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TRANSMITTAL OF REVISED RESPONSES TO COMMENTS AND REVISED CLOSURE PLAN INFORMATION AND DATA FOR THE HYDROFLUORIC TANK CAR

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FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

Closure Plan Information and Data for the HF Tank Car

Rev. 2

(Resubmittal)

July 1994

U.S. DEPARTMENT OF ENERGY

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CLOSURE PLAN INFORMATION AND DATA for the HF Tank Car

Revision 2
(Resubmittal)

Fernald Environmental Management Project

July 1994

U.S. DEPARTMENT OF ENERGY

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ACRONYMS AND ABBREVIATIONS

ARAR	APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENT
BRC	BELOW REGULATORY CONCERN
CERCLA	COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, AND LIABILITY ACT
CFR	CODE OF FEDERAL REGULATIONS
CPID	CLOSURE PLAN INFORMATION AND DATA
DHF	DILUTE HYDROFLUORIC ACID
DOE	U.S. DEPARTMENT OF ENERGY
FEMP	FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
FERMCO	FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION
FFCA	FEDERAL FACILITIES COMPLIANCE AGREEMENT
FMPC	FEEDS MATERIALS PRODUCTION CENTER
FS	FEASIBILITY STUDY
HWMU	HAZARDOUS WASTE MANAGEMENT UNIT
MEF	MATERIALS EVALUATION FORM
NPL	NATIONAL PRIORITIES LIST
OAC	OHIO ADMINISTRATIVE CODE
OEPA	OHIO ENVIRONMENTAL PROTECTION AGENCY
ORR	OPERATIONAL READINESS REVIEW
OU	OPERABLE UNIT
PP	PROPOSED PLAN
QA	QUALITY ASSURANCE
QC	QUALITY CONTROL
RA	REMEDIAL ACTION
RCRA	RESOURCE CONSERVATION AND RECOVERY ACT
RD	REMEDIAL DESIGN
RI	REMEDIAL INVESTIGATION
ROD	RECORD OF DECISION
SACD	STIPULATED AMENDMENT TO THE CONSENT DECREE
SAP	SAMPLING AND ANALYSIS PLAN
SCQ	SITEWIDE CERCLA QUALITY ASSURANCE PROJECT PLAN
USEPA	U.S. ENVIRONMENTAL PROTECTION AGENCY

CLOSURE PLAN INFORMATION AND DATA FOR THE HF TANK CAR
U.S. Department of Energy
Fernald Environmental Management Project
Cincinnati, Ohio

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1.0 INTRODUCTION

1.1 BACKGROUND AND PURPOSE

The Fernald Environmental Management Project (FEMP) is a U.S. Department of Energy (DOE) owned facility. The FEMP 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 in Hamilton and Butler Counties, Ohio. The site is approximately 18 miles northwest of Cincinnati, Ohio. The FEMP production facilities are 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.

THIS CLOSURE PLAN INFORMATION AND DATA (CPID) IS BEING SUBMITTED TO CLOSE THE HF TANK CAR, ~~AS~~ SHOWN IN FIGURE 2. THE HAZARDOUS WASTE MANAGEMENT UNIT (HWMU) NO. 38 IS LOCATED AT THE FORMER SITE OF THE HF TANK CAR ON A RAILWAY EAST OF THE MAIN TANK FARM AND WEST OF THE MAINTENANCE SERVICE BUILDING (BUILDING 12). THE HF TANK CAR WAS MOVED TO THE SECONDARY CONTAINMENT AREA WEST OF THE MAIN TANK FARM ON APRIL 14, 1994. THE LOCATION OF THE TANK CAR IS SHOWN ON THE UNIT LOCATION MAP IN FIGURE 3. ~~This closure plan information and data is being submitted to close the HF Tank Car, a hazardous waste management unit (HWMU) located on a railway east of the Main Tank Farm and west of the Maintenance Service Building (Building 12). The location of the tank car is shown on the unit location map in Figure 2.~~ The HF Tank Car will be closed as a CONTAINER ~~tank~~ consistent with OAC 3745-66-10 to

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3745-66-15 (40 CFR 265.110 to 265.115). A copy of this closure plan information and data will be kept at the site per OAC 3754-55-15 (40 CFR 265.115) until final closure.

The FEMP management intends to ensure efficient integration of all RCRA closure activities with related Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) response actions. This CPID has been prepared to ensure closure actions are consistent with RCRA requirements. These actions also will adhere to the terms of the DOE/U.S. EPA Consent Agreement (as amended) and the STIPULATED AMENDMENT TO THE CONSENT DECREE (SACD) ~~Proposed Amended Consent Decree~~ between DOE and the OEPA. Additional discussion of the impact of the FEMP CERCLA Program is provided in Section 1.2.2 of this document.

1.2 REGULATORY INTEGRATION

Management of radioactive materials at the FEMP must comply with DOE orders and regulations. The RCRA closure activities must comply with all applicable federal, state, and local regulations, including those of the U.S. Environmental Protection Agency (U.S. EPA), Ohio Environmental Protection Agency (OEPA), and with all DOE orders. In addition, all FEMP RCRA closure activities must comply with the various legal agreements that the DOE has negotiated with the U.S. EPA and the OEPA. To resolve conflicting requirements, this closure plan information and data has proposed an integrated approach consistent with all applicable regulatory and legal requirements.

PRIOR TO CONSTRUCTION OF THE NEUTRALIZATION PROCESS LINE, THE FEMP WILL EVALUATE AIR POLLUTION PERMIT REQUIREMENTS. AS MUCH AS IS FEASIBLE, THE PROCESS WILL UTILIZE EXISTING EQUIPMENT FOR WHICH AIR POLLUTION PERMITS HAVE BEEN ISSUED. IF REQUIRED, NEW OR REVISED AIR POLLUTION PERMIT APPLICATIONS WILL BE SUBMITTED.

1.2.1 Mixed Radioactive and RCRA Hazardous Wastes

Most FEMP wastes that are RCRA characteristic or listed hazardous waste are handled on-site as mixed radioactive and hazardous wastes. The radioactive portion of mixed waste is not regulated under RCRA. Determination of the radionuclide component of most material on-site is based upon an assay value. These materials have been analyzed

to determine their uranium content. Assay values are based on prior sampling of the same or similar materials, or upon process knowledge. If assay values have not been established, the FEMP considers materials generated in the uranium processing area to be contaminated with radionuclides. This determination is based upon process knowledge, experience in uranium production operations, and the fact that *de minimis* concentrations or below-regulatory-concern (BRC) levels for radionuclides have not been established for the residues or wastes in question.

Recognizing the dual nature of these wastes, the FEMP stores mixed (hazardous combined with radioactive) wastes according to RCRA regulations and DOE orders. These materials are stored pending the availability of acceptable treatment or disposal facilities for mixed waste. 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.

DOE will, for informational purposes only, provide OEPA with the results of the radiological analysis that will be conducted during the closure of the HF Tank Car. This monitoring will be performed according to the HF Tank Car Sampling and Analysis Plan (SAP) - Attachment A, and with existing FEMP Standard Operating Procedures.

1.2.2 Integration of RCRA Closures with CERCLA Response Actions

RCRA closures at the FEMP will be integrated with CERCLA requirements, and be consistent with all other applicable or relevant and appropriate requirements (ARARs). In July 1986, the U.S. EPA and the DOE entered into a Federal Facilities Compliance Agreement (FFCA). Pursuant to the FFCA, the DOE initiated a Remedial Investigation and Feasibility Study (RI/FS) at the FEMP. On November 21, 1989, the U.S. EPA added the FEMP to the National Priorities List (NPL) of hazardous waste sites. The CERCLA section of the FFCA was replaced by the April 9, 1990 and September 20, 1991 Consent Agreements to reflect requirements of Sections 106 and 120 of CERCLA relative to activities at the FEMP. Pursuant to the amended Consent Agreement, the FEMP will:

- Characterize chemical and radiological contamination at the FEMP and establish site cleanup objectives,

- Conduct necessary short-term response actions to eliminate or minimize immediate threats to human health and the environment.

- Implement any necessary long-term monitoring and surveillance of the facility and surrounding environment.

Consistent with the terms of the Consent Agreement (as amended), the FEMP RI/FS has been divided into 5 Operable Units (OUs). A Proposed Plan (PP) will be recommended for the CERCLA Records of Decision (RODs) for each of the 5 OUs. The RODs for each OU will specify the required final remediation or removal of contaminated media, equipment and structures. Remedial Design/Remedial Action (RD/RA) plans will be prepared to implement the requirements of the RODs and accomplish final remediation for each of the Operable Units. The closure of the HF Tank Car is included within the scope of Operable Unit 3 (OU 3) which covers FEMP production areas and production-associated facilities and equipment.

1.2.3 Financial and Liability Exemptions

The FEMP is a federally owned facility. According to OAC 3745-66-40 C [40 CFR 265.140(c)], the Federal Government is exempt from financial requirements of OAC 3745-66-40 through OAC 3745-66-48 (40 CFR 265.140 through 40 CFR 265.150).

1.3 POST-CLOSURE REQUIREMENTS

Post-closure plans are required when the hazardous waste management unit or facility is closed as a landfill under OAC 3745-66-18 (40 CFR 265.118). ~~A post-closure plan and post-closure notices are not ANTICIPATED TO BE required for the HF Tank Car.~~ THE CLEAN STANDARDS FOR SOIL (SECTION 3.1.1) HAVE BEEN CONFIRