

Environmental Restoration Program

EG&G MOUND-21-06-01-01--9508150100

**OPERABLE UNIT 1
REMEDIAL DESIGN/REMEDIAL ACTION
WORK PLAN**

**MOUND PLANT
MIAMISBURG, OHIO**

July 1995

**Final
(Revision 0)**

**U.S. Department of Energy
Ohio Field Office**



EG&G Mound Applied Technologies

ENVIRONMENTAL RESTORATION PROGRAM

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EG&G MOUND APPLIED TECHNOLOGIES**

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CONTENTS

1.	INTRODUCTION	1-1
1.1.	PURPOSE AND ORGANIZATION OF THE REPORT	1-1
1.2.	BACKGROUND	1-3
1.3.	PROJECT MANAGEMENT	1-4
2.	OVERVIEW/DESCRIPTION OF REMEDY	2-1
2.1.	TREATMENT SYSTEM	2-1
3.	PROGRAMMATIC STRATEGY	3-1
3.1.	ACTIVITIES AND COORDINATION	3-1
3.1.1.	OU 1 RI/FS and Other OUs	3-1
3.1.2.	Removal Actions	3-1
3.1.3.	Long-Term Site and Facility Utilization	3-1
3.1.4.	Waste Management	3-2
3.1.4.1.	Normal Operation and Maintenance	3-2
3.1.4.2.	Construction and Startup	3-2
3.1.4.3.	Disposition of Soil, Construction Debris, and PPE Wastes	3-3
3.1.4.4.	Disposition of Groundwater and Decontamination Water	3-3
3.2.	PREDESIGN\PRECONSTRUCTION DOCUMENTATION	3-4
3.3.	SEQUENCING OF ACTION	3-5
4.	IMPLEMENTATION STRATEGY	4-1
4.1.	SEQUENCING WITHIN A DESIGN/BID PACKAGE – ENGINEERING STRATEGY	4-1
4.2.	MODELING OF REMEDY	4-3
5.	REMEDIAL ACTION	5-1
5.1.	CONSTRUCTION CONTRACTOR PROCUREMENT	5-1
5.2.	EXECUTION OF WORK	5-1
5.3.	CERTIFICATION OF CONSTRUCTION COMPLETION	5-1
5.4.	REMEDIAL ACTION REPORT	5-2
5.5.	REVIEWING AGENCIES	5-2
6.	ENVIRONMENTAL MONITORING/PERMITS	6-1
6.1.	PUMP TESTS AND SURFACE WATER MONITORING	6-1
6.2.	GROUNDWATER AND AIR STRIPPER DISCHARGE MONITORING	6-1
6.3.	ADDITIONAL PERMITS AND ARARS	6-1
7.	REPORTS AND SUBMITTALS	7-1
7.1.	DESIGN PHASE REPORTING AND SUBMITTALS	7-1
7.2.	CONSTRUCTION PHASE REPORTING	7-1
8.	COMMUNITY INVOLVEMENT	8-1
9.	SCHEDULE	9-1
10.	REFERENCES	10-1

FIGURES

1.1.	Mound Plant OU boundaries	1-2
2.1.	Tentative treatment plant location	2-3
2.2.	Treatment System Schematic	2-4

TABLES

II.1.	Observed Concentrations and Computations of Estimated Discharge to Treatment System	2-2
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1. INTRODUCTION

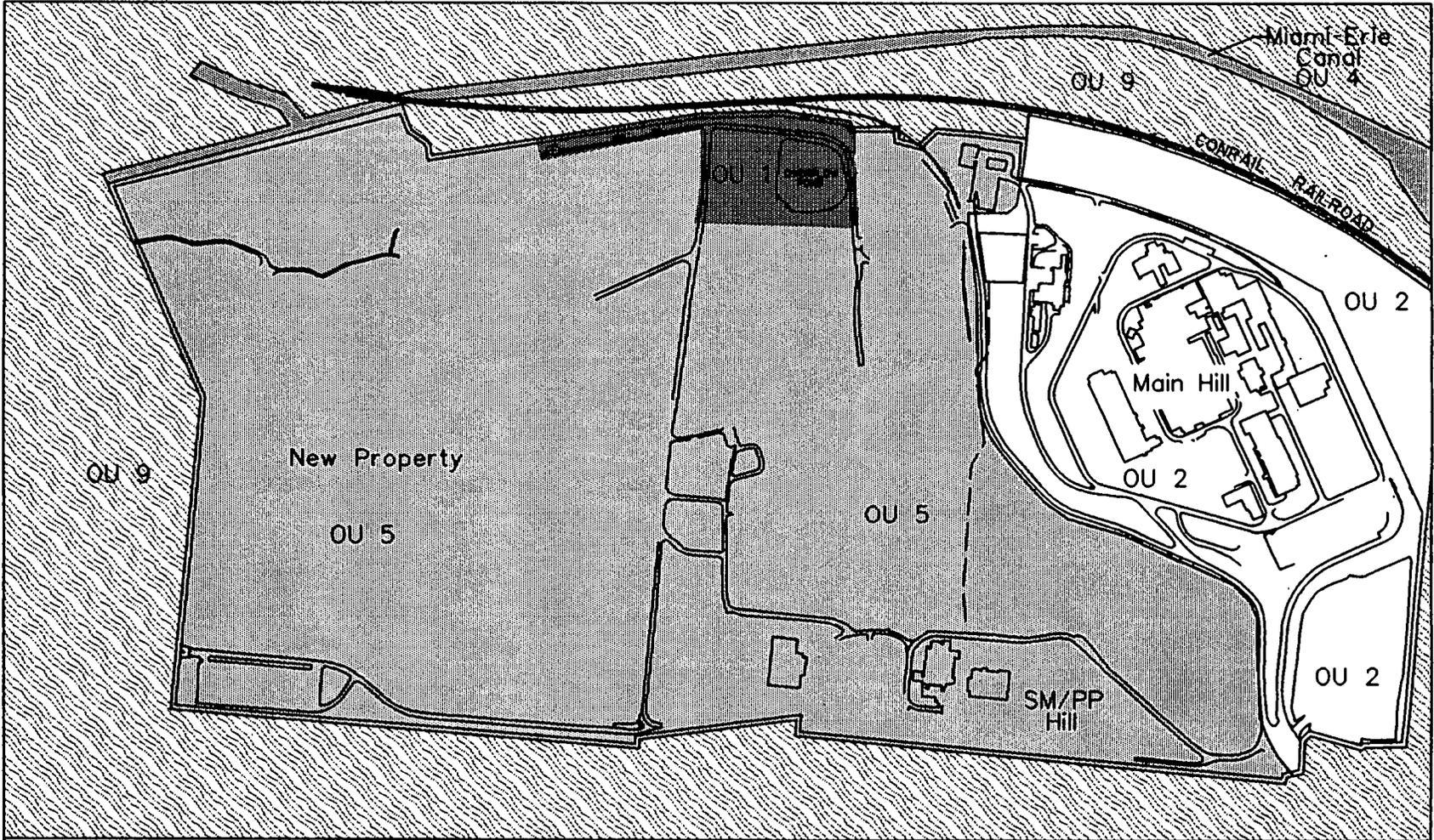
The U.S. Department of Energy (DOE) Mound Plant site is located within the southern city limits of Miamisburg, in Southern Montgomery County, Ohio. The site is approximately 10 miles south-southwest of Dayton and 45 miles north of Cincinnati. Mound Plant was placed on the National Priorities List (NPL) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, also known as Superfund) National Priority List (NPL) on 21 November 1989. Pursuant to its NPL status, the U.S. Department of Energy (DOE) signed a CERCLA Section 120 Federal Facility Agreement (FFA) with the U.S. Environmental Protection Agency (U.S. EPA), which became effective 11 October 1990 (EPA 1990a). A similar tripartite agreement was signed among the DOE, EPA, and Ohio Environmental Protection Agency (OEPA) in July 1993 (EPA 1993a).

For the Environmental Restoration (ER) Program, Mound Plant is divided into six OUs based on geography and contaminant occurrence. OUs 1, 2, 4, 5, 6, and 9 divide the Mound Plant site into general geographic areas (Figure 1.1). The elements of the ER Program and the RI/FS process for each operable unit will address all media sources and contaminants within its assigned boundaries. The ER program consists of three phases and is patterned after the EPA CERCLA program. Phase I, a preliminary assessment/site inspection (PA/SI), was completed at Mound Plant in 1986. Phase II, a remedial investigation/feasibility study (RI/FS), is currently under way at Mound Plant and has been completed for Operable Unit (OU) 1. Phase III, remedial design/ remedial action (RD/RA), will implement the remedial alternatives chosen in the feasibility studies of Phase II and will follow EPA guidance for Expediting RD/RA Programs (EPA 1990c).

1.1. PURPOSE AND ORGANIZATION OF THE REPORT

The purpose of this work plan is to describe the preparation of the RD and the conduct of the RA for OU 1. The remedy to be designed and constructed is specified in the DOE Record of Decision (ROD) (DOE 1995). The content of this document is specified in Section XI and Attachment II of the FFA (EPA 1990a). It incorporates the findings of the RI report (RIR) (DOE 1994a) and the FS Report (FSR) (DOE 1994b). The principal content of the work plan is as follows:

- Section 2 contains an overview and description of the remedy, with details of the system configuration, operating parameters, and applicability of the remedy to the situation at hand.
- Section 3 presents the programmatic strategy, including:
 - activities at OU 1 that may affect other operable units and how other operable units may affect the chosen remedy;



Note: OU 9 encompasses the cumulative impact of all other OUs on the offsite environment, including characterization of the BVA and the plant drainage system.

OU 6 occupies small areas within the larger boundaries depicted; these are not shown separately.

Legend

-  Structures
-  Paved roadway
-  Unpaved roadway
-  Mound Plant boundary
-  OU boundaries

True North 

0 700

Scale in Feet

Figure 1.1. Mound Plant OU boundaries.

- information regarding removal actions or application of innovative technology that may be initiated before remedial action, as well as any need for coordination of removal actions with the remedial action;
 - the long-term utilization plan for the site and OU 1;
 - planning with regard to the generation and disposition of waste materials from the construction, testing, and startup of the remedy and any wastes generated during the life of the unit;
 - the function and organization of the functional entity that will manage and supervise the remedial action construction for the site;
 - necessary information related to documentation (this work plan, project design/bid packages, RD/RA Work Plan addenda and other project-specific documentation, health and safety plan [HASP], sampling and analysis plan [SAP], operation and maintenance [O&M] plan, and construction quality assurance plan [CQAP]);
 - the necessary sequence of action (preliminary), decision criteria for sequencing, method for prioritization of action, and preliminary assumptions and considerations.
- Section 4 presents the implementation strategy, including sequencing within a Design/Bid Package, Mound-specific requirements and specifications, project-specific requirements, project-specific technical specifications (including media and contaminant-specific requirements), and modeling of the remedy in the aquifer system.
 - Section 5 describes the conduct of the remedial action itself — construction contractor procurement, execution of work, certification of construction completion, and the RA Report.
 - Section 6 specifies procedures for environmental monitoring and permits — groundwater monitoring, surface water (NPDES) permits, and any additional permit requirements, including compliance with applicable or relevant and appropriate requirement (ARARs).
 - Sections 7, 8, and 9 present reporting requirements, the community relations plan, and the project schedule, respectively.

1.2. BACKGROUND

OU 1, also known as Area B, occupies approximately 4 acres in the southwestern portion of the Mound Plant site. It encompasses four areas: the historic landfill, the site sanitary landfill, the overflow pond, and the three plant production wells. Mound Plant used the historic landfill site from 1948 to 1974. Waste materials disposed of included general trash, liquid wastes, and wastes that may have contained radioactive materials — some by burning. Much of this waste was relocated to and encapsulated in a site sanitary landfill constructed in 1977. An overflow pond was constructed simultaneously, partially covering the historic landfill site. After 1977, waste was no longer disposed of in OU 1. OU 1 includes the three plant production wells located along the southern plant boundary. An extended discussion of OU 1 history, including waste disposal and construction activities, is provided in the RIR (DOE 1994a).

The former waste disposal sites within Area B (the historic landfill and associated features) are concentrated within, beneath, and immediately adjacent to the current site sanitary landfill. These waste disposal sites are the result of years of dumping, burning, moving, reworking, burying, and partially removing trash and placing it into the engineered structure (the site sanitary landfill). The area bounded by the overflow pond to the north, the paved roads to the west and south, and the bunker area to the east can now be considered a single entity. This entity is internally heterogeneous, and not all portions are contaminated; however, subdividing the area does not increase understanding of the transport phenomena that are occurring, nor does it facilitate the development of remedial alternatives for the area.

1.3. PROJECT MANAGEMENT

Consistent with the structure suggested in EPA guidance (EPA 1990b), the Mound Plant ER Program is managed for DOE by EG&G Mound Applied Technologies (EG&G), the Management and Operations (M&O) contractor. The responsible DOE office is the Miamisburg Area Office, reporting to the Ohio Field Office. The DOE Remedial Project Manager is Mr. Arthur W. Kleinrath.

