This facility is pending further CERCLA determination; FFA parties will continue to evaluate this facility in FY 2021.
C-102	Hospital		15	Operating	This facility is pending further CERCLA determination; FFA parties will continue to evaluate this facility in FY 2021.
C-200	Guard and Fire Headquarters		14	Operating	This facility is pending further CERCLA determination; FFA parties will continue to evaluate this facility in FY 2021.
C-203	Emergency Vehicle Shelter	--	14	Operating	This facility is pending further CERCLA determination; FFA parties will continue to evaluate this facility in FY 2021.
C-205	Respirator Issue Facility	--	14	Operating	This facility is pending further CERCLA determination; FFA parties will continue to evaluate this facility in FY 2021.
C-207	Fire Training Facility	--	11	Standby	This facility is pending further CERCLA determination; FFA parties will continue to evaluate this facility in FY 2021.
C-300	Central Control Building	--	15	Operating	This facility is pending further CERCLA determination; FFA parties will continue to evaluate this facility in FY 2021.
C-301	Former Fire Training Building	--	16	Shutdown	This facility is pending further CERCLA determination; FFA parties will continue to evaluate this facility in FY 2021.
C-303	Supervisory Control and Data Acquisition System		15	Operating	This facility is pending further CERCLA determination; FFA parties will continue to evaluate this facility in FY 2021.

FACILITIES UNDERGOING CERCLA DETERMINATION

Facility Number	Description	SWMU/ AOC Number	GA	Facility Status	Determination Status
C-320	Communication Building		15	Operating	This facility is pending further CERCLA determination; FFA parties will continue to evaluate this facility in FY 2021.
C-410-D	Fluorine Storage Building	--	13	Deactivating	This facility is pending further CERCLA determination; FFA parties will continue to evaluate this facility in FY 2021.
C-410-K	Fluorine Facility	--	13	Deactivating	This facility is pending further CERCLA determination; FFA parties will continue to evaluate this facility in FY 2021.
C-410-L	Quonset Hut	--	13	Operating	This facility is pending further CERCLA determination; FFA parties will continue to evaluate this facility in FY 2021.
C-601	Nitrogen Generator Building Addition	--	12	Shutdown	This facility is pending further CERCLA determination; FFA parties will continue to evaluate this facility in FY 2021.
C-601-C	Steam Plant Fuel Oil Pump House	--	12	Operating	This facility is pending further CERCLA determination; FFA parties will continue to evaluate this facility in FY 2021.
C-604	Utilities Maintenance Building	--	12	Operating	This facility is pending further CERCLA determination; FFA parties will continue to evaluate this facility in FY 2021.
C-605	Substation Building	--	12	Operating	This facility is pending further CERCLA determination; FFA parties will continue to evaluate this facility in FY 2021.
C-607	Emergency Air Compressor Generator Build	--	12	Shutdown	This facility is pending further CERCLA determination; FFA parties will continue to evaluate this facility in FY 2021.
C-635-6	Recirculating Heat Utilization Pump House	--	17	Operating	This facility is pending further CERCLA determination; FFA parties will continue to evaluate this facility in FY 2021.
C-710-A	Gas Cylinder Storage Building	--	15	Operating	This facility is pending further CERCLA determination; FFA parties will continue to evaluate this facility in FY 2021.
C-711	Storage/Former Gas Manifold	--	15	Standby	This facility is pending further CERCLA determination; FFA parties will continue to evaluate this facility in FY 2021.
C-720-D	Transformer Building	--	14	Operating	This facility is pending further CERCLA determination; FFA parties will continue to evaluate this facility in FY 2021.
C-720-G	Warehouse	--	14	Operating	This facility is pending further CERCLA determination; FFA parties will continue to evaluate this facility in FY 2021.
C-720-H	Warehouse	--	14	Operating	This facility is pending further CERCLA determination; FFA parties will continue to evaluate this facility in FY 2021.
C-720-J	Air Lock	--	14	Operating	This facility is pending further CERCLA determination; FFA parties will continue to evaluate this facility in FY 2021.
C-721	Gas Manifold Storage	--	14	Shutdown	This facility is pending further CERCLA determination; FFA parties will continue to evaluate this facility in FY 2021.
C-724-D	Lumber Storage Building	--	14	Operating	This facility is pending further CERCLA determination; FFA parties will continue to evaluate this facility in FY 2021.

FACILITIES UNDERGOING CERCLA DETERMINATION

Facility Number	Description	SWMU/ AOC Number	GA	Facility Status	Determination Status
C-727	90-Day Mixed Waste Accumulation Facility	--	16	Deactivation Complete ¹	Deactivation is complete; a site evaluation previously was submitted; FFA parties need to finalize.
C-730	Maintenance Service Building	--	2	Operating	This facility is pending further CERCLA determination; FFA parties will continue to evaluate this facility in FY 2021.
C-731	Railroad Repair Equipment Storage Building	--	14	Operating	This facility is pending further CERCLA determination; FFA parties will continue to evaluate this facility in FY 2021.
C-740-B	Oil Drum Storage Shelter	--	14	Operating	This facility is pending further CERCLA determination; FFA parties will continue to evaluate this facility in FY 2021.
C-742	Cylinder Storage Building	--	14	Operating	This facility is pending further CERCLA determination; FFA parties will continue to evaluate this facility in FY 2021.
C-745-R1	Cylinder Changeout Building	--	4	Operating	This facility is pending further CERCLA determination; FFA parties will continue to evaluate this facility in FY 2021.
C-746-A	North Warehouse	--	9	Deactivation Complete ¹	Deactivation is complete; a site evaluation previously was submitted; FFA parties need to finalize.
C-746-G	Building – Electrical Equipment Storage	--	16	Operating	This facility is pending further CERCLA determination; FFA parties will continue to evaluate this facility in FY 2021.
C-752-C	Off-Site Decontamination Facility	--	2	Operating	This facility is pending further CERCLA determination; FFA parties will continue to evaluate this facility in FY 2021.
C-754-B	Low Level Waste Storage	--	16	Operating	This facility is pending further CERCLA determination; FFA parties will continue to evaluate this facility in FY 2021.
C-755-A	Decontamination Building	--	5	Operating	This facility is pending further CERCLA determination; FFA parties will continue to evaluate this facility in FY 2021.
C-755-B	Changehouse Building	--	5	Operating	This facility is pending further CERCLA determination; FFA parties will continue to evaluate this facility in FY 2021.
C-755-C	Sample Shipment/Storage Facility	--	5	Operating	This facility is pending further CERCLA determination; FFA parties will continue to evaluate this facility in FY 2021.
C-757	Solid and Low-Level Waste Processing Facility	--	17	Operating	This facility is pending further CERCLA determination; FFA parties will continue to evaluate this facility in FY 2021.

¹ These facilities were identified with a status of “Deactivation Complete” in the FY 2018/FY 2019 Site Management Plan. DOE submitted an SE on April 26, 2016. On August 4, 2016, DOE requested that EPA and Kentucky cease review due to priority changes.

FACILITIES UNDERGOING CERCLA DETERMINATION

Facility Number	Description	SWMU/ AOC Number	GA	Facility Status	Determination Status
Remedial Action Facilities					
C-612	Northwest Plume Groundwater Treatment Facility	--	1	Operating	This facility is pending further CERCLA determination; FFA parties will continue to evaluate this facility in FY 2021.

GA = Geographical Area

Operating = Facility currently is in use supporting U.S. Department of Energy mission activities.

Standby = Facility currently is not in use, but may be utilized to support future U.S. Department of Energy mission activities.

Shutdown = Facility is not being maintained for future use and is awaiting disposition (excess property determination is still pending).

Deactivating = Interim process where stabilization and deactivation activities have been initiated and are ongoing.

Deactivation Complete = Awaiting Decommissioning

Replaced = Facility as originally constructed was removed and replaced with an alternate system.

Demolished = Facility has undergone demolition and is no longer present.

Stabilization = In general, stabilization refers to the early stages of the deactivation process to support placing a facility in a safe and stable condition and includes, but is not limited to, preparing nuclear materials and contaminants for storage and/or removal from the facility.

Deactivation = The definition from the EPA-DOE Joint Policy 1995 is "Deactivation is the process of placing a facility in a safe and stable condition that is protective of workers, the public, and the environment until decommissioning is completed. As the bridge between operations and decommissioning, deactivation can accomplish operation-like activities such as final process runs, and also decontamination activities aimed at placing the facility in a safe and stable condition."

Decommissioning = The definition from the EPA-DOE Joint Policy 1995 is "Decommissioning includes those activities that take place after a facility has been deactivated and placed in an ongoing surveillance and maintenance program. Decommissioning can include decontamination and dismantlement. Decontamination encompasses the removal or reduction of radioactive or hazardous contamination from facilities. Dismantlement involves the disassembly or demolition, and removal, of any structure, system, or component and the interim or long-term disposal of waste materials in compliance with applicable requirements."

APPENDIX 7

DATA MANAGEMENT PLAN

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DATE OF ISSUE: October 2, 1998

**DOE/OR/07-1595&D2
Primary Document**


**DATA AND DOCUMENTS MANAGEMENT AND
QUALITY ASSURANCE PLAN FOR
PADUCAH ENVIRONMENTAL MANAGEMENT
AND ENRICHMENT FACILITIES**

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Under Contract No. DE-AC05-98OR22700**

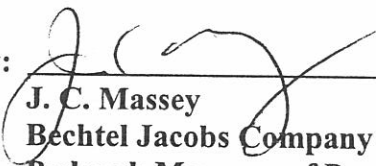
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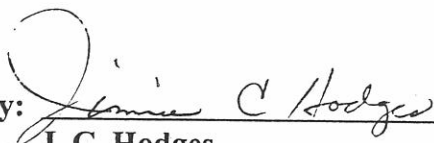
**DATA AND DOCUMENTS MANAGEMENT
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PREFACE

This plan is generated to define the roles, responsibilities, and activities affecting data management, document management, and quality for data collection between the Department of Energy (DOE) and the regulatory agencies that govern the Paducah Gaseous Diffusion Plant (PGDP) Federal Facility Agreement (FFA). Pursuant to the FFA section titled "Quality Assurance/Sampling Availability/Data Management," all quality-assured data or summaries of all quality-assured data from all samples collected, analyzed, and reported shall be available no later than 30 days after the analyses have been received and validated. Further, DOE shall maintain one consolidated database for the Site which includes all data/studies generated pursuant to this agreement. To fulfill this requirement, Paducah DOE has an integrated "data system" made up of many databases managed by one organization. Electronic formats and/or hard copies of all data/studies and related documents are made available upon request.

In addition to the requirements in the Federal Facility Agreement (FFA), other agreements require a consolidated data management process:

- 1) Environmental Protection Agency (EPA) Hazardous and Solid Waste Amendment Permit states:

Condition I.D.9.d.—Monitoring and Records

"All environmental monitoring data collected pursuant to Part II of this Permit shall be submitted to the Regional Administrator in a consistent format, with consistent parameters and concentration units. This will facilitate collection and recording of such data in a computer data file. Within one (1) year from the effective date of the Permit, this monitoring data shall also be routinely submitted electronically and on computer disc..."

Condition II.E.3.b.—Interim Measures (IM) Reports

"...The IM Report shall contain the following information at a minimum, (e) copies of all relevant laboratory/monitoring data, etc., in accordance with Condition I.D.9."

- 2) Kentucky Division of Waste Management Hazardous and Solid Waste Permit states:

Condition III.E.9.a.—Monitoring and Records

"...All environmental and monitoring data collected pursuant to Part II.J and Part IV of the Permit shall be submitted to the Division, both in written and electronic format. Sampling data shall be submitted in accordance with the schedules described in this Permit."

- 3) Agreement in Principle states:

"...DOE will promptly furnish to Kentucky environmental monitoring data in electronic format, if available, or paper copies. DOE data reports will be released to Kentucky within 90 days after receipt from the laboratory and completion of the appropriate level of review and quality assurance/quality control (QA/QC) validation..."

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ACRONYMS

AIP	Agreement in Principle
AR	Administrative Record
ASER	Annual Site Environmental Report
ASTM	American Society for Testing and Materials
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
COC	chain-of-custody
DOE	Department of Energy
DMC	Document Management Center
DMP	Data Management Plan
DMS	Data Management System
DQO	Data Quality Objectives
EDD	Electronic Data Deliverable
EMEF	Environmental Management & Enrichment Facilities
EMP	Environmental Monitoring Program
EMP PEMS	Environmental Monitoring Program Project Environmental Measurements System
EMP RTL	Environmental Monitoring Program Ready-to-Load
EPA	Environmental Protection Agency
ER PEMS	Environmental Restoration Project Environmental Measurements System
ER RTL	Environmental Restoration Ready-to-Load
FFA	Federal Facility Agreement
GIS	Geographic Information System
GW PEMS	Groundwater Project Environmental Measurements System
GW RTL	Groundwater Ready-to-Load
IM	interim measures
NENW PEMS	North East/North West Project Environmental Measurements System
NENW RTL	North East/North West Ready-to-Load
OREIS	Oak Ridge Environmental Information System
PC	personal computer
PEMS	Project Environmental Measurements System
PGDP	Paducah Gaseous Diffusion Plant
QA	quality assurance
QAMS	Quality Assurance Management Staff
QC	quality control
RCRA	Resource, Conservation, and Recovery Act
SAP	Sampling and Analysis Plan
SMO	Sample Management Office
SOW	Statement of Work
SWMU	Solid Waste Management Unit
VOA	volatile organic analysis
VOC	volatile organic compound
WAG	Waste Area Grouping
WM PEMS	Waste Management Project Environmental Measurements System
WM RTL	Waste Management Ready-to-Load

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DEFINITIONS

Administrative Record (AR)—Official body of documents that forms the basis of the selection of a particular response action.

Chain-of-Custody (COC)—A process used to document the transfer of custody of samples from one individual to another from collection until final disposition. A sample is under custody if:

1. it is in the field personnel's possession;
2. it is in the field personnel's view after being in their physical possession;
3. it was in the field personnel's physical possession and then it was secured to prevent tampering; or
4. it is placed in a designated secure area.

Data Backup—The process by which computerized data is copied from one electronic medium to another to guard against the loss of data.

Data Entry—The manual keying of information using data entry screens for transfer into a database.

Data Qualifiers—A set of predefined alphabetic or numeric codes applied to analytical data to signify its usability. Qualifiers pertaining to data include laboratory qualifiers, verification qualifiers, validation qualifiers, and assessment qualifiers.

Data Quality Checks—A list of quality control (QC) elements associated with a data collection activity which are evaluated during data verification and/or data validation.

Data Quality Objectives (DQO)—A set of criteria established for the collection of data. The DQO process is based on the DQO process developed by the Environmental Protection Agency (EPA), Region IV and is a planning tool based on the scientific method that clearly identifies an environmental problem; the remedial decisions to be made to address the problem; and the type, quantity, and quality of data needed to support decision making. The DQO process may be applied in modified form to any data collection activity. The DQO process balances risks with cost, in selecting the most appropriate data collection plan.

Paducah Department of Energy (DOE) Program Integrated Data System—An integrated computer system for data storage and retrieval that organizes data into tables consisting of one or more rows of information, each containing the same set of data items. Data files are cross-referenced to one another to provide flexible access so that data collection is complete, consistent, sufficiently documented, and reusable to the maximum extent possible. The Paducah DOE Program Integrated Data System is compatible with the central Oak Ridge Environmental Information System (OREIS) to comply with the Oak Ridge Federal Facilities Agreement (FFA).

Data Transfer—The exchange of data from one electronic medium to another.

Document—Writings, drawings, graphs, charts, photographs, electronic tapes, diskettes, and data compilation from which information can be obtained.

DEFINITIONS (Continued)

Document Management Center (DMC)—A location established for a targeted audience where individual documents are tracked and maintained for audit purposes. It also may be a center where collection of controlled documents is maintained. Paducah's established location is the document center at 761 Veterans Avenue, Kevil, Kentucky.

Document Management System (DMS)—A computerized system used by the DOE Program at the Paducah Gaseous Diffusion Plant (PGDP) to facilitate the electronic handling of bibliographic, file classification, and index information.

Electronic Data Deliverable (EDD)—Data that is received in electronic format either through transfer on physical media or direct communication between computerized data management systems. EDD contents must meet defined completeness, consistency, and format requirements. These criteria are defined in the Statement of Work (SOW) for each program or project.

Electronic Media—Data storage device such as diskette, disk drive, tape, or optical disk.

Field Logbooks—The primary record for field activities. They should include a description of any modifications to the protocols outlined in the work plan, field sampling plan, or health and safety plan with justifications for such modifications. They are intended to provide sufficient data and observations to enable participants to reconstruct events that occurred. All entries should be dated and signed by the data recorder and quality assured by another individual.

Historical Data—Data which was collected and managed prior to implementation of procedure PMSA-1001, "Quality Assured Data."

Metadata—Information about measurement data that helps to define data usability and associated context.

Quality Assurance (QA) and Data Management Plan (DMP)—A document written for each task that presents in specific terms the policies, organization, objectives, functional responsibilities, and specific QA/Quality Control (QC) activities designed to achieve the data quality goals.

Quality Assurance (QA) Record—A complete document that furnishes evidence of the quality of items, activities, or credentials and has been designated as a QA record. Such records are considered to be lifetime or nonpermanent records.

Protocol—A record or document utilized to provide guidance or work direction. Some examples of protocols would be procedures, SOWs, work guides, work instructions, sampling plans, etc.

Records—Books, papers, maps, photographs, machine-readable materials, or other documentary materials, regardless of physical form or characteristics, made or received by an agency of the U.S. Government under federal law or in connection with the transaction of public business. Virtually all recorded, informational materials in the custody of the government (including information held by contractors that is considered by contract to be government information), regardless of the medium (hard copy, machine-readable, microfilm, etc.), are considered government "records."

DEFINITIONS (Continued)

Sample Delivery Group—A unit used to identify a group of samples for delivery. Each Sample Delivery Group is assigned a unique ID number.

Sampling and Analysis Plan (SAP)—A plan of action developed before implementation of field activities that describes the methods and protocols for obtaining representative portions of the environment being investigated. It also describes the methods for analysis and the required parameters.

Statement of Work (SOW)—The contractual agreement between the requesting organization and the service provider. The SOW defines the scope of work, including associated QA/QC, schedules, and deliverables.

Task Files—Files maintained at the PGDP Site Office pertaining to the site mission. A Task File is required for each task and usually pertains to a single task.

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1. INTRODUCTION

1.1 PURPOSE

This plan will be used for the Paducah Department of Energy (DOE) tasks that are involved in the collection of data. Each section of the plan was written to meet the data quality requirements set forth by the Paducah DOE Program and defined in 10 CFR 830.120 and provides a description of the programmatic elements which should occur for each task. Appendix A provides additional information concerning the quality assurance (QA) and data management aspects which are specific to the task and cannot be defined at this level. Appendix A should be completed once the task has been planned or has documented the Data Quality Objectives (DQOs). This plan, along with a completed Appendix A, will serve as the "Quality Assurance and Data Management Plan" for the task, will be provided to appropriate personnel, and will be maintained as a project record.

For the purpose of this document, Appendix A is not completed but shows the information to be completed for each task involved in the collection of data. Each task will issue the task-specific "Quality Assurance and Data Management Plan" through the designated channels.

1.2 APPLICABILITY

The requirements of this plan apply to the collection and generation of data by Paducah DOE. This plan applies to screening and definitive analytical data as defined in Section 3.2, historical data, and locationally descriptive data which includes the Geographic Information System (GIS), lithology, geophysical data, etc. Implementation for tasks is based on data collection needs and final use of the data. The requirements of this plan do not apply to data collected by the Health and Safety Program or personnel and financial data.

2. PROGRAM ORGANIZATION, RESPONSIBILITY, AND TRAINING

This information describes the basic organization, responsibility, and training requirements for tasks. Specific task plans should be developed using Appendix A as a guide to define individuals and matrix responsibilities. The task will further define training needs based on activities performed in the field.

2.1 ORGANIZATION

The DOE Project Manager and the DOE Performance Management contractor establish task scope and prioritize work to ensure the Paducah DOE Program strategic plans are accomplished. Furthermore, they serve as the primary interface to ensure that task, regulatory agency, stakeholder, and other involved organizations objectives are met. They will ensure that requirements in this plan are incorporated into various protocols and other Statements of Work (SOWs). In addition, they will ensure adequate technical support is in place for the task and that QA and safety are first priorities throughout the task life cycle.

2.2 ROLES AND RESPONSIBILITIES

The functional responsibilities of task staff members shown below relate to their involvement with the data collection and the output process. This section identifies task activities with staff members performing the work. While the descriptions are identified by title, they indicate functional responsibilities that task staff perform rather than individual staff positions.

2.2.1 Stakeholders

- **DOE Project Manager**

The DOE Project Manager has direct communication with the DOE Performance Management contractor Project Manager and is responsible for task oversight, overall compliance for the task, and submitting various reports to, and interfacing with, the Environmental Protection Agency (EPA) and the Commonwealth of Kentucky.

- **Commonwealth of Kentucky**

The Commonwealth of Kentucky is the state regulatory stakeholder for the site. Activities including remedial action, enrichment facilities, and waste management of the Paducah DOE Program are reviewed, commented upon, and approved by the Commonwealth of Kentucky.

- **EPA, Region IV**

EPA is the federal regulatory stakeholder for the Site. Activities, including remedial action, enrichment facilities, and waste management of the Paducah DOE Program are reviewed, commented upon, and approved by EPA.

- **Kentucky Agreement in Principle (AIP)**

The Kentucky AIP reflects the understanding and commitments between DOE and the Commonwealth of Kentucky regarding DOE's provision to provide to the Commonwealth technical and financial support for the Commonwealth's activities in environmental oversight, surveillance, remediation, and emergency-response activities. The AIP is intended to support nonregulatory activities. Its goal is to maintain an independent, impartial, and qualified assessment of the potential environmental impacts of present and future DOE activities at the Paducah Gaseous Diffusion Plant (PGDP).

- **Federal Facility Agreement (FFA)**

The FFA reflects the understanding and commitments between DOE, EPA, and the Kentucky Division of Waste Management regarding the comprehensive remediation of PGDP. The purpose of the FFA is to provide a set of comprehensive requirements for remediation that coordinates the cleanup provisions of both Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and Resource, Conservation, and Recovery Act (RCRA).

2.2.2 DOE Managing and Integrating Contractor

Bechtel Jacobs Company LLC as the managing and integrating contractor is responsible for ensuring the following functions are performed either by their staff or a subcontractor.

- **Data Manager**

The Data Manager is responsible for long-term electronic storage of data, loading Electronic Data Deliverables (EDDs), electronic verification of data, and ensuring compliance to policies and protocols relating to data management. The Data Manager has overall responsibility for the design, operations, and maintenance of the databases; ensures compatibility with central Oak Ridge Environmental Information System (OREIS); serves on the OREIS Steering Committee; reviews the system performance; determines the need for changes; authorizes changes; and oversees the electronic transfer of electronic data to external agencies. The Data Manager interfaces with the Sample Manager and the Project Data Coordinator to set up the Project Environmental Measurements System (PEMS) for each task. The Data Manager oversees the completion of task-specific Data Management Plans.

- **Data Requestor**

The requestor may be a task lead or his designated representative, such as a technical lead, risk assessor, waste management coordinator, compliance coordinator, or other individual who determines the need for data to support decision making. The requestor is responsible for coordinating sample collection, sample analysis, data assessment, and decision making. If the requestor is a designated representative, the task lead has ultimate responsibility.

- **Network Administrator**

The Network Administrator is responsible for implementing the system design for the Paducah DOE Program Integrated Data System platform; coordinating necessary network and personal computer (PC) maintenance; establishing user accounts to the network; and performing daily backups to system data.

- **Project Data Coordinator/Data Management Team**

The Project Data Coordinator/Data Management Team is responsible for ensuring that the requirements relating to data management are met for the task. This includes accumulation of historical data, control of data generated by field activities or as a result of lab analyses, and storage of data as part of the task. The Project Data Coordinator ensures that all data are entered into PEMS. The Project Data Coordinator works with the Data Manager and the Sample Manager to ensure consistency throughout the task data, with other task's data, and the data systems in place. The Project Data Coordinator is responsible for data entry verification; assisting with the data evaluation and review process; data updates and deletions, as authorized by the Data Manager; and performing electronic transfer of data files from electronic data laboratory deliverables to the Paducah DOE Program Integrated Data System.

