

Environmental Restoration Program

WORK PLAN

POTENTIAL RELEASE SITE 111 RELEASE BLOCK Q

**MOUND PLANT
MIAMISBURG, OHIO**

January 1997

FINAL

(Revision 0)

**U.S. Department of Energy
Ohio Field Office
EG&G Mound Applied Technologies**



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APPENDIX A PRS 266 REMOVAL ACTION ARAR SCREENING SUMMARY

ACRONYMS

AM	Action Memorandum
ARAR	Applicable or Relevant and Appropriate Requirement
CERCLA	Comprehensive Environmental Response, Compensation & Liability Act
CGI	Combustible Gas Indicator
D&D	Decontamination and Decommissioning
DOE	U.S. Department of Energy
ER	Environmental Restoration
EPA	U.S. Environmental Protection Agency
FIDLER	Field Instrument for the Detection of Low Energy Radiation
GIS	Geographical Information System
HASP	Health and Safety Plan
IDM	Investigative Derived Material
IH	Industrial Hygiene
LLRW	Low Level Radioactive Waste
NCP	National Contingency Plan
OAC	Ohio Administrative Code
ODOT	Ohio Department of Transportation
OSC	On-Scene Coordinator
OSHA	Occupational Safety and Health Act
OVA	Organic Vapor Analyzer
PCB	Polychlorinated biphenyls
ppb	parts per billion
ppm	parts per million
pCi/g	picocuries per gram
PPE	Personal Protective Equipment
PRC	Passive Product Recovery System
PRS	Potential Release Site
QAPjP	Quality Assurance Project Plan
RCT	Radiation Control Technician
RCRA	Resource Conservation and Recovery Act
RESRAD	Residual Radioactive Material Program
RI/FS	Remedial Investigation/Feasibility Study
RSE	Removal Site Evaluation
RWP	Radiation Work Permit
SOP	Standard Operating Procedures
TBD	To Be Determined
VSAP	Verification Sampling and Analysis Plan

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EXECUTIVE SUMMARY

The removal action Work Plan for Potential Release Site (PRS) 111 outlines the procedures for performing a time-critical removal action under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) for the Release Block Q investigation at the U.S. Department of Energy (DOE) Mound Plant in Miamisburg, Ohio.

Monitoring Well 0034 was identified as a Potential Release Site (#111) as a result of visual inspection during the Comprehensive Environmental Assessment and Response Program - Phase II. The monitoring well is located west of the COS Building substation.

The monitoring well was installed in 1976 during the Potable Water Project. Tritium was the only parameter analyzed for during this project and was detected in the range of 16,000 to 91,000 pCi/L (from PRS 111, Mound, February 1996). The Potable Water Project utilized this well until 1980.

In 1986, an oily substance was discovered in the well. Because the well was not properly secured, the oily substance is suspected to have been placed in the well. The Comprehensive Environmental Assessment and Response Program - Phase II Report indicated that an oily substance was discovered during surveillance activities. The limited analytical chemical data does not confirm the presence of oil. This chemical data indicates no other contamination concern.

An attempt will be made to collect a sample of the oily substance for analytical characterization. If oil is detected and it does not contain PCB's, the oil will be collected by a passive skimmer. After the free product has been removed, the well will be cleaned by steam cleaning and swabbing. The well will then be sampled to verify cleaning. For two months thereafter, the well will be monitored for any return of oil. If oil does return, further investigation of the subsurface will be required, on direction of EG&G ER Program personnel. If oil does not return and the well remains clean, the well will be abandoned under the ER Well Abandonment Program subsequent to a program of verification sampling. If, after the initial sampling PCB's are observed in the well, work will be halted to allow EG&G ER personnel to evaluate the situation.

GEOLOGIC LOG			MOUND PLANT			Project Manager Al Gleason		PAGE: 1 of 1	
Drilling Company		Raymond Int.			Borehole/Well Id		0034		
Drilling Method		Auger			STATE PLANE COORDINATES				
Drilling Fluid		Unk			North (ft)		598082.49		
Date Started		5/26/76			East (ft)		1496257.79		
Date Completed		5/26/76			Ground Surface Elev. (ft)		818.10		
Logged By		Dames and Moore			Top of Casing Elev. (ft)		818.71		
Checked By		Tom Tharp			Total Depth (ft)		20.0		
Comments:		Dames and Moore Well # 34-1.							
Depth	Sample			Well Materials	Well Con	Lith	USCS or Rock Type	Lithologic Description	
	T	A	ID						
0				SEAL: Bentonite.			FL	Fill.	
5									
10				CASING: PVC, 3". BACKFILL: Earth.			TI	Gray till.	
15				SEAL: Bentonite.			SH	Weathered shale.	
20				SCREEN: Steel, 3". FILTER PACK: Gravel.			SH	Unweathered shale. Total Depth = 20.0 feet.	

GROUNDWATER		
DEPTH	HOUR	DATE
16.46	14:10	109/20/90

Figure 1.1 Well log for Well 0034.

The groundwater recharge may be slow, which could extend the time it takes to remove significant volumes of water from the well. The water level in the well in 1990 was 16.46 feet below ground surface, with the bottom of the well at 20 feet and the well casing three inches in diameter. One well volume therefore equals 1.32 gallons. It is expected then, that approximately 80 to 85 well volumes will have to be removed from the well during the decontamination procedure.

2.3. PROBLEM STATEMENT

The AM (June 1996) states that "actual or threatened releases of pollutants and contaminants from this site, if not addressed by implementing the response action, may present an imminent and substantial endangerment to public health or welfare or the environment" (p. 4-1).

3. DESIGN BASIS

The purpose of this section is to present the basis of the removal action design for PRS 111. This section identifies the applicable or relevant and appropriate requirements (ARARs) for the proposed removal action, Mound Plant and DOE policies and procedures, and removal action guidelines. Also in this section the expected approach, work flow diagrams, and an uncertainty analysis are described.

3.1. APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

CERCLA regulations require removal actions to comply with ARARs only to the extent practicable; that is, to the extent that ARARs can be performed or complied with under the circumstances. Also, only those federal and state ARARs that relate to the actual removal action and not to long-term remediation requirements, apply to the removal action addressed in this work plan.