EG&G will manage the complete RD/RA process for OU 1. The EG&G operable unit manager is Mr. Kenneth R. Hacker. Both the RD and the RA will be supported by subcontractors of EG&G.

The current RD professional organization for preparation of this RD/RA Work Plan is Roy F. Weston, Inc. (WESTON®). The Ohio-registered professional engineer (P.E.) is Mr. John W. Thorsen. WESTON will also serve as the RD organization which will be responsible for preparing the plans and specifications for the remedy. The deliverables and the schedule for them are discussed in Sections 6 and 8. For purposes of this work plan, the RD professional organization will subsequently be referred to as the RD engineer or RD contractor.

The RA constructor organization will be selected by competitive bidding near the end of the RD process. EG&G will select the subcontractor, administer the subcontract, and provide construction oversight during the performance of the remedy. For purposes of this work plan, the RA constructor organization will subsequently be referred to as the RA contractor.

Since the RA contractor will be an independent subcontractor of EG&G, the independent quality assurance team called out in EPA guidance (EPA 1990b) can be drawn from the EG&G construction inspection organization. This team will provide continuous oversight of the RA contractor's activities.

2. OVERVIEW/DESCRIPTION OF REMEDY

The selected remedy for controlling contamination from the soils and groundwater at OU 1 is the collection, treatment, and disposal of groundwater. This remedy provides protection of human health and the environment by capturing contaminated groundwater before it migrates off site. It also meets the requirements for NPDES permits, satisfies the ARARs, and protects the Mound Plant groundwater production wells.

The selected remedy consists of the following:

- Two groundwater extraction wells with an estimated combined capacity of 45 gallons per minute (gpm) will capture the groundwater plume. The number, exact location, and pumping rates will be refined during the design phase by groundwater modeling.
- Groundwater will be pumped to an air stripper, using submersible well pumps. Each pump is to be sized to deliver an estimated 30 gpm, which would allow a factor of safety over the estimated design. The capacity will be refined after completion of the groundwater model. The pump will be controlled by equipment located in the treatment building.
- Surface controls, such as grading and lining of ditches along the south, west, and east sides of the landfill will manage the runoff and reduce infiltration, slowing the rate of migration of contaminants from the unsaturated soil to the groundwater.
- Institutional controls (fencing, access restriction, deed restrictions) will limit access to the site and prevent uncontrolled groundwater usage on site and downgradient from the site.
- Long-term groundwater monitoring will determine effectiveness of groundwater pump and treat system.

2.1. TREATMENT SYSTEM

The quality of the influent to the treatment system will be a composite of the water quality of the discharge of the two extraction wells. As discussed in the FSR (DOE 1994b), the average of the data from Monitoring Wells 370 and 63 should provide a reasonable estimate. These data are shown in Table II.1 and will be used as design criteria for the RD.

The discharge from the treatment system will meet or be lower than the levels established by the Ohio EPA (OEPA) for appropriate parameters under the National Pollution Discharge Elimination System (NPDES) permit. For the purpose of design, the discharge limits for the VOCs of concern are 5 $\mu\text{g/L}$ for each contaminant (OEPA 1994).

The tentative location of the proposed treatment system building is shown in Figure 2-1. The

Table II.1. Observed Concentrations and Computations of Estimated Discharge to Treatment System

Compound (concentration in $\mu\text{g/L}$)	Well 63	Well 370	Average
1,2- <i>cis</i> -dichloroethene	13	535	274
1,2- <i>trans</i> -DCE	4.7	1.8	3.2
Tetrachloroethene (PCE)	23	228	125
Tetrachloromethane (carbon tetrachloride)	2.9	3.9	3.4
1,1,1-Trichloroethane (1,1,1-TCA)	0.4	1.0	0.7
Trichloroethene (TCE)	23	149	86
Trichlorofluoromethane	3.6	7.1	5.4
Trichloromethane (chloroform)	6	80	43
Chloroethene (vinyl chloride)	3.9 (well 374)	3.2	3.6

treatment system building will house the blower, the air stripper, the control system, and the system appurtenances.

A process flow schematic is shown in Figure 2-2. A control system for the treatment system will be equipped with a flow meter, pressure gauges and switches, and level gauges and switches to control and monitor the operation of the extracted groundwater treatment system. Electrical power will be required for the treatment building and for the operation of the groundwater extraction wells.

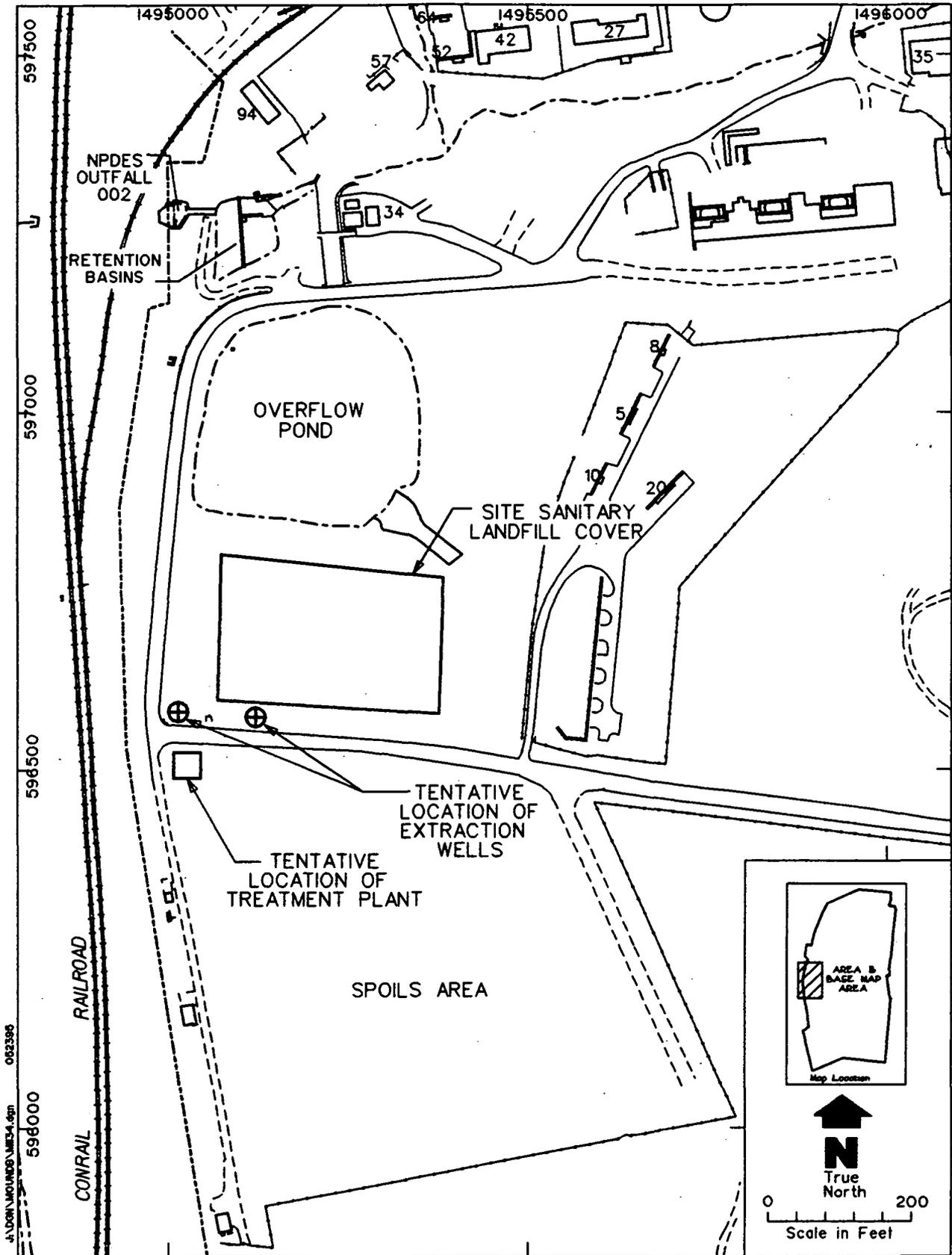


Figure 2.I. Tentative treatment plant location.

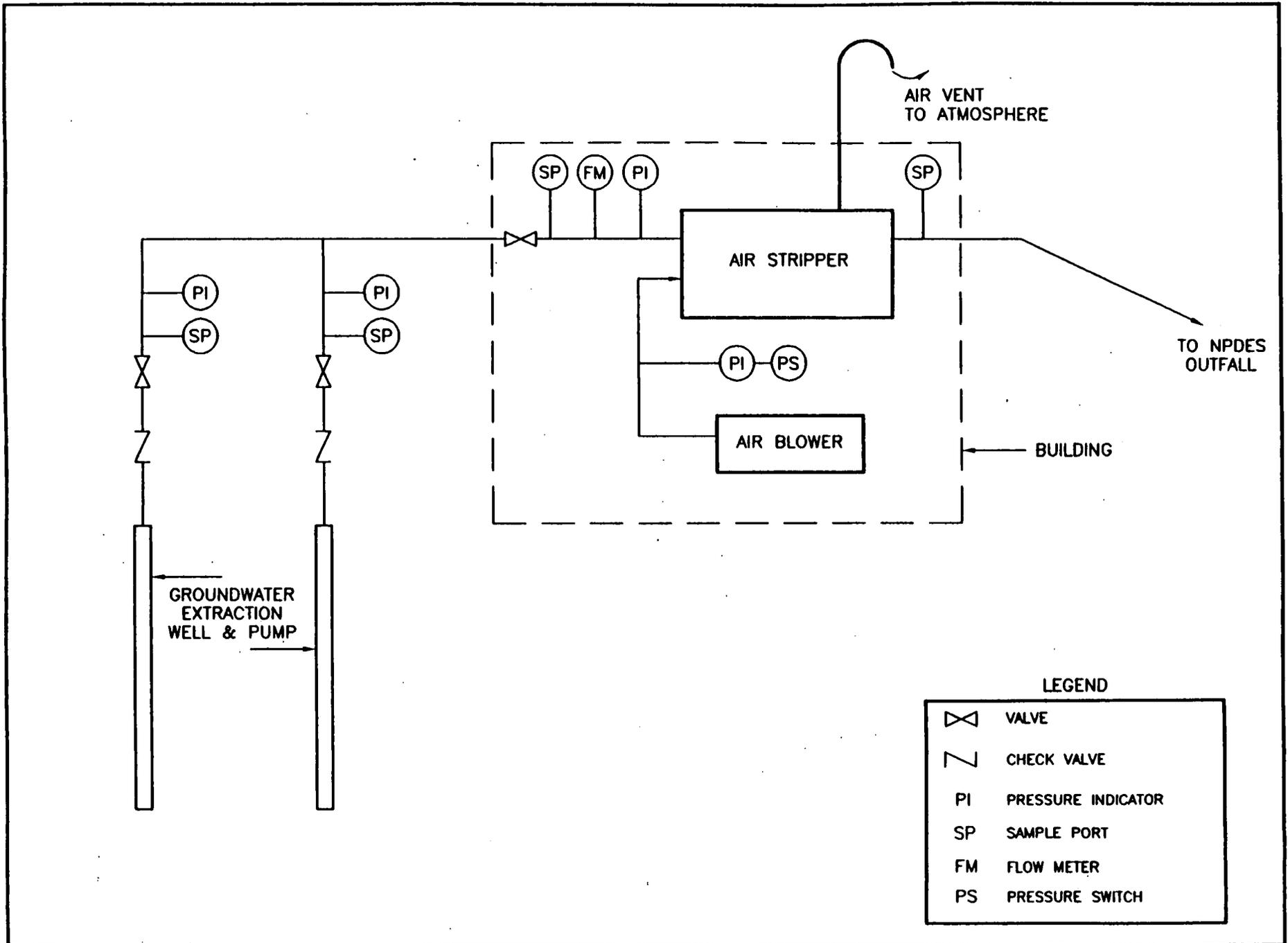


Figure 2.2. Treatment System Schematic

3. PROGRAMMATIC STRATEGY

3.1. ACTIVITIES AND COORDINATION

3.1.1. OU 1 RI/FS and Other OUs

The OUs that make up the Mound Plant site were selected to minimize the interaction among each other. OU 1 is isolated from the balance of the plant. Furthermore, this RA at OU 1 is the first one to be implemented. It is unlikely that the remediation of OU 1 will affect any other OUs — the site is downgradient of all the other OUs, and the small quantity of water to be withdrawn is unlikely to affect the Buried Valley Aquifer (BVA).

Activities in adjacent OU 4 (the Miami Erie Canal) may have small effects on OU 1, however:

- A removal action is planned for OU 4, the Miami-Erie Canal, to the west and south of OU 1. The current plant wastewater discharge that is routed through the canal will be routed through a concrete culvert that will be constructed along the plant boundary, immediately to the west of OU 1.
- The drainage improvements for the removal action will alter the location of the wastewater discharge from OU 1. The elimination of a constant water flow through the canal may alter the long-term groundwater conditions adjacent to OU 1. The latter issue will be addressed in the groundwater modeling activity, described in section 4.2. The planned location of the OU 1 treated wastewater discharge has been revised. Wastewater will enter the concrete culvert at a point directly west of the treatment facility.