- **Project Manager**

The Project Manager has direct responsibility for the overall task oversight, including budget, schedule, and milestones. This responsibility includes the management of strategic planning, safety, quality, task activities, and for the successful completion of task assignments within budget and on schedule. The Project Manager ensures that implementation of the QA and Data Management Programs is consistent with guidelines and ensures requirements are adhered to, as stated in this plan. The Project Manager reports to the Bechtel Jacobs Company Manager of Projects and interfaces with DOE and the task team.

- **Task Team**

The Task Team is made up of personnel (i.e., Project Manager, Task Manager, Task Lead, Quality Engineer, Sample Manager, Data Manager, Technical Manager, Field Team Leader, and other field personnel) responsible for a specific task. The team is responsible for the data collection planning; fieldwork; sampling and analysis; data review; and decision making for a set task.

- **Quality Engineer**

The Quality Engineer is responsible for the overall QA concerns of the data and system functions relating to a task. The Quality Engineer is involved in the planning and review of data to ensure that data quality requirements are met. The Quality Engineer is also responsible for helping prepare QA plans, work agreements, protocols, and documents to establish and implement requirements, performing assessments, providing guidance/assistance in resolving quality problems, and ensuring that corrective action is taken and appropriately documented.

- **Records Clerk**

The Records Clerk is responsible for entering records; indexing data into Data Management System (DMS) records; indexing tables; assisting with the records storage and retrieval process; and performing data updates and deletions as authorized by the Records Manager.

- **Records Manager**

The Records Manager is responsible for maintaining all pertinent and required records associated with operating the DMS and preserving the data; determining which records must be stored and the storage requirements; establishing a records classification, inventory, and indexing system; maintaining the DMS records indexing tables; implementing a records storage and retrieval system; and coordinating with the Data Manager and Sample Manager to establish pointers to data processing records and associated metadata (e.g., laboratory data packages, regulatory documents, QA requirements, and program plans).

- **Project Records Coordinator**

The Project Records Coordinator is responsible for the task records. Duties include all activities relating to identification, acquisition, classification, indexing, and storage of task records related to field activities. The task records include data documentation materials; plans and protocols; and all task file requirements. Upon completion of the task, the Project Records Coordinator transmits all task files to the Paducah Document Management Center (DMC).

- **Release Requestor**

The Release Requestor is identified as the person who requests the release of data to an external agency. This responsibility could be filled by several different roles including, but not limited to, the Task Lead or the Technical Manager.

- **Sample Manager**

The Sample Manager is responsible for working with the Task Lead to develop specific analytical requirements for the task, interfacing with the Oak Ridge Sample Management Office (SMO) for procurement of laboratory services, contracting validation services, and coordinating contractual screening. The Sample Manager works with the task team to resolve issues identified during contractual screening or electronic data review of the data with the laboratory. The Sample Manager interfaces with the Data Manager, the Project Data Coordinator, and the task team.

- **Task Lead**

The Task Lead is responsible for direct task coordination, issuing technical reports, and maintaining the task is on schedule and within the budget. The Task Lead coordinates all team personnel working on the task and communicates regularly with the Task Team personnel on the status of task budgets and schedules; assuring all protocols are followed; deliverables are met; and that any issues or concerns associated with the task are properly addressed. The Task Lead ensures that implementation of the QA and Data Management Programs is consistent with guidelines and ensures requirements are adhered to as stated in this plan. The Task Lead reports to the Task Manager and interfaces with the task team.

- **Task Manager**

The Task Manager is responsible for ensuring that the proper resources are available and that personnel are appropriately trained for the assigned task. The Task Manager ensures that all requirements and protocols for the task are followed and that they are consistent with the overall mission of the Environmental Management and Enrichment Facilities (EMEF) Program. The Task Manager also ensures that implementation of the QA and Data Management Programs is consistent with guidelines and ensures requirements are adhered to as stated in this plan. The Task Manager reports to the Project Manager and interfaces with the Task Lead.

- **Technical Manager/Subcontractor Technical Representative**

The Technical Manager/Subcontractor Technical Representative is responsible for providing technical support and guidance to the task. This includes field observations and oversight of subcontractors, generating reports/documents, and making decisions regarding technical issues (i.e., sample locations, analytical methods, etc.).

2.3 TRAINING

Personnel assigned to the task, including field personnel and subcontractors, will be trained to perform the tasks to which they are assigned. Training requirements are defined in the task-specific SOWs and plans.

3. QA OBJECTIVES FOR MEASUREMENT DATA

QA objectives, for the purposes of this plan, apply to measurement data only. Other data (such as locationally descriptive information) is discussed in Section 8.

3.1 DQOs

DQOs are statements developed by data users to specify the quality of data from field and laboratory data collection activities to support specific decisions or regulatory actions. DQOs are qualitative and quantitative specifications that are used to design a study that will limit uncertainty to an acceptable level. The DQOs describe what data is needed, why the data is needed, and how the data will be used to address the problems being investigated. DQOs also establish numeric limits to ensure that data collected is of sufficient quality and quantity for user applications.

The DQO process is a planning tool based on the scientific method that clearly identifies a problem; the decisions to be made to address the problem; and the type, quantity, and quality of data needed to support the decision making. The DQO process may be applied in modified form to any data collection activity. The DQO process balances risks with costs in selecting the most appropriate data collection plan. When applicable, various regulatory agencies (i.e., EPA, Kentucky Department for Environmental Protection, etc.) may participate in the DQO sessions.

Specific DQOs and Sampling and Analysis Plans (SAPs) for tasks are developed per PMSA-1001 and will be documented in Appendix A.

3.2 ANALYTICAL DATA CATEGORIES

Two descriptive data categories have been specified by EPA in the *Data Quality Objectives Process for Superfund, Interim Final Guidance*, EPA/540/G-93/071 (EPA, 1993). These two data categories supersede the five quality control (QC) levels (Levels I, II, III, IV, and V). The two new data categories are associated with specific QA/QC elements and may be generated using a wide range of analytical methods. The type of data generated will be based on the qualitative and quantitative DQOs. The two data categories are:

Screening data—Measurements generated through the use of field- or fixed-laboratory methods in which the level of certainty in the data cannot be determined given physical evidence documenting the acquisition and analysis of the sample. Analytical methods producing field measurements or screening data include those that indicate the presence or absence of an analyte, or class of analytes, or provide a semiquantitative (estimated) result. Field measurement and other screening data include, but are not limited to, Draeger tubes; organic vapor analyses; soil gas surveys; and radiation and contamination monitoring. Screening data results must be confirmed by collecting a specified percentage of definitive data. Screening data should be used conservatively and not rule out the presence of a contaminant without some percentage of the data being confirmed by definitive data.

Definitive data—Analytical measurements for which the presence and corresponding concentration of the target analyte(s) can be determined with a known degree of certainty. The measurements are supported with appropriate physical evidence documenting the acquisition and analysis. Definitive data, in electronic form, must be supported with retrievable, but not necessarily retrieved, physical evidence in the laboratory. This evidence can include analytical results, QA/QC results, chains-of-custody (COCs), logbooks, standards information, etc.

Definitive data, or a combination of screening data, definitive confirmation, and definitive data, will be collected when the task is implemented. A minimum of ten percent of the screening samples will also be analyzed by a fixed-base laboratory using EPA SW-846 Methods (1986) to provide the required definitive data. When not available, other nationally recognized methods such as those of the American Society for Testing and Materials (ASTM), DOE, and EPA, will be used.

Applicable task documents summarize the data uses, data users, data categories, and data deliverable QC levels for each of the media and sample types that will be collected during the investigation.

4. APPLICABLE PROTOCOLS AND DOCUMENTS

Company protocols, sampling methods, administrative procedures, etc., utilize hierarchy documents that relate to data quality. Hierarchy documents such as EPA Quality Assurance Management Staff (QAMS) 005/80, *Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans*, *EPA Region 4 Environmental Investigations Standard Operating Procedures and Quality Assurance Manual*, and *Environmental Data Management Implementation Handbook for the Environmental Restoration Program (ES/ER/TM-88/R1)* are used as flow-down documents in writing company protocols. Deviations are documented as described in Section 16. Protocols and documents applicable to the processes described will be defined in completion of Appendix A.

5. SAMPLE CUSTODY

COC is a process used to document the transfer of custody of samples from one individual to another from sample collection until final disposition. COC records are handled in accordance with applicable protocols. COC requires signature transfer of samples from sampling personnel to the sample custodians, who then transfer samples to the appropriate analytical laboratory personnel. The transfer of samples between individuals in the same work group located in the same general location (sampling or analytical) does not require a signature transfer since the integrity of the sample is maintained at all times. If the individuals are not in the same general location, a COC is required. This is accomplished by the samples being locked in a refrigerator when laboratory personnel are not available. Sample residuals are disposed of only after notification by the Task Lead that they no longer need archiving or once holding times have been exceeded. Sample custody protocols are identified in Appendix A.

6. CALIBRATION PROTOCOLS AND FREQUENCY

6.1 FIELD EQUIPMENT CALIBRATION PROTOCOLS AND FREQUENCIES

The calibration of field instruments will be checked in the field in accordance with manufacturer's specifications. Field calibration records will be documented in logbooks and/or on field data sheets. Calibration frequencies for field instruments will be defined in Appendix A.

6.2 LABORATORY CALIBRATION PROTOCOLS AND FREQUENCIES

The laboratory(ies) will use written, standard protocols for equipment calibration and frequency. These protocols are based on EPA guidance or manufacturer's recommendations and are given in the EPA-approved analytical methods. Supplemental calibration details, such as documentation and reporting requirements, are given in the laboratory QA Plan. The laboratory QA Plan will be reviewed and approved as part of the contract review process. When available, standards used for calibration will

be traceable by the National Institute of Standards and Technology. Corrective action protocols for malfunctioning equipment will be addressed in the laboratory QA Plan. Calibration records, in accordance with the laboratory QA Plan, will be maintained for each piece of measuring and test equipment and each piece of reference equipment. The records will indicate that established calibration protocols have been followed. Records of equipment use will be kept in the laboratory files.

7. ANALYTICAL PROTOCOLS

When available and appropriate for the sample matrix, SW-846 Methods will be used. When SW-846 Methods are not available or lower detection limits that are required cannot be achieved by SW-846 Methods, other nationally-recognized methods such as those of ASTM, DOE, and EPA will be used. Analytical methods, detection limits, sample preservation, holding times, and container requirements for field measurements and analytical parameters are defined during the DQO process and are incorporated in the analytical SOW for the task and applicable protocols and will be defined in Appendix A.

8. DETAILS OF DATA AND DOCUMENT FLOW

The components of data management include planning, collection, review, archival, and transmittal. Task activities follow identical paths to meet data management requirements. A flow chart (Figure 1) and narrative (Sections 8 and 9) are provided for each component of data and document flow. The Paducah DOE Program Integrated Data System is discussed first. The data system is core to each of the data management components.

8.1 INTEGRATED DATA SYSTEM

The Paducah DOE Program Integrated Data System provides a centralized system for management and storage of environmental information while allowing easy, yet controlled, access. The basis for the Paducah DOE Program Integrated Data System is to establish and maintain a program to provide the most efficient system of data collection, analysis, storage, and retrieval. DOE, as specified in the FFA, is to maintain one consolidated database for the Paducah Site. All data collected under this agreement (the FFA) is to be routinely submitted electronically in a consistent format to the stakeholders (see Section 9.2 and Appendix B). In addition, under the Kentucky AIP, AIP personnel require access to the electronic data that is maintained by the Paducah facility and its contractors. Consequently, the Paducah DOE Program Integrated Data System meets the regulatory requirements and provides Paducah EMEF with a platform to manage its data.

The Paducah DOE Program Integrated Data System is composed of integrated hardware and software to support the collection, management, analysis, and presentation of data associated with environmental restoration/remedial action, compliance, and monitoring activities at PGDP. All environmental measurements, analyses, and locationally descriptive information (e.g., GIS, lithology, and monitoring structure information), as applicable per this plan, is included. In addition, an extensive collection of descriptive and reference information about environmental tasks and permits is stored. A flow diagram for the Paducah DOE Program Integrated Data System is shown in Figure 2.

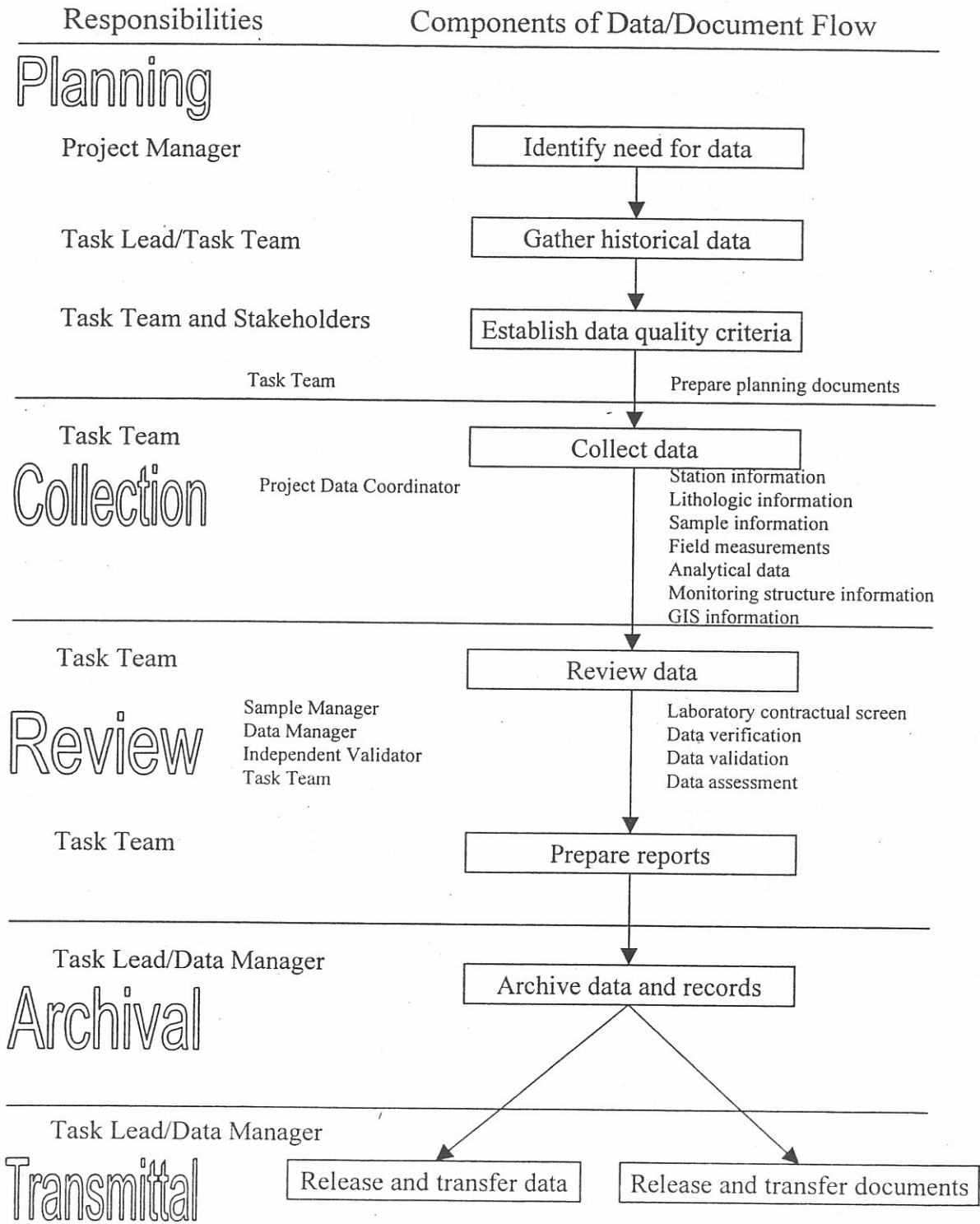


Figure 1. Detail of Data and Data Flow.

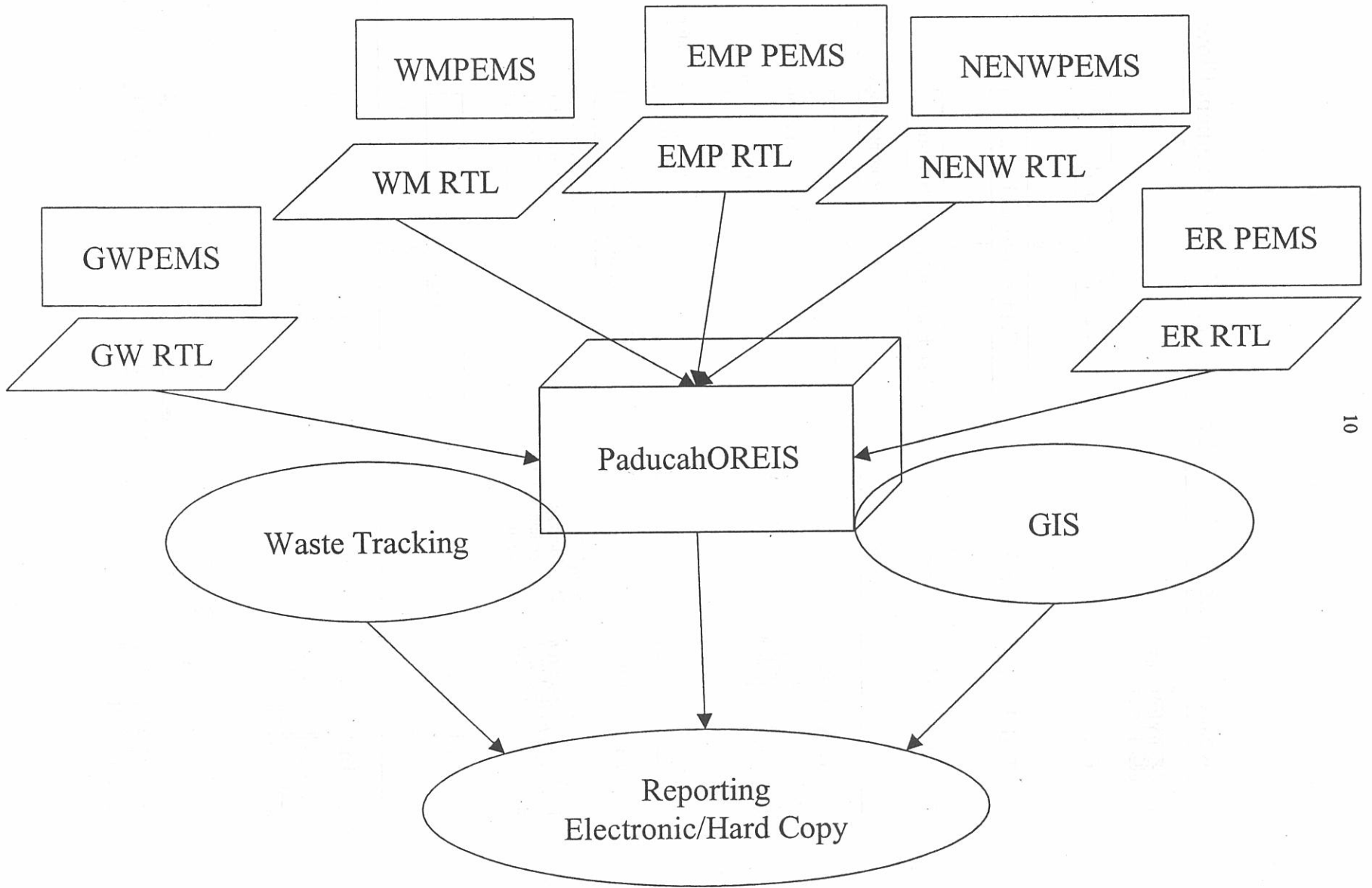


Figure 2. Paducah DOE Integrated Data System.

As part of the Paducah DOE Program Integrated Data System, each project utilizes a PEMS for sample scheduling, collection, and tracking each sample and associated data from point of collection through final data reporting. Each PEMS is established on a project-specific basis. PEMS tracking includes field forms, COCs, hard copy data packages, and EDDs. Project data is entered as the project progresses. All field measurement data, analytical data, lithologic descriptions, monitoring structure information, sample stations, and corresponding coordinates (as appropriate) are entered into PEMS.

Upon completion of the project, or on a routine basis, data from each PEMS is reviewed as described in Section 8.4 and transferred to Paducah OREIS for permanent retention. All final data reporting is reported from Paducah OREIS. Additionally, PEMS data is archived on a specified frequency to ensure data traceability.

The Paducah DOE Program Integrated Data System is accessed by a computer network. The system is designed to allow the electronic transfer of information between all branches of EMEF. A central file server is used to maintain the software and database applications. This server may be accessed from several PC workstations within the computer network.

8.2 DATA PLANNING

8.2.1 Initiation of Data Collection

The need for data collection is determined by the Task Lead and Project Manager to satisfy applicable regulatory requirements and/or DOE Orders. The Task Lead identifies the need for collection of data to support the task and is responsible for the development of applicable documents that outline the specific objectives of the data collection activity.

8.2.2 Historical Data Gathering

A substantial effort should be made by the data requestor (i.e., project manager/task lead) to acquire and analyze all historical data and documents relevant to the task (i.e., in numeric, spatial, attribute, and textual form) prior to the DQO process and/or data generation. For example, these documents and data might include prior work done for preliminary assessments, site characterization tasks, remedial investigations, annual monitoring reports, or data summaries provided by previous analysts. In addition, information specialists who would know of relevant documents, GIS information, and data sets should be consulted to acquire a comprehensive task background. In many cases, descriptive and qualitative information about the data (e.g., metadata) may be required. This is often the case with electronic files that may be received without the basic information provided through proper documentation. Some research may be required to prepare these metadata statements which are essential to the determination of data quality and usability.

If the data is in electronic form, the usable data and metadata should be entered into the Paducah DOE Program Integrated Data System for inclusion into Paducah OREIS. If the data is in document form, the usable data and metadata should be extracted and key-entered into the Paducah DOE Program Integrated Data System. If GIS information is required, themes/coverages should be updated as necessary.

8.2.3 Data Quality Criteria

With the usable historical data now in the Paducah DOE Program Integrated Data System, the data, along with the documents and metadata, can be retrieved, analyzed (both statistically and spatially), modeled, and used in support of DQOs for the task. This data, along with elements from the DQO process such as, contaminants of concern, QA/QC requirements, "Identification of Project Data Quality Checks" checklist, data review options, and the sampling design is used to generate applicable plans.

Field SOWs, sampling plans, and analytical SOWs are developed in support of field preparation. A field SOW describes the field activities to be undertaken and subsequent work to be performed. A sampling plan may be used to further expand on details of field activities. An analytical SOW is prepared which includes analytical parameters, methods, and detection limits. A validation SOW is also prepared when validation services are required to ensure the analytical laboratory's performance is acceptable.

Information from each of the SOWs and sampling plans is used to initiate sampling logbooks, labels, and other required field documentation. Documentation generated by the data collection activity shall be forwarded electronically and/or in hard copy to the Task Lead and the DMC to be indexed and filed as specified per the SOW.

8.3 DATA COLLECTION

Data collection information is recorded and maintained for all data collection activities. This information includes station information, lithologic information, sample information, field measurements, analytical data, monitoring structure information, and GIS information and is explained below.

8.3.1 Station Information

Station information is data describing the location from which a sample is taken. Station information includes plant coordinates (surveyed or estimated, as appropriate), station description, and station type. This information is input directly into PEMS. Methods for determining coordinates and relevant information necessary to determine and document accuracy should be recorded.

8.3.2 Lithologic Information

Lithologic information is data describing the lithology of a borehole. This information is input directly into PEMS.

8.3.3 Sample Information

Sample information is environmental data describing the sampling event and consists of the following: station, date collected, time collected, and other sampling conditions collected for every sampling event. This information is recorded in logbooks and may be included on the COC or sample labels. This information is input directly into PEMS.

8.3.4 Field Measurements

Field measurements are measurements of a parameter without physical collection of a sample which are collected real-time in the field. Field measurements may include water level measurements, pH, conductivity, flow rates, temperature, and dissolved oxygen. Field measurements are taken and recorded on appropriate field forms or in logbooks, and input into PEMS.