The PRS 111 removal action will be performed in accordance with chemical-specific, location-specific, and action-specific ARARs listed in the following subsections. The justification for including or excluding specific ARARs is provided in Table A-1, located in Appendix A.

3.1.1. Chemical-Specific ARARs

Chemical-specific ARARs are health- or risk-based numerical values or methods that establish concentrations or discharge limits for chemical contaminants known or suspected to be in the removal action area. The following chemical-specific ARARs have been identified for the PRS 111 removal action:

40 CFR 141.11-141.16	MCLs for chemical and radiological contaminants
10 CFR 20	Standards for protection against radiation
10 CFR 835	Radiation Protection for Occupational Workers
OAC 3745-81-11 through 13 and 81-15 A,B	MCLs for chemical and radiological contaminants
OAC 3745-81-40	Criteria by which a director may grant a variance from MCLs
OAC 1301:7-9-13	Petroleum UST Corrective Action

3.1.2. Location-Specific ARARs

Location-specific ARARs are restrictions placed on the concentrations of hazardous substances in the environment, or the conduct of activities solely because they occur in special locations. No location specific ARARs are applicable for this removal action.

3.1.3. Action-Specific ARARs

Action-specific ARARs are usually technology- or activity-based requirements or limitations applied to specific actions. The following action-specific ARARs have been identified for the PRS 111 removal action:

10 CFR 71	Packaging and Transportation of Radioactive Materials
10 CFR 830.120	DOE Quality Assurance Requirements
40 CFR 268.50	Storage of banned waste (e.g., mixed waste)
OAC 3745-9-10	Abandonment of Test Holes and Groundwater Wells
OAC 3745-54-13	Waste analysis requirements before storage
OAC 3745-55-14	Disposal/ Decontamination of Equipment, Structures and Soils
ORC 6111	Prohibits pollution of waters within the State
33 USC 1318	Guidelines and standards for effluent, pretreatment standards, and discharge of treatment system effluent
OSHA 29 CFR 1910	Requirements include general standards for worker protection
OSHA 29 CFR 1926	OSHA Safety and Health Standards
OSHA 29 CFR 1904	OSHA Recordkeeping, Reporting, and Related Regulations
DOT 49 CFR 171, 172, 173 & 174	Hazardous materials transportation and hazardous material employee training requirements

3.1.4. Requirements To Be Considered

In addition to the ARARs listed above, certain to be considered (TBC) requirements are applied when no ARAR exists or where ARARs are not sufficiently protective of human health or the environment. The following TBCs have been identified for the PRS 111 removal action:

DOE Order 5400.5	Radiation protection of the public and the environment
DOE Order 5480.3	Safety Requirements for the Packaging and Transportation of Hazardous Materials, Hazardous Substances, and Hazardous Wastes
DOE Order 5480.4	Environmental Protection Safety and Health Protection Standards
EPA guidance EPA/540/2-88/002	Technological Approaches to the Cleanup of Radiologically Contaminated Superfund Sites (8/88)
EPA OSWER Directive 9355.0-25A	Use of removal approach to speed up remedial action project (7/89)

3.2. OTHER STANDARDS AND REQUIREMENTS

Other Mound Plant manuals and procedures, and DOE orders/criteria applicable to the PRS 111 removal action, are listed in Subsections 3.2.1 and 3.2.2 below.

3.2.1. Mound Manuals and Procedures

The following list of Mound Manuals and Procedures are applicable to the PRS 111 removal action:

- a. MD-10019 - Radiological Protection Program Manual;
- b. MD-10286 - Safety and Hygiene Manual;
- c. MD-10334 - Quality Policy and Responsibilities;
- d. MD-80030 - Environmental Analytical Procedures;
- e. MD-80036 - Radiological Operations Procedures;
- f. MD-81020 - Waste Certification Program Plan;
- g. MD-81240 - Low-level Waste Management Manual;
- h. Form ML-8440 - Project Quality Assurance Review;
- i. WS12 - Debris Disposal;
- j. OU-9 RI/FS QAPjP - Environmental Restoration Procedures

3.2.2. DOE Orders/Criteria

The following list of DOE Orders and associated criteria are applicable to the PRS 111 removal action:

- a. DOE 5400.5 - Radiation Protection for the Public and the Environment;
- b. DOE 5820.2A - Radioactive Waste Management;

- c. DOE 5480.3 - Safety Requirements for the Packaging and Transportation of Hazardous Materials, Hazardous Substances and Hazardous Wastes
- d. DOE 5480.4 - Environmental Protection Safety and Health Protection Standards

3.3. REMOVAL ACTION GUIDELINES

The National Oil and Hazardous Substances Pollution Contingency Plan contains criteria which suggests that the presence of oil in well 0034 creates a potential threat to the environment. This potential threat is prompting the removal action at PRS 111. When analytical results are obtained from the well, alternate removal action guidelines may become appropriate.

3.4. EXPECTED APPROACH

The design for the PRS 111 removal action consists of four primary tasks: site preparation, excavation, waste management, and site restoration which correspond to the proposed sequence of work. Figure 3.1 is a flow diagram presenting an overview of the expected approach for the sequence of work. The expected approach includes all applicable Mound site procedures.

3.4.1. Site Preparation

The site preparation includes all activities that must be completed or in place before initiation of the removal action. These tasks include:

- a. Obtaining all site-specific permits;
- b. Completing utility and field survey;
- c. Installing site controls;
- d. Establishing site facilities including temporary utilities as necessary for construction activities;
- e. Mobilizing supplies, equipment, and personnel to the site;
- f. Establishing work zones and staging areas;
- g. Construct decontamination water diversion and/or collection structures.