3.1.2. Removal Actions

At the present time, no removal actions are being contemplated within OU 1. However, the DOE Innovative Treatment Remediation Demonstration (ITRD) Program is in the process of reviewing site conditions in search of candidate areas. This organization will determine if there is an opportunity to apply an innovative technology to improve the remedy for OU 1. A removal action taken under the DOE ITRD Program initiative would be designed so it would not interfere with the schedule for construction or operation of the remedy specified in the Record of Decision (DOE 1995), without consultation and concurrence with the regulators.

3.1.3. Long-Term Site and Facility Utilization

Currently, the Mound Plant is operated by EG&G Mound Applied Technologies for DOE as an integrated research, development, and production plant that supports the DOE weapons and energy programs.

To reconfigure and consolidate the nuclear complex, DOE has decided to phase out the future defense mission. As a result, the Mound Plant has been designated an environmental management site, and the plant is in the process of being converted into commercial and industrial use.

Identified future uses for OU 1 guide both the remedy selected and the performance standards against which that remedy is measured. As with the plant as a whole, the future land use is "industrial." Thus, the exposed individual is an on-site worker, either inside or outside.

The residual risk posed by contaminant transport through the groundwater pathway will be assessed at an appropriate point outside the OU1 compliance boundary. The exposed individual, a full-time, life-long resident, will be exposed to groundwater by using water from a private well. The on-site worker is also exposed via this same groundwater pathway.

The features within OU 1, especially the overflow pond and the plant production wells, are expected to stay in place and in use. Except for the remedy, no structures are scheduled for construction within the OU. No change is contemplated in adjacent land uses, either on or off the Mound Plant site.

3.1.4. Waste Management

3.1.4.1. Normal Operation and Maintenance

During normal operation and maintenance of the treatment system, small quantities of solid waste will be generated. The types of solid waste generated during this phase will include those materials that may be used during maintenance activities, such as personal protection equipment (PPE), pump seals, gaskets, valve packing, and other similar materials. Waste generated during operations and maintenance will be disposed through the Mound Plant Waste Management Department.

As part of the Remedial Design, the RD engineer will include an enclosure for the blowers, instrumentation, and air stripping unit. The enclosure will shelter the unit from the weather and provide adequate space appropriate for storage of small quantities of materials, including PPE, parts, wastes, and tools. The shelter design will include adequate utilities such as heat, light, electrical outlets, and communications.

3.1.4.2. Construction and Startup

Construction of the treatment system for OU 1 may generate both clean and RCRA-contaminated waste materials. The types of wastes generated during this period will include:

- Soil from soil borings for well placement and construction activities (i.e., trenching).
- Water (groundwater and decontamination water).
- Construction debris.
- PPE.

Small quantities of other materials such as pump seals, gaskets, and valve packing may also be generated during maintenance activities, and these materials will be dealt with in the same manner as PPE wastes.

For wastes that may be generated during construction and startup, the RA contractor will provide the necessary containers and prepare a temporary storage area sufficient for the estimated quantities of waste plus ten percent. The temporary storage area will be arranged to allow segregation of general refuse and contaminated wastes. The RA contractor will take appropriate measures to ensure that all wastes are characterized and disposed of in accordance with appropriate regulations.

3.1.4.3. Disposition of Soil, Construction Debris, and PPE Wastes

The majority of each type of waste generated during construction and startup will be from areas away from the landfill. These materials (common construction debris) will not be considered contaminated either chemically or radiologically. Disposal of clean materials will be in accordance with appropriate Mound Plant/DOE policy and procedure.

Some soils that are known or suspected to be contaminated may be generated. The contaminated waste will consist largely of soil from bore holes for well placement. These soils will be placed in 55-gallon drums for transfer to the Mound Plant Waste Management Department. Other materials known or suspected to be contaminated will be segregated by type and transferred to the Mound Plant Waste Management Department.

3.1.4.4. Disposition of Groundwater and Decontamination Water

During construction, testing, and startup, limited quantities of groundwater will be generated before the treatment plant is installed and operating. This groundwater will be managed in accordance with ER SOP 1.15 (DOE 1994c) and Ohio EPA Policy No. DSW-DERR 0100.027 (OEPA 1994). The RD engineer will prepare the appropriate documentation.

The RA contractor will collect decontamination water in appropriate containers for characterization and disposal. Appropriate containers consist of 55-gallon drums or portable tanks. The RA contractor will

transfer custody of the decontamination water to the Mound Plant Waste Management Department. Disposal will be in accordance with current Mound Plant policies and procedures.

3.2. PREDESIGN\PRECONSTRUCTION DOCUMENTATION

The Remedial Design/Remedial Action (RD/RA) Work Plan will be used to guide the construction, startup and initial operation of the treatment system. The RD/RA Work Plan provides general information regarding the sequence of action and design strategy, permitting, waste handling and disposal, and procurement. The RD/RA Work Plan may be amended periodically to reflect changes in existing conditions or design. These amendments will be approved and promulgated as part of the RD preparation process. Other project-specific documentation includes the site-specific Health and Safety Plan (HASP), the Sampling and Analysis Plan (SAP), and the Construction Quality Assurance Plan (CQAP). With the exception of the HASP, all these documents are prepared by the RD contractor.

Project Design/Bid Packages provide the design criteria and technical specifications for the remedial action. These packages will be developed based on the Record of Decision, the Proposed Plan, and the RD/RA Work Plan.

A CQAP will be prepared by the RD contractor to identify responsibilities for inspection, monitoring, and testing activities that may be necessary to ensure that the construction will satisfy design criteria, drawings, and specifications. Additional information regarding personnel responsibilities, authorities, and qualifications related to construction quality assurance will also be identified.

The HASP will be prepared by the RA contractor detailing specific requirements and anticipated conditions during system construction and startup. As much as possible, existing information from the RI will be used to prepare these documents. The HASP will include monitoring, decontamination, PPE, and construction safety. It will incorporate Mound Plant-specific requirements. The HASP will also include coordination with Mound Plant environmental, health and safety (EH&S) organizations.

A SAP will be prepared by the RD contractor that includes specific monitoring requirements for treatment system installation, surface water discharges, and characterization of waste materials. The SAP will include specific quality assurance requirements for field and laboratory analysis, chain of custody, shipping, procedures for sample collection, sample identification, preservatives, and holding time requirements.

In addition, the RD engineer will prepare a preliminary O&M Manual. This O&M Manual will include specifications for long-term groundwater monitoring. The groundwater monitoring will be coordinated with site-wide monitoring programs.

3.3. SEQUENCING OF ACTION

A brief history of the environmental activities preceding the RA discussed in this Work Plan is presented in Section 1. This Work Plan discusses the sequence of action within Phase III of the Environmental Restoration of OU 1.

Preliminary work leading up to construction, startup, and operation of the treatment system should be completed in a specific sequence to prevent rework and schedule delays. The preliminary sequence of action is:

- Complete RD/RA Work Plan.
- Select process option for groundwater treatment (preliminary documentation and ARARs call for air stripping),
- Survey of OU 1 and treatment system construction site.
- Perform local groundwater modeling based on pump test results and site-wide modeling.
- Prepare draft specifications and 30% RD.
- Determine lead time necessary for equipment and plan as necessary.
- Apply for NPDES permit modification and aquifer test and construction discharges, per Ohio EPA Policy No. DSW-DERR 0100.027.
- Select locations for extraction and monitoring wells.
- 90% RD.
- Final RD.
- Apply for other permits (e.g., construction).
- Select RA contractor after receipt of bids.
- Construct system including site preparation.
- Startup testing.
- Operation.

Priority will be given to completion of tasks necessary for system design. Primarily, these tasks are obtaining permits and modeling the aquifer. The second priority is acquisition of high lead time equipment based on the final design. The main assumption guiding the design is the use of a commercially available air stripper design provided by a vendor. The design should give heavy weight to the use of "skid-mounted" air stripping units. Skid-mounted units require minimal site work and preparation during construction.

4. IMPLEMENTATION STRATEGY

4.1. SEQUENCING WITHIN A DESIGN/BID PACKAGE — ENGINEERING STRATEGY

The treatment system design will use specific Mound Plant policies and procedures where appropriate for document preparation and quality assurance. The RD engineer will prepare all designs in accordance with EG&G Mound Design Requirements, which specify that the Design Engineer will utilize state-of-the-art concepts and designs to obtain the overall design objective at the lowest cost, consistent with high quality.

Monitoring well and extraction well design will conform to RCRA Ground-water Monitoring guidance (EPA 1986). Requirements for location and depth will be based on results found in the RIR and the FSR.

The contract documents will include the front end documents and the technical provisions, which include the plan sheets and technical specifications. These documents will be of sufficient detail to establish the minimum requirements of the project.

The front end documents are Mound and DOE documents that are part of the construction/ remediation contract and identify the terms and conditions, as well as special contract requirements, of each contract let by Mound. They will be provided by EG&G and include the following:

- Invitation for bid for construction contracts, January 1995, or latest revision.
- Insurance requirements.
- Bond requirements.

The technical provisions contain a description of the requirements to be met and the criteria for determining whether these requirements have been met. The starting point of the technical specifications will be provided by EG&G as part of the Master Index of Specifications, which needs to be revised for the specific project requirements. Mound's Master Index of Specifications is a list of contract specifications using the Construction Specification Institute format. Specific specification sections that are not included in the Master Index of Specifications will need to be created — for example, well pumps and double containment piping.

Preliminary Design Submittal

The preliminary design documents will be submitted when the remedial design is 30% complete. The technical requirements of this submittal will be to provide sufficient detail to confirm that the final design will provide an operational remedial system. The preliminary design submittal will include or discuss, at a minimum, the following:

- Preliminary plans, drawings, and sketches, including design calculations.
- Results of aquifer pumping test and model.
- Design assumptions and parameters, including design restrictions, process performance criteria, appropriate unit processes for the treatment train, and expected removal or treatment efficiencies for both the process and waste (concentration and volume).
- Proposed cleanup verification methods, including compliance with ARARs. (See Appendix A for listing of ARARs from site ROD.)
- Outline of required specifications.
- Proposed siting, proposed locations of processes, and proposed construction activity.
- Expected long-term monitoring and operation requirements.
- Preliminary construction schedule, including contracting strategy.
- Draft CQAP.
- Draft Contingency Plan.

Prefinal and Final Design Submittal

The remedial design will be approximately 90% complete at this point of the prefinal design phase. The prefinal design will address all comments made relative to the preliminary design submittal. The prefinal design will include those items listed for the preliminary design, as well as the following:

- Final CQAP.
- Contingency Plan.
- Draft O&M Plan.
- Capital and O&M Cost Estimate (RD engineer's cost estimate).
- Project Schedule.
- Front-end Contact Documents.

After approval of the prefinal design documents, the required revisions will be incorporated, and the final documents will be submitted complete with drawings and specifications suitable for bid

advertisement. The prefinal design will serve as the final design if EG&G, OEPA, and U.S. EPA have no further comments and issue an approval letter.

4.2. MODELING OF REMEDY

A groundwater model will be prepared for OU 1. The purpose of the model is to simulate the effects of various alternative proposed extraction well schemes so that an effective and efficient design can be achieved. The selected code is the USGS Modular Three-Dimensional Finite-Difference Groundwater Flow Model (McDonald and Harbaugh, 1988), commonly referred to as MODFLOW. MODFLOW was selected because the MODFLOW code is already in satisfactory use in a calibrated model at the Mound Plant site, and the code is capable of performing the necessary simulations. The modeling effort will be conducted as described in the following paragraphs.

First, the existing site-wide MODFLOW groundwater model will be used to generate an appropriate set of boundary conditions around OU 1. The existing model, created by Terran Corporation, was developed as a tool for simulating the Buried Valley Aquifer adjacent to the Mound Plant as a whole. The existing model is considered an acceptably accurate depiction of the buried valley aquifer, but does not have a fine enough local resolution within OU 1 to support the present computation of capture zones.

Next, with a subdomain of the site-wide model broken out as a local domain, a high-resolution grid will be established across OU 1. It is expected that all geological parameters are adequately understood to allow construction of the new local grid without any additional subsurface investigation. Nodes at the local model's perimeter will be set to constant-head boundaries in accordance with the modeled heads in the site-wide model. To the greatest extent possible, directly measured parameters will be used for the model. Where directly measured parameters are unavailable, the calibrated parameter values from the existing model will be used.

Next, the new local model will be run for present-day conditions, and its results will be compared against actual water levels. If necessary, the local model's calibration will be adjusted and the adjustments will be noted.

Next, the local model will be put through a series of sensitivity analyses to measure its performance under a variety of differing parameter values. At a minimum, sensitivity will be evaluated with respect to hydraulic conductivity and recharge.

Finally, after the local model's proper functioning is assured, it will be employed to simulate various pumping scenarios developed during the remedial design phase. In every scenario, the model's results will be used to evaluate the effectiveness and efficiency of the pumping scheme. Effectiveness will be measured by the ability of the pumping to capture the contaminated groundwater before it migrates beyond the OU1 compliance boundary. Efficiency will be measured by the ability of the pumping to avoid capturing clean groundwater. Several iterations of the design-and-model process are expected, with the goal of achieving progressively more refined designs at each step.

Appropriate text and graphics will be provided to document each stage of the local model's development and use. Representative input and output files will be available on diskette.

5. REMEDIAL ACTION

5.1. CONSTRUCTION CONTRACTOR PROCUREMENT

A remediation contractor will be selected through a competitive procurement process. This procurement and the subsequent contract will be managed for DOE by EG&G Mound Applied Technologies. The selection process is scheduled to begin near the end of the design process, when a fixed scope is available for bid.

5.2. EXECUTION OF WORK

The RA contractor and subcontractors performing site work will attend a preconstruction meeting at the Mound Plant to discuss construction activities and responsibilities. Coordination of activities will be discussed, and will include review of technical specifications, CQAP, construction drawings, utilities connections, traffic, training issues, inspection points, permit requirements, health and safety, contract related issues, and project management. This meeting will include an inspection visit to the OU 1 area.

The RA contractor will be prepared for a pre-final inspection at the end of the work. The RA contractor will meet with Mound representatives during a pre-final inspection to determine the status of the construction and startup activities. The pre-final inspection will occur at 90% of construction, prior to system startup. Specific action items will be provided to the contractor for verification, modification, or repair. Completion of the items will be documented in the RA report.

The RA contractor will meet with Mound Plant representatives during a final inspection to determine the status of the construction and startup activities and action items from previous inspections. The final inspection will occur after the system has been demonstrated to operate successfully within the design specifications for 30 consecutive days.

5.3. CERTIFICATION OF CONSTRUCTION COMPLETION

The construction will be certified complete by a civil engineer of EG&G's independent quality assurance team who is licensed in the State of Ohio. The system will have been demonstrated to operate within design specifications for a period of 30 consecutive days. The RA contractor will provide an O&M manual. The O&M manual will include details of system startup, normal operation, shutdown, emergency operations, system maintenance, emergency shutdown, etc. Original copies of

manufacturers' literature and manuals will be provided as appendices to the O&M manual. A table detailing periodic maintenance and inspections will also be prepared as part of the O&M manual. The RA contractor will provide training to the Mound Plant staff in the operation of the system.

5.4. REMEDIAL ACTION REPORT

The RA contractor will prepare a report detailing the activities during the construction and startup of the treatment system. The report will include all sampling and monitoring results for the period, including hard copy and electronic versions of the sample data in a format specified by EG&G. The contractor will provide a summary of the system operating efficiency and any problems encountered during system construction or startup. This document will certify that the system meets the plans and specifications and includes documentation (e.g., test results) substantiating that the performance standards have been met. Record drawings shall be provided with the report (EPA, 1990b).

5.5. REVIEWING AGENCIES

Review and comments on the RD/RA Work Plan will be conducted first by the DOE. Following the DOE review and comments, review and comments will be conducted by the OEPA and U.S. EPA. Review of the RD itself will be performed by DOE, U.S. EPA, and OEPA, in parallel.

6. ENVIRONMENTAL MONITORING/PERMITS

6.1. PUMP TESTS AND SURFACE WATER MONITORING

During the construction phase, Ohio EPA approval must be obtained to allow for discharge of groundwater during the construction and startup period. This groundwater discharge will be managed in accordance with ER SOP 1.15 and Ohio EPA Policy No. DSW-DERR 0100.027. Sampling of the discharge will be required at a frequency specified in the preliminary design documents and the SAP. Monitoring will include the parameters specified in the SAP. These analytes will include but will not be limited to those parameters listed in Section 2.

For normal operation of the treatment system, the existing NPDES permit for the Mound facility must be modified to accommodate the additional waste stream, or a new NPDES permit must be issued for the waste stream. In both cases, sampling and characterization of the waste stream must be performed. Sample frequency and parameters will be specified in the O&M manual. QA/QC will be consistent with Mound Plant ER Program QAPP (DOE 1993). Sampling during normal operations will be performed by Mound Plant staff.

6.2. GROUNDWATER AND AIR STRIPPER DISCHARGE MONITORING

Determining the effectiveness of the treatment system requires that the inlet and outlet concentrations of contaminants be monitored. Ongoing monitoring results regarding the effect of the pumping operation on groundwater contamination is needed to determine that the system is capturing the contaminant plume. The SAP and the O&M manual will specify requirements for QA/QC, frequency, and parameters for sampling. The SAP will cover the construction and startup of the treatment system, while the O&M manual covers the continued operation of the system.

6.3. ADDITIONAL PERMITS AND ARARS

ARARs as defined in the ROD are listed in Appendix A. The Regional Air Pollution Control Agency (RAPCA) was contacted concerning air emissions. RAPCA determined that no air emission control would be needed as part of the OU1 Remedial Action.

7. REPORTS AND SUBMITTALS

7.1. DESIGN PHASE REPORTING AND SUBMITTALS

The RA contractor will provide reports and submittals as necessary to document the progress of the design activities and the following minimum requirements:

- Monthly progress reports
- Draft design specifications
- 30% preliminary design
- 90% final design
- Complete remedial design

These minimum requirements will be delivered to Mound by the close of business on the dates identified in the project schedule. The condition of the reports and other required items will be such that they may be provided to DOE, U.S. EPA, and OEPA for review. Specific comment periods are identified in the project schedule, and the design contractor shall respond to comments within the allotted time frame.

7.2. CONSTRUCTION PHASE REPORTING

The success of the remedial action requires that appropriate documentation of construction activities and oversight be provided. This reporting will include:

- Daily reports (RA contractor).
- Monthly Progress Reports (EG&G, RA contractor).
- Testing logs (RA contractor).
- Photographic documentation (EG&G).
- Project administrative and financial records (EG&G, RA contractor).
- Permits and applications (EG&G).
- Personnel daily logs (RA contractor).
- Field reports (weekly) (EG&G).
- Laboratory data (EG&G).

- Site HASP for construction and startup (RA contractor).
- Manufacturers' documentation, including instructions, drawings, and maintenance and test procedures (RA contractor).
- O&M Manual (EG&G).
- SAP (RD engineer).
- Well logs (RD engineer).
- As-built record drawings (EG&G).
- Certifications (EG&G).
- Survey records and site plan, including locations and elevations of wells, piping, equipment, outfalls, and similar structures (RD engineer, RA contractor).
- Design and specification changes (RD engineer, RA contractor).
- Text summary report of field activities (RD engineer, RA contractor).

The CQAP will provide final details of specific reports and submittals.

All contractor's records shall be kept in the contractor's files until completion of the project. Upon completion of the project, the construction contractor will provide a copy of each document, along with an appropriate narrative.

8. COMMUNITY INVOLVEMENT

The CERCLA Public Relations Program is carried out for the Mound Plant site as a whole. Thus, the public participation program for the OU 1 RD/RA will be carried out as part of the larger program. The usual vehicles for public information are the *Superfund Update*, a news publication dealing with the Mound Plant CERCLA program, and quarterly public meetings on current topics. As the design and construction process continues, status reports on OU 1 will be presented through these two venues.

9. SCHEDULE

The schedule is contained in Appendix B and is taken from the Mound Plant ER program's master schedule. Details of the RA schedule will be developed and specified during the design phase by the design contractor, with concurrence from EG&G, DOE, U.S. EPA, and OEPA. The schedule will include provisions for the RA/RD Work Plan, the RD, the RA, acceptance of the RA, and the ER process.

10. REFERENCES

- DOE. 1993. Remedial Investigation/Feasibility Study Operable Unit 9, Site-Wide Quality Assurance Project Plan, Final (Revision 3), June 1993.
- DOE. 1994a. "Operable Unit 1 Remedial Investigation Report." Environmental Restoration Program, U.S. Department of Energy, Albuquerque Operations Office, Albuquerque, New Mexico. Final, May 1994.
- DOE. 1994b. "Operable Unit 1 Feasibility Study Report." Environmental Restoration Program, U.S. Department of Energy, Albuquerque Operations Office, Albuquerque, New Mexico. Final, October 1994.
- DOE. 1994c. Mound Plant ER Program SOP 1.15, Guide to Management of Investigation-Derived Material (Revision 3), August 1994.
- DOE. 1995. "Operable Unit 1 Record of Decision." Environmental Restoration Program, U.S. Department of Energy, Ohio Field Office, Albuquerque, New Mexico. Final, May 1995.
- EPA. 1986. RCRA Ground-water Monitoring Technical Enforcement Document (TEGD). OSWER-9950.1. Office of Waste Programs Enforcement; Office of Solid Waste and Emergency Response, Washington, D.C. September 1986.
- EPA. 1990a. "Federal Facility Agreement, Statement of Work." Agreement between DOE and EPA, U.S. Environmental Protection Agency, Washington, D.C. Administrative Docket Number VW-90-C-075.
- EPA. 1990b. Guidance on EPA Oversight of Remedial Designs and Remedial Actions Performed by Potentially Responsible Parties. Interim Final. EPA/540/G-90/001. Office of Emergency and Remedial Response, Washington, D.C. April 1990.
- EPA. 1990c. Guidance on Expediting Remedial Design and Remedial Action. EPA/540/G-90/006. Office of Emergency and Remedial Response, Washington, D.C. August 1990.
- EPA. 1993a. "Federal Facility Agreement, Statement of Work." Agreement between DOE, EPA, and OEPA. U.S. Environmental Protection Agency Administrative Docket Number OH 890 008 984. July 15, 1993.
- McDonald, M.G., and A.W. Harbaugh. 1988. "A Modular Three-Dimensional Finite-Difference Ground-Water Flow Model," Techniques of Water-Resources Investigations. 06-A1, USGS.
- OEPA. 1994. OEPA Policy #DSW-DERR 0100.027. "National Pollutant Discharge Elimination System; Wastewater Discharges Resulting from Cleanup of Response Action Sites Contaminated with Volatile Organic Compounds."

APPENDIX A

ARARs FOR OU 1

Table 1. State Chemical-Specific ARARs for OU 1

Regulation Title or Subject/Revised Code Section and Pertinent Paragraph	Regulation Description	Regulation Application	ARAR	Comments
Prohibits Violation of Air Pollution Control Rules/3704.05 A-I	Prohibits emission of an air contaminant in violation of Section 3704 or any rule, permit, order, or variance issued pursuant to that section of the ORC.	May pertain to any site where emissions of an air contaminant occur either as a preexisting condition of the site or as a result of remedial activities. Should be considered for virtually all sites.	ARAR	Implementation of the substantive provisions of state air requirements as ARARs is required by Section 121(d) of CERCLA.
Handling Low-Level Radioactive Waste Prohibited/3734.02. 7 A,B	A) Prohibits commingling low-level radioactive waste with any type of solid, hazardous, or infectious waste. B) No owner or operator of a solid, infectious, or hazardous waste facility shall accept any radioactive waste for transfer, storage, treatment, or disposal.	Pertains to all sites at which low-level radioactive waste has come to be located.	ARAR	Radioactive wastes generated as part of remedial actions at OU 1 will be managed separately from non-radioactive materials.
"Five Freedoms" for Surface Water/ 3745-1-04 A,B,C,D,E	All surface waters of the state shall be free from: A) Objectionable suspended solids. B) Floating debris, oil, and scum. C) Materials that create a nuisance. D) Toxic, harmful, or lethal substances. E) Nutrients that create nuisance growth.	Pertains to discharges to surface waters as a result of remediation and to any onsite surface waters affected by site conditions.	ARAR	Surface water bodies subject to quality criteria standards do not occur within OU 1. Alternatives that involve discharge to surface water will be addressed in action-specific ARARs.
Antidegradation Policy for Surface Water/3745-1-05 A,B,C	Prevents degradation of surface water quality below designated use or existing water quality. Existing instream uses shall be maintained and protected. The most stringent controls for treatment shall be required by the director of the USEPA for all new and existing point source discharges. Prevents any degradation of "State Resource Waters."	Pertains to discharges to surface water as a result of remedial action and to any surface water affected by site conditions.	ARAR	Surface water bodies subject to quality criteria standards do not occur within OU 1. Alternatives that involve discharge to surface water will be addressed in action-specific ARARs.
Mixing Zones for Surface Water/ 3745-1-06 A,B	A) Presents the criteria for establishing non-thermal mixing zones for point source discharges. B) Presents the criteria for establishing thermal mixing zones for point source discharges.	Applied as a term of discharge permit to install.	ARAR	Alternatives involving direct discharge will comply.

Table 1. (page 2 of 6)

Regulation Title or Subject/Revised Code Section and Pertinent Paragraph	Regulation Description	Regulation Application	ARAR	Comments
Water Quality Criteria/3745-1-07 C	Establishes water quality criteria for pollutants that do not have specific numerical or narrative criteria identified in Tables 7-1 through 7-15 of this rule.	Pertains to discharges to surface waters as a result of remedial action and any surface waters affected by site conditions.	ARAR	Surface water bodies subject to quality criteria standards do not occur within OU 1. Alternatives that involve discharge to surface water will be addressed in action-specific ARARs.
Particulate Ambient Air Quality Standards/3745-17-02 A,B,C	Establishes specific standards for total suspended particulates.	Pertains to any site that may emit measurable quantities of particulate matter (both stack and fugitive). Consider for sites that will undergo excavation, demolition, cap installation, clearing and grubbing, incineration, and waste fuel recovery.	ARAR	Air emissions may be involved as part of the treatment in several of the alternatives. Alternatives involving air emissions will be coordinated with USEPA and OEPA to ensure particulate emissions are within acceptable limits.
Particulate Nondegradation Policy/3745-17-05	Degradation of air quality in any area where air quality is better than required by 3745-17-02 is prohibited.	Pertains to sites in certain locations that may emit or allow the escape of particulates (both stack and fugitive). Consider for sites that will undergo excavation, demolition, cap installation, clearing and grubbing, and incineration.	ARAR	Air emissions may be involved as part of the treatment in several of the alternatives. Alternatives involving air emissions will be coordinated with USEPA and OEPA to ensure particulate emissions are within acceptable limits.
Evaluation of Wastes/3745-52-11 A-D	Any person generating a waste must determine if that waste is a hazardous waste (either through listing or by characteristic).	Pertains to sites at which wastes of any type (both solid and hazardous) are located.	ARAR	Any materials generated during construction or implementation of remedial actions will be evaluated to determine if they are identifiable as a hazardous waste, or if they are sufficiently similar to hazardous wastes so that hazardous waste management standards should be applied.

Table 1. (page 3 of 6)

Regulation Title or Subject/Revised Code Section and Pertinent Paragraph	Regulation Description	Regulation Application	ARAR	Comments
Ground Water Protection: Applicability/ 3745-54-90	Establishes circumstances under which an operator of a hazardous waste facility must implement a groundwater protection program or a corrective action program.	Pertains to all sites with land-based hazardous waste units (surface impoundments, waste piles, land treatment units, and landfills), including existing land-based areas of contamination.	ARAR	Historic disposal of hazardous waste occurred within OU 1. Groundwater monitoring implemented as part of the remedial alternatives will incorporate the requirements of the hazardous waste regulations.
Required Programs/ 3745-54-91 (A)-(B)	Establishes requirements for conducting a groundwater compliance monitoring and response program.	Whenever hazardous constituents from a regulated unit are detected at the compliance point, or whenever groundwater protection standards are exceeded between the compliance point and the downgradient facility property boundary.	ARAR	Exceedences of groundwater protection standards have been observed within OU 1. Groundwater monitoring program is ongoing; a program will be implemented as part of a remedial alternative that will follow requirements of this ARAR.
Maximum Contaminant Levels for Inorganic Chemicals/3745-81-11 A,B	Presents maximum contaminant levels for inorganics.	Pertains to any site that has contaminated surface or groundwater that is either being used or has the potential for being used as a drinking water source.	ARAR	Because of the potential impacts to the BVA, this standard will be applied.
Maximum Contaminant Levels for Organic Chemicals/3745-81-12 A,B,C	Presents maximum contaminant levels for organics.	Pertains to any site that has contaminated surface or groundwater that is either being used or has the potential for being used as a drinking water source.	ARAR	Because of the potential impacts to the BVA, this standard will be applied.
Maximum Contaminant Levels for Turbidity/3745-81-13 A,B	Presents maximum contaminant levels for turbidity.	Pertains to any site that has contaminated surface or groundwater that is either being used or has the potential for being used as a drinking water source.	ARAR	Because of the potential impacts to the BVA, this standard will be applied.
Maximum Microbiological Contaminant Levels/ 3745-81-14 A-E	Presents maximum contaminant levels for microbiological contaminants.	Pertains to any site that has contaminated surface or groundwater that is either being used or has the potential for being used as a drinking water source.	ARAR	Because of the potential impacts to the BVA, this standard will be applied.

Table 1. (page 4 of 6)

Regulation Title or Subject/Revised Code Section and Pertinent Paragraph	Regulation Description	Regulation Application	ARAR	Comments
Maximum Contaminant Levels for Radium-226, -228, and Gross Alpha/3745-81-15 A,B	Presents maximum contaminant levels for radium-226, radium-228, and gross alpha particle activity.	Pertains to any site that has contaminated surface or groundwater that is either being used or has the potential for being used as a drinking water source.	ARAR	Because of the potential impacts to the BVA, this standard will be applied.
Maximum Contaminant Levels for Beta Particle and Photon Radioactivity/ 3745-81-16 A,B	Presents maximum contaminant levels for beta particle and photon radioactivity from man-made radionuclides.	Pertains to any site that has contaminated surface or groundwater that is either being used or has the potential for being used as a drinking water source.	ARAR	Because of the potential impacts to the BVA, this standard will be applied.
Microbiological Contaminant Sampling and Analytical Requirements/ 3745-81-21 A-B	Presents sampling and analytical requirements for microbiological contaminants.	Pertains to any site that has contaminated surface or groundwater that is either being used or has the potential for being used as a drinking water source.	ARAR	Appropriate methods for monitoring compliance with ARARs will be coordinated with OEPA and USEPA.
Turbidity Contaminant Sampling and Analytical Requirements/ 3745-81-22 A-B	Presents sampling and analytical requirements for turbidity.	Pertains to any site that has contaminated surface or groundwater that is either being used or has the potential for being used as a drinking water source.	ARAR	Appropriate methods for monitoring compliance with ARARs will be coordinated with OEPA and USEPA.
Inorganic Contaminant Monitoring Requirements/ 3745-81-23 A-E	Presents monitoring requirements for inorganic contaminants.	Pertains to any site that has contaminated surface or groundwater that is either being used or has the potential for being used as a drinking water source.	ARAR	Appropriate methods for monitoring compliance with ARARs will be coordinated with OEPA and USEPA.
Organic Contaminant Monitoring Requirements/ 3745-81-24 A-E	Presents monitoring requirements for organic contaminants.	Pertains to any site that has contaminated surface or groundwater that is either being used or has the potential for being used as a drinking water source.	ARAR	Appropriate methods for monitoring compliance with ARARs will be coordinated with OEPA and USEPA.

Table 1. (page 5 of 6)

Regulation Title or Subject/Revised Code Section and Pertinent Paragraph	Regulation Description	Regulation Application	ARAR	Comments
Analytical Methods for Radioactivity/ 3745-81-25 A-D	Presents analytical methods for radioactivity.	Pertains to any site that has contaminated surface or groundwater that is either being used or has the potential for being used as a drinking water source.	ARAR	Appropriate methods for monitoring compliance with ARARs will be coordinated with OEPA and USEPA.
Monitoring Frequency for Radioactivity/ 3745-81-26 A-C	Presents monitoring requirements for radioactivity.	Pertains to any site that has contaminated surface or groundwater that is either being used or has the potential for being used as a drinking water source.	ARAR	Appropriate methods for monitoring compliance with ARARs will be coordinated with OEPA and USEPA.
Analytical Techniques/3745-81-27 A-E	Presents general analytical techniques for maximum contaminant levels.	Pertains to any site that has contaminated surface or groundwater that is either being used or has the potential for being used as a drinking water source.	ARAR	Appropriate methods for monitoring compliance with ARARs will be coordinated with OEPA and USEPA.
Requirements for a Variance from MCLs/ 3745-81-40 A-C	Provides criteria by which director may grant variance from MCLs.	Pertains to any site which has contaminated ground or surface water that is either being used, or has the potential for use, as a drinking water source.	ARAR	If required, the remedy will comply with this provision.
Alternative Treatment Technique Variance/ 3745-81-46	Allows for the use of alternative treatment techniques to attain MCLs.	Pertains to any site which has contaminated ground or surface water that is either being used, or has the potential for use, as a drinking water source.	ARAR	If required, the remedy will comply with this provision.

Table 1. (page 6 of 6)

Regulation Title or Subject/Revised Code Section and Pertinent Paragraph	Regulation Description	Regulation Application	ARAR	Comments
Prohibition of Nuisances/3767.14	Prohibition against throwing refuse, oil, or filth into lakes, streams, or drains.	Pertains to all sites located adjacent to lakes, streams, or drains.	ARAR	

ARAR - applicable or relevant and appropriate requirement

BVA - Buried Valley aquifer

CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act

MCL - maximum contaminant level

OEPA - Ohio Environmental Protection Agency

ORC - Ohio Revised Code

OU 1 - Operable Unit 1

USEPA - U.S. Environmental Protection Agency

Table 2. Federal Chemical-Specific ARARs for OU 1

Regulatory Program	Requirement	ARAR	Comment
CWA	Acute CWA freshwater toxicity criterion (CWA §304).	ARAR	Compliance is specifically required by CERCLA §121(d) where relevant and appropriate. Will be applied except where more appropriate standards exist. For example, standards specifically intended for groundwater or drinking.
	Chronic CWA freshwater toxicity criterion (CWA §304).		
	USEPA ambient water quality criteria for protection of human health aquatic organisms, and drinking water standards (CWA §304).		
	USEPA ambient water quality criteria for protection of human health aquatic organisms only (CWA §304).		
Safe Drinking Water Act	Maximum contaminant levels (40 CFR .11 to 141.16).	ARAR	Compliance is specifically required by CERCLA §121(d) where relevant and appropriate.
	Maximum contaminant level goals (40 CFR § 141.50)		
Resource Conservation and Recovery Act Groundwater Monitoring Requirements	Groundwater Protection Program for Hazardous Waste "Regulated Units" (40 CFR 264 Subpart F).	ARAR	Considered relevant and appropriate because of historic disposal of apparent hazardous wastes.

ARAR - applicable or relevant and appropriate requirement

CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act

CWA - Clean Water Act

USEPA - U.S. Environmental Protection Agency

Table 3. State Location-Specific ARARs for OU 1

Regulation Title or Subject/Revised Code Section and Pertinent Paragraph	Regulation Description	Regulation Application	ARAR	Comments
"Digging" Where Hazardous or Solid Waste Facility Was Located/3734.02 (H)	Filling, grading, excavating, building, drilling or mining on land where a hazardous waste or solid waste facility was operated is prohibited without prior authorization from the director of the OEPA.	Pertains to any site where hazardous or solid waste is located.	ARAR	Implementation of the substantive provisions of state requirements relating to intrusive activities at former disposal sites as ARARs is required by Section 121(d) of CERCLA.
Prohibits Open Dumping or Burning/ 3734.03	Prohibits open burning or open dumping of solid waste or treated or untreated infectious waste.	Pertains to any site at which solid waste has come to be located or will be generated during a remedial action.	ARAR	Solid wastes generated as part of the remedy will be subject to this requirement.
Hazardous Waste Facility Environmental Impact/3734.05 (D)(6)(c)	A hazardous waste facility installation and operation permit shall not be approved unless the facility is proven to represent the minimum adverse environmental impact considering the state of available technology, the nature and economics of various alternatives, and other pertinent considerations.	Pertains to all sites where hazardous wastes are located and/or where hazardous wastes will be treated, stored, or disposed of. May function as siting criteria.	ARAR	While no permit is required, remedial alternatives will be coordinated with the USEPA and OEPA.

Table 3. (page 2 of 3)

Regulation Title or Subject/Revised Code Section and Pertinent Paragraph	Regulation Description	Regulation Application	ARAR	Comments
<p>Hazardous Waste Siting Criteria/ 3734.05 (D)(6)(d)(g)(h)</p>	<p>(D)(6)(d). A hazardous waste facility installation and operation permit shall not be approved unless it proves that the facility represents the minimum risk of all of the following:</p> <ul style="list-style-type: none"> (i) Contamination of ground and surface waters. (ii) Fires or explosions from treatment, storage, or disposal methods. (iii) Accident during transportation. (iv) Impact on public health and safety. (v) Soil contamination. <p>(D)(6)(g)(h). Prohibits the following location for treatment, storage and disposal of acute hazardous waste:</p> <ul style="list-style-type: none"> (i) Within 2,000 feet of any residence, school, hospital, jail, or prison. (ii) Any naturally occurring wetland. (iii) Any flood hazard area. (iv) Within any state park or national park or recreation area. 	<p>Pertains to all sites at which hazardous waste has come to be located and/or at which hazardous will be treated, stored, or disposed of. May function as siting criteria.</p>	<p>ARAR</p>	
<p>Water Use Designations for Southwest Ohio Tributaries/ 3745-1-17</p>	<p>Establishes water use designations for stream segments within the Southwest Ohio Tributaries Basin.</p>	<p>Pertinent if stream or stream segment is onsite and is affected by site conditions or if remedy includes direct discharge. Used by DWQPA to establish waste load allocations.</p>	<p>ARAR</p>	<p>Applicable to discharge.</p>
<p>Water Use Designations for Great Miami River/ 3745-1-21</p>	<p>Establishes water use designations for stream segments within the Great Miami River Basin.</p>	<p>Pertinent if stream or stream segment is onsite and is affected by site conditions or if remedy includes direct discharge. Used by DWQPA to establish waste load allocations.</p>	<p>ARAR</p>	<p>Applicable to discharge.</p>

Table 3. (page 3 of 3)

Regulation Title or Subject/Revised Code Section and Pertinent Paragraph	Regulation Description	Regulation Application	ARAR	Comments
Location/Siting of New GW Wells/3745-9-04 A,B	Mandates that groundwater wells be: A) Located and maintained to prevent contaminants from entering the well. B) Located to be accessible for cleaning and maintenance.	Pertains to all groundwater wells on the site that either will be installed or have been installed since February 1975. Would pertain during the FS if new wells are constructed for treatability studies.	ARAR	Wells installed as part of the remedy will comply with this requirement.
Particulate Nondegradation Policy/3745-17-05	Degradation of air quality in any area where air quality is better than required by 3745-17-02 is prohibited.	Pertains to sites in certain locations that may emit or allow the escape of particulates (both stack and fugitive). Consider for sites that will undergo excavation, demolition, cap installation, clearing and grubbing, and incineration.	ARAR	Fugitive dust emission controls may be required during construction. Alternatives involving air emissions will be coordinated with USEPA and OEPA to ensure particulate emissions are within acceptable limits.
Open Burning Standards in Restricted Areas/3745-19-03 A-D	Open burning without prior authorization from OEPA is prohibited.	Pertains to sites within a restricted area (within the boundary of a municipality and a zone extending beyond such municipality).	ARAR	
Disturbances Where Hazardous or Solid Waste Facility Was Operated/ 3745-27-13 C	Prohibits any filling, grading, excavating, building, drilling, or mining on land where a hazardous waste facility or solid waste facility was operated without prior authorization from the director of the USEPA. Special terms to conduct such activities may be imposed by the director to protect the public and the environment.	Pertains to any site where hazardous or solid waste has been managed, either intentionally or otherwise. Does not pertain to areas that have had one-time leaks or spills.	ARAR	Implementation of the substantive provisions of state requirements relating to intrusive activities at former disposal sites as ARARs is required by Section 121(d) of CERCLA.

ARAR - applicable or relevant and appropriate requirement
 CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act
 DWQPA - Department of Water Quality Planning and Assessment
 FS - Feasibility Study
 OEPA - Ohio Environmental Protection Agency
 USEPA - U.S. Environmental Protection Agency

Table 4. State Action-Specific ARARs for OU 1

Regulation Title or Subject/Revised Code Section and Pertinent Paragraph	Regulation Description	Regulation Application	ARAR	Comments
Prohibits Violation of Air Pollution Control Rules/3704.05 A-1	Prohibits emission of an air contaminant in violation of Section 3704 or any rule, permit, order, or variance issued pursuant to that section of the ORC.	May pertain to any site where air contaminant emissions occur either as a preexisting condition of the site or as a result of remedial activities. Should be considered for virtually all sites.	ARAR	Implementation of the substantive provisions of state air requirements as ARARs is required by Section 121(d) of CERCLA.
"Digging" Where Hazardous or Solid Waste Facility Was Located/3734.02 H	Filling, grading, excavating, building, drilling, or mining on land where a hazardous waste or solid waste facility was operated is prohibited without prior authorization from the director of the OEPA.	Pertains to any site where hazardous or solid waste is located.	ARAR	Implementation of the substantive provisions of state requirements relating to intrusive activities at former disposal sites as ARARs is required by Section 121(d) of CERCLA.
Air Emissions from Hazardous Waste Facilities/3734.02 I	No hazardous waste facility shall emit any particulate matter, dust, fumes, gas, mist, smoke, vapor, or odorous substance that interferes with the comfortable enjoyment of life or property or that is injurious to public health.	Pertains to any site where hazardous waste will be managed so that air emissions may occur. Consider for sites that will undergo movement of earth or incineration.	ARAR	Air emissions may be involved as part of the treatment in several of the alternatives. Alternatives involving air emissions will be coordinated with USEPA and OEPA to ensure emissions are within acceptable limits.
Handling Low-Level Radioactive Waste Prohibited/ 3734.02.7 A,B	A) Prohibits commingling low-level radioactive waste with any type of solid, hazardous, or infectious waste. B) No owner or operator of a solid, infectious, or hazardous waste facility shall accept any radioactive waste for transfer, storage, treatment, or disposal.	Pertains to all sites where low-level radioactive waste is located.	ARAR	Radioactive wastes generated as part of remedial actions at OU 1 will be managed separately from non-radioactive materials.
Prohibits Open Dumping or Burning/ 3734.03	Prohibits open burning or open dumping of solid waste or treated or untreated infectious waste.	Pertains to any site at which solid waste has come to be located or will be generated during a remedial action.	ARAR	Solid wastes generated as part of the remedy will be subject to this requirement.

Table 4. (page 2 of 10)

Regulation Title or Subject/Revised Code Section and Pertinent Paragraph	Regulation Description	Regulation Application	ARAR	Comments
Hazardous Waste Facility Environmental Impact/3734.05 (D)(6)(c)	A hazardous waste facility installation and operation permit shall not be approved unless the facility is proven to represent the minimum adverse environmental impact considering the state of available technology, the nature and economics of various alternatives, and other pertinent considerations.	Pertains to all sites where hazardous wastes are located and/or where hazardous wastes will be treated, stored, or disposed of. May function as siting criteria.	ARAR	While no permit is required, remedial alternatives will be coordinated with the USEPA and OEPA.
Hazardous Waste Siting Criteria/ 3734.05 (D)(6)(d)(g)(h)	<p>(D)(6)(d). A hazardous waste facility installation and operation permit shall not be approved unless it proves that the facility represents the minimum risk of all of the following:</p> <ul style="list-style-type: none"> (i) Contamination of ground and surface waters. (ii) Fires or explosions from treatment, storage, or disposal methods. (iii) Accident during transportation. (iv) Impact on public health and safety. (v) Soil contamination. <p>(D)(6)(g)(h). Prohibits the following location for treatment, storage and disposal of acute hazardous waste:</p> <ul style="list-style-type: none"> (i) Within 2,000 feet of any residence, school, hospital, jail, or prison. (ii) Any naturally occurring wetland. (iii) Any flood hazard area. (iv) Within any state park or national park or recreation area. 	Pertains to all sites at which hazardous waste has come to be located and/or at which hazardous will be treated, stored, or disposed of. May function as siting criteria.	ARAR	

Table 4. (page 3 of 10)

Regulation Title or Subject/Revised Code Section and Pertinent Paragraph	Regulation Description	Regulation Application	ARAR	Comments
Conditions for Disposal of Acute Hazardous Waste/ 3734-14-1	Prohibits disposal of acute hazardous waste unless it: (1) cannot be treated, recycled, or destroyed; (2) has been reduced to its lowest level of toxicity; and (3) has been completely encapsulated or protected to prevent leaching.	Pertains to any site where acute hazardous waste has come to be located.	ARAR	Based on available information, only one waste disposed of prior to construction of the sanitary landfill, beryllium machining wastes, may be determined to be an acute hazardous waste. Currently, there is some question whether such wastes would have been considered off-specification commercial chemical products, identifiable as P015 listed acute hazardous wastes. If such a listing is appropriate, this standard will be regarded as ARAR for any alternatives involving generation of listed beryllium hazardous wastes.
Analytical and Collection Procedures/3745-1-03	Specifies analytical methods and collection procedures for surface water discharges.	Pertains both to discharges to surface waters as a result of remediation and to any onsite surface waters affected by site conditions.	ARAR	Alternatives involving direct discharge will comply.
Water Quality Criteria/3745-1-07 C	Establishes water quality criteria for pollutants that do not have specific numerical or narrative criteria identified in Tables 7-1 through 7-15 of this rule.	Pertains both to discharges to surface waters as a result of remedial action and to any surface waters affected by site conditions.	ARAR	Alternatives involving direct discharge will comply.
Water Use Designations for Southwest Ohio Tributaries/3745-1-17	Establishes water use designations for stream segments within the Southwest Ohio Tributaries Basin.	Pertinent if stream or stream segment is onsite and is affected by site conditions or if remedy includes direct discharge. Used by DWQPA to establish waste load allocations.	ARAR	Applicable to discharge.

Table 4. (page 4 of 10)

Regulation Title or Subject/Revised Code Section and Pertinent Paragraph	Regulation Description	Regulation Application	ARAR	Comments
Water Use Designations for Great Miami River/3745-1-21	Establishes water use designations for stream segments within the Great Miami River Basin.	Pertinent if stream or stream segment is onsite and is affected by site conditions or if remedy includes direct discharge. Used by DWQPA to establish waste load allocations.	ARAR	Alternatives involving direct discharge will comply.
Location/Siting of New GW Wells/ 3745-9-04 A,B	Mandates that groundwater wells be: A) Located and maintained to prevent contaminants from entering the well. B) Located to be accessible for cleaning and maintenance.	Pertains to all groundwater wells on the site that either will be installed or have been installed since February 1975. Would pertain during the FS if new wells are constructed for treatability studies.	ARAR	Will be applied for new well installation as part of any alternatives.
Construction of New GW Wells/ 3745-9-05 A1,B-H	Specifies minimum construction requirements for new groundwater wells with regard to casing material, casing depth, potable water, annular spaces, use of drive shoe, openings to allow water entry, and contaminant entry.	Pertains to all groundwater wells on the site that either will be installed or have been installed since 15 February 1975. Would pertain during the FS if new wells are constructed for treatability studies.	ARAR	Will be applied for new well installation as part of any alternatives.
Casing Requirements for New GW Wells/ 3745-9-06 A,B,D,E	Establishes specific requirements for well casings, such as suitable material, diameters, and conditions.	Pertains to all groundwater wells on the site that either will be installed or have been installed since 15 February 1975. Would pertain during the FS if new wells are constructed for treatability studies.	ARAR	Will be applied for new well installation as part of any alternatives.
Surface Design of New GW Wells/ 3745-9-07 A-F	Establishes specific surface design requirements, such as height above ground, well vents, and well pumps.	Pertains to all groundwater wells on the site that either will be installed or have been installed since 15 February 1975. Would pertain during the FS if new wells are constructed for treatability studies.	ARAR	Will be applied for new well installation as part of any alternatives.

Table 4. (page 5 of 10)

Regulation Title or Subject/Revised Code Section and Pertinent Paragraph	Regulation Description	Regulation Application	ARAR	Comments
Start-up and Operation of GW Wells/ 3745-9-08 A,C	Requires disinfection of new wells and use of potable water for priming pumps.	Pertains to all groundwater wells on the site that either will be installed or have been installed since 15 February 1975. Would pertain during the FS if new wells are constructed for treatability studies.	ARAR	Will be applied for new well installation as part of any alternatives.
Maintenance and Operation of GW Wells/ 3745-9-09 A-C,D1,E-G	Establishes specific maintenance and modification requirements for casing, pump, and wells in general.	Pertains to all groundwater wells on the site that either will be installed or have been installed since 15 February 1975. Would pertain during the FS if new wells are constructed for treatability studies.	ARAR	Will be applied for new well installation as part of any alternatives.
Abandonment of Test Holes and GW Wells/ 3745-9-10 A,B,C	Following completion of use, wells and test holes shall be completely filled with grout or similar material and shall be maintained in compliance of all regulations.	Pertains to all groundwater wells on the site that either will be installed or have been installed since 15 February 1975.	ARAR	Will be applied for new well installation as part of any alternatives.
"De minimis" air contaminant source exemption/ 3745-15-05	Provides that an air contaminant source is exempt from permitting requirements, provided it has the potential to emit no more than 10 pounds per day of criteria pollutants or 1 ton per year of hazardous air pollutants.	Pertains to any site emitting air pollutants.	ARAR	Will be applied to any remedy that has the potential to emit criteria or hazardous air pollutants.
Air Pollution Nuisances Prohibited/ 3745-15-07 A	Defines air pollution nuisance as the emission or escape into the air (from any source) of smoke, ashes, dust, dirt, grime, acids, fumes, gases, vapors, odors, and combinations of the above that endanger health, safety, or welfare of the public or cause personal injury or property damage. Such nuisances are prohibited.	Pertains to any site that causes, or may reasonably cause, air pollution nuisances. Consider for sites that will undergo excavation, demolition, cap installation, methane production, incineration, and waste fuel recovery.	ARAR	Air emissions may be involved as part of the treatment in several of the alternatives. Alternatives involving air emissions will be coordinated with USEPA and OEPA to ensure emissions are within acceptable limits.

Table 4. (page 6 of 10)

Regulation Title or Subject/Revised Code Section and Pertinent Paragraph	Regulation Description	Regulation Application	ARAR	Comments
Emission Restrictions for Fugitive Dust/ 3745-17-08 A1,A2,B,D	All emissions of fugitive dust shall be controlled.	Pertains to sites that may have fugitive emissions (non-stack) of dust. Consider for sites that will undergo grading, loading operations, demolition, clearing and grubbing, and construction.	ARAR	Air emissions may be involved as part of the treatment in several of the alternatives. Alternatives involving air emissions will be coordinated with USEPA and OEPA to ensure fugitive dust emissions are within acceptable limits.
Open Burning Standards in Restricted Areas/3745-19-03 A-D	Open burning without prior authorization from OEPA is prohibited.	Pertains to sites within a restricted area (within the boundary of a municipality and a zone extending beyond such municipality).	ARAR	
Ambient Air Quality Standards and Guidelines/ 3745-21-02 A,B,C	Establishes specific air quality standards for carbon monoxide, ozone and non-methane hydrocarbons.	Pertains to any site that will emit carbon oxides, ozone, or non-methane hydrocarbons. Consider for sites that will undergo water treatment, incineration, and fuel burning (waste fuel recovery).	ARAR	Alternatives involving air emissions will be coordinated with USEPA and OEPA to ensure emissions are within acceptable limits.
Methods of Ambient Air Quality Measurement/ 3745-21-03 B,C,D	Specifies measurement methods to determine ambient air quality for carbon monoxide, ozone, and non-methane hydrocarbons.	Pertains to any site that will emit carbon monoxide, ozone, or non-methane hydrocarbons. Consider for sites where treatment systems will result in air emissions.	ARAR	Alternatives involving air emissions will be coordinated with USEPA and OEPA to ensure emissions are within acceptable limits.
Non-degradation Policy/3745-21-05	Prohibits significant and avoidable deterioration of air quality.	Pertains to any site that will emit carbon oxides and non-methane hydrocarbons. Consider for sites that will undergo water treatment, incineration, and fuel burning (waste fuel recovery).	ARAR	Alternatives involving air emissions will be coordinated with USEPA and OEPA to ensure emissions are within acceptable limits.

Table 4. (page 7 of 10)

Regulation Title or Subject/Revised Code Section and Pertinent Paragraph	Regulation Description	Regulation Application	ARAR	Comments
Organic Materials Emission Control; Stationary Sources/ 3745-21-07 A,B,G,I,J	Requires control of emissions of organic materials from stationary sources and best available technology.	Pertains to any site that is emitting or will emit organic material. Consider for sites that will undergo water treatment, incineration, and fuel burning (waste fuel recovery).	ARAR	Alternatives involving air emissions will be coordinated with USEPA and OEPA to ensure organic materials emissions are within acceptable limits.
VOC Emissions Control: Stationary Sources/3745-21-09	Establishes limitations for emissions of VOCs from stationary sources.	Pertains to any site that is emitting or will emit VOCs. Consider for sites that will undergo water treatment.	ARAR	Alternatives involving air emissions will be coordinated with USEPA and OEPA to ensure VOC emissions are within acceptable limits.
Exemptions to Solid Waste Regulations/ 3745-27-03 B	Defines exemptions to solid waste regulations and establishes limitations on temporary storage of putrescible waste or any solid waste that causes a nuisance or health hazard. Storage of putrescible waste beyond 7 days is considered open dumping.	Pertains to any site where solid waste will be managed. Consider especially for old landfills where solid waste may be excavated and/or consolidated.	ARAR	Will be applied to any alternative that involves generation of solid wastes.
Authorized, Limited and Prohibited Solid Waste Disposal/ 3745-27-05 A,B,C	Establishes allowable methods of solid waste disposal: sanitary landfill, incineration, composting. Prohibits management by open burning and open dumping.	Pertains to any site where solid wastes will be managed. Prohibits management by open burning and open dumping.	ARAR	Will be applied to any alternative that involves generation of solid wastes. None of the alternatives involve open burning or open dumping.
Sanitary Landfill - Ground Water Monitoring/ 3745-27-10 B-D	Groundwater monitoring program must be established for all sanitary landfill facilities. The system must consist of a sufficient number of wells that are located so that samples indicate both upgradient (background) and downgradient water samples. The system must be designed per the minimum requirements specified in this rule. The sampling and analysis procedures used must comply with this rule.	Pertains to any new solid waste facility and any expansions of existing solid waste landfills onsite. Also may pertain to existing areas of contamination that are capped in-place per the solid waste rules.	ARAR	Groundwater monitoring is contemplated as an element of the remedy.

Table 4. (page 8 of 10)

Regulation Title or Subject/Revised Code Section and Pertinent Paragraph	Regulation Description	Regulation Application	ARAR	Comments
Disturbances Where Hazardous or Solid Waste Facility Was Operated/ 3745-27-13 C	Prohibits any filling, grading, excavating, building, drilling, or mining on land where a hazardous waste facility or solid waste facility was operated without prior authorization from the director of the USEPA. Special terms to conduct such activities may be imposed by the director to protect the public and the environment.	Pertains to any site where hazardous or solid waste has been managed, either intentionally or otherwise. Does not pertain to areas that have had one-time leaks or spills.	ARAR	The RD/RA Work Plan will comply with this requirement.
Post-Closure Care of Sanitary Landfill Facilities/ 3745-27-14 A	Specifies the required post-closure care for solid waste facilities. Includes continuing operation of leachate and surface water management systems, maintenance of the cap system, and groundwater monitoring.	Substantive requirements pertain to newly created solid waste landfills onsite, expansions of existing solid waste landfills onsite, and existing areas of contamination that are capped per the solid waste rules.	ARAR	Evaluation of existing closed sanitary landfill conditions will be included in all but the no-action alternative and necessary modifications/repairs will be made.
Water/Air Permit Criteria for Decision by the Director/ 3745-31-05	A permit to install or plans must demonstrate best available technology and shall not interfere with or prevent the attainment or maintenance of applicable ambient air quality standards.	Pertains to any site that will discharge to onsite surface water or will emit contaminants into the air.	ARAR	Alternatives involving onsite water discharge will comply. Air emissions may be involved as part of the treatment in several of the alternatives. Alternatives involving air emissions will be coordinated with USEPA and OEPA to ensure emissions are within acceptable limits.
Evaluation of Wastes/ 3745-52-11 A-D	Any person generating a waste must determine if that waste is a hazardous waste (either through listing or by characteristic).	Pertains to sites where wastes of any type (both solid and hazardous) are located.	ARAR	Any materials generated during construction or implementation of remedial actions will be evaluated to determine if it is identifiable as a hazardous waste, or if it is sufficiently similar to a hazardous waste that hazardous waste management standards should be applied.

Table 4. (page 9 of 10)

Regulation Title or Subject/Revised Code Section and Pertinent Paragraph	Regulation Description	Regulation Application	ARAR	Comments
Prohibition of Nuisances/3767.14	Prohibition against throwing refuse, oil, or filth into lakes, streams, or drains.	Pertains to all sites located adjacent to lakes, streams, or drains.	ARAR	
Acts of Pollution Prohibited/6111.04	Pollution of waters of the state is prohibited.	Pertains to any site that has contaminated onsite surface water or groundwater or will have a discharge to onsite surface water or groundwater.	ARAR	Implementation of the substantive provisions of state water requirements as ARARs is required by Section 121(d) of CERCLA.
Rules Requiring Compliance with National Effluent Stds/ 6111.04.2	Establishes regulations requiring compliance with national effluent standards.	Pertains to any site that will have a point source discharge.	ARAR	Alternatives involving onsite discharge will comply.
Water Pollution Control Requirements- Duty to Comply/6111.07 A,C	Prohibits failure to comply with requirements of sections 6111.01 to 6111.08 or any rules, permit, or order issued under those sections.	Pertains to any site that has contaminated groundwater or surface water or will have a discharge to onsite surface or groundwater.	ARAR	Implementation of the substantive provisions of state water requirements as ARARs is required by Section 121(d) of CERCLA.

Table 4. (page 10 of 10)

Regulation Title or Subject/Revised Code Section and Pertinent Paragraph	Regulation Description	Regulation Application	ARAR	Comments
OEPA Policy #DSW-DERR 0100.027	National Pollution Discharge Elimination System: Wastewater Discharges Resulting from Clean-up of Response Action Sites Contaminated with VOCs.	Establishes guidelines for the disposal of wastewaters, of both short- and long-term discharge categories, resulting from cleanup response action sites contaminated with VOCs, and the operating interface between the involved OEPA divisions. For discharges to surface water or storm sewers, the Best Available Treatment Technology/Best Available Demonstrated Control Technology (BATT/BADCT) must be applied to achieve 5 µg/L or less for each VOC parameter listed.	TBC, Not ARAR	This policy addresses short-term discharges (pump tests and treatability tests) and long-term discharges (interim and remedial actions). This policy provides guidelines for achievement of less than 5 µg/L for specific VOC parameters by utilizing BATT/BADCT for those compounds. BATT/BADCT consists of air stripping, carbon columns, or both or equivalent to achieve the 5 µg/L or less.

ARAR - applicable or relevant and appropriate requirement
 CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act
 DWQPA - Department of Water Quality Planning and Assessment
 FS - feasibility study
 µg/L - micrograms per liter

OEPA - Ohio Environmental Protection Agency
 ORC - Ohio Revised Code
 TBC - to be considered
 USEPA - U.S. Environmental Protection Agency
 VOC - volatile organic compound

Table 5. (page 2 of 4)

Action	Requirement	Prerequisite	Citation	ARAR	Comments
Discharge of Treatment System Effluent (cont.)	<p><u>Best Management Practices:</u> Develop and implement a best management practices program to prevent the release of toxic constituents to surface waters.</p>		40 CFR 125.100		
	<p>The best management practices program must:</p> <ul style="list-style-type: none"> - Establish specific procedures for the control of toxic and hazardous pollutant spills. - Include a prediction of direction, rate of flow, and total quantity of toxic pollutants where experience indicates a reasonable potential for equipment failure. - Ensure proper management of solid and hazardous waste in accordance with regulations promulgated under RCRA. 		40 CFR 125.104		

Table 5. (page 3 of 4)

Action	Requirement	Prerequisite	Citation	ARAR	Comments
Discharge of Treatment System Effluent (cont.)	<p>Management Requirements: Discharge must be monitored to ensure compliance. Discharge will monitor:</p> <ul style="list-style-type: none"> - The mass of each pollutant. - The volume of effluent. - Frequency of discharge and other measurements as appropriate. <p>Approved test methods for waste constituent to be monitored must be followed. Detailed requirements for analytical procedures and quality controls are provided.</p> <p>Comply with additional substantive conditions such as:</p> <ul style="list-style-type: none"> - Duty to mitigate any adverse effects of any discharge. - Proper operation and maintenance of treatment systems. 		<p>40 CFR 122.41 (i)</p> <p>40 CFR 136.1-136.4</p> <p>40 CFR 122.41 (i)</p>		
	<p>Movement of excavated materials to new location and placement in or on land will trigger land disposal restrictions for the excavated waste or closure requirements for the unit in which the waste is being placed.</p>		<p>Materials containing RCRA hazardous wastes subject to land disposal restrictions are placed in another unit.</p>		

Table 5. (page 4 of 4)

Action	Requirement	Prerequisite	Citation	ARAR	Comments
	The area from which materials are excavated may require cleanup to levels established by closure requirements.	RCRA hazardous waste placed at site after the effective date of the requirements.	See Closure in this exhibit.		
Discharge to Storm Sewers	Requires storm water discharges to be permitted under the federal (or state) NPDES program. Different requirements are applicable for different classes and types of discharges.	Protection of surface waters against degradation resulting from site discharges.	40 CFR 122 40 CFR 125	ARAR	Alternatives involving onsite discharge to sewer systems will comply.
Discharge of Water into Surface Water Bodies	An NPDES permit is required for discharging water offsite into surface water bodies. All surface water discharges must be in compliance with promulgated Ohio Stream Discharge Standards	Protection of surface waters against degradation resulting from site discharges.	40 CFR 122 and 40 CFR 125	ARAR	Alternatives involving onsite discharge will comply.

ARAR - applicable or relevant and appropriate requirement
 CWA - Clean Water Act
 NPDES - National Pollutant Discharge Elimination System
 RCRA - Resource Conservation and Recovery Act

APPENDIX B

REMEDIAL DESIGN SCHEDULE

4-YEAR DETAILED SCHEDULE

	1995												1996												1997												1998																					
	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N
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Target Date 24JAN94
 Plot Date 2MAR95
 Data Date 20FEB95
 Project Start 10CT87
 Project Finish 30SEP18

Activity Bar/Early Start
 Critical Activity
 Progress Bar
 Target Dates
 Milestone/Flag Activity

CPR COU1

OU1 AREA B GROUNDWATER
 EGGG MOUND ER PROGRAM
 OU1 - 4 YEAR DETAIL WINDOW SCHEDULE

Sheet 2 of 8

TARGET SCHEDULE - 8504

Date	Revision	Checked	Approved

	1995					1996					1997					1998																				
	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J
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OU1 AREA 8 GROUNDWATER
EG&G MOUND ER PROGRAM
OU1 - 4 YEAR DETAIL WINDOW SCHEDULE

Target Date 24JAN94
Plot Date 2MAR95
Date Date 20FEB95
Project Start 10CT87
Project Finish 30SEP18



Activity Bar/Early Date
Critical Activity
Progress Bar
Target Dates
Milestone/Flag Activity

CPM CODE

Sheet 3 of 8

TARGET SCHEDULE - B504

Date	Revision	Checked	Approved

	1995												1996												1997												1998																					
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C158W0070 ES 6MAY95 EF 19MAY95 RD 14	RD/RA WP-EG6G REVIEW OF WORKING DRAFT																																																									
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C158W0090 ES 6MAY95 EF 19MAY95 RD 14	RD/RA WP-DOE REVIEW OF WORKING DRAFT																																																									
Trgt Start 6MAY95 Trgt Fin 19MAY95 VAR 0																																																										
C158W0080 ES 20MAY95 EF 24MAY95 RD 5	RD/RA WP-RESPOND TO EG6G WORKING DRAFT COMMENTS																																																									
Trgt Start 20MAY95 Trgt Fin 24MAY95 VAR 0																																																										
Target Date 24JAN94	OU1 AREA B GROUNDWATER																																																									
Plot Date 2MAR95	EG&G MOUND ER PROGRAM																																																									
Date Date 20FEB95	OU1 - 4 YEAR DETAIL WINDOW SCHEDULE																																																									
Project Start 10CT87																																																										
Project Finish 30SEP18																																																										
(c) Primavera Systems, Inc.																																																										

TARGET SCHEDULE - 8504			
Date	Revision	Checked	Approved

Activity Bar/Early Start

Critical Activity

Progress Bar

Target Dates

Milestone/Flag Activity

CPM CDU1

	1995												1996												1997												1998											
	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J
	REMEDATION																																															
	OU1 REMEDIATION, RD/RA WORK PLAN																																															
C158W0100 ES 20MAY95 EF 24MAY95 RD 5	RD/RA WP-RESPOND TO DOE WORKING DRAFT COMMENTS																																															
Trgt Start 20MAY95 Trgt Fin 24MAY95 VAR 0																																																
C158MX110 EF 24MAY95 RD 0	RD/RA WP-WORKING DRAFT APPROVAL REC'D																																															
Trgt Start Trgt Fin 24MAY95 VAR 0	◇																																															
C158W0120 ES 25MAY95 EF 27MAY95 RD 3	RD/RA WP-DRAFT PRODUCTION																																															
Trgt Start 25MAY95 Trgt Fin 27MAY95 VAR 0																																																
C158W0130 ES 28MAY95 EF 28MAY95 RD 1	RD/RA WP-DISTRIBUTE DRAFT TO EPA																																															
Trgt Start 28MAY95 Trgt Fin 28MAY95 VAR 0																																																
C158P7140 ES 29MAY95 RD 0	RD/RA WP-DELIVER DRAFT TO EPA																																															
Trgt Start 29MAY95 Trgt Fin VAR 0	◇																																															
C158W0150 ES 29MAY95 EF 27JUN95 RD 30	RD/RA WP-EPA REVIEW OF DRAFT																																															
Trgt Start 29MAY95 Trgt Fin 27JUN95 VAR 0	□																																															
C158W0160 ES 28JUN95 EF 17JUL95 RD 20	RD/RA WP-RESPOND TO EPA DRAFT COMMENTS																																															
Trgt Start 28JUN95 Trgt Fin 17JUL95 VAR 0	□																																															
C158W0170 ES 18JUL95 EF 25JUL95 RD 8	RD/RA WP-DRAFT FINAL PRODUCTION/REVIEW																																															
Trgt Start 18JUL95 Trgt Fin 25JUL95 VAR 0	0																																															
C158W0180 ES 26JUL95 EF 27JUL95 RD 2	RD/RA WP-DISTRIBUTE DRAFT FINAL TO EPA																																															
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C158MX190 ES 28JUL95 RD 0	RD/RA WP-DELIVER DRAFT FINAL																																															
Trgt Start 28JUL95 Trgt Fin VAR 0	◇																																															
C158W0200 ES 28JUL95 EF 26AUG95 RD 30	RD/RA WP-EPA REVIEW OF DRAFT FINAL																																															
Trgt Start 28JUL95 Trgt Fin 26AUG95 VAR 0	□																																															
C158W0210 ES 27AUG95 EF 15SEP95 RD 20	RD/RA WP-RESPOND TO EPA DRAFT FINAL COMMENTS																																															
Trgt Start 27AUG95 Trgt Fin 15SEP95 VAR 0	□																																															
C158W0220 ES 16SEP95 EF 23SEP95 RD 8	RD/RA WP-FINAL PRODUCTION/REVIEW																																															
Trgt Start 16SEP95 Trgt Fin 23SEP95 VAR 0	0																																															
C158W0230 ES 24SEP95 EF 25SEP95 RD 2	RD/RA WP-DAO DISTRIBUTE FINAL																																															
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C158W0240 ES 26SEP95 EF 9OCT95 RD 14	RD/RA WP-EPA APPROVAL REVIEW OF FINAL																																															
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C158MX250 EF 9OCT95 RD 0	RD/RA WP-EPA FINAL APPROVAL RECEIVED																																															
Trgt Start Trgt Fin 9OCT95 VAR 0	◇																																															

Target Date 24JAN94
Plot Date 2MAR95
Date Date 20FEB95
Project Start 10CT87
Project Finish 30SEP18

Activity Bar/Early Dates
Critical Activity
Progress Bar
Target Dates
Milestone/Flag Activity

OU1 AREA B GROUNDWATER
EGSG MOUND ER PROGRAM
OU1 - 4 YEAR DETAIL WINDOW SCHEDULE

Sheet 5 of 8

TARGET SCHEDULE - 8504			
Date	Revision	Checked	Approved

	1995												1996												1997												1998																					
	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N
	REMEDICATION																																																									
	OU1 REMEDIATION, REMEDIAL DESIGN																																																									
	REMEDIAL DESIGN																																																									
C160H5000 ES 10OCT95 EF 23JUN96 RD 258	RD-START REMEDIAL DESIGN																																																									
Trgt Start 14NOV95 Trgt Fin 28JUL96 VAR 30	♦																																																									
C160MX250 ES 10OCT95 RD 0	RD-CONTRACTOR PLAN/MOBILIZE - REMEDIAL DESIGN																																																									
Trgt Start 10OCT95 Trgt Fin VAR 0	♦																																																									
C160W0000 ES 10OCT95 EF 16OCT95 RD 7	RD-DRAFT DESIGN SPECIFICATIONS																																																									
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C160W0010 ES 17OCT95 EF 15NOV95 RD 30	RD-MGMT REVIEW PRELIMINARY DESIGN SPECIFICATIONS																																																									
Trgt Start 17OCT95 Trgt Fin 15NOV95 VAR 0	□																																																									
C160W0020 ES 16NOV95 EF 22NOV95 RD 7	RD-INCORP. PRELIMINARY SPEC COMMENTS																																																									
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C160W0030 ES 23NOV95 EF 27NOV95 RD 5	RD-DRAFT PRELIMINARY DESIGN																																																									
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C160W0040 ES 28NOV95 EF 27DEC95 RD 30	RD-FINALIZE PRELIMINARY DESIGN																																																									
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C160W0050 ES 28DEC95 EF 26JAN96 RD 30	RD-PRODUCE PRELIMINARY DESIGN PKG																																																									
Trgt Start 28DEC95 Trgt Fin 26JAN96 VAR 0	□																																																									
C160W0060 ES 27JAN96 EF 29JAN96 RD 3	RD-DELIVER PD TO DOE																																																									
Trgt Start 27JAN96 Trgt Fin 29JAN96 VAR 0	□																																																									
C160W0070 ES 30JAN96 EF 30JAN96 RD 1	RD-DELIVER PD TO EPA																																																									
Trgt Start 30JAN96 Trgt Fin 30JAN96 VAR 0	□																																																									
C160W0110 ES 30JAN96 EF 30JAN96 RD 1	RD-EPA RECEIVES PD DOCUMENT																																																									
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C160MX270 ES 31JAN96 EF 30JAN96 RD 0	RD-DOE REVIEW PRELIMINARY DESIGN																																																									
Trgt Start 31JAN96 Trgt Fin VAR 0	□																																																									
C160W0080 ES 31JAN96 EF 29FEB96 RD 30	RD-EPA REVIEW PRELIMINARY DESIGN																																																									
Trgt Start 31JAN96 Trgt Fin 29FEB96 VAR 0	□																																																									
C160W0120 ES 31JAN96 EF 29FEB96 RD 30	RD-RESP. TO DOE PD COMMENTS																																																									
Trgt Start 31JAN96 Trgt Fin 29FEB96 VAR 0	□																																																									
C160W0090 ES 1MAR96 EF 14MAR96 RD 14	RD-RESP. TO EPA PD COMMENTS																																																									
Trgt Start 1MAR96 Trgt Fin 14MAR96 VAR 0	□																																																									
C160W0130 ES 1MAR96 EF 14MAR96 RD 14																																																										
Trgt Start 1MAR96 Trgt Fin 14MAR96 VAR 0																																																										

Target Date 24JAN94
 Plot Date 2MAR95
 Date Date 20FEB95
 Project Start 10CT87
 Project Finish 30SEP18

Activity Bar/Early Start
 Critical Activity
 Progress Bar
 Target Dates
 Milestone/Flag Activity

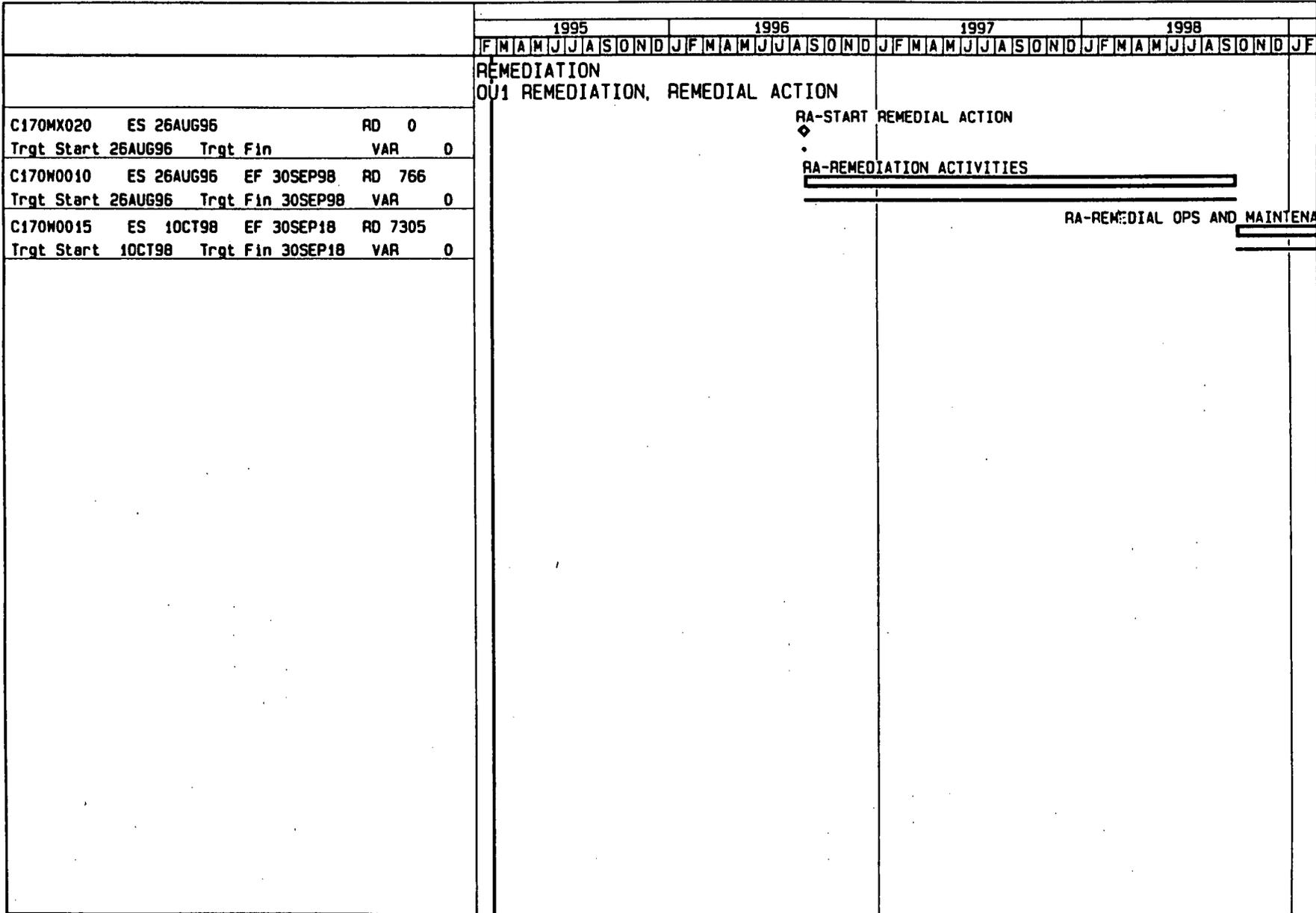
OU1

OU1 AREA B GROUNDWATER
 EG&G MOUND ER PROGRAM
 OU1 - 4 YEAR DETAIL WINDOW SCHEDULE

Sheet 6 of 8

TARGET SCHEDULE - 8504

Date	Revision	Checked	Approved



Target Date 24JAN94
 Plot Date 2MAR95
 Data Date 20FEB95
 Project Start 10CT87
 Project Finish 30SEP18

Activity Bar/Early Dates
 Critical Activity
 Progress Bar
 Target Dates
 Milestone/Flag Activity

OU1 AREA B GROUNDWATER
 EG&G MOUND ER PROGRAM
 OU1 - 4 YEAR DETAIL WINDOW SCHEDULE

Sheet 8 of 8

TARGET SCHEDULE - B504

Date	Revision	Checked	Approved