3786

RESPONSE ACTION SUMMARY/CLOSURE PLAN INFORMATION AND DATA FOR THE DRUM STORAGE AREA SOUTH OF W-26 (LAB BLDG) SEPTEMBER 1992

09/01/92

DS-EES-CO5-R/C-10008
DOE-FN/EPA
50
REPORT

SD-EES-C05-R/C-10008

RESPONSE ACTION SUMMARY/CLOSURE PLAN INFORMATION AND DATA FOR THE DRUM STORAGE AREA SOUTH OF W-26 (LAB BLDG)

Revision 0
September 1992

Fernald Office
U. S. Department of Energy
Fernald Environmental Management Project
7400 Willey Road
Fernald, Ohio 45030

3786

RESPONSE ACTION SUMMARY/CLOSURE PLAN INFORMATION AND DATA FOR THE DRUM STORAGE AREA SOUTH OF W-26 (LAB BLDG)

Revision 0
September 1992

Fernald Office
U. S. Department of Energy
Fernald Environmental Management Project
7400 Willey Road
Fernald, Ohio 45030

2

This page intentionally left blank

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ATTACHMENTS

RESPONSE ACTION SUMMARY/CLOSURE PLAN INFORMATION AND DATA FOR THE DRUM STORAGE AREA SOUTH OF W-26 (LAB BLDG)

U. S. Department of Energy
Fernald Environmental Management Project
Cincinnati, Ohio

1.0 INTRODUCTION

1.1 Purpose

This document fulfills the requirement to submit closure plan information and data for the Drum Storage Area South of W-26 (Lab Bldg), hereafter referred to as hazardous waste management unit No. 5 or HWMU No. 5, as identified in the Resource Conservation and Recovery Act (RCRA) Part A Permit Application, Revision 11, in June 1991 and in the RCRA compliance schedule provided to the Ohio Environmental Protection Agency (OEPA) on August 27, 1991. The compliance schedule was prepared pursuant to Section 3.12 of the Proposed Amended Consent Decree (PACD), Draft 6 of Civil No. C-1-86-0217 between the State of Ohio and the U. S. Department of Energy (DOE) et. al.

The area that includes this unit will be subject to remedial actions pursuant to the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) records of decision (RODs) for Operable Unit No. 3 (OU #3), which addresses the FEMP production area and associated facilities and equipment, and Operable Unit No. 5 (OU #5), which addresses contaminated environmental media. As a result, the RCRA closure plan information and data in this document is discussed in the context of RCRA applicable or relevant and appropriate requirements (ARARs) for CERCLA response activities. The CERCLA activities discussed are in accordance with the September 20, 1991 Consent Agreement (Administrative Docket Number: V-W-90-C-057) between the U. S. Environmental Protection Agency (USEPA) and the DOE.

The purpose of this document is to summarize the background and history of the HWMU and describe how soil sampling of HWMU No. 5 will be conducted to test for hazardous contaminants and characteristics listed in Tables 1 and 2. Analyses of the soil samples will be used to determine if HWMU No. 5 is clean or contaminated.

If no contamination is indicated by sample analyses, a RCRA Closure Certification statement will be submitted for clean closure of HWMU No. 5. However, if contamination is indicated, the need for remediation necessary to protect human health and the environment will be evaluated. Revised closure plan information and data will be prepared to discuss the need for response actions and provide supporting information necessary to determine if the response actions will be conducted as a CERCLA Removal Action and/or final Remedial Action(s) under the USEPA Records of Decision for CERCLA OU #3 (Production Area and Associated Facilities and Equipment) and OU #5 (Contaminated Environmental Media).

A brief summary of each section in this document is described below.

- Section 2 of this document provides a unit description, current use and the history of HWMU No. 5.

- Section 3 discusses sampling activities to be conducted and RCRA regulatory issues to be considered during development and implementation of removal or remediation actions.

- Section 4 presents closure certification to be submitted in the event that the sample analyses results meet "clean" conditions as defined in section 4.0.

- Section 5 discusses the schedule for the proposed sampling and analyses and review of analytical data.

1.2 Facility Background Information

The FEMP is a DOE-owned facility which was formerly operated as the Feed Materials Production Center (FMPC). Facility construction and start up occurred in 1951/1952. The FEMP site is located on 1,050 acres in a rural area of Hamilton and Butler Counties, Ohio. This site is approximately 18 miles northwest of Cincinnati, Ohio. The FMPC production facilities were limited to an approximate 136 acre tract near the center of the site. The villages of Fernald, New Baltimore, Ross, New Haven and Shandon are all located within a 5 mile radius of the plant (Figure 1).

The former FMPC facility was established to produce high-purity uranium metals and intermediate compounds from uranium ore concentrates or recycled uranium materials for use in government defense programs. A wide variety of chemical and metallurgical processes were used to support the production of uranium metal products. Production operations began in the early 1950's and continued until July 1989 when production ceased.

1.3 Regulatory Integration

Pursuant to the 1986 Federal Facilities Compliance Agreement (FFCA), the FEMP is conducting a CERCLA Remedial Investigation and Feasibility Study (RI/FS). In 1989, the FEMP was added to the National Priority List (NPL) of CERCLA sites. The FFCA for the FEMP was amended in June 1990 and September 1991 to reflect additional CERCLA requirements for NPL sites. CERCLA and the Consent Agreements require that all response actions be consistent with the regulations, rules and guidance established to protect human health and the environment. These regulations, rules and guidance are referred to as ARARs. The FEMP is compiling a comprehensive list of ARARs for the site to be evaluated and addressed during the development of CERCLA Removal Action Work Plans and in the RODs for each of the five CERCLA OUs identified in the Compliance Agreements.

Additional discussions of some of the RCRA ARARs applicable to HWMU No. 5 are provided in the following discussions and in Section 3.0 of this document.

1.3.1 Mixed Radioactive and RCRA Hazardous Wastes

Mixed waste is a combination of both radioactive and RCRA hazardous wastes. Waste management activities must comply with all applicable federal and state solid and hazardous waste regulations, including those of the USEPA, OEPA and applicable DOE orders and regulations. DOE orders are administrative orders that govern the conduct of operations at DOE sites. DOE orders apply both to DOE personnel and contractors employed at DOE sites.

Additional restrictions have been imposed since the expiration of the RCRA National Capacity Land Disposal Variance for mixed hazardous and radioactive wastes on May 8, 1992. Because there is still a lack of approved facilities for treatment, storage or disposal of mixed wastes, any action at the FEMP which may generate mixed wastes must be evaluated to determine if the activity is essential for protection of human health and the environment. The FEMP must assess alternative approaches for minimizing the wastes generated at the site. These restrictions will be alleviated if a variance can be obtained from the USEPA; however, waste minimization efforts will still be required to comply with FEMP procedures.

1.3.2 Financial and Liability Exemptions

The FEMP is a federally owned facility. According to OAC 3745-66-40 C, the Federal Government is exempt from financial requirements of OAC 3745-66-40 through OAC 3745-66-48. A similar exclusion from 40 CFR 265 Subpart H Financial Requirements is provided in 40 CFR 265.140(c).

2.0 HWMU DESCRIPTION AND HISTORY

2.1 Waste Management Unit Description

HWMU No. 5 is located in the southwest quadrant of the FEMP, west of Laboratory Building 15 (Figure 2). The area construction, which is the same today as it was when wastes were stored in the area, was not designed for the purpose of hazardous waste storage. It should be noted that the HWMU determination was not completed until after the waste storage practices had been stopped. Since it was not operated as a HWMU, much of the operating documentation required for an active HWMU was not maintained.

The boundaries of HWMU No. 5 were delineated based on interviews with personnel that had worked in the area. The topography of HWMU No. 5 is relatively level and the majority of the area is unpaved. Based on personnel interviews, hazardous waste storage activities were contained within an area 41' by 31'- 8" adjacent to and south of lab room W-26 and west of the Laboratory. On the drawing provided in Figure 3 the perimeter of the HWMU is designated by a bold line, the unpaved area within the HWMU is shaded and the sidewalk is unshaded.

Documentation is not available to verify the information concerning types of wastes and length of storage. To ensure compliance with the PACD requirements to identify all RCRA regulated HWMUs, the Drum Storage Area South of W-26 was identified as a HWMU in the June 1991 Part A Permit Application (Revision 11). The HWMU determination was the based on the suspicion that hazardous wastes might have been stored in excess of 90 days and in quantities exceeding 55 gallons.

2.2 Waste Inventory

Although the types of wastes stored in HWMU No. 5 were not fully documented, some suspect RCRA hazardous waste streams were inferred based on a review of wastes generation records from 1988-1991 for satellite accumulation areas within the Laboratory building. The following suspect waste streams have been identified:

- A variety of waste acids (i.e., hydrochloric, sulfuric, perchloric, nitric and phosphoric acids) and bases (i.e., ammonium, potassium, and sodium hydroxides).

- Spent solvents generated in the labs. It has been reported that most if not all of the spent solvents used in the laboratories were disposed of through the FEMP wastewater treatment system up to 1989. However, it has also been suggested that some of these solvents may have been transferred to the maintenance area in the basement and mixed with the waste oils.

- Waste oils generated from equipment and maintenance activities in the Laboratory Building. On occasion, the waste oils were suspected to have been mixed with spent solvents that may have been subject to RCRA listing criteria.

- Mercury wastes from lab recycling units.

Table 1 provides a target list of waste constituents and characteristics compiled from a review of the available information concerning solvents and compounds used in the Laboratory building.

2.3 Past and Current Use

Based on interviews with area personnel and some limited records of material lot movements, from approximately 1983 until 1989 liquid wastes generated in various labs within the Lab Building (including spent acids and solvents) were transferred and stored in the unit. Since 1989, no hazardous wastes were stored in the HWMU. Information from interviews indicates that plastic carboys of waste materials collected in various laboratory rooms were brought to the area now known as HWMU No. 5 and transferred into 55-gallon drums for temporary storage. The Laboratory personnel interviewed indicated that the normal practices associated with HWMU No. 5 included removal of waste containers (either monthly or quarterly). Wastes removed were evaluated to determine if they contained recoverable uranium. Wastes containing recoverable uranium were reintroduced

into the uranium production process. Waste oils not containing recoverable uranium were either burned in the Trane Incinerator or used for training fire fighters at the fire training area (both have also been identified as HWMUs). The remaining wastes were placed into storage as low-level radioactive wastes.

Due to the ongoing renovation of the Lab, HWMU No. 5 is in the path of construction traffic. In June 1992, discussions were held with representatives of the Division of Hazardous and Solid Waste in the OEPA Southwest District Office. Pursuant to the discussions, the FEMP covered the exposed concrete inside the boundary of HWMU No. 5 with polyethylene sheeting and new 2 ft. square concrete pads. This was done to prevent cross-contamination while materials, personnel and equipment are being moved through the area during construction activities inside the Lab. The plastic sheeting will be maintained until the laboratory renovations are completed and any contamination identified within HWMU No. 5 is removed or remediated.

3.0 RCRA REQUIREMENTS TO BE ADDRESSED

This section discusses the general RCRA requirements applicable to HWMU No. 5. A comprehensive list of RCRA and other ARARs and procedures for incorporating then into CERCLA work plans is being compiled for the site by the FEMP management. The following RCRA ARARs are discussed in this section:

- performance standards
- area surveillance and monitoring
- clean up criteria
- sampling and analyses
- security

3.1 Objectives and Performance Standards

To address Closure Performance Standards in OAC 3745-66-11 (40 CFR 265.111), the activities to be conducted will be in accordance with the following performance standards:

- Minimize the need for further maintenance by conducting soil sampling and analyses to identify and evaluate potential contamination from previous waste management activities.

- Assess the need to control, minimize or eliminate, to the extent necessary to protect human health and the environment, the escape of hazardous waste, hazardous constituents, leachate, contaminated runoff, or hazardous waste decomposition products to the groundwater, surface waters, or to the atmosphere.

- Identify any necessary removal or remediation activities to be conducted in accordance with response action work plans reviewed and approved by the OEPA and/or USEPA.

Wastes generated by sampling and analyses or removal/remediation will be sampled and evaluated according to the RCRA Waste Analysis and Waste Determination Plans as approved by the OEPA. Wastes will be managed as mixed hazardous waste pending final waste determinations. All wastes will be managed, stored, treated or disposed in accordance with applicable OEPA and USEPA solid and hazardous waste requirements and DOE Orders for low-level radioactive wastes.

3.2 Area Surveillance and Monitoring

All hazardous wastes were removed from HWMU No. 5 prior to 1990 and no further hazardous waste management in the unit is planned. Since the waste has been removed, the potential for any future hazardous waste spills causing releases from the HWMU has been eliminated. Based on conversations with FEMP personnel, spill reporting, available records and physical inspections, there is no reason to suspect that the previous waste storage practices resulted in any significant releases of hazardous waste constituents.

General RCRA inspection requirements for HWMUs at the FEMP are stipulated under OAC 3745-65-15 (40 CFR 265.15) and OAC 3745-66-74 (40 CFR 265.174). Until the HWMU No. 5 is closed, or OEPA concurs with stopping these inspections, weekly inspections will be continued to confirm that current activities in the area will not result in additional releases of hazardous wastes that would require additional clean up prior to RCRA closure or completion of the final remediation under the RODs for OU #3 and OU #5.

If soil contamination is identified by analyses, additional soil or groundwater monitoring will be addressed in the revised closure plan information and data prepared to determine additional response actions necessary to protect human health and the environment.

3.3 Clean Up Criteria

Although the OEPA levels for "clean" will be used to determine if RCRA closure can be certified without additional actions (see discussions in Section 4.0), the CERCLA RODs will define the final clean up standards for OU #3 and OU #5. The CERCLA clean-up level in the ROD will be based on site-specific risk-based levels established by an assessment of the risks to human health and the environment. The CERCLA risk assessment will consider the types and concentrations of contamination sources and the potential for releases, environmental transport, and subsequent exposure of the human and environmental receptors.

Based on the soil sample analyses, the need for additional response actions prior to final remediation under the RODs for OU #3 and OU #5 will be evaluated. To ensure the useability of the data obtained for RCRA and CERCLA needs, sampling will be conducted in accordance with the SAP provided in Attachment A. The evaluation of the need for clean up, removal or remediation will consider background concentrations being established by the FEMP Background Study for Soils and available CERCLA risk-based criteria being developed under the CERCLA RI/FS and FEMP Environmental Restoration activities. Revised closure plan information and data will be prepared in which the results of the evaluation will be used to determine if response actions will be conducted as a CERCLA Removal Action and/or final Remedial Action(s) under the USEPA Records of Decision for CERCLA OU #3 and OU #5.

3.4 Sampling and Analyses

To survey for possible contamination from previous hazardous waste management activities in this unit, five (5) locations will be sampled and analyzed for the waste constituents and characteristics listed in Table 1. One (1) location will be sampled and analyzed for the constituents listed in the FEMP RI/FS Full Hazardous Substance List (Full HSL), provided in Table 2, to evaluate possible contamination from other sources. The samples to be collected include:

1) Eighteen (18) soil samples (i.e., three (3) samples from each of the six (6) sampling locations - See Figure 3). The three soil samples from the southwest corner of HWMU No. 5 (identified in Figure 3 as location S-6) will be analyzed for the compounds listed in Table 2 (i.e., the RI/FS Full HSL). The remaining 15 samples will be analyzed for the targeted waste constituents and characteristics listed in Table 1.

2) Quality Assurance and Quality Control (QA/QC) samples consistent with the current requirements of the FEMP Sitewide CERCLA Quality Assurance Project Plan (SCQ) and the attached Sampling and Analysis Plan (SAP).

The concrete will not be sampled. Based on OEPA guidance, evaluation of concrete contamination would require construction of containment barriers to enable rinsing the concrete surfaces and collection of rinseate samples for analyses. Because there is no run-off control to contain spills and rain, it is reasonable to assume that previous spills and any resulting contamination of the concrete would have been washed or leached into the soil over the past three years (i.e., since hazardous waste storage in the area was discontinued). Therefore, results from soil analyses will be used to evaluate potential contamination of the concrete.

3.4.1 Soil Sampling

Six (6) judgmental sampling locations, as shown in Figure 3, have been identified:

- two (2) located in the unpaved area adjacent to lab room W-26 and
- four (4) in the unpaved area located on the south side of the sidewalk.

Within each of these six (6) sampling locations, three (3) samples will be taken:

- one (1) sample taken from 0" to 6",
- one (1) sample taken from 6" to 18" and
- one (1) sample taken from 18" to 30" below the grade.

A total of eighteen (18) soil samples will be taken. The specific sampling procedures are discussed in the Sampling and Analysis Plan (SAP). See Attachment A.

3.5 Security

The boundary of HWMU No. 5 has been roped off and identification signs have been posted. As with all Department of Energy (DOE) facilities, security at the FEMP is strict. The entire FEMP processing area, which includes HWMU No. 5, is surrounded by chain link fencing and monitored by on-site security personnel. All employees and visitors enter through one of several guarded entrances into the administration and processing area. Site visitors that have not received the required site-specific training are escorted to prevent unauthorized entry into controlled areas.

4.0 CONTINGENT RCRA CLOSURE CERTIFICATION

RCRA certification for closure of HWMU No. 5 will be made if the following criteria is met:

1. The sample analyses do not detect any of the organics listed in Tables 1 and 2 in excess of the Practical Quantitation Limits (PQL).

2. The sample analyses do not detect any of the inorganics listed in Table 1 and 2 above background concentrations plus two (2) standard deviations, as determined by the approved FEMP Background Soil Study.

3. The sample analyses confirms that soils do not exhibit RCRA hazardous waste characteristics listed in Table 1.

The report of sample analyses shall include the Method Detection Limits (MDL) and the PQL for the methods specified in SW-846.

If contamination is indicated, the potential risks will be evaluated to determine if remediation is necessary to protect human health and the environment. Revised closure plan information and data will be prepared to define what response actions are needed. The revised information and data will provide supporting information necessary to determine if the response actions will be conducted as a CERCLA Removal Action and/or final Remedial Action(s) under the USEPA Records of Decision for CERCLA OU #3 and OU #5.

4.1 Certification Inspections and Documentation

To support RCRA closure certification and/or provide documentation for the CERCLA Administrative Record, inspections by the owner (DOE) and an independent, qualified, registered Professional Engineer, or his/her designated representatives, will be maintained to confirm that actions conform to this document, as approved. Documentation will include:

- a daily log of activities
- field notes recorded by the owner or their representative during sampling activities
- sampling plans
- copies of the laboratory analyses and analytical quality assurance reports
- copies of the hazardous waste manifests (if used)
- chain of custody forms used for sample handling and tracking
- certification statements by both the owner and Professional Engineer.

If RCRA closure is certified, the certification statement, provided in Section 4.2, will be submitted and the supporting certification documentation will be retained in the operating record at the FEMP for access and inspection by the OEPA and USEPA.