8.3.5 Analytical Data

The Sample Manager tracks progress of analytical samples as fieldwork continues. COCs are reviewed and lab receipt of samples is verified. Once samples have entered the laboratory, the laboratory is responsible for sample analysis, data reduction, and data reporting. The analytical data will be checked for completeness and reasonableness. A system is set up within the Paducah DOE Program Integrated Data System to log shipment of samples and receipt of data packages.

All data packages received from the fixed-base and screening/field laboratories are tracked, reviewed, and maintained in a secure environment. The primary individual responsible for these tasks is the Sample Manager. The following information is tracked: sample delivery group number, date received, number of samples, sample analyses, receipt of EDD (if applicable), and comments. The Sample Manager compares the contents of the data package with the COC form and identifies discrepancies. Discrepancies are immediately reported to the laboratory and the data validators. All data packages are forwarded to the Bechtel Jacobs Company EMEF DMC for permanent storage.

8.3.6 Monitoring Structure Information

Monitoring structure information is data describing the monitoring wells and boreholes installed during the combined tasks. Information includes well screen depth; borehole and well diameter; screened aquifer; and datum information. This information is input directly into PEMS.

8.3.7 GIS Information

GIS information is metadata that is visually descriptive of the area around the location of a project. Information may include maps of roads, streams, underground utilities, etc. Projects creating new GIS information or causing required updates to existing GIS information supply the information to the Paducah DOE Program Integrated Data System.

8.4 DATA REVIEW

8.4.1 Laboratory Contractual Screening

Laboratory contractual screening is the process of evaluating a set of data against the requirements specified in the analytical SOW to ensure that all requested information is received. The contractual screening includes, but is not limited to, the COC, number of samples, analytes requested, total number of analyses, methods used, QC samples analyzed, EDDs, units, holding times, and reporting limits achieved.

The Sample Manager conducts the screening upon receipt of data from the analytical laboratory. To the extent possible, the contractual screening should be done electronically. The Sample Manager identifies and documents any exceptions to the SOW on a Laboratory Deliverable Contractual Screening Checklist.

8.4.2 Data Verification

Data verification is the process for comparing a data set against a set standard or contractual requirement. Verification may be performed electronically, manually, or by a combination of both. Data verification includes contractual screening and can include other data quality checks established by the task team. Applicable task plans define the specific verification to be performed. Data is flagged as necessary.

Specific documentation associated with data verification is developed per PMSA-1001, Appendix G, entitled, "Identification of Project Data Quality Checks," and will be provided in Appendix A.

8.4.3 Data Validation

Data validation is the process for evaluating the laboratory adherence to analytical-method requirements. This is performed by a qualified individual for a data set, independent from sampling, laboratory, project management, or other decision-making personnel for the task. Data validation is performed according to PMSA-1001 and is coordinated by the Sample Manager. Validation qualifiers are stored in the Paducah DOE Program Integrated Data System. Documentation associated with data validation (the validation SOW, data validation reports, and exception reports, if applicable) is filed in the DMC. Specific documentation associated with data validation is identified in Appendix A.

8.4.4 Data Assessment

Data assessment is the process for assuring that DQOs are met, and that the type, quality, and quantity of data are appropriate for their intended use. It allows for the determination that a decision (or estimate) can be made with the desired level of confidence given the quality of the data set. Data assessment follows data verification and data validation and must be performed on 100 percent to ensure data is usable.

The data assessment is conducted by a designated task team member in conjunction with other task team members according to PMSA-1001. Assessment qualifiers are stored in the Paducah DOE Program Integrated Data System. Data is made available for reporting upon completion of the data assessment and associated documentation (Data Assessment Review Checklist) is filed with the task files.

8.4.5 Report Preparation

Personnel will utilize the official Paducah OREIS data tables for all official data reporting. Prior to the release of any data, the "Data Release" form shall be completed according to PMSA-1001, Appendix I. Release of all data shall be approved by DOE and the Managing and Integrating Contractor.

8.5 DATA AND RECORDS ARCHIVAL

8.5.1 Data Archival

Data archival refers to the long-term storage of electronic data generated by a task in the Paducah DOE Program Integrated Data System. Long-term storage in a central repository assures maximum accessibility by the environmental engineering community. To ensure its future usability, sufficient documentation, including the associated metadata, must accompany archived data to describe the source, contents, and structure of the data. Paducah OREIS is the database that stores archived data for future use. In addition, the Paducah PEMS used for the task is archived both intact and as exported ASCII text with sufficient documentation to recreate task data. The archive of Paducah PEMS, as well as the backups for Paducah OREIS, are stored in the DMC.

8.5.2 Records Archival

The DMC is a repository for all EMEF documents and data. Each EMEF task transmits a copy of all task documentation to be filed in the DMC as the task file. This information is arranged by a file classification scheme and is filed on shelves in color-coded folders. The documents are shelved in mobile file cabinets which are located inside a two-hour-rated firewall vault. The vault is protected by a wet-pipe sprinkler system and intrusion alarm. The DMC staff utilizes the DMS, a database management system designed for management and retrieval of documents, to perform searches. DMS records contain bibliographic information (title; author; issue date; document type and number; etc.), file classification information (document location), and index information (subject keywords, document status, facility name/waste area grouping [WAG]/solid waste management unit [SWMU] number, cleared for public use flag, and administrative record [AR] codes).

By utilizing the DMC, all documents relevant to EMEF work will be located in a central repository and will be available to the EMEF organization as well as other identified users. The DMC will also provide controlled access to these documents.

Information that may be found in a task file include hard copies of all original field and analytical results; data reduction and summarization programs; data packages; logbooks; associated QA/QC forms; correspondence; contracts; meeting minutes; training records; plans; and reports. All contents of a task file are classified, indexed, and stored into appropriate file groups and record series within the task file.

Satellite document centers are sometimes established with routine transfer frequencies to the PGDP DMC. Task records are maintained by the Task Records Coordinator as record copy as specified in task data and document management plans and as required by protocol. Logbooks and field documentation are copied weekly unless maintained as record copies, which are kept in one-hour-rated, fire-resistant, locked file cabinets overnight. If the activities during logbook use could potentially damage the logbook or result in loss, then weekly copies are required. If copies are made, they are maintained separate from the original logbook and are forwarded to the task files and maintained as record copy until the originals are complete. At that time, the originals replace the copies as record copy. The record copy is transferred to the Paducah EMEF DMC. Upon completion of the task, all original logbooks (field and analytical), field documentation, and project deliverables will be forwarded to the DMC by the task manager or designee.

Documents will be selected for the AR from the task file. The AR files are duplicated and made available to the public at the Environmental Information Center. Documentation associated with data and records archival includes archive checklists; indexed and filed copies of all relevant hard copies; and lists of all items recommended for the AR file.

9. DOCUMENT AND DATA RELEASE AND TRANSFER

9.1 DOCUMENT RELEASE AND TRANSFER

A standard distribution list is maintained for regulatory documents submitted according to the FFA. Changes to this distribution list should be submitted through the DOE Site Office. Other documents generated for the EMEF Program may be specially requested through the DOE Site Office or their designee. Requested documents may be historical or newly generated and will be transmitted within a reasonable time frame.

9.2 ELECTRONIC DATA RELEASE AND TRANSFER

Once data has undergone verification, validation, and data assessment, it may be released to external agencies. Routine data or data specially requested by external agencies is downloaded into a standard format (see Appendix B) and transmitted either electronically or by physical transfer on electronic media (diskettes, etc.). If data is transmitted electronically, data files will be placed on an externally-accessible file server that is password protected. The external agency has the responsibility to protect the data that has been provided. Passwords shall not be shared with anyone outside the external agency. External agencies will be notified of data availability via electronic mail.

The Task Lead/Release Requestor will complete the "Paducah EMEF Data Release to External Agencies" form and obtain all appropriate signatures. Field QC data is not routinely transmitted with the data; however, this information is available upon request. Electronic data formats will contain a "Read Me" file that will identify the electronic data package and the number of files associated with the package. The "Read Me" file will also indicate the appropriate data qualifiers along with their associated definitions and the appropriate data quality level. Hard copy data formats will contain a cover letter that will identify the contents of the data package. The cover letter will also indicate the appropriate data qualifiers along with their associated definitions and the appropriate data quality level.

9.2.1 DOE Remedial Action Investigations

DOE will provide electronically-transmitted data concurrent with the D1 Report/Characterization Report or when the Project Completion Report is issued (if formal D1 is not required) for remedial action investigations.

9.2.2 DOE-Permitted Facilities/Routine Environmental Monitoring Reports

Permitted and routine sampling is outlined in Table 8.1. Additionally, Table 8.1 includes reporting and transfer frequencies. DOE will provide electronic-transmitted data per the agreed schedule in this document.

9.2.3 Special Requests

Data will be transmitted routinely as specified in Sections 9.2.1 and 9.2.2. Any additional data generated from sampling activities that are available electronically may be transmitted upon receipt of a special request correspondence. Special requests shall be submitted through the DOE Site Office, or their designee, specifying the sampling event information required.

Table 8.1. Regulatory and routine sampling.

PROGRAM	FREQUENCIES/SCHEDULE		
	SAMPLING	REPORTING	TRANSFER
Permit-Associated Sampling			
Kentucky Pollutant Discharge Elimination System Permit DOE Outfalls	Monthly and Quarterly	Monthly 28 th of each month	Monthly 28 th of each month
Toxicity Monitoring	Quarterly	Quarterly Publication of the ASER	Quarterly Concurrent with ASER
Bioaccumulation Study	Annually	Annually Publication of the ASER	Annually Concurrent with ASER
Fish Community	Semiannually	Annually Publication of the ASER	Annually Concurrent with ASER
C-746-K Surface Water	Quarterly	Semiannually June 30, December 30	Semiannually June 30, December 30
C-746-S&T Surface Water	Quarterly	Quarterly January 15, April 15, July 15, October 15	Quarterly January 15, April 15, July 15, October 15
C-746-U Surface Water	Quarterly	Quarterly January 15, April 15, July 15, October 15	Quarterly January 15, April 15, July 15, October 15
C-746-K Groundwater	Quarterly	Semiannually June 30, December 30	Semiannually June 30, December 30
C-404 Landfill Groundwater	Quarterly	Semiannually May 30, November 30	Semiannually May 30, November 30
C-746-S&T Landfill Groundwater	Quarterly	Quarterly February 30, May 30, August 30, November 30	Quarterly February 30, May 30, August 30, November 30
C-746-U Groundwater Monitoring	Quarterly	Quarterly February 30, May 30, August 30, November 30	Quarterly February 30, May 30, August 30, November 30
Environmental Monitoring Programs (EMP)			
EMP Surface Water Sampling	Bimonthly	Annually Publication of Annual Site Environmental Report (ASER)	Annually Concurrent with ASER
EMP Annual Sediment Sampling	Annually	Annually Publication of ASER	Annually Concurrent with ASER
EMP Annual Deer Sampling	Annually	Annually Publication of ASER	Annually November
Plume Groundwater Sampling	Monthly and Quarterly	Quarterly January 30, April 30, July 30, October 30	Quarterly January 30, April 30, July 30, October 30
Residential Groundwater Sampling	Monthly, Quarterly, and Annually	Annually Publication of ASER	Semiannually April and October
Surveillance Groundwater Sampling	Monthly, Quarterly, and Annually	Annually Publication of ASER	Semiannually January and July

PROGRAM	FREQUENCIES/SCHEDULE		
	SAMPLING	REPORTING	TRANSFER
Surveillance & Maintenance or Operation & Maintenance Activities			
C-404 Leachate	Per Permit As needed	Per Permit January 30, April 30, July 30, October 15	Annually * October 15
C-746-S&T Leachate	Per Permit As needed	Quarterly per permit	Quarterly per permit
C-746- U Leachate	Per Permit As needed	Quarterly per permit	Quarterly per permit
Northwest Plume/Northeast Plume	Daily	Quarterly and Annually January 30, April 30, July 30, October 30	Quarterly January 30, April 30, July 30, October 30

* If leachate samples were collected.

10. INTERNAL QC CHECKS

10.1 FIELD QC SAMPLES

Standard operating protocols are used for all routine sampling operations. Field QC sampling will be conducted to check sampling and analytical accuracy and precision for both laboratory and field analyses of the original samples. All QC samples will be handled, shipped, and analyzed as stated in Sections 5 and 7. Field QC samples will have sample numbers which are unique and which identify them as QC samples.