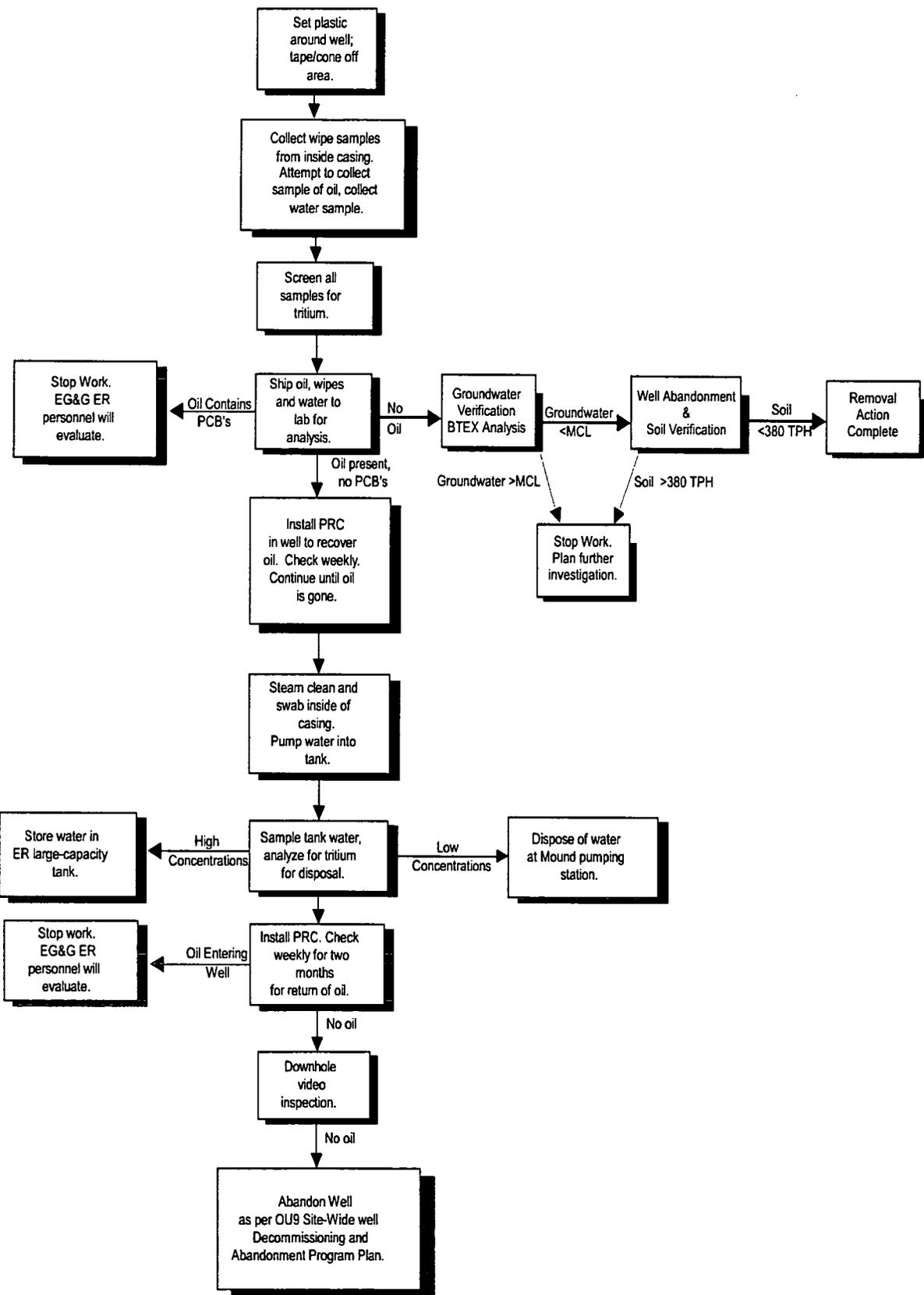


Figure 3.1. Flow diagram of anticipated approach for Removal Action at PRS 111.

The PRS 111 Project Manager will secure all required Mound specific work permits prior to the start of the removal action. A field survey will locate above-ground and underground utilities. Site controls will be implemented as part of the site preparation activities. Site controls may include temporary fencing, caution tape, signs, etc. Temporary utilities including power and potable water may be made available as necessary.

3.4.2. Excavation

Excavation will not be required during the well decontamination. Therefore, soil dust emissions are not a concern. Soils disturbed below ground surface will be left in the over-drilled hole at the well site. The soil will not be moved, however, it will be spread around the vicinity of the well.

3.4.3. Waste Management

The waste management task includes the handling, packaging, and disposal of the waste material generated during the removal action. The expected approach may require handling and disposal of:

- a. Oil skimmed from the well - disposed of at the Mound FFTA or by PermaFix of Dayton;
- b. Groundwater removed from the well (which may contain tritium) - disposed of at the Mound treatment facility, pending screening results;
- c. Decontamination water from the well - disposed of at the Mound treatment facility, pending screening results;
- d. Personal protective equipment - gloves only anticipated, disposed of in Mound dumpster;
- e. Cleaning swabs - if non-PCB bearing, disposed of at Mound or at PermaFix;
- f. Well casings and screen - after decontamination, disposed of in Mound dumpster.

3.4.4. Site Restoration

Site restoration will occur after the well abandonment is complete. The restoration will include spreading any soil cuttings produced during drilling and spreading any grout on the ground surface. All trash will be removed from the site.

3.5. UNCERTAINTY ANALYSIS

The uncertainty analysis for the proposed PRS 111 removal action is summarized in Table III.1.

Table III.1. Removal Action Uncertainty Analysis

Expected Conditions	Potential Deviation	Monitoring	Contingency Plan	Evaluation
Oily substance contained in well 0034	No oil observed or detected in laboratory analysis	None required	Well will be sampled for verification	Contingency plan included in design for removal action
Oily substance is PCB-free	Oily substance contains PCB's	To be determined	Work will stop and EG&G ER personnel will evaluate situation	Contingency plan included in design for removal action
Oily substance can be removed with passive recovery and pumping	Oily substance continues to flow into well after decontamination	To be determined	EG&G ER program personnel will determine the required subsurface investigation	Contingency plan included in design for removal action
Groundwater in well contains tritium	Groundwater does not contain tritium	Groundwater currently monitored for tritium regardless of conditions in well 0034	No special plan required	Contingency plan included in design for removal action

4. REMOVAL ACTION ACTIVITIES

This section describes the designed removal action process from site controls, mobilization, and site preparation to site restoration. A description of the options/methods being evaluated in the process of determining a final removal and waste management approach is presented. This section presents the specific approach to complete the removal action in sufficient detail to enable manpower loadings, cost estimates, procurement of material and equipment, and completion of permits.

4.1. PROJECT SITE CONTROLS

Project site controls will include traffic cones and hazard tape surrounding the work area. After well decontamination and until well abandonment, the well cap will be locked to restrict access.

4.2. MOBILIZATION

The following resources will be used and mobilized in preparation for this removal action:

4.2.1. Personnel

- a. Field personnel will be certified as having received required training.
- b. Field personnel will acknowledge having received and read the HASP and QAPjP.
- c. All support personnel (Radiological Operations and Industrial Hygiene and screening lab personnel) will be assigned to the task and made available as needed.

4.2.2. Heavy Equipment

- a. All equipment pertinent to the removal action (e.g. trucks, hand tools, drill rigs, portable sump pumps, hosing, connectors and generators) will be procured for use on this project.

4.2.3. Instrumentation

- a. All necessary instrumentation required by the Radiation Work Permit (RWP), will be procured and calibrated.

4.2.4. Transportation Containers

- a. No transportation containers will be required.

4.2.5. Storage Containers and Liners

- a. If oil is skimmed from the well, it will be placed into a 55-gallon drum. Groundwater and decontamination water will be placed first in a trailer-mounted poly tank, which will be emptied periodically into an ER large-capacity poly tank.

It is anticipated that no more than one 55-gallon drum will be required. One or two loads in the trailer-mounted poly tank are anticipated, and perhaps 250 gallons will be transferred to the ER tank.

4.2.6. Permits

- a. All permits such as the RWP, D&D work permit, excavation/digging permit, penetration permit, welding or confined space entry permits and HASP requirements will be initiated, approved, and available at the work site.

4.2.7. Utilities

- a. All necessary utilities, such as electrical power, water (potable), fuel, batteries, etc. will be procured.

4.2.8. Personal Protective Equipment

- a. All PPE, as specified by the HASP and the RWP, will be available and in proper working order.

4.3. SITE PREPARATION

The following activities must be performed to prepare the site for execution of the planned removal action.

4.3.1. Health and Safety Requirements

- a. All personnel will conform to the training and qualification requirements of the HASP. Such conformance will be documented by signing the acknowledgment form.
- b. To ensure compliance with regulations and to ensure worker safety, various types of safety equipment will be used, as specified in the HASP.
- c. During well decontamination, the control zone area will be marked off to restrict access.
- d. All equipment on site will conform to Mound safety standards and be available for inspection by Mound Safety Personnel.

4.3.2. Initial Site Survey and Utility Locations/Restrictions

- a. Survey the location of PRS 111 to determine the location of overhead, surface, and location and depth of subsurface utilities.
- b. These will apply primarily to well abandonment, as the well decontamination will only involve the existing well -- no ground will be broken.

4.3.3. Staging Areas

- a. Equipment will be stored in Building 19 during this removal action.

4.3.4. Decontamination Area

- a. Establish a portable decontamination pad on the spoils area, as determined by the Site Health and Safety Officer.
- b. Construct decontamination area before beginning removal activities.
- c. Initiate equipment decontamination (in accordance with ER Program Standard Operating Procedure (SOP) 1.6. and 1.8 and HASP).

4.3.5. Field Sampling Area/Trailer

- a. No field sampling trailer is required for this removal action. Sample management will occur in Building 19.

4.3.6. Storm Water Provisions

Storm water is not a concern for this removal action as all activities will occur within well 0034.

4.3.7. Clearing and Grubbing

No clearing or grubbing is required for this site.

4.4. EXCAVATION OF CONTAMINATED SOIL

No actual excavation will take place during this removal action. Minimal soil will be exposed at the surface when the well is over-drilled. This material will be moist and, therefore, soil dust emissions are not a concern. Soils disturbed below ground surface will be left in the over-drilled hole at the well site.

4.5. FIELD SAMPLING PROGRAM

4.5.1. Sampling Objectives and Rationale

Two types of samples will be collected initially from Well 0034. The first are wipe samples from the inside of the well casing. These wipes will be collected from several depths. The second are samples of product inside the well (if available). The objective of these samples is to characterize the oily contaminants within the well. Verification samples of water and soil will also be collected. These will be detailed in Section 5.3.1 of this report. Additionally, samples will be collected from the storage tank to characterize the water for disposal.

4.5.2. Field Screening Sampling

Field screening will be performed on all water samples before they are shipped to the analytical laboratory, and on water before disposal to insure that it meets Mound NPDES requirements. Water samples will be screened for tritium, plutonium and thorium.

4.5.2.1. Sample Types

All samples obtained during the removal action will be water samples, oil samples or wipe samples (of oil).

4.5.2.2. Sample Locations and Frequency

Samples will be collected from either Monitoring Well 0034 or from the storage tank used to hold the removed water. Samples will be collected once for characterization, once for verification and once for disposal characterization.

4.5.2.3. Sample Collection Procedures and Equipment

Water samples will be collected using either a pump or a bailer. Oil samples will be collected either in the PRC or using an interface bailer. The wipe samples will be obtained by swabbing with a pad attached to the steam cleaner extension rod.

4.5.2.4. Sample Analyses

The water samples will be analyzed for Total Petroleum Hydrocarbons by two modifications of Method SW846; gasoline-range organics and diesel-range organics. The oil samples and wipe samples will be analyzed for PCB's by Method SW846 8080.

4.5.2.5. Groundwater Cleanup Standards

The removal action efforts will remove oily contaminated water in accordance with the program cleanup standard. For comparative purposes, the Ohio Bureau of Underground Storage Tank Regulations (BUSTR) has no standard for oil in groundwater, only oil in soil. Therefore, comparison to standards set by BUSTR for benzene, toluene, ethylbenzene and xylene (BTEX) in ground water will be completed to determine if the ground water is acceptable. If the ground water meets the standards, remediation will be considered to be complete. The cleanup standards include the following limits:

Chemical of Concern	Concentration (ppm)	Analytical Methods
Benzene	0.005	EPA 602
Toluene	1.0	EPA 602
Ethylbenzene	0.700	EPA 602
Total Xylene	10.0	EPA 602

The screening samples are intended to support the field team in deciding when shipping is permitted and when disposal is permitted. Decision rules will be applied by the field team for the PRS 111 removal action. Table IV.1 lists the radioactive sample shipment requirements for tritium, plutonium and thorium (Mound Plant ER Program SOPs, January 1993).

Table IV.1. Radioactive Sample Shipment Requirements

Radionuclide	49 CFR Reference	Concentration	Total Quantity	DOT Class
Tritium in water	49 CFR 173.403(y)	< 2 μ Ci/L	NA	Environmental
	49 CFR 173.423	2 μ Ci/L to 1 x 10 ⁵ μ Ci/L	< 1,000 Ci/ package	UN2910 (Limited quantity)
	49 CFR 173.403	1 x 10 ⁵ μ Ci/L to 5 x 10 ⁶ μ Ci/L	< 1,000 Ci/ package	UN2912 (LSA)
Plutonium-238 in soil or other solids	49 CFR 173.403(y)	0.002 μ Ci/g	NA	Environmental
	49 CFR 173.403	0.002 μ Ci/g to	< 30 μ Ci to	UN2912
	49 CFR 173.423	0.1 μ Ci/g	package	(LSA)
	49 CFR 173.403(n)	0.002 μ Ci/g to	30 μ Ci to	UN2912
	49 CFR 173.435	0.1 μ Ci/g	3,000 μ Ci/ package	(LSA)
Thorium-232 soil or other solids	49 CFR 173.403(y)	< 0.002 μ Ci/g	NA	Environmental
	49 CFR 173.403	0.002 μ Ci/g to	Unlimited	UN2910
	49 CFR 173.435	300 μ Ci/g		(Limited quantity)
Thorium-230 in soil or other solids	49 CFR 173.403(y)	< 0.002 μ Ci/g	NA	Environmental
	49 CFR 173.403	0.002 μ Ci/g to	< 30 μ Ci to	UN2910
	49 CFR 173.423	0.1 μ Ci/g	package	(Limited quantity)
	49 CFR 173.403(n)	0.002 μ Ci/g to	30 μ Ci to	UN2912
	49 CFR 173.435	0.1 μ Ci/g	3,000 μ Ci/ package	(LSA)

*The package refers to the shipment cooler (not the sample jars).

DOT - U.S. Department of Transportation

NA - not applicable

LSA - low-specific activity

within the confines of the decontamination pad and disposed of in Mound dumpsters. The contaminated waste water generated by the decontamination procedures will subsequently be transferred and stored in a trailer-mounted poly tank or 55-gallon drums. The contaminated waste water will be sampled by the contract laboratory and finally sent to PermaFix at concentrations of fifty (50) parts per million or less.

4.6.3. Management of Low Level Radioactive Waste

We anticipate that any waste water containing tritium will be at concentrations low enough to meet NPDES regulatory requirements. The waste water will be transferred into an ER large-capacity poly tank and disposed of by discharging at the Mound pumping station.

4.7. SITE RESTORATION

Site restoration requirements following well abandonment will be minimal. Any soil cuttings will be spread at the surface, and any grout overrun from the hole will be spread at the surface as well. All disposable materials will be removed from site.

5. ASSOCIATED FIELD PLANS

5.1. QUALITY ASSURANCE PROJECT PLAN

The work to be performed, which includes the removal and verification sampling and analysis activities, will be consistent with the QAPjP prepared for this removal action. The QAPjP is consistent with DOE 10 CFR Part 830.120 and the Mound OU9, Site-Wide, QAPjP, with additional requirements to include field removal activities. Specific quality assurance requirements are incorporated into written and approved procedures and personnel training. Mound personnel will also conduct periodic surveillance, inspections, and/or audits to verify compliance throughout the execution of this removal action.

5.2. HEALTH AND SAFETY PLAN

The work to be performed will be consistent with the HASP prepared for this removal action. The HASP will identify, evaluate, and require controls for all health and safety hazards. It has detailed all applicable SOPs, worker training requirements, worker protection, fugitive dust control, air monitoring, sample controls, and general site control measures for the protection of the public and workers during the removal action. In addition, this HASP provides for emergency response for hazardous operations. The HASP is consistent with OSHA regulations 29 CFR Part 1910.120 and Mound Technical Manual MD-10286, Issue 17, "Mound Safety and Hygiene Manual," 9/26/94.

5.3. VERIFICATION SAMPLING AND ANALYSIS PLAN

The VSAP is consistent with the Mound OU9 Site-Wide, Field Sampling Plan, and EPA's Methods for Evaluating the Attainment of Clean-up Standards (EPA 230/02-89/042) (EPA 1989) and is supplemented by the removal action QAPjP. Verification procedures will be as follows.

5.3.1 Groundwater Verification Sampling of PRS 111

Additional groundwater sampling will include the analysis of benzene, toluene, ethylbenzene, and xylene (BTEX) prior to any work on abandoning the well. The groundwater samples will be analyzed for VOC's by EPA method 602 (GC/PID), whereas the soil cuttings will be analyzed for both BTEX by EPA method 8020, and TPH by EPA method 418.1. All groundwater sampling will be conducted in accordance with the OU-9 QAPP and SOPs. Groundwater and quality control samples will be submitted to the appropriate on-site radionuclide screening laboratory prior to being sent to the off-site contract laboratory for chemical analysis.

During the initial stage of the investigation, the water level in PRS 111 will be recorded, and the well bailed dry. Two days after bailing the well dry, the water level will once again be recorded to determine if the water has fully recovered. If it has, groundwater samples will then be collected using a decontaminated stainless steel bailer. Efforts will be made to minimize the turbidity of the samples. Immediately after the sample is collected, the well will be bailed dry a second time. Following recovery several days later, the well will be sampled and bailed dry as previously mentioned. This same sample/bail procedure will occur a third time approximately two days later. This series of samples will indicate whether concentrations of contaminants in the groundwater remain constant, or are fluctuating.

Each of the groundwater samples will be analyzed for radiological screening and shipping purposes by the Mound wet chemistry laboratory. Analysis for BTEX will be completed by the contract laboratory. The contract laboratory will be instructed to deliver the analytical results within five days of receipt of the samples.

Upon evaluating the laboratory results, it will be determined whether to continue with abandonment of the well. If BTEX is present below the standards listed in Section 4.5.2.5 of this report, abandonment will take place as described below in Section 5.3.2. However, if BTEX is present above the standards, the sample/bail procedures will be conducted an extra two times. If the lab data suggest an external source *ie.* contaminant concentrations that do not decline with subsequent well evacuation and sampling, it will be necessary to conduct further investigations at a later date, and therefore the well should not be immediately abandoned.

All discharge wastewater will be stored in a trailer-mounted poly tank or 55-gallon drums. If the discharge water is not contaminated above limits set in the NPDES permit, it may be discharged at the NPDES lift station or drain located near cells 0350 and 0351. Any contaminated waste water above NPDES permit limits will be sampled and then analyzed by a contract laboratory and finally sent to an off-site disposal facility (Permfix). Permfix requires that the oil concentrations be fifty ppm or less.

5.3.2 Well Abandonment and Soil Verification Sampling Procedures for PRS 111

The well abandonment of PRS 111 will involve well removal and simultaneous grouting of the borehole with a volclay sealant. Well removal will be accomplished by over-drilling, which shall: 1) follow the original borehole, 2) create a borehole of greater diameter than the original boring, and 3) remove all of the well construction material, if possible.

Proper sealing of abandoned wells prevents vertical movement of water. This is so important that well abandonment must be documented per the Ohio Revised Code (ORC) Section 1521.05(B). A well sealing report must be submitted to the Ohio Department of Natural Resources (ODNR), Division of Water. Also, the ODH Private Water Systems Rules require that the local health department be notified when an abandoned well has been sealed. In most counties, sending the local health department a copy of ODNR's well sealing report is an acceptable form of notification.

Well abandonment will follow the DOE Operable Unit 9, Site-Wide Well Decommissioning and Abandonment Program Plan, Draft (Revision 0) and the Technical Guidance for Sealing Unused Wells by the Ohio State Coordinating Committee on Ground Water, 1996. Well abandonment will be completed by Bowser-Morner drillers.

Well abandonment will be completed in level D personal protective clothing. The site will be monitored for volatile organic vapors (VOCs), oxygen and combustible gases using an OVA-128 and MX-241, respectively. No surface obstructions (concrete pad, steel guard posts, protective steel well casing) were observed for removal. Likewise, no down-hole obstructions (pumps, pressure lines, bailers, other debris, etc.) were observed for removal during the video inspection survey.

This well will be abandoned by over-drilling the well casing using an 8¼ inch inside diameter hollow stem auger. This will ensure that the filter pack material from seventeen to twenty feet below ground surface is removed, and that native soil is sampled.

As the auger advances, soil cuttings will be brought to the surface by the rotating helical threads of the auger. Grab samples of this soil will be taken at discrete two foot intervals to determine if the soil surrounding the well may serve as a source for the oily substance. An attempt will be made to collect soil samples at the zone of ground water saturation - the water level in the well being approximately 16.27 feet below ground surface.

The on-site geologist will examine the soil cuttings to document soil lithology, degree of saturation, nature of occurrence of any contaminant, and other pertinent observations. Each sample will be divided into three sample fractions. The first fraction will be placed in a labeled glass jar, sealed with a Teflon-lined lid, and placed on ice for laboratory analysis. A second fraction will be placed in a similar jar for Mound soil screening on-site and organic vapor analysis of the head space. The third fraction will be examined and described by the on-site geologist.

The well casing and screen material will be decontaminated within the confines of the decontamination pad and stored on plastic liners in the vicinity of the decontamination pad or placed decontamination

pad and stored on plastic liners in the vicinity of the decontamination pad or placed in Mound dumpsters. All decontamination water will be placed either in a trailer-mounted poly tank or 55-gallon drums. The drillers will be responsible for removal and disposal of the well casing after the material has been scanned and cleared by Mound health physics. The contract laboratory samples will be refrigerated and stored in building 19 until radionuclide results from the Mound soil screening laboratory are obtained.

An Organic Vapor Analyzer (OVA) with a flame-ionization detector will be used to screen soil samples for volatile organic compound (VOC) concentrations. The OVA will be calibrated in the field prior to screening activities in accordance with Standard Operating Procedures.

Once the augers have been advanced to the desired depth, the PVC well casing will be removed through the hollow stem augers. When the well casing is removed from the borehole, the borehole will be sealed using a volclay seal (portland cement/bentonite grout) at a ratio of 2.1 pounds of grout to one gallon of water. The sealant will be pumped under pressure through a tremie pipe as the augers are slowly removed from the borehole. When the grout level stabilizes, casing or augers are removed from the borehole. This will ensure a complete seal devoid of gout bridging, segregation or dilution. The borehole will be sealed from the bottom up to within two feet of the surface. To prevent the creation of investigative derived materials (IDM), soil and drill cuttings will be left at the site and used to back-fill any remaining excavation. Any remaining cuttings will be graded over the site.

Approximately 130 gallons or 17.5 cubic feet of sealing material will be needed to fill the borehole to within two feet of the ground surface. The volume of sealant tremied into the well will be closely monitored and recorded to ensure that the borehole is sealed properly. Following well abandonment, the augers will be decontaminated at a decontamination pad.

The location of the sealed well should be marked with a piece of metal (rebar) to allow for location by a metal detector or magnetometer.

All soil removed shall be surveyed by Mound Health Physics personnel. All excavated soil that is radiologically clean shall be salvaged for grading and completing the decommissioning.

The cleanup standard for organic compounds which will be applied to the samples are derived from BUSTR guidance. Since only heavy-fraction oils are anticipated, the cleanup standard for TPH in soil (380 ppm, based on method 418.1) will be utilized. If any soil samples contain TPH at or above a concentration of 380 ppm, abandonment will proceed as specified, but a future investigation of surrounding soils will be planned.

6. PROJECT ORGANIZATION

The organizational structure for the personnel performing this removal action will be determined by Mound personnel to ensure that proper lines of authority and safety responsibilities are clearly defined. The removal action project organization will contain the following communication links and job classifications.

6.1. PROJECT MANAGEMENT

The organizational structure for this project is described below.

- Project Manager: The Project Manager is responsible for the overall operation of the PRS 111 Removal Action. The Project Manager is responsible for securing all required Mound specific work permits prior to the start of the removal action.
- Field Coordinator: The Field Coordinator is responsible for implementing the removal plan and the day-to-day safe operation of the removal action project. This individual is responsible for the surveying, excavation, collection and documentation of all samples collected during the excavation, waste handling and packaging at PRS 111, site restoration, and construction contingencies during this removal action. The Field Coordinator will interact and coordinate the project and schedule with EG&G site organizations (Waste Management, Industrial Hygiene, Radiological Operations, etc.).
- Health and Safety Officer: The Health and Safety Officer is responsible for ensuring the project-specific HASP requirements are implemented. This individual is responsible for maintaining the contamination reduction zone, overseeing construction safety, and conducting initial site safety training and daily safety briefings.
- Quality Assurance Officer: The Quality Assurance Officer is responsible for implementing the project-specific QAPjP. This individual is responsible for conducting periodic surveillance of field activities, reporting non-conformances, and ensuring that corrective actions are implemented.
- Verification Sampling Manager: The Verification Sampling Manager is responsible for implementing the VSAP. This individual is responsible for the collection, handling, packaging, and documentation of all samples obtained during the verification sampling program.

7. SCHEDULE

Performance of work will be accomplished as follows:

- | | | |
|-----|--|----------|
| 1. | Completion of Work Plan documents (Working Draft) for EG&G | 08/30/96 |
| 2. | Completion of Work Plan documents (Draft) for DOE | 09/06/96 |
| 3. | Completion of Work Plan documents (Draft) for EPA | 09/13/96 |
| 4. | Completion of Work Plan documents (Final) for distribution | 01/31/97 |
| 5. | Start of field work | 09/16/96 |
| 6. | Completion of field work | 02/28/97 |
| 7. | Completion of OSC report (Working Draft) for EG&G | 03/31/97 |
| 8. | Completion of OSC report (Draft) for DOE | 04/14/97 |
| 9. | Completion of OSC report (Draft) for EPA | 05/05/97 |
| 10. | Completion of OSC report (Final) for distribution | 05/26/97 |

8. COST ESTIMATE

The estimated costs associated with the PRS 111 removal action are presented below.

- | | | |
|--|---------------|-------------|
| • Task 1.0 (SOW Task I,II)
Inspection, Sampling and Substance
Characterization of Well 0034 | Approximately | \$5,000.00 |
| • Task 3.1 (SOW Task III)
Installation of Passive Recovery Canister
and Monitoring One Month | Approximately | \$3,000.00 |
| • Task 3.2 (SOW Task III)
Well Cleaning and Installation of Passive
Recovery Canister | Approximately | \$6,200.00 |
| • Task 3.3 (SOW Task III)
Exterior Source Monitoring and
Downhole Inspection | Approximately | \$4,000.00 |
| • Task 3.4 Groundwater and Soil Verification
Sampling Well Abandonment | Approximately | \$16,500.00 |
| • Task 5.0 (SOW Task v)
Preparation of Work Plan Documents | Approximately | \$11,500.00 |
| • Task 6.0
Project Management | Approximately | \$3,000.00 |
| • Task 7.0
Transportation/Disposal of Waste Water | Approximately | \$1,300.00 |

9. REFERENCES

EPA 1989. "Methods for Evaluating the Attainment of Cleanup Standards, Volume 1: Soils and Solid Media," EPA/230/02-89/042 U.S. Environmental Protection Agency, 1989.

Environmental Restoration Program. 1993. "Remedial Investigation, Operable Unit 9, Site-Wide, Quality Assurance Project Plan" Mound Plant. Miamisburg, Ohio. January 1993.

Work Plan, Potential Release Site 111, Release Block Q, Mound Plant, Miamisburg, Ohio, October 1996.

Mound Plant, Release Block Q, Potential Release Site Package, PRS #111, Groundwater Monitoring Well Location 0034, Mound Environmental Restoration Program, Revision 0, February 27, 1996.

Monitoring Well Survey, OU-2, Main Hill Phase I Technical Memorandum, February 1995.

Comprehensive Environmental Assessment and Response Program - Phase II, Installation Plan - Stage 2 Supplement, September 1987.

Potable Water Standards: Final Report, April 1981.

Aller, L., et. al., 1991. Handbook of Suggested Practices for the Design and Installation of Ground Water Monitoring Wells. Environmental Monitoring Systems Laboratory, Office of Research and Development, U.S. Environmental Protection Agency, EPA/600/4-89/034.

Ohio Department of Commerce, Division of State Fire Marshal. Bureau of Underground Storage Tank Regulations, OAC 1301:7-9-13.

APPENDIX A

PRS 111 REMOVAL ACTION ARAR SCREENING SUMMARY

1. INTRODUCTION

The ARARs compiled by DOE are shown in the first two columns of Table A.1. The third column indicates whether the ARARs are practicable for the specific alternative selected for the PRS 111 removal action, i.e., well decontamination. The rationale for excluding any of the ARARs is shown in the last column. Those ARARs that remain from this screening process are listed in Section 3.1 of this Work Plan.

Table A.1. PRS 111 Removal Action ARAR Screening Summary

Chemical-Specific ARAR	Description of ARAR	Applicable to PRS 111 Removal Action? (yes or no)	Explanation (if excluded)
40 CFR 61 Subpart H	National emission standards for emissions of radionuclides other than radon from DOE facilities	No	No emissions
40 CFR 141.11-141.16	MCLs for chemical and radiological contaminants	Yes	
40 CFR 192	EPA environmental standards for uranium and thorium mill tailings and licensed commercial processing sites	No	No tailings, no Uranium, no Thorium
40 CFR 264.94	RCRA groundwater protection concentration limits	No	Under CERCLA
10 CFR 20	Standards for protection against radiation	Yes	
10 CFR 61	Licensing requirements for land disposal of radioactive waste	No	No land disposal
10 CFR 835	Radiation Protection for Occupational Workers	Yes	
OAC 3745-81-11 through 13 and 81-15 A,B	MCLs for chemical and radiological contaminants	Yes	
OAC 3745-81-40	Criteria by which a director may grant a variance from MCLs	Yes	
OAC 3745-17-02 A,B and C	Particulate ambient air quality standards	No	Groundwater only, no particulates
OAC 3745-17-05	Regulation prohibiting degradation of air quality in areas where air quality exceeds requirements of OAC 3745-17-02	No	No significant air quality degradation.
OAC 3745-17-08 A(1), A(2), B and D	Emission restrictions for fugitive dust.	No	No dust emissions
CWA 304	Clean Water Act water quality criteria	No	No drinking water

Table A.1. PRS 111 Removal Action ARAR Screening Summary (cont.)

Location-Specific ARAR	Description of ARAR	Applicable to PRS 111 Removal Action? (yes or no)	Explanation (if excluded)
40 CFR 6, Appendix A	Executive Order 11988 (Floodplain Management) and 11990 (Protection of Wetlands)	No	Involves no flood plains or wetlands
CWA 404	Dredge or fill wetland	No	Involves no flood plains or wetlands
16 USC 661	Fish and Wildlife Coordination act - requires action to protect fish and wildlife from actions modifying streams	No	No surface water
10 CFR 71	Packaging and Transportation of Radioactive Materials	Yes	
10 CFR 830.120	DOE Quality Assurance Requirements	Yes	
33 CFR 320 thru 330	Discharge of dredge and fill material to waters of the US	No	No discharge to US waters
40 CFR 230	Discharge of dredge and fill material to waters of the US	No	No discharge to US waters
40 CFR 264.13	Waste analysis	No	No RCRA
40 CFR 264.111	Closure with no post-closure care (e.g., clean closure)	No	No RCRA
40 CFR 264.114	Disposal/ Decontamination of Equipment, Structures and Soils	No	No RCRA
40 CFR 264.117	Restrict post-closure use to prevent damage to cover	No	No cover
40 CFR 264.171 thru 176	Container storage	No	No RCRA
40 CFR 264.228	Surface impoundment closure requirements and post-closure care	No	No surface impoundments
40 CFR 264.251	Specifies the design and operation requirements for waste piles	No	No waste piles
40 CFR 264.254	Monitoring and Inspection of Waste Piles	No	No waste piles
40 CFR 264.258	Closure and Post-Closure Care for Waste Piles	No	No waste piles
40 CFR 264.270	Additional Permit Information for Hazardous Waste Stored in Waste Piles	No	No waste piles

Table A.1. PRS 111 Removal Action ARAR Screening Summary (cont.)

Action-Specific ARAR	Description of ARAR	Applicable to PRS 111 Removal Action? (yes or no)	Explanation (if excluded)
40 CFR 264.310	Landfill closure requirements and post-closure care	No	No landfills
40 CFR 268	Land Disposal Restrictions, excavation and placement	No	No land disposal
40 CFR 268.50	Storage of banned waste (e.g., mixed waste)	Yes	May store water
RCRA 40 CFR 260 thru 266	Hazardous waste management	No	No RCRA
RCRA §3004(e)	Dust suppression	No	No dust generated
OAC 3745-9-10	Abandonment of Test Holes and Groundwater Wells	Yes	
OAC 3745-9-11	Use of Wells for Disposal	No	No use of wells for disposal
OAC 3745-27-01 thru 10	Requirements include authorized solid waste disposal methods, operational requirements for solid waste disposal facilities and closure requirements	No	No solid waste disposal or solid waste disposal facilities.
OAC 3745-54-13	Waste analysis requirements before storage	Yes	
OAC 3745-55-14	Disposal/ Decontamination of Equipment, Structures and Soils	Yes	
OAC 3745-50.44 C(4)	Additional Permit Information for Hazardous Waste Stored in Waste Piles	No	No waste piles
OAC 3745-56-51	Specifies the design and operation requirements for waste piles	No	No waste piles
OAC 3745-56-54	Monitoring and Inspection of Waste Piles	No	No waste piles
OAC 3745-56-58	Closure and Post-Closure Care for Waste Piles	No	No waste piles
OAC 3745-59	Land Disposal Restrictions	No	No land disposal
OAC 3745-59-50	Limits time for on-site storage of hazardous wastes restricted from land disposal	No	No land disposal
OAC 1301: 7-9-13	Petroleum UST Corrective Action	Yes	

Table A.1. PRS 111 Removal Action ARAR Screening Summary (cont.)

Action-Specific ARAR	Description of ARAR	Applicable to PRS 111 Removal Action? (yes or no)	Explanation (if excluded)
ORC 3767	Prohibits noxious exhalation or smells, obstruction or pollution of water courses or other nuisances	No	No surface water discharge
ORC 6111	Prohibits pollution of waters within the State	Yes	Mound has NPDES permit
33 USC 1318	Guidelines and standards for effluent, pretreatment standards, and discharge of treatment system effluent	Yes	Mound has NPDES permit
OSHA 29 CFR 1910	Requirements include general standards for worker protection	Yes	
OSHA 29 CFR 1926	OSHA Safety and Health Standards	Yes	
OSHA 29 CFR 1904	OSHA Recordkeeping, Reporting, and Related Regulations	Yes	
DOT 49 CFR 171, 172, 173 & 174	Hazardous materials transportation and hazardous material employee training requirements	Yes	

Table A.1. PRS 111 Removal Action ARAR Screening Summary (cont.)

To Be Considered (TBCs)	Description of TBC	Applicable to PRS 111 Removal Action? (yes or no)	Explanation (if excluded)
55 FR 30798 (July 27, 1990)	Proposed RCRA corrective action regulations	No	No RCRA
49 CFR Part 177 Subpart A	Hazardous Materials Transportation Regulations; Carriage by Public Highways	No	No hazardous materials transportation
DOE Order 1540 1.A	Materials Transportation and Traffic Management	No	No hazardous materials transportation
DOE Order 5400.5	Radiation protection of the public and the environment	Yes	
DOE Order 5480.3	Safety Requirements for the Packaging and Transportation of Hazardous Materials, Hazardous Substances, and Hazardous Wastes	Yes	
DOE Order 5480.4	Environmental Protection Safety and Health Protection Standards	Yes	
DOE Order 5480.15	DOE Laboratory Accreditation Program for Personnel Dosimetry	No	No dosimeters
EPA RAGS	Provides pathway model to correlate risk and contaminant concentration	No	No risk assessment at this time
EPA draft guidance	For cleanup of accidental releases of transuranics to the environment	No	No accidental release of transuranics
OERR 9200.6-303-(91-1)	Health Effects Assessment Summary Tables	No	No risk assessment at this time
EPA guidance EPA/540/2-88/002	Technological Approaches to the Cleanup of Radiologically Contaminated Superfund Sites (8/88)	Yes	
EPA OSWER Directive 9355.0-25A	Use of removal approach to speed up remedial action project (7/89)	Yes	