4.2 Statement of Certification

The DOE, and an independent, qualified, registered Professional Engineer will submit certification of closure within 60 days of the determination that HWMU No. 5 is clean. The certification will meet the requirements of OAC 3745-50-42(D) and OAC 3745-66-15 and 40 CFR 270.11(d) and 40 CFR 265.115. The certification statement will be worded as follows:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

_____

U. S. Department of Energy

I hereby certify that all activities in this plan for this hazardous waste management unit has been accomplished in accordance with the specifications in the approved plan.

_____

Ohio Registered Professional Engineer

5.0 SCHEDULE

To comply with internal DOE orders and other regulatory requirements, several FEMP project-specific activities must be undertaken before initiating the actions discussed in this document. Project-specific activities include completing necessary documentation and work plans to obtain authorization for conducting field activities and scheduling of sampling and analytical services. Final project-specific activities must be completed after the plan has been approved by the OEPA to incorporate any revisions to the plan. Project-specific activities are indicated in the Schedule of Activities (Figure 4) as internal activities to prepare for sampling and may be initiated before plan approval. It is expected that these activities, conducted concurrently, will require up to 180 days to complete.

Assuming no modifications to the plan are required or unexpected events are encountered, it is expected that sampling, analyses and review activities can be completed within 210 days from the date sampling begins. The schedule assumes that funding and support personnel are available to complete all activities. The schedule does not anticipate unexpected events; such as adverse weather, samples lost or damaged in shipment, or invalidated data due to the analytical laboratory exceeding sample holding times. If necessary, a request for an extension of the time required for completion of activities will be submitted to the agency according to OAC 3745-66-13(A) and OAC 3745-66-13(B) [40 CFR 265.113(a) and 40 CFR 265.113(b)].

The OEPA and an independent, qualified, registered Professional Engineer will be notified at least five (5) business days before any sampling activities begin.

TABLE 1: TARGETED WASTE CONSTITUENTS/CHARACTERISTICS

WASTE CONSTITUENT/CHARACTERISTIC	CHEMICAL ABSTRACT SYSTEM (CAS) NO.
Acetone	67-64-1
Acetonitrile	75-05-8
Benzene	71-43-2
Butanol	71-36-3
Carbon Tetrachloride	56-23-5
Chloroform	67-66-3
Cyanide (Compounds)	57-12-5
Cyclohexane	110-82-7
1,1-Dichloroethane [1]	75-34-3
1,2-Dichloroethane [1]	107-06-2
1,1-Dichloroethylene [1]	75-35-4
1,2-Dichloroethylene [1]	540-59-0
Ethyl Acetate	141-78-6
Ethyl Ether	60-29-7
Lead	7439-92-1
Mercury	7439-97-6
Methanol	67-86-1
Methylene Chloride	75-09-2
Methyl Isobutyl Ketone	108-10-1
Phenol	108-95-2
Tetrachloroethylene	127-18-4
Tributyl Phosphate	126-73-8
Trichloroethylene	127-18-4
1,1,1-Trichloroethane	71-55-6
1,1,2-Trichloroethane	79-01-6
Xylene	1330-20-7
Vanadium [1]	7440-62-2
Vinyl Chloride [1]	75-01-4
RCRA Waste Characteristics:	
Corrosivity [2]	Not Applicable
Ignitability	Not Applicable
Reactive Cyanide	Not Applicable
Radiological:	
Gross Alpha and Gross Beta [3]	Not Applicable
Total Uranium [3]	Not Applicable-Group of Compounds
Total Thorium [3]	Not Applicable-Group of Compounds

[1] Included on target list as possible degradation products of suspect waste constituents of wastes generated in the laboratories.

[2] Acid/Base contamination will be evaluated based on pH measurements used to evaluate the RCRA corrosivity characteristic hazards.

[3] Radiological parameters covered by CERCLA remediation that are not regulated by RCRA.

TABLE 2: FEMP RI/FS - FULL HSL - ANALYTICAL PARAMETERS

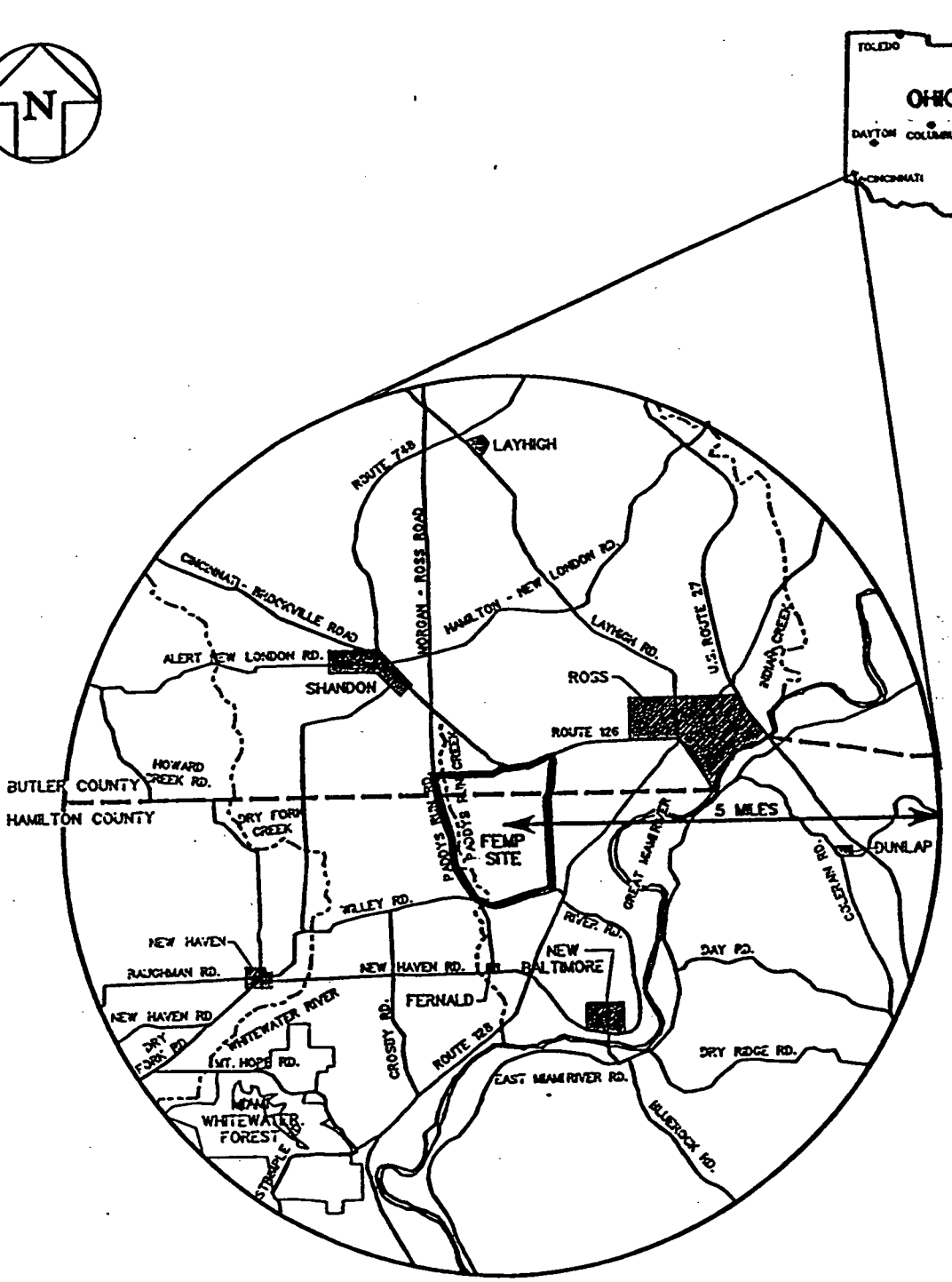
INORGANICS	CAS No.
Aluminum	7429-90-5
Antimony	7440-36-0
Arsenic	7440-38-2
Barium	7440-41-7
Beryllium	7440-39-3
Cadmium	7440-43-9
Calcium	7440-70-2
Chromium	7440-47-3
Cobalt	7400-48-4
Copper	7440-50-8
Cyanide	57-12-5
Iron	7439-89-6
Lead	7439-92-1
Magnesium	7439-95-4
Manganese	7439-96-5
Mercury	7439-97-6
Molybdenum	7439-98-7
Nickel	7440-02-0
Potassium	7440-09-7
Selenium	7782-49-2
Silver	7440-22-4
Sodium	7440-23-5
Thallium	7440-28-0
Vanadium	7440-62-2
Zinc	7440-66-6

PESTICIDES/PCBs	CAS No.
4,4'-DDD	72-54-8
4,4'-DDE	72-55-9
4,4'-DDT	50-29-3
Aldrin	309-00-2
alpha-BHC	319-84-6
alpha-Chlordane	5103-71-9
Aroclor 1016	12764-11-2
Aroclor 1221	11104-28-2
Aroclor 1232	11141-16-5
Aroclor 1242	53469-21-9
Aroclor 1248	12672-29-6
Aroclor 1254	11097-69-1
Aroclor 1260	11096-82-5
beta-BHC	319-85-7
delta-BHC	319-86-8
Dieldrin	60-57-1
Endosulfan sulfate	1031-07-8
Endosulfan I	959-98-8
Endosulfan II	33213-65-9
Endrin	72-20-8
Endrin aldehyde	7421-93-4
Endrin ketone	53494-70-5
gamma-BHC	58-89-9
Heptachlor	76-44-8
Heptachlor epoxide	1024-57-3
Methoxychlor	72-43-5
Toxaphene	8001-35-2

VOLATILE ORGANICS	CAS No.
1,1-Dichloroethane	75-34-3
1,1-Dichloroethylene	75-35-4
1,1,1-Trichloroethane	71-55-6
1,1,2-Trichloroethane	79-00-5
1,1,2,2-Tetrachloroethane	79-34-5
1,2-Dichloroethene	540-59-0
1,2-Dichloroethane	107-06-2
1,2-Dichloropropane	78-87-5
2-Hexanone	591-78-6
4-Methyl-2-pentanone	106-10-1
Acetone	67-64-1
Benzene	71-43-2
Bromodichloromethane	75-27-4
Bromoform	75-25-2
Bromomethane	74-83-9
Carbon disulfide	75-15-0
Carbon tetrachloride	56-23-5
Chlorobenzene	108-90-7
Chloroethane	75-00-3
Chloroform	67-66-3
Chloromethane	74-87-3
cis-1,3-Dichloropropene	10061-01-5
Dibromochloromethane	124-48-1
Ethylbenzene	100-41-4
Methyl ethyl ketone	78-93-3
Methylene chloride	75-09-2
Styrene	100-42-5
Tetrachloroethene	79-01-6
Toluene	108-88-3
trans-1,3-Dichloropropene	10061-02-6
Trichloroethene	127-18-4
Vinyl Acetate	108-05-4
Vinyl chloride	75-01-4
Xylene (total)	1330-20-7

SEMIVOLATILE ORGANICS	CAS No.
1,2-Dichlorobenzene	95-50-1
1,2,4-Trichlorobenzene	120-82-1
1,3-Dichlorobenzene	541-73-1
1,4-Dichlorobenzene	106-46-7
2-Chloronapthalene	91-58-7
2-Chlorophenol	95-57-8
2-Methylnaphthalene	91-57-6
2-Methylphenol	95-48-7
4-Methylphenol	106-44-5
2-Nitroaniline	88-74-4
2-Nitrophenol	88-75-5
2,4-Dichlorophenol	120-83-2
2,4-Dimethylphenol	105-67-9
2,4-Dinitrophenol	51-28-5
2,4-Dinitrotoluene	121-14-2

SEMIVOLATILE ORGANICS	CAS No.
2,4,5-Trichlorophenol	95-95-4
2,4,6-Trichlorophenol	88-06-2
2,6-Dinitrotoluene	606-20-2
3-Nitroaniline	99-09-2
3,3'-Dichlorobenzidine	91-94-1
4-Bromophenyl phenyl ether	101-55-3
4-Chloro-3-methylphenol	59-50-7
4-Chloroaniline	106-47-8
4-Chlorophenyl-phenyl ether	7005-72-3
4-Methylphenol (p-Cresol)	106-44-5
4-Nitroaniline	100-01-6
4-Nitrophenol	100-02-7
4,6-Dinitro-2-methylphenol	534-52-1
Acenaphthene	83-32-9
Acenaphthylene	208-96-8
Anthracene	120-12-7
Benzoic Acid	65-85-0
Benzo[a]anthracene	56-55-3
Benzo[a]pyrene	50-32-8
Benzo[b]fluoranthene	205-99-2
Benzo[ghi]perylene	191-24-2
Benzo[k]fluoranthene	207-08-9
Benzyl alcohol	100-51-6
Bis(2-chloroethoxy)methane	111-91-1
Bis(2-chloroethyl)ether	111-44-4
Bis(2-chloroisopropyl) ether	108-60-1
Bis(2-ethylhexyl)phthalate	117-81-7
Butyl benzyl phthalate	85-68-7
Carbazole	86-74-8
Chrysene	218-01-9
Dibenzofuran	132-64-9
Dibenz[a,h]anthracene	53-70-3
Diethyl phthalate	84-66-2
Dimethyl phthalate	131-11-3
Di-n-butyl phthalate	84-74-2
Di-n-octyl phthalate	117-84-0
Fluoranthene	206-44-0
Fluorene	86-73-7
Hexachlorobenzene	118-74-1
Hexachlorobutadiene	87-68-3
Hexachlorocyclopentadiene	77-47-7
Hexachloroethane	67-72-1
Indeno(1,2,3-cd)pyrene	193-39-5
Isophorone	78-59-1
Naphthalene	91-20-3
Nitrobenzene	98-95-3
N-Nitroso-di-n-propylamine	621-64-7
N-Nitrosodiphenylamine	86-30-6
Pentachlorophenol	87-86-5
Phenanthrene	85-01-8
Phenol	108-93-2
Pyrene	129-00-0



1 ½ 0 1 2 3

SCALE IN MILES

FIGURE 1

FEMP AND VICINITY MAP

DATE: 4-15-92 DRAWN: D.TEEL	U.S. DEPARTMENT OF ENERGY FERNALD, OHIO	DWG. NO.: 089-1-0022

N

NORTH ACCESS ROAD

SOUTH ACCESS ROAD

E 55+00

F STREET

E STREET E 53+45

D STREET E 48+50

C STREET E 45+50

B STREET E 42+00

A STREET E 35+00

S 5+00

S 19+25

S 32+00

S 35+00

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32

74P DECONTAMINATION PAD

COAL PILE

DRUM STORAGE AREA SOUTH OF W-26 (LAB)

WESTINGHOUSE ENVIRONMENTAL MANAGEMENT CO. OF OHIO
FERNALD, OHIO
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
U.S. DEPARTMENT OF ENERGY

AREA LOCATION MAP
FIGURE 2
DRUM STORAGE AREA SOUTH OF W-26 (LAB)

DATE 8/7/92
DRAWN S.J.SMOCK

FILE NAME: /USR/STEVE/MAPS/1971FIG2.DGN

N

MATCH LINE, SEE DWG. NO.
75H-5500-G-00025, GRID 14

MATCH LINE, SEE DWG. NO.
75O-5500-G-00019, GRID 20

1ST STREET S 26+75

BLDG. 15
LABORATORY

E 39+71.4 S 28+35.5 MH 96

E 39+59.2 S 28+48.3 CB 187

CB 188 E 39+67.33 S 29+42.00

MH 97 E 39+67.33 S 29+50.52

CB 191 E 38+67.33 S 29+42.00

E 38+65.24 S 28+49.27 CB 190

E 38+12 S 28+35.5 MH 107

SUMP

E 38+60.2 S 26+90.8 LFH 25

E 38+27.00 S 27+02.50 SMH 110

E 38+14.0 S 26+97.0 MH 16

E 37+04.8 S 26+97 MH 83

E 37+01.4 S 26+90.17 HFH 138

CB 55 E 37+30.5 S 28+51.9

CB 24 E 37+30.0 S 28+06.9 (ABANDONED)

LFH 26 E 36+85.0 S 28+16.5

MH 114 E 37+04.8 S 28+22

E 37+56.36 S 30+27.94

W-18 W-16 W-26

S1 S2 S3 S4 S5 S6

31'-8"

41'-0"

HWMU DRUM STORAGE AREA

SI- REPRESENTS SAMPLING LOCATIONS

N2 TANK

ARGON TANK

1403 2053 3053 1053 1255 1262 1263 1266 1269 1270 1271

T-62 T-61 T-22 T-21 T-20

T-523 T-536 T-520 T-510 T-511

T-620 T-619 T-601 T-602 T-603

T-631

MATCH LINE, SEE DWG. NO.
75A-5500-G-00105, GRID 29

S+32+00

MATCH LINE, SEE DWG. NO.
75G-5500-G-00023, GRID 26

UNPAVED AREA

LEGEND

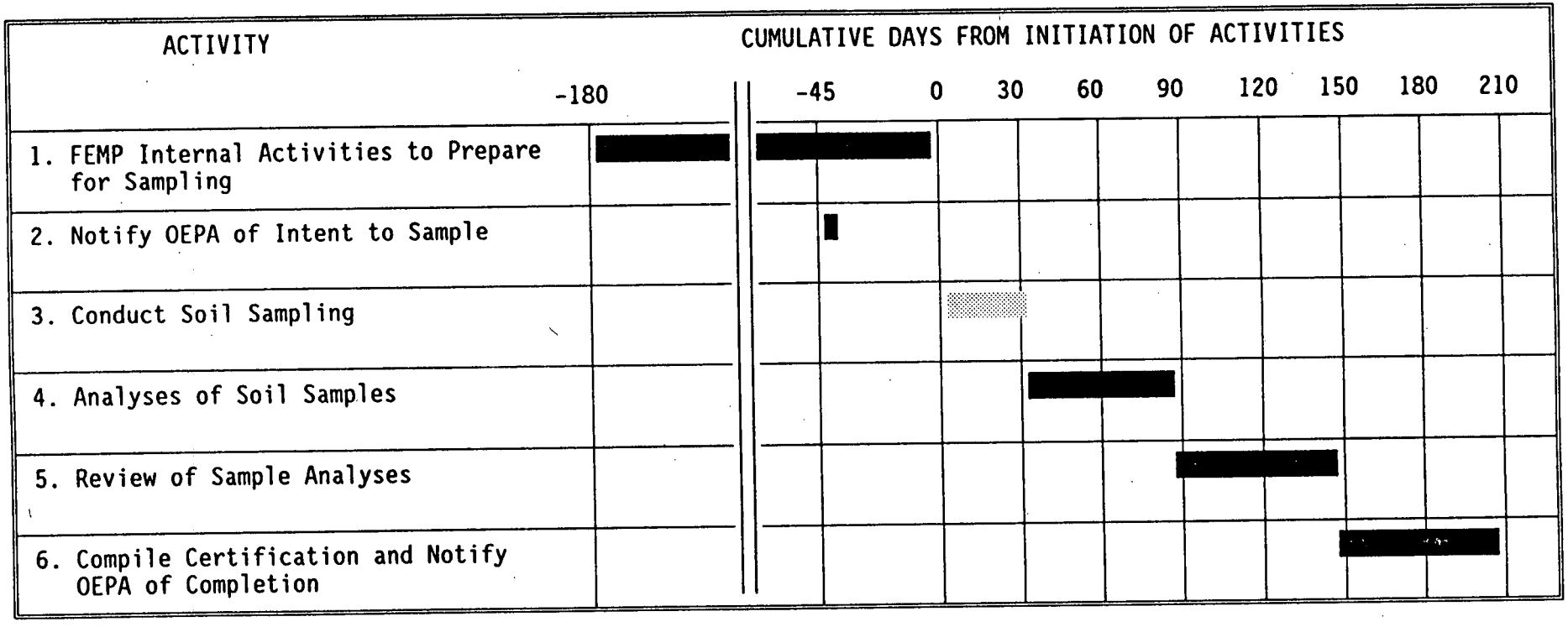
- POST INDICATOR VALVE (P.I.V.)
- FIRE HYDRANT (F.H.)
- MANHOLE (MH)
- CATCH BASIN (CB)
- LIGHT POLE
- PIPE SUPPORT
- ELECTRICAL MANHOLE
- TELEPHONE MANHOLE
- STREET WASHERS
- 0000 MONITORING WELL

WESTINGHOUSE ENVIRONMENTAL MANAGEMENT CO. OF OHIO
FERNALD, OHIO
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
U.S. DEPARTMENT OF ENERGY

AREA/UNIT PLAN
FIGURE 3
LABORATORY & AREA SOUTH OF W-26

DATE 8/10/92
DRAWN S.J.SMOCK

FILE NAME: /USR/STEVE/MAPS/197IFIG3.DGN



Notes:

▒ - Indicates critical activities when an independent, qualified, registered Professional Engineer or his representative should be present.

FIGURE 4: SCHEDULE OF RCRA ACTIVITIES FOR THE DRUM STORAGE AREA SOUTH OF W-26 (LAB BLDG)

This page intentionally left blank

ATTACHMENT A

SAMPLING AND ANALYSIS PLAN

FOR THE

DRUM STORAGE AREA SOUTH OF W-26 (LAB BLDG)

Revision 0
September 1992

Fernald Office
U. S. Department of Energy
Fernald Environmental Management Project
7400 Willey road
Fernald, Ohio 45030

This page intentionally left blank

TABLE OF CONTENTS

This page intentionally left blank

1.0 INTRODUCTION

This Sampling and Analysis Plan (SAP) was prepared to support the Response Action Summary / Closure Plan Information (RAS/CPID) and Data for the Drum Storage Area South of W-26 (Lab Bldg), hereafter referred to as hazardous waste management unit No. 5 (HWMU No. 5).

This SAP describes the sample collection and handling procedures, references analytical methods and specifies the quality assurance/quality control (QA/QC) procedures for soil sampling in HWMU No. 5 (see Section 3.4 of the RAS/CPID). All sampling and analyses will follow approved procedures discussed in this SAP. This SAP is prepared to be consistent with the current draft or approved version of the FEMP Site-Wide CERCLA Quality Assurance Project Plan (SCQ). Sampling and analytical procedures will also comply with the U.S. EPA "Test Methods for Evaluating Solid Wastes" (SW-846).

1.1 Sampling Objectives

Sampling of soil in and around HWMU No. 5 is being conducted to determine if there is any indication of area contamination from previous waste management activities or other sources. The analytical results generated will be reviewed following the schedule provided in Table 4 of the RAS/CPID for HWMU No. 5. Soil sampling for HWMU No. 5 will meet the following objectives:

1) Collect representative samples from the soil within HWMU No. 5 to identify the presence of contamination.

2) Evaluate possible contamination (see Table A-1) from previous hazardous waste management activities associated with HWMU No. 5.

3) Survey for possible contamination (see Table A-2) from other sources that may be present in the soils.

All wastes and materials being held for RCRA determinations will be managed in a manner consistent with mixed radioactive and hazardous waste management practices. Wastes determined to be RCRA hazardous will be managed, stored, treated, and disposed according to applicable hazardous waste rules and regulations and DOE orders for radioactive wastes.

1.2 Sampling Analyses

Five (5) soil samples will be analyzed for waste constituents listed in Table A-1 (sample locations S1, S2, S3, S4 and S5 in Figure 3 in the RAS/CPID). Sample location S6 (see Figure 3 in RAS/CPID) will be analyzed for waste constituents listed in Table A-2.

Table A-1 is based on an inventory of solvents, acids and oils generated or used in the Lab. Table A-2 is the Full Hazardous Substances List (Full HSL) as defined for FEMP Remedial Investigation / Feasibility Study (RI/FS). Analyses will be conducted using methods specified in the FEMP SCQ. Where the SCQ does not specify a method, applicable SW-846 analytical methods will be used.

Radiological analyses, using analytical methods specified in the FEMP Laboratory Analytical Methods Manual, will be conducted to determine gross alpha and beta, total uranium and total thorium levels in collected samples.

Quality Assurance and Quality Control (QA/QC) samples will also be collected consistent with the current requirements of the FEMP SCQ and discussions in Section 4.0 of this SAP.

2.0 SAMPLE COLLECTION

The following sections discuss the procedures that will be used for sampling in support of the RAS/CPID for HWMU No. 5.

2.1 Sampling Equipment

The following equipment may be used to collect samples from the soil within the boundaries of HWMU No. 5:

- Bucket or hand auger (stainless steel)
- Bowls or buckets (stainless steel or other suitable material)
- Spoons, scoops or trowels (stainless steel or other suitable material)
- Spatulas (stainless steel or other suitable material)
- Sample bottles and sample preservatives
- Thermal coolers and freezer packs
- Sample labels
- Waterproof marking pen
- Field sampling logbook and field data forms
- Chemical resistant gloves
- Polyethylene or other approved impervious sheeting

This list may be modified, as appropriate, by a trained, qualified sampling supervisor or manager. Any change to this list will be noted in the field sampling logbook.

2.2 Soil Sampling

Samples of the soil in the unpaved areas will be taken, as indicated in the closure plan, to determine the presence of targeted RCRA waste constituents/ characteristics listed in Table A-1 and HSL contaminants listed in Table A-2, for Sample location S6.

Before initiating any sampling activities at the HWMU, site blueprints will be reviewed with the facility engineer to determine if there are any known underground utilities, pipes, wiring or other similar structures. Underground structures will be identified and marked at the unit to prevent sampling in these areas. Sampling or decontamination activities will not be conducted during adverse weather (e.g., rain, snow).

2.2.1 Soil Sampling Locations

The six (6) sampling locations (see Figure 3) are as follows:

S1 located between the sidewalk and room W-26 in the unpaved area.

S2 located between the sidewalk and room W-26 in the unpaved area.

S3 located between the sidewalk and the south perimeter of HWMU No. 5 in the unpaved area.

S4 located between the sidewalk and the south perimeter of HWMU No. 5 in the unpaved area.

S5 located between the sidewalk and the south perimeter of HWMU No. 5 in the unpaved area.

S6 located between the sidewalk and the south perimeter of HWMU No. 5 in the unpaved area.

A total of eighteen (18) soil samples will be taken (i.e. one (1) sample taken at each of the following depths:

- 0" to 6",
- 6" to 18" and
- 18" to 30"

for a total of three (3) samples per sample location).

2.2.2 Soil Sampling Procedures

The following procedures will be used to collect samples of the soil within the boundaries of the HWMU:

1) Place clean polyethylene or other approved impervious sheeting on the ground to protect sampling equipment from contamination.

2) Use a clean stainless steel bucket auger or soil coring device to advance the soil boring to extract a soil sample from a the 0" to 6" depth from the surface.

3) Use a clean spatula (stainless steel or other suitable material), or other approved device to remove soils from the auger and place them into a stainless steel pan (or remove soil core cylinder).

4) To composite the sample (if using the soil auger), divide the sample volume into four quarters within the pan. Mix opposite quarters together, then mix resulting halves together into a single volume. Repeat this step.

5) Using the spatula or other approved device, transfer a sample from the mixed soils in the pan into the appropriate sample container (or, if using a soil core sampler, cap the sample cylinder). Follow container management procedures in Section 2.3.

6) Repeat steps 2, 3, 4 and 5 to obtain soil samples from 6" to 18" and 18" to 30" depths from the surface.

7) Upon completion of sampling the soil, decontaminate all sampling equipment used, following procedures in Section 2.4 of the SAP. Sampling equipment that cannot be decontaminated shall be managed in a manner consistent with FEMP hazardous waste management practices pending a RCRA hazardous waste determination.

Upon completion of sampling all samples will be managed following the procedures discussed in Section 2.3. Samples will be analyzed by an analytical laboratory designated by the FEMP using methods specified in the FEMP SCQ. Where the SCQ does not specify a method, applicable SW-846 methods will be used.

2.3 Management of Sample Containers

Once a sample has been placed inside a sample container it will be managed as follows:

1) For all samples: Tightly close the lid, seal the lid with custody tape and attach appropriate label that has been filled out using indelible ink.

2) Record the sample label and container information in the field sampling logbook and on a Sitewide Sample Analysis Request/Custody Record (SAR/CR) form.

3) Immediately place sample containers into a sample cooler that will maintain samples at approximately 4° C.

4) Record all transfers of sample custody on the SAR/CR form.

5) To maintain chain-of-custody, ensure that access to all samples is controlled. This requires the sample collector or designated sample custodian to:

   - have constant direct physical control,
   - use a locked limited access area under his/her control, or
   - affix signed container custody seals on samples or sample coolers.

When the planned sampling activity has been completed, secure the lid of the sample cooler and transfer the samples to the FEMP Sample Processing Laboratory.

The FEMP Sample Processing Laboratory will be responsible for ensuring custody records are maintained during shipment to the laboratory selected to conduct the analyses.

2.4 Equipment Decontamination

Before beginning any decontamination procedures, all personnel shall inspect their clothing to ensure that clean clothing or clean disposable outer coveralls are used. Clean, chemical-resistant gloves will be used during the decontamination process and when handling any clean equipment. Equipment decontamination procedures are discussed in the following sections.

2.4.1 Decontamination Supplies

Supplies used in decontamination may vary based on the media being sampled and the type of contamination encountered. The following basic list of supplies may be modified, as necessary, by a trained, qualified supervisor or manager:

- Laboratory grade non-phosphate detergent solution
- Long-handled scrapers (stainless steel, glass)
- Long-handled, soft bristled brushes
- Portable low-pressure water sprayer
- Potable water
- Deionized water (organic free)
- Reagent grade ethanol
- Dilute (0.02 normal) hydrochloric or sulfuric acid rinse
- Polyethylene or other approved impervious sheeting
- Heavy duty plastic bags
- Absorbent materials, socks, and pads
- Wash/rinse tubs, buckets, or other approved containers

2.4.2 Decontamination Procedures

All reusable equipment will be decontaminated after each use. If decontamination is not practical, the equipment will be managed in a manner consistent with FEMP hazardous waste management practices pending RCRA hazardous waste determination. The following procedures will be used to decontaminate equipment:

1) Establish a decontamination area in a location that is protected from potential contamination. Use a double thickness of 6-mil polyethylene, or other approved impervious sheeting, to line the decontamination area. As appropriate, construct containment dikes for control of run-off.

2) Provide appropriate containers for containment, handling, and collection of wastes and rinse water. Non-liquid wastes shall be collected in a heavy duty plastic bag, 55-gallon drum, or other approved container. Liquid wastes will be collected in buckets and/or placed into 55-gallon drums or other approved liquid storage containers.

3) Remove visible residues and stains from the equipment by brushing, scraping, or scrubbing.

4) Rinse with potable water.

5) Wash with a non-phosphate, laboratory-grade detergent and potable water solution.

6) Rinse with potable water.

7) Rinse with a dilute acid solution. (NOTE: Residual acids in used rinse solutions will be neutralized.)

8) Rinse with potable water.

9) Rinse with a solvent solution (i.e., ethanol).

10) Triple rinse with deionized, organic-free water.

11) Air dry in a dust-free environment. Cover with clean plastic sheeting.

12) Upon completion of decontamination of sampling equipment, wash the buckets and other containers used for temporary storage of the decontamination wash and rinse wastes with clean detergent solution and rinse twice with deionized water.

An equipment decontamination rinseate sample will be collected each day sampling is conducted. The sample will be collected using the procedures described in section 4.1 of this SAP.

2.5 Wastes Generated During Sampling and Decontamination

Non-liquid wastes and wastewaters collected during sampling and decontamination of sampling equipment and miscellaneous wastes (e.g., plastic sheeting, brushes, and disposable protective clothing), will be managed in a manner consistent with FEMP hazardous waste practices pending RCRA determinations. Waste determinations shall be performed on the materials following the FEMP Waste Analysis and Waste Determination Plans, as approved by the OEPA. Wastes will be managed and disposed according to all applicable radiological, hazardous and solid waste rules and regulations.

3.0 FIELD DOCUMENTATION AND SAMPLE HANDLING

Sample handling and documentation procedures shall conform to approved FEMP procedures applicable at the time closure activities are conducted. The information in the following sections presents the procedures to follow after the samples have been collected.

3.1 Field Sampling Logbook

A field sampling logbook will be kept and updated to document information pertinent to the RCRA closure sampling activities. At a minimum, the entries in the logbook will include the following:

- Name of supervisor(s) responsible for HWMU management
- Name of FEMP closure project manager
- Maps, drawings, or photographs of the sampling site
- Purpose of sampling (e.g., verification of decontamination)
- Description and location of sampling points
- Description of sampling methods and field sampling activities (e.g., containers, types of samples, etc.)
- Documentation of any deviations from this SAP
- Weather conditions at the time samples are collected
- Number, type, and volume of samples taken
- Date and time of collection
- Field sample identification number(s)
- Names of sampling personnel
- Date and time of transfer to sample receiving/shipping area
- Field observations (e.g., spills or other activities nearby)
- Data from field measurements (e.g., pH, specific conductance)
- Signatures of persons responsible for maintaining the logbook

The logbook will record information sufficient to reconstruct the sampling event without reliance on the collector's memory. The logbook shall be stored and maintained according to FEMP document control procedures.

3.2 On-Site Handling/Processing Procedures

Sample coolers, along with the signed and complete a SAR/CR form, will be taken to the designated FEMP Sample Processing Laboratory. Each person who relinquishes or takes possession of the samples or sample coolers shall sign the Custody Record portion of the SAR/CR and record the date and time of transfer.

The FEMP will characterize radiation levels associated with the samples to determine disposition of the samples for analyses.

4.0 QUALITY ASSURANCE AND QUALITY CONTROL

Quality Assurance/Quality Control (QA/QC) procedures are required to identify, evaluate, and control conditions and activities that can affect the quality and validity of the analytical data obtained from sampling and analyses. Validation of data requires accurate records to document procedures and conditions during the sampling and analyses. At a minimum, these records will include:

- an updated field sampling logbook
- properly completed sample labels
- field and laboratory QA/QC samples
- completed SAR/CR forms

Quality assurance procedures will include:

1) Only clean sample containers will be used.

2) Clean chemical resistant gloves will be used whenever contact is made with the sampling equipment.

3) Sampling containers and collection equipment shall be handled, stored, and maintained in a manner that prevents cross-contamination.

4) Any field conditions, events, or activities that may affect analytical results will be documented in the field sampling logbook (see Section 3.1 of this SAP).

Sampling activities will be conducted consistent with applicable FEMP QA/QC procedures as defined in the current revision of the SCQ. The following sections discuss field QA/QC, laboratory QA/QC, and SAR/CR forms.

4.1 Field QA/QC Procedures

To prevent cross-contamination between samples and locations, only clean or decontaminated sampling equipment will be used. When sampling equipment is decontaminated following collection of a sample, a sample of the final rinseate will be collected and analyzed for the waste constituents listed in Table A-1. These samples will confirm that decontamination was effective. One (1) sample of the final rinseate from sampling equipment decontamination will be collected for every twenty samples collected per sampling event, using the following procedure:

1) Pour deionized water over and through the cleaned surfaces of the decontaminated equipment.

2) Collect the deionized water rinseate using an appropriate sample container.

3) Follow container management procedures in Section 2.3 of the SAP.

Blanks will be collected and analyzed as part of normal QC procedures. At a minimum, the following samples will be collected each sampling event:

- one (1) container/trip blank, a sample of clean deionized water prepared in a non-contaminated area and taken into the field during each sampling event.

- one (1) field blank, a grab sample of the deionized rinse water supply, collected in the field.

To evaluate the impact of field sampling activities on analytical precision (i.e., repeatability of results), field duplicate samples will be collected. One (1) duplicate sample of the decontamination verification rinseate will be

collected for each sampling event and one (1) duplicate sample of the soil within the unit will be collected for each sampling event. If requested, additional duplicate samples will be collected for QC confirmation by an independent laboratory.

4.2 Laboratory QA/QC Procedures

The analytical laboratory, designated to analyze the samples, shall use the approved method as specified in the SCQ for the constituents of concern. Where the SCQ does not specify a method, the analytical laboratory shall use the approved SW-846 methods. The laboratory will document the use and results of laboratory quality control samples and analyses. Laboratory samples for quality control (QC) may include:

- sample preparation blanks to detect residual contamination of analytical equipment that may affect analytical results,
- duplicate samples prepared in the laboratory to evaluate the precision (i.e., the ability to reproduce analytical results) achieved by the methods used.
- Laboratory control and calibration verification samples (to verify calibration of the equipment).
- Matrix-Spike samples to evaluate analytical recovery rates.
- laboratory equipment blanks to detect residual contamination of analytical equipment that may affect analytical results,

All pertinent information concerning problems and conditions that may affect the validity of the analytical data must be clearly identified. In addition to laboratory QC and analytical data, information to be provided by the laboratory includes:

- Name of person receiving the sample
- Date and time of sample receipt
- Laboratory sample number (if different from field ID)
- Date and time of sample analyses
- Signature of the laboratory supervisor

Conditions outside the control of the laboratory that could affect sample quality and validity of analytical results shall also be documented by the laboratory. These include items such as:

- discrepancies between sample shipping records, sample analytical requests, custody records and the sample shipments as received by the laboratory,

- sample containers and packaging problems, such as broken containers, loose lids, and broken custody seals.

To prevent laboratory bias, field duplicate samples shall be submitted that will not be identifiable from the sample labels or sample identification number. Field duplicate samples will be noted in the field sampling logbook for use in FEMP QA/QC review of analytical reports.

4.3 Sample Analysis Request/Chain-Of-Custody Procedures

Each sample container shall be labeled with the sample number and identification that is consistent with the Sitewide Sample Analysis Request/Custody Record (SAR/CR) form. Prior to relinquishing possession of a sample, the person that collected the sample shall complete and sign a SAR/CR form. Each person that accepts custody will also sign and date the custody record. A complete record of custody transfers shall be maintained on the SAR/CR form.

All samples taken to the FEMP Sample Processing Laboratory must be accompanied by the completed SAR/CR form. An Off-Site Sample Analysis Request/Custody Transfer Record will be prepared and accompany samples to be sent off-site for laboratory analyses.

The laboratory conducting the analyses will be responsible for maintaining sample custody logs until samples are returned to the FEMP or disposed after obtaining FEMP approval. The Custody Records will document sample possession from the time of collection through analyses by the laboratory. Records of any custody seals used on sample containers shall be maintained. The laboratory will document the condition of any custody seals on containers that they receive. Laboratories conducting analyses are required to provide the FEMP a copy of all completed laboratory custody records.

The completed sample Analysis Request/Custody Record, Off-Site Analysis Request/Custody Transfer Record, and laboratory custody forms will be signed by and returned with the analytical report for the samples identified on the form(s). These documents will be filed in the FEMP RCRA HWMU Closure files for review by the OEPA and USEPA.

5.0 HEALTH AND SAFETY

A project/task specific health and safety plan (HASP) will be prepared to reflect site, area conditions and health and safety requirements prior to conduction sampling. Appendix 1 is a copy of the guidelines for preparing the HASP. All sampling activities shall be conducted in accordance with the HASP.

This page intentionally left blank

TABLE A-1: TARGETED WASTE CONSTITUENTS/CHARACTERISTICS

WASTE CONSTITUENT/CHARACTERISTIC	CHEMICAL ABSTRACT SYSTEM (CAS) NO.
Acetone	67-64-1
Acetonitrile	75-05-8
Benzene	71-43-2
Butanol	71-36-3
Carbon Tetrachloride	56-23-5
Chloroform	67-66-3
Cyanide (Compounds)	57-12-5
Cyclohexane	110-82-7
1,1-Dichloroethane [1]	75-34-3
1,2-Dichloroethane [1]	107-06-2
1,1-Dichloroethylene [1]	75-35-4
1,2-Dichloroethylene [1]	540-59-0
Ethyl Acetate	141-78-6
Ethyl Ether	60-29-7
Lead	7439-92-1
Mercury	7439-97-6
Methanol	67-86-1
Methylene Chloride	75-09-2
Methyl Isobutyl Ketone	108-10-1
Phenol	108-95-2
Tetrachloroethylene	127-18-4
Tributyl Phosphate	126-73-8
Trichloroethylene	127-18-4
1,1,1-Trichloroethane	71-55-6
1,1,2-Trichloroethane	79-01-6
Xylene	1330-20-7
Vanadium [1]	7440-62-2
Vinyl Chloride [1]	75-01-4
RCRA Waste Characteristics:	
Corrosivity [2]	Not Applicable
Ignitability	Not Applicable
Reactive Cyanide	Not Applicable
Radiological:	
Gross Alpha and Gross Beta [3]	Not Applicable
Total Uranium [3]	Not Applicable-Group of Compounds
Total Thorium [3]	Not Applicable-Group of Compounds

[1] Included on target list as possible degradation products of suspect waste constituents of wastes generated in the laboratories.

[2] Acid/Base contamination will be evaluated based on pH measurements used to evaluate the RCRA corrosivity characteristic hazards.

[3] Radiological parameters covered by CERCLA remediation that are not regulated by RCRA.

TABLE A-2: FEMP RI/FS - FULL HSL - ANALYTICAL PARAMETERS

INORGANICS	CAS No.
Aluminum	7429-90-5
Antimony	7440-36-0
Arsenic	7440-38-2
Barium	7440-41-7
Beryllium	7440-39-3
Cadmium	7440-43-9
Calcium	7440-70-2
Chromium	7440-47-3
Cobalt	7400-48-4
Copper	7440-50-8
Cyanide	57-12-5
Iron	7439-89-6
Lead	7439-92-1
Magnesium	7439-95-4
Manganese	7439-96-5
Mercury	7439-97-6
Molybdenum	7439-98-7
Nickel	7440-02-0
Potassium	7440-09-7
Selenium	7782-49-2
Silver	7440-22-4
Sodium	7440-23-5
Thallium	7440-28-0
Vanadium	7440-62-2
Zinc	7440-66-6

PESTICIDES/PCBs	CAS No.
4,4'-DDD	72-54-8
4,4'-DDE	72-55-9
4,4'-DDT	50-29-3
Aldrin	309-00-2
alpha-BHC	319-84-6
alpha-Chlordane	5103-71-9
Aroclor 1016	12764-11-2
Aroclor 1221	11104-28-2
Aroclor 1232	11141-16-5
Aroclor 1242	53469-21-9
Aroclor 1248	12672-29-6
Aroclor 1254	11097-69-1
Aroclor 1260	11096-82-5
beta-BHC	319-85-7
delta-BHC	319-86-8
Dieldrin	60-57-1
Endosulfan sulfate	1031-07-8
Endosulfan I	959-98-8
Endosulfan II	33213-65-9
Endrin	72-20-8
Endrin aldehyde	7421-93-4
Endrin ketone	53494-70-5
gamma-BHC	58-89-9
Heptachlor	76-44-8
Heptachlor epoxide	1024-57-3
Methoxychlor	72-43-5
Toxaphene	8001-35-2

VOLATILE ORGANICS	CAS No.
1,1-Dichloroethane	75-34-3
1,1-Dichloroethylene	75-35-4
1,1,1-Trichloroethane	71-55-6
1,1,2-Trichloroethane	79-00-5
1,1,2,2-Tetrachloroethane	79-34-5
1,2-Dichloroethene	540-59-0
1,2-Dichloroethane	107-06-2
1,2-Dichloropropane	78-87-5
2-Hexanone	591-78-6
4-Methyl-2-pentanone	106-10-1
Acetone	67-64-1
Benzene	71-43-2
Bromodichloromethane	75-27-4
Bromoform	75-25-2
Bromomethane	74-83-9
Carbon disulfide	75-15-0
Carbon tetrachloride	56-23-5
Chlorobenzene	108-90-7
Chloroethane	75-00-3
Chloroform	67-66-3
Chloromethane	74-87-3
cis-1,3-Dichloropropene	10061-01-5
Dibromochloromethane	124-48-1
Ethylbenzene	100-41-4
Methyl ethyl ketone	78-93-3
Methylene chloride	75-09-2
Styrene	100-42-5
Tetrachloroethene	79-01-6
Toluene	108-88-3
trans-1,3-Dichloropropene	10061-02-6
Trichloroethene	127-18-4
Vinyl Acetate	108-05-4
Vinyl chloride	75-01-4
Xylene (total)	1330-20-7

SEMIVOLATILE ORGANICS	CAS No.
1,2-Dichlorobenzene	95-50-1
1,2,4-Trichlorobenzene	120-82-1
1,3-Dichlorobenzene	541-73-1
1,4-Dichlorobenzene	106-46-7
2-Chloronapthalene	91-58-7
2-Chlorophenol	95-57-8
2-Methylnaphthalene	91-57-6
2-Methylphenol	95-48-7
4-Methylphenol	106-44-5
2-Nitroaniline	88-74-4
2-Nitrophenol	88-75-5
2,4-Dichlorophenol	120-83-2
2,4-Dimethylphenol	105-67-9
2,4-Dinitrophenol	51-28-5
2,4-Dinitrotoluene	121-14-2

SEMIVOLATILE ORGANICS	CAS No.
2,4,5-Trichlorophenol	95-95-4
2,4,6-Trichlorophenol	88-06-2
2,6-Dinitrotoluene	606-20-2
3-Nitroaniline	99-09-2
3,3'-Dichlorobenzidine	91-94-1
4-Bromophenyl phenyl ether	101-55-3
4-Chloro-3-methylphenol	59-50-7
4-Chloroaniline	106-47-8
4-Chlorophenyl-phenyl ether	7005-72-3
4-Methylphenol (p-Cresol)	106-44-5
4-Nitroaniline	100-01-6
4-Nitrophenol	100-02-7
4,6-Dinitro-2-methylphenol	534-52-1
Acenaphthene	83-32-9
Acenaphthylene	208-96-8
Anthracene	120-12-7
Benzoic Acid	65-85-0
Benzo[a]anthracene	56-55-3
Benzo[a]pyrene	50-32-8
Benzo[b]fluoranthene	205-99-2
Benzo[ghi]perylene	191-24-2
Benzo[k]fluoranthene	207-08-9
Benzyl alcohol	100-51-6
Bis(2-chloroethoxy)methane	111-91-1
Bis(2-chloroethyl)ether	111-44-4
Bis(2-chloroisopropyl) ether	108-60-1
Bis(2-ethylhexyl)phthalate	117-81-7
Butyl benzyl phthalate	85-68-7
Carbazole	86-74-8
Chrysene	218-01-9
Dibenzofuran	132-64-9
Dibenz[a,h]anthracene	53-70-3
Diethyl phthalate	84-66-2
Dimethyl phthalate	131-11-3
Di-n-butyl phthalate	84-74-2
Di-n-octyl phthalate	117-84-0
Fluoranthene	206-44-0
Fluorene	86-73-7
Hexachlorobenzene	118-74-1
Hexachlorobutadiene	87-68-3
Hexachlorocyclopentadiene	77-47-7
Hexachloroethane	67-72-1
Indeno(1,2,3-cd)pyrene	193-39-5
Isophorone	78-59-1
Naphthalene	91-20-3
Nitrobenzene	98-95-3
N-Nitroso-di-n-propylamine	621-64-7
N-Nitrosodiphenylamine	86-30-6
Pentachlorophenol	87-86-5
Phenanthrene	85-01-8
Phenol	108-93-2
Pyrene	129-00-0

APPENDIX 1
TO THE
SAMPLING AND ANALYSIS PLAN
FOR THE
DRUM STORAGE AREA SOUTH OF W-26 (LAB BLDG)

Revision 0
September 1992

GUIDELINES FOR THE PREPARATION OF FMPC
PROJECT/TASK SPECIFIC HEALTH AND SAFETY PLANS
(APPENDIX II OF THE FMPC SITE HEALTH AND SAFETY PLAN, JUNE 1990)

PROJECT/TASK TITLE: _____
PREPARED BY: _____
DATE: _____

REVIEWED BY:
Centralized training: _____
Radiological Safety: _____
Industrial Hygiene and Safety: _____

NOTE: This plan and associated permits shall be reviewed with each worker and be posted at the work site at all times. Review of all of the listed sections is required prior to work start.

INTRODUCTION

A project/task specific health and safety plan is a complementary program element that aids in the elimination or effective control of anticipated safety and health hazards. The project/task health and safety plan shall include all basic requirements of the overall health and safety plan, but with close attention given to those characteristics unique to the particular project, task or job. For example, the project/task plan may outline the method of doing work in a confined space area, hazardous waste area, area containing hazardous materials or any area where there is the potential for exposure to employees.

Much of the information required to complete the plan may be provided on FMPC Work Permit Form No. 2939. However, the plan will allow for a complete job evaluation, health evaluation of the employee(s) performing the work and assure that personnel health and safety concerns are addressed prior to the start of the job/task.

The project/task health and safety plan must identify the hazards of each phase of the specific project/task/job and must be kept at the work site. All required permits shall be posted in the immediate work area. A job briefing shall be conducted prior to job start up and at any other time as deemed necessary to ensure that employees are aware of the project/task/job health and safety plan and its implementation. The supervisor in charge and Industrial, Radiological Safety and Training representatives shall perform periodic inspections of the job area to ensure that all known deficiencies are corrected prior to work start and during work performance.

NOTE: Examples are provided after each section, they are not meant to be realistic.

TASK SPECIFIC HEALTH & SAFETY QUESTIONNAIRE

SECTION NO. 1 **History and Description of Building, Equipment, Area**

This Section in its entirety address all known facts about the area where work will be performed. When completed, this section combined with job activities/work plan, should create an understanding of potential health and safety issues to be addressed at the work area.

A. Description of Building, Equipment, Area

Pertinent information about the building, equipment or area such as current disposition, name, manufacturers, location of work area, building construction, etc.

EXAMPLE: This is a 1000 gallon fiberglass tank buried approximately three (3) feet beneath the blacktop east of Building 46. The tank currently contains an unknown amount of methyl ethyl something. The tank was constructed in 1978 by Round Up Manufacturers and installed at the FMPC in January 1979. It has been in continuous use since that time and will be taken out of service 10 days before this project starts.

B. Process Performed or Activities Conducted in the Area

Describe activities performed in the building, use of the equipment, types of material processed, etc.

EXAMPLE: Building 46 is a vehicle and maintenance supply storage facility. The north bay of

this three bay building houses emergency vehicles. No radioactive or hazardous substances have been processed in this building or area.

C. Unusual Features

Include information pertaining to conditions which may present a hazard to personnel such as powerlines, material storage, equipment location, buried lines/pipes, etc.

EXAMPLE: There is a drainage ditch approximately 50 feet east of the proposed work site. The flow in the drainage ditch is not controlled.

An underground high voltage line is believed to be located in this area connecting the electric substation with Building 46.

SECTION NO. 2 Work Area Organization and Site Access Control

This section clearly identifies the designated work area, control zones or restricted areas where work will be performed; name(s) of supervisor personnel; name(s) of personnel performing work/activities; names of support personnel required to complete task. Site entry and exiting protocol should also be identified.

EXAMPLE: An exclusion zone will be established around the proposed tank excavation area. This area measures approximately 25' X 25'. The exclusion zone shall

be marked with barrier tape.

Jo Smyth, Badge No. 0000, will be the supervisor in charge of this project. Tiny Tim, Badge No. 0000, Chicken Little, Badge 000, and Hairy Wolf, Badge No. 0000, will perform the tank sampling, excavation and removal activities.

Entry into the exclusion zone will be limited to the above listed individuals, Industrial Hygiene and Radiological Safety Technicians, Safety and Fire Inspectors and Utility Engineers. Anyone else desiring entry must first be approved by the supervisor in charge.

Personnel exiting the area must be monitored to assure they are free of contaminates.

SECTION NO. 3 Task Activities/Work Plan

State task activity that will be performed and anticipated work plan.

EXAMPLE: The contents of the tank must be sampled, the blacktop and aggregate fill on top and around the tank will be removed and boxed for shipment, all piping will be disconnected and removed, the tank will be removed and the excavation filled with new aggregate materials.

SECTION NO. 4 Hazard Assessments

General categories of hazards that may be present at the work site should be listed. MSDSs must be included for any identified hazardous substance. It is prudent to assume that any identified hazard is present until a characterization has proven otherwise. Provisions should be made to properly protect all individuals that have the potential for exposure from the suspected or identified hazardous substances. Specific WEMCO work permits may be required and should be prepared in accordance with Site Procedure 516.

DISCUSSION: List each suspected or identified hazardous substance, condition or waste. Attach copy of the applicable MSDS to the Health and Safety Plan. When identified, the appropriate permit should be completed and a copy attached to the Project/Task Specific Health and Safety Plan.

SECTION NO. 5 Standard Operating Procedures (SOPs)

Some project/tasks will require that special SOPs be prepared or existing procedures be referenced to conduct the work according to specified guidelines.

DISCUSSION: If no procedure exists to cover the proposed work, prepare one to address the project/task. If procedures exist, list the applicable document number and full title.

SECTION NO.6 Education and Training

Employees shall not engage in field activities until they have been trained to a level commensurate with their job function, responsibilities and with the degree of anticipated hazards. The amount of training is based on worker categories.

A. Worker Category

1. General Site Worker - 40 hours of SARA/OSHA instruction plus 24 hours of field experience.

2. Occasional Site Worker - 24 hours of SARA/OSHA instruction plus 8 hours of filed experience.

3. Workers Regularly on Site But Not in Danger of Exposure - 24 hours of SARA/OSHA instruction plus 8 hours of field experience.

4. Management or Supervisor - Same as 1, 2, or 3 depending on category of work being supervised plus 8 hours of specialized training.

5. Visitors -Are not permitted within exclusion zones unless they have completed the training requirements specified in No. 1 through 4.

B. A safety meeting for all employees involved in hazardous material/waste operations. These meetings shall be held prior to task start, daily during work periods, when there is a change in work activities or implementation of safety plan amendments. Meetings shall be documented

and will become a permanent element of this task specific health and safety plan. Subjects to be covered shall include:

- o Work operations
- o Personnel protective equipment
- o air monitoring data
- o hazard communication
- o hearing conservation
- o monitoring results
- o decontamination procedures
- o task organization
- o physical stress
- o emergency procedures
- o communications
- o general safety
- o housekeeping

A detailed listing of subjects can be found in the site Health and Safety Plan Appendix II.

SECTION NO. 7 **Medical Surveillance (To be completed by Medical Services)**

Worker selection is based on an evaluation by a qualified licensed physician having knowledge of the specific tasks to be performed and the exposure potential as it relates to the worker. FMPC form HR 3162 is used for the purpose.

SECTION NO. 8 Monitoring (To be completed by IRS&T)

A. State the monitoring protocol and action levels for the contaminants involved in each work activity.

B. State each type of instrument to be utilized and coordinate with the type of contaminate to be monitored.

SECTION NO. 9 Personnel Protective Equipment Requirements

State the required level of protection for each activity, task or hazardous substance as identified in the hazard assessment.

SECTION NO. 10 Safety Equipment List

State each piece of safety equipment and the protocol for utilization. This section should create the "shopping list" of safety supplies or equipment available for use by workers.

EXAMPLES: Personnel Protective Equipment (PPE), Fire Extinguishment, Decontaminating Materials, Communication Devices, Barrier Tape, Etc.

SECTION NO. 11 Decontamination Procedures

Address decontamination of personnel and each piece of equipment as a step by step procedure for both chemical and radiological contaminants.

Include level of protection to be utilized during decontamination process, solutions, stations and dispensation of fluids, disposable and other waste.

SECTION NO. 12 Emergency Plans

Emergency plans shall include methods of reporting emergencies or abnormal conditions; evacuation procedures; accountability; types of alarms, etc.

SECTION NO. 13 Amendments

Statements shall be made as follows:

A. This Project/Task Specific Health and Safety Plan is based on information available at the time of preparation. Unexpected conditions may arise which require reassessment of safety procedures. It is important that personnel protective measures be thoroughly assessed by the supervisor in charge and IRS&T representative prior to and during the planned task activities. Unplanned activities and/or changes in the hazard status require a review of and may require changes in this plan.

B. Changes in the anticipated hazard status or unplanned activities are to be submitted as an amendment to this Project/Task Specific Health and Safety Plan.

C. Amendments must be approved by the plan author and IRS&T prior to implementation of the amendment.