A **filter blank** is a sample of ASTM Type II water passed through, or over, a filter before any samples are filtered. Filter blanks are used as a measure of filter contamination. Samples are analyzed for the same parameters as the filtered sample. Filter blanks can be collected at a rate of one per lot number.

Field blanks serve as a check on environmental contamination at the sample site. ASTM Type II water is transported to the site, opened in the field, transferred into each type of sample bottle, and returned to the laboratory for analysis of all parameters associated with that sampling event. It is also acceptable for field blanks to be filled in the lab, transported to the field, and then opened. Field blanks may be used as a reagent blank as needed. It is recommended that field blanks be collected at a rate of 1:20.

Equipment blanks (may also be referred to as equipment rinseates) are samples of ASTM Type II water passed through decontaminated sampling equipment. Equipment blanks are used as a measure of decontamination-process-effectiveness and are analyzed for the same parameters as the sample collected with the equipment. Equipment blanks may also be used as a reagent blank as needed. Equipment blanks are required only when nondisposable equipment is being used. It is recommended that equipment blanks be collected at a rate of 1:20.

A **trip blank** is a sample used to detect contamination by volatile organic compounds (VOCs) during sample shipping and handling. Trip blanks are 40 mL volatile organic analysis (VOA) vials of ASTM Type II water that are filled in the laboratory, transported to the sampling site, and returned to the laboratory with VOA samples. Trip blanks are not opened in the field. One trip blank is to accompany each cooler containing VOA samples. Each trip blank is to be stored at the laboratory with associated samples, and analyzed with those samples. Trip blanks are only analyzed for VOCs.

Duplicates are two separate samples taken from the same source during the same sampling event and are analyzed for the same parameters. Data generated by duplicate samples includes sampling and analytical variability (precision). It is recommended that duplicates be collected at a rate of 1:20.

10.2 ANALYTICAL LABORATORY QC SAMPLES

Fixed-based analytical laboratories that provide services will have an approved QA plan that describes the laboratory QC sample program and the laboratory control sample program. The analytical laboratory has an established internal QC program that is managed by the laboratory supervisors. Analytical laboratory QC samples will be analyzed as required by the analytical method for the parameters of interest and the results will be included in the analytical report. Blind samples are samples in which the laboratory has no information on the sample location and, subsequently, would have no indication of the possible analytical results. These samples will be analyzed for the parameters of interest and the results will be included in the analytical report. Acceptable completion of the blind samples provides an indication of the laboratory's performance. DOE laboratories participating in the blind sample program will follow blind submittal frequencies determined by the SMO.

11. AUDITS AND SURVEILLANCES

11.1 AUDITS

Audits are qualitative reviews of task activity to check that the overall QA program is functioning. Audits should be conducted early in the task so that problems can be corrected quickly. The audit involves the review of all available and relevant task and contract documents and includes an evaluation of QC measures for office and field. Audits will be performed as requested by management.

11.2 SURVEILLANCES

Surveillances follow the same general format as an audit but are less detailed and require a less formal report. A surveillance is designed to give task staff rapid feedback concerning QA compliance and to facilitate corrective action. Surveillances will be performed as requested by management.

12. PREVENTIVE MAINTENANCE

Equipment is an inclusive term for tools, gauges, instruments, and other items. The equipment discussed in this section requires that specific preventive maintenance is serviced as specified by the manufacturer's recommended schedule. All services are documented and performed by qualified and trained individuals. Out-of-service equipment is controlled to prevent inadvertent use and its maintenance is recorded. A list is maintained of the critical, spare parts that should be stocked to minimize equipment downtime. Specific field equipment preventive-maintenance practices, frequencies, and spare parts are described in the factory manual for each instrument.

Preventive-maintenance protocols for laboratory equipment and instruments are provided in laboratory QA plans. All maintenance activities will be recorded in maintenance logs. Laboratories will be required to maintain an adequate inventory of spare parts and consumables to prevent downtime as a result of minor problems.

13. SPECIFIC ROUTINE PROTOCOLS

The precision, accuracy, and completeness parameters are quantitative tools by which data sets can be evaluated. These parameters can help ensure that DQOs are met and are defined as follows:

- **Precision**—A quantitative measurement of the variability of a group of measurements as compared to their average. Usually expressed as a percentage or a standard deviation, it evaluates the reproducibility of the system. Sample duplicates measure the reproducibility of the sampling event, while lab replicates measure the precision of the analytical process. The acceptable precision may be defined by the laboratory method used.
- **Accuracy**—A quantitative measurement of the bias of the data. It represents how close the measurement data is to the true value. Analytical accuracy is measured by percent recoveries associated with the laboratory analytical control spikes (blank spikes), surrogate spikes, or matrix spikes. The acceptable accuracy may be defined by the laboratory method used. Sampling accuracy can be assessed by evaluating field and trip blanks.
- **Representativeness**—A qualitative measurement of the ability of a sample or group of data to adequately describe or define the conditions being measured. Precision, accuracy, and completeness all affect representativeness. Sampling strategy (location, method, and frequency) are critical to ensure that the samples statistically represent the population. Laboratory precision and accuracy reflect how representative the data is of the sample.
- **Completeness**—A quantitative measurement of the percentage of acceptable data as compared to the number planned. Both sampling and analytical completeness can be measured.
- **Comparability**—A qualitative measurement of the confidence with which one data set can be compared with another. Comparability is achieved by using standard techniques for collection and analysis.

Protocols for assessing the precision, accuracy, and completeness are provided in the following text. It should be noted that there are no standard guidelines available for representativeness and comparability.

13.1 PRECISION

To determine the precision of the laboratory analysis, a routine program of replicate analyses, in accordance with the analytical method requirements, is performed by the laboratory. The results of replicate analyses are used to calculate the relative percent difference which is used to assess laboratory precision.

For replicate results C_1 and C_2 :

$$\text{Relative percent difference} = \frac{|C_1 - C_2|}{\left(\frac{C_1 + C_2}{2}\right)} \times 100$$

Precision of the total sampling and analytical measurement process will be assessed from field duplicates. Although a quantitative goal cannot be set due to sample variability, the Task Lead will review relative percent difference values of field duplicates to estimate precision. Analytical precision can be measured separately from sampling precision through the use of laboratory duplicate and matrix spikes.

13.2 ACCURACY

To determine the accuracy of an analytical method and/or the laboratory analysis, a periodic program of sample spiking is conducted (minimum one spike and one spike duplicate per 20 samples). The results of sample spiking are used to calculate the QC parameter for accuracy evaluation, the percent recovery (% R).

For surrogate spikes and QC samples:

$$\%R = \frac{C_s}{C_t} \times 100$$

where--

C_s = measured spiked sample concentration (or amount)
 C_t = true spiked concentration (or amount)

For matrix spikes:

$$\%R = \frac{|C_s - C_o|}{C_t} \times 100$$

where--

C_s = measured, spiked sample concentration
 C_o = sample concentration (not spiked)
 C_t = true concentration of the spike

Accuracy of the total sampling and analytical measurement process will not be determined. This would require the addition of chemical-spiking compounds to the samples in the field.

13.3 COMPLETENESS

To determine the completeness of data, the percentage of valid, viable data obtained from a measurement system is compared with the number of total measurements. The goal of completeness is to generate a sufficient amount of valid data to satisfy task needs.

Completeness, C , is calculated as follows:

$$\% C = \frac{\text{Number of valid measurements}}{\text{Number of total measurements}} \times 100$$

14. NONCONFORMANCES AND CORRECTIVE ACTIONS

Nonconforming equipment, items, activities, conditions, and unusual incidents that could affect compliance with task requirements will be identified, controlled, and reported in a timely manner. Nonconforming equipment will immediately be labeled or tagged, and segregated, if possible. Specific protocols for controlling nonconforming items will be described in applicable documents. Nonconformance Reports issued as a result of an audit or surveillance will identify the root cause of the problem. Laboratories must notify the appropriate personnel of any nonconformance or problems with analytical samples. Laboratory corrective actions reports are completed by the analytical laboratory when a nonconformance is recognized by laboratory personnel. Handling of any nonconformance is described in appropriate plans and protocols.

Corrective actions to audit/surveillance findings and nonconformances are managed. The Task Manager is notified of a nonconformance and/or surveillance finding. These are documented and a copy is furnished to the Task Lead as soon as possible. Copies of audits, surveillances, and/or nonconformances and their dispositions will be forwarded to the appropriate management personnel and will be placed in the DMC.

15. QA REPORTS TO MANAGEMENT

Upon request, QA personnel will provide to management a report which summarizes QA activities for the task, system, and performance audits conducted (internal and external); quality problems found; corrective actions initiated; and other applicable items. Some reports that present measurement data generated during the work assignment may require a QA section addressing the quality and limitations of the data. This QA section will address results of audits or surveillance of the measurement work; quality problems found and corrective actions taken; and deviations from applicable documents.

16. FIELD CHANGES

Field changes will be governed by control measures commensurate with those applied to the documentation of the original protocol. The task team identifies, documents, and approves field changes. These changes are communicated to the team through the use of Change Notices and Change Orders.

REFERENCES

- 10 CFR 830.120, "*Quality Assurance*," April 1994.
- Bechtel Jacobs Company LLC. Quality Assurance Program Plan, DRAFT, October 1998.
- Energy Systems. *Environmental Measurements Data Management Plan Implementation Handbook for the Environmental Restoration Program*, ES/ER/TM-88/R1, 1996.
- EPA. *Data Quality Objectives Process for Superfund*, Interim Final Guidance, EPA/540/G-93/071, 1993.
- EPA. Hazardous and Solid Waste Amendment Permit, Permit #KY8890008982, August, 19, 1991.
- EPA. *Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans*, QAMS 005/80, December 20, 1980.
- EPA. *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*, SW-846, 1986.
- EPA. *EPA Region 4 Environmental Investigations Standard Operating Procedures and Quality Assurance Manual*, May 1996.
- Kentucky Division of Waste Management Hazardous Waste Management Permit, Permit No. KY8890008982, August 19, 1991.
- Kentucky Agreement in Principle, January 1, 1997.
- Quality Assured Data*, PMSA-1001, Bechtel Jacobs Company LLC Procedures Manual, April 1997.

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APPENDIX A

TASK-SPECIFIC INFORMATION FOR QUALITY AND DATA ELEMENTS

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TASK-SPECIFIC INFORMATION FOR QUALITY AND DATA ELEMENTS

Purpose and Introduction

This plan can be used and implemented for the Paducah DOE tasks requiring the collection of analytical data. Each section of the FFA QA/DMP was written to meet data-quality requirements and provides a description of the programmatic elements which should occur for each task. This appendix provides additional information concerning the QA and Data Management aspects which are specific to the task and cannot be defined at the programmatic level. This appendix should be completed once the task has been planned or once the DQOs have been documented. This completed appendix, along with the "Data and Documents Management and Quality Assurance Plan for the Paducah Environmental Management and Enrichment Facilities Program," will serve as the "Quality Assurance and Data Management Plan" for the task, will be provided to appropriate personnel, and will be maintained as a task record.

For the purpose of this document, this appendix is not completed but shows the information to be completed for each task involved in the collection of analytical data. This appendix should be completed, printed with attachments compiled, combined with the "Data and Documents Management and Quality Assurance Plan for the Paducah Environmental Management and Enrichment Facilities Program," and distributed to the appropriate personnel for review, approval, and use.

INSTRUCTIONS FOR COMPLETING THE QUALITY ASSURANCE/DATA MANAGEMENT PLAN (QA/DMP)

Use the following instructions to complete each section for the task-specific QA/DMP. Attachments may be used to serve as and/or supplement the information provided in the tables.

TITLE PAGE: Type over the task-specific information in the underlined/bolded/italicized portion of the text. Information needed is the issue date, document number, document title, and author(s). Document numbers must be obtained from the Records Manager.

APPROVAL PAGE: Type over the task-specific information in the underlined/bolded/italicized portion of the text. Information needed is the preparers' names and titles and the approvers' names and titles. Minimum approvals are the Task Lead, Project Manager, and QA Manager.

TABLE OF CONTENTS AND ATTACHMENTS: Include the appropriate page numbers to the table of contents and identify and document the attachments provided to supplement this QA/DMP.

SECTION 1.0—TASK ORGANIZATION, RESPONSIBILITY, AND TRAINING: Identify the task organizational chart listing additional roles and responsibilities, including those identified in Section 2.2 of the "Data and Documents Management and Quality Assurance Plan for the Paducah Environmental Management and Enrichment Facilities Program." Also, document in Table 1.1 the training requirements for key personnel. An organizational chart and/or training matrix may be attached to this QA/DMP.

SECTION 2.0—DATA QUALITY OBJECTIVES (DQOs) AND SAMPLE PLANNING: Refer to PMSA-1001, *Quality Assured Data*, Appendix C, for directions to complete DQOs for the project. Attach DQO documentation to this QA/DMP. Using the DQO documentation, with assistance from the task team, identify details of the SAP. The SAP is generated out of the data needs identified in the DQOs and will specify applicable samples (i.e., regular samples, QC samples, and waste characterization samples) to be collected. Complete Table 2.1 (if SAP is not available) and/or attach the task SAP for environmental data. Complete Table 2.2 for waste characterization.

SECTION 3.0—APPLICABLE PROTOCOLS, DOCUMENTS, AND WORK INSTRUCTIONS: Identify the applicable protocols and documents (to data quality activities) which will be followed for the data collection activity and document in Table 3.1. Work instructions may be required for task-specific tasks.

When available and appropriate for the sample matrix, SW-846 Methods will be used. When not available, other nationally-recognized methods such as those of ASTM, DOE, and EPA will be used. Analytical methods are listed in Table 2.0 and in analytical SOWs; therefore, an additional listing of analytical methods is not required in Table 3.1.

SECTION 4.0—CALIBRATION PROTOCOLS AND FREQUENCIES: This section addresses documentation of field equipment and field support laboratory equipment which is to be calibrated for the task. Fixed-base laboratory calibration protocols and frequencies are not required to be included in this plan but are covered in the laboratory QA plans and protocols. The SMO oversight/audit has ensured the laboratory has met the requirements of SW-846. Calibration protocols and frequency information may be attached to this QA/DMP.

Identify the field equipment and field support laboratory equipment to be used during the data collection activity and document in Table 4.1 or attach supplemental information concerning equipment calibrations, the protocols, and frequencies.

SECTION 5.0—DATA REVIEW PROCESS: For details on the data review process, refer to PMSA-1001, *Quality Assured Data*, Appendices E, F, G, and H. Complete verification and assessment.

For the purposes of this section, contractual screening, data verification, and data assessment frequencies are identified in Table 5.1, Table 5.2, and Table 5.4, respectively; however, responsible personnel for these tasks must be identified and documented in the appropriate tables. Complete and attach Appendix G, "Data Quality Checks," from PMSA-1001, *Quality Assured Data*, to better define verification and assessment criteria. Complete Table 5.3 to document the validation strategy defined by the task team.

SECTION 6.0—DOCUMENT AND RECORDS CONTROL AND TRANSFER: Identify the documents and records to be controlled during the task, the document or record name and type (i.e., a document such as a QA project plan or a record such as a logbook) and the frequency of transfer of the document or record to the EMEF DMC. Record this information in Table 6.1 for documents and Table 6.2 for records.

SECTION 7.0—QUALITY ASSESSMENT SCHEDULE: Identify and document in Table 7.1 the quality assessments to be performed for the task as requested by the Task Lead or other applicable managers.

DISTRIBUTION LIST: Identify and document the appropriate personnel to receive a copy of the QA/DMP.

REVIEWING, APPROVING, AND ISSUING THE QA/DMP: Upon completion of the above instructions, the QA/DMP should be printed, noticeably stamped "DRAFT," and provided to the appropriate personnel for review. Comments should be received and resolved in a timely manner. The revised QA/DMP should be printed, approved, and provided to the appropriate personnel as defined in the distribution list.

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DATE OF ISSUE: DATE

DOCUMENT NO., REV. NO.

PROJECT TITLE
QUALITY ASSURANCE AND DATA MANAGEMENT PLAN

AUTHOR(S)

Prepared by
Environmental Management and Enrichment Facilities
Kevil, Kentucky 42053
Managed by
BECHTEL JACOBS COMPANY
for the
U. S. DEPARTMENT OF ENERGY
Under Contract No. DE-AC05-98OR22700

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PROJECT TITLE
QUALITY ASSURANCE AND DATA MANAGEMENT PLAN

APPROVALS

Prepared by: _____ Date: _____
Name
Title

Prepared by: _____ Date: _____
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Approved by: _____ Date: _____
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Title

Approved by: _____ Date: _____
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Title

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CONTENTS

- 1.0 TASK ORGANIZATION, RESPONSIBILITY, AND TRAINING**
- 2.0 DATA QUALITY OBJECTIVES AND SAMPLE PLANNING**
- 3.0 APPLICABLE PROTOCOLS AND DOCUMENTS**
- 4.0 CALIBRATION PROTOCOLS AND FREQUENCIES**
- 5.0 DATA REVIEW PROCESS**
- 6.0 DOCUMENT AND RECORDS CONTROL AND TRANSFER**
- 7.0 ASSESSMENT SCHEDULE**

ATTACHMENTS

- 1 Organizational Chart**
- 2 Training Matrix**
- 3 DQO Documentation**
- 4 Sampling and Analysis Plan**
- 5 Figures/Drawings of Area**
- 6 Calibration Protocols and Frequencies**
- 7 Data Quality Checks Checklist**

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1.0 TASK ORGANIZATION, RESPONSIBILITY, AND TRAINING

Table 1.1. Task Organization, Responsibility, and Training.

Job Title or Position	Name	Role, Responsibility, and Interface	Training*
DOE Project Manager			
Data Clerk			
Data Manager	M&I Data Manager/ Subcontractor Personnel		
Network Administrator	M&I Network Administrator		
Project Manager			
Project Engineer			
QA Specialist			
Records Clerk			
Records Manager	M&I Records Manager/ Subcontractor Personnel		
Sample Manager	M&I Sample Manager/ Subcontractor Personnel		
Task Lead			
Task Manager			
Field Team Leader	Subcontractor Personnel		
Samplers	Subcontractor Personnel		
Drillers	Subcontractor Personnel		
Other	Subcontractor Personnel		
Other	Subcontractor Personnel		

*The required training (GET, GERT, RAD II, etc.) should be identified for Subcontractor Personnel for this project.

Identify Location of Training Records for Subcontractor Personnel: _____

2.0 DATA QUALITY OBJECTIVES AND SAMPLE PLANNING

Table 2.1. DQOs and sample planning for environmental data collection.

Sampling Location	Matrix	Sampling Method(s)	Sampling Frequency	Data Type(s) (Screen or Def)	Analyte(s)	Analytical Method	Detection Limit(s)	Holding Time	Container	Preservative
<i>Regular Samples</i>										
<i>QC Samples</i>										

Table 2.2. DQOs and sample planning for waste characterization data collection.

Material/ Volume/ Container	Preliminary Classification	Characterizat ion Method	Future Disposition	Analyte(s)	Analytical Method	Detection Limit(s)	Holding Time	Container	Preservative
<i>Regular Samples</i>									
<i>QC Samples</i>									

3.0 APPLICABLE DOCUMENTS, PROTOCOLS, AND WORK INSTRUCTIONS

Table 3.1. Applicable documents, protocols, and work instructions.

Protocol Number	Protocol Name	Applicability	
		Yes	No
	<i>General</i>		
	List appropriate protocols for to be used for chain-of-custodies, logbooks, ensuring quality data, etc.		
	<i>Sampling</i>		
	List appropriate sampling protocols to be used.		
	<i>Data Management</i>		
	List appropriate data management protocols to be used.		
	<i>Data Validation</i>		
	List appropriate data validation protocols to be used.		

4.0 CALIBRATION PROTOCOLS AND FREQUENCIES

Table 4.1. Field equipment and field support laboratory calibration protocols and frequencies.

Equipment & Serial No.	Field Usage	Calibration Check Frequency	Calibration Check Material	Calibration Check Protocol
<i>Field Equipment</i>				
<i>Field Support Laboratory Equipment</i>				

5.0 DATA REVIEW PROCESS

Table 5.1. Contractual screening.				
Responsible Person: _____ Other: _____				
Table 5.2. Data verification.				
Responsible Person: _____ Other: _____				
Table 5.3. Details for performing data validation.				
Frequency	Data Package Type	Analytes & Media	Protocol Used	Completed By
Responsible Person: _____				
Table 5.4. Data assessment.				
Responsible Person: _____				

6.0 DOCUMENT AND RECORDS CONTROL AND TRANSFER

Table 6.1. Identification of documents.				
Document Name and Type	Controlled Document (Yes* or No)	Storage Location	Frequency of Transfer	Comments

* If a document is identified as a “controlled document”, then a distribution list must be created, maintained, and updated, as needed. The access control method for the “controlled document” must be defined and implemented.

Table 6.2. Identification of records.				
Record Name and Type	Quality Record (Yes or No)	Storage Location	Frequency of Transfer	Comments

7.0 ASSESSMENT SCHEDULE

Table 7.1. Assessment schedule.			
Audit/Surveillance/ Self Assessment No.	Subject/Topic	Date	Completed By

DISTRIBUTION

(List appropriate names and associated organization, if needed, for distribution of document.)

QUESTION

QUESTION: [Faint, illegible text]

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APPENDIX B

DATA DICTIONARY AND FORMATS FOR PADUCAH OREIS TRANSMITTALS

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TRANSMITTAL FORMAT

Transmittal format for all data transmittals will be in exported database format (.dbf) and as a Microsoft Access table (version 97 or more recent). The file will be added to the password-protected external server under the base directory \\home\oreis\data\ in a zipped file named according to the structure outlined below that corresponds to Table 1 in addition to other applicable transmittals.

KPDES Permit DOE Outfalls, Toxicity Monitoring, Bioaccumulation Study, Fish Community

...\data\permit\KPDES\KPDESTYYYY-MM

where T corresponds to the sample type (i.e., R=regular permitted sampling, T=toxicity sampling, B=bioaccumulation sampling, F=fish community sampling)

YYYY corresponds to the calendar year, and

MM corresponds to the month

C-746-K Surface Water, C-746-K Groundwater

...\data\permit\C746K\KMYYYY-SA

where M corresponds to the media (i.e., S=Surface water, G=Groundwater)

YYYY corresponds to the calendar year, and

SA corresponds to the 1st or 2nd half of the year

C-746-S&T Surface Water, C-746-S&T Groundwater, C-746-S&T Leachate

...\data\permit\C746S&T\S_TMYYYY-QQ

where M corresponds to the media (i.e., S=Surface water, G=Groundwater, L=Leachate)

YYYY corresponds to the calendar year, and

QQ corresponds to the quarter

C-746-U Surface Water, C-746-U Groundwater, C-746-U Leachate

...\data\permit\C746U\UMYYYY-QQ

where M corresponds to the media (i.e., S=Surface water, G=Groundwater, L=Leachate)

YYYY corresponds to the calendar year, and

QQ corresponds to the quarter

C-404 Groundwater, C-404 Leachate

...\data\permit\C404\404MYYYY-SA

where M corresponds to the media (i.e., S=Surface water, G=Groundwater, L=Leachate)

YYYY corresponds to the calendar year, and

SA corresponds to the 1st or 2nd half of the year

Environmental Monitoring Surface Water Sampling

...\data\envmon\SW-YYYY

where YYYY corresponds to the calendar year

Environmental Monitoring Sediment Sampling

...\data\envmon\SD-YYYY

where YYYY corresponds to the calendar year

Environmental Monitoring Deer Sampling

...\data\envmon\D-YYYY

where YYYY corresponds to the calendar year

Environmental Monitoring Plume Groundwater Sampling

...\data\envmon\PI-GW\PIGWYYYY-QQ

where YYYY corresponds to the calendar year, and
 QQ corresponds to the quarter

Environmental Monitoring Residential Groundwater Sampling

...\data\envmon\Res-GW\ResGWYYYY-SA

where YYYY corresponds to the calendar year, and
 SA corresponds to the 1st or 2nd half of the year

Environmental Monitoring Surveillance Groundwater Sampling

...\data\envmon\Sur-GW\SurGWYYYY-SA

where YYYY corresponds to the calendar year, and
 SA corresponds to the 1st or 2nd half of the year

S&M/O&M Northwest Plume Operations Sampling

...\data\sm_om\NWYYYY-QQ

where YYYY corresponds to the calendar year, and
 QQ corresponds to the quarter

S&M/O&M Northeast Plume Operations Sampling

...\data\sm_om\NEYYYY-QQ

where YYYY corresponds to the calendar year, and
 QQ corresponds to the quarter

DOE Remedial Action Investigations

...\data\ra\PROJCODE

where PROJCODE corresponds to the PROJ_CODE in Paducah OREIS (e.g., ERI-WAG6, ERI98-698W22, etc.)

Special Requests

...\data\requests\YYYYMMDD-A

where YYYY corresponds to the calendar year,
 MM corresponds to the month,
 DD corresponds to the day of the request, and
 A corresponds to the sequential number for the request.

Lithology

...\data\lith\PROJCODE

where PROJCODE corresponds to the PROJ_CODE in Paducah OREIS from which the lithology description was collected (e.g., ERI-WAG6, ERI-WAG 27, LASAGNA, etc.)

GIS Themes/Coverages

...\data\gis\

Each file will be named to appropriately describe the theme/coverage. Updates to themes/coverages will be named identical to the previous version with a revision number immediately following (e.g., roads, roads1, roads2, etc).

GIS Themes/coverages will be in a format compatible to be viewed in ArcView 2.0 or higher (i.e., ArcInfo Coverages, AutoCAD drawings, etc.)

DATA DICTIONARY INFORMATION

CODE

The CODE table contains the codes used in Paducah OREIS tables and their descriptions.

CODE	Code referenced in other Paducah OREIS tables.
CODE_DESCRIPTION	Description of the coded value. This is the 'decoded' value.
CODE_TYPE	Column name for the codes and descriptions. This value identifies the type of coded value.

PROJECT FLD SMP MEAS

The export of PROJECT FLD SMP MEAS table contains the measurement data taken in the field, which is associated with specific SAMPLEs collected during a STATION_EVENT. Examples are flow rate, depth, and temperature. Only those field measurements directly associated with a SAMPLE will be stored in the FLD_SMP_MEAS table. Field measurement data collected, not directly associated with a SAMPLE (e.g., water level suites) will also be in this format.

PROJ_CODE	Acronym assigned by the project (e.g., "ERI-WAG6" for the WAG 6 Environmental Restoration Field Investigation).
STA_NAME	Unique station name assigned by the individual projects (e.g., 400-212 or MW156).
PROJ_SAMPLE_ID	Unique sample identifier assigned by the project.
SAMPLE_COMMENTS	Comments about the sample.
SMP_STRT_LEVEL	For a measurement taken over a range of elevations or depths, the upper vertical distance in feet of the measurement from ground surface.
SMP_END_LEVEL	For a measurement taken over a range of elevations or depths, the lower vertical distance in feet of the measurement from ground surface.
MED_TYPE	Coded value that represents the part of the environment from which a sample is collected, or on which a field measurement or observation is made. See CODE table where CODE_TYPE = MED_TYPE for a list of valid values and their descriptions.
SMP_TYPE	Coded value that represents the type of sample collected. See CODE table where CODE_TYPE = SMP_TYPE for a list of valid values and their descriptions.
D_COLLECTED	Date sample was collected.
CHEMICAL_NAME	Description of the chemical or measurement parameter. For CAS numbers, this is the preferred name defined by the Common Lab Practices Committee.
CAS_NUM	Chemical Abstract Services number with dashes, blank if no CAS number is available.
LAB_CODE	Coded value assigned by the project that represents the analytical laboratory that performed the analysis of the sample. See the CODE table where CODE_TYPE = LAB_CODE for a list of valid values and their descriptions.
RESULTS	Measurement for a given parameter.
RSLT_PREFIX_QUALIFIER	A qualifier indicating whether the result is below, within, or above range limits. See CODE table where CODE_TYPE = RSLT_PREFIX_QUALIFIER for a list of valid values and their descriptions.

RSLTQUAL	Coded value that documents any conditions associated with the results of the analysis. See CODE table where CODE_TYPE = RSLTQUAL for a list of valid values and their descriptions.
UNITS	Coded value that represents the units of measure used to report the parameter value. See CODE table where CODE_TYPE = UNITS for a list of valid values and their descriptions.
NON_COMPLI_CODE	For Paducah OREIS, this field designates electronic verification qualifiers assigned during the Data Assessment process according to PMSA-1001. See CODE table where CODE_TYPE = NON_COMPLI_CODE for a list of valid values and their descriptions. A null field may indicate no criteria were established or may indicate verification was clear. Non-standard criteria are established on a project-by-project basis.
VALIDATION	Coded value that represents the outcome of the data validation process. See CODE table where CODE_TYPE = VALIDATION for a list of valid values and their descriptions.
ASSESSMENT	Coded value describing assessment qualifiers added to data as a result of PMSA-1001. Applies only to data generated after effective date of procedure. See CODE table where CODE_TYPE = ASSESSMENT for a list of valid values and their descriptions.
FLD_COMMENTS	Comments about the measurement.
ANA_METHOD	Method number used to identify a standard analysis method.
ANA_TYPE	Coded value of the chemical group to which the analyte belongs. See CODE table where CODE_TYPE = ANA_TYPE for a list of valid values and descriptions.

PROJECT LAB MEAS

The export of PROJECT LAB MEAS table contains the measurement data analyzed by an analytical laboratory, which is associated with specific SAMPLEs collected during a STATION_EVENT.

PROJ_CODE	Acronym assigned by the project (e.g., "ERI-WAG6A" for the WAG 6 Environmental Restoration Field Investigation).
STA_NAME	Unique station name assigned by the individual projects (e.g., 400-212 or MW156).
PROJ_SAMPLE_ID	Unique sample identifier assigned by the project.
SAMPLE_COMMENTS	Comments about the sample.
SMP_STRT_LEVEL	For a measurement taken over a range of elevations or depths, the upper vertical distance in feet of the measurement from ground surface.
SMP_END_LEVEL	For a measurement taken over a range of elevations or depths, the lower vertical distance in feet of the measurement from ground surface.
MED_TYPE	Coded value that represents the part of the environment from which a sample is collected, or on which a field measurement or observation is made. See CODE table where CODE_TYPE = MED_TYPE for a list of valid values and their descriptions.
SMP_TYPE	Coded value that represents the type of sample collected. See CODE table where CODE_TYPE = SMP_TYPE for a list of valid values and their descriptions.
D_COLLECTED	Date sample was collected.

CHEMICAL_NAME	Description of the chemical or measurement parameter. For CAS numbers, this is the preferred name defined by the Common Lab Practices Committee.
CAS_NUM	Chemical Abstract Services number with dashes, blank if no CAS number is available.
LAB_CODE	Coded value assigned by the project that represents the analytical laboratory that performed the analysis of the sample. See the CODE table where CODE_TYPE = LAB_CODE for a list of valid values and their descriptions.
RESULTS	Measurement for a given parameter.
RSLT_PREFIX_QUALIFIER	A qualifier indicating whether the result is below, within, or above range limits. See CODE table where CODE_TYPE = RSLT_PREFIX_QUALIFIER for a list of valid values and their descriptions.
RSLTQUAL	Coded value that documents any conditions associated with the results of the analysis. See CODE table where CODE_TYPE = RSLTQUAL for a list of valid values and their descriptions.
UNITS	Coded value that represents the units of measure used to report the parameter value. See CODE table where CODE_TYPE = UNITS for a list of valid values and their descriptions.
RAD_ERR	The counting error for a specific radionuclide expressed as 2 standard deviations.
NON_COMPLI_CODE	For Paducah OREIS, this field designates electronic verification qualifiers assigned during the Data Assessment process according to PMSA-1001. See CODE table where CODE_TYPE = NON_COMPLI_CODE for a list of valid values and their descriptions. A null field may indicate no criteria were established or may indicate verification was clear. Non-standard criteria are established on a project-by-project basis.
VALIDATION	Coded value that represents the outcome of the data validation process. See the CODE table where CODE_TYPE = VALIDATION for a list of valid values and their descriptions.
ASSESSMENT	Coded value describing assessment qualifiers added to data as a result of PMSA-1001. Applies only to data generated after effective date of procedure. See CODE table where CODE_TYPE = ASSESSMENT for a list of valid values and their descriptions.
LAB_COMMENTS	Comments about the individual sample.
ANA_METHOD	Method number used to identify a standard analysis method.
ANA_TYPE	Coded value of the chemical group to which the analyte belongs. See CODE table where CODE_TYPE = ANA_TYPE for a list of valid values and descriptions.

STATION-LOCATION

The export of STATION-LOCATION table contains the data about sampling points associated with one or more projects. Each point has a distinct station name/station type within a project. Locational information contains coordinate and other information describing a point on the ground. Most location are points described by x,y coordinates, but a location could be a line or a polygon where measuring events occur. In those cases, a single point, such as the estimated center point, is used.

STA_NAME	Unique station name assigned by the individual projects (e.g., GW101).
STA_TYPE	Coded value that represents the type of station (e.g., seep, spring, well). See CODE table where CODE_TYPE = STA_TYPE for a list of valid values and their descriptions.
STATION_COMMENTS	Comments about the station.
STA_DESC	Description of the specific sampling or measuring location.
GRND_ELV	Elevation of ground surface (for groundwater, soil, or sediment sampling) at a sampling or measuring location in feet above mean sea level (msl).
ADMIN_EAST	X-value of the distance in feet of a sampling or measuring location from the reference location based on the administrative coordinate grid system.
ADMIN_NORTH	Y-value of the distance in feet of a sampling or measuring location from the reference location based on the administrative coordinate grid system.
SWMU	Acronym for Solid Waste Management Unit, if applicable.
LOCATION_COMMENTS	Comments about the location.
DATUM	Coded value that represents the method by which reference points were established (e.g., NAD27, NAD83). Datum should be associated with the state plane coordinate system. It is not valid for administrative grid. See CODE table where CODE_TYPE = DATUM for a list of valid values and their descriptions.
SPLANE_EAST	X-value of the distance in meters of a sampling or measuring location from the reference location based on the state plane coordinate grid system.
SPLANE_NORTH	Y-value of the distance in meters of a sampling or measuring location from the reference location based on the state plane coordinate grid system.
LOC_ERROR	Station location error in feet.
LOC_METHOD	Coded value that represents the method used for locating the station. See CODE table where CODE_TYPE = LOC_METHOD for a list of valid values and their descriptions.

LITHOLOGY

The LITHOLOGY export provides a description of a material (e.g., sand, gravel) encountered underground at a given location at a specific interval within a well, borehole, etc. and the discrete fixed top and bottom points of the interval where the sample was taken.

CONSTR_DEPTH_VAL	The total measurement from the ground surface of a hole downward to the bottom of the screening material in a well, expressed in feet.
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HOLE_DIAM	Diameter in inches of the well. If more than one diameter is available, this column will contain the smallest diameter and the others will be listed in the COMMENTS column.
LOG_FLAG	A flag which indicates that reference source information (e.g., geophysical logs) exists.
LOG_TYPE	Coded value that represents a specific geophysical log. An example would be CL for Caliper Log, GRL for Gamma Ray Log. A name or abbreviation representing a type of LOG used in geologic work (e.g., driller, caliper, gamma). See CODE table where CODE_TYPE = LOG_TYPE for a list of valid values and their descriptions.
TOT_DRILLED_DEPTH	The total measurement from the ground surface to the bottom of a newly-constructed well after any plug back material has been added, expressed in feet.
INT_BOT_DEPTH_VAL	The distance in feet, from the ground surface to the bottom of a monitored interval.
INT_TOP_DEPTH_VAL	The distance in feet, from the ground surface to the top of a monitored interval.
MONIT_INT_NAME	The name (or number) assigned to a given monitored interval at a given location.
MONIT_ZONE_CODE	Coded value that represents the generic interval of a saturated zone that a hole monitors. A monitored interval can cut across multiple zones. See CODE table where CODE_TYPE = MONIT_ZONE_CODE for a list of valid values and their descriptions.
INT_MATL_CODE	Coded value that represents a specific characteristic or set of characteristics of the solid content found at a specific location. See CODE table where CODE_TYPE = INT_MAT_TYPE for a list of valid values and their descriptions.
STRAT_SEQ	Number assigned by the site geologist to each distinct lithologic layer at a site.
VISUAL_DESC	Textual and mineralogical description of the material comprising the layer to augment or qualify the lithtype code (e.g., grain sizes, color, secondary characteristics).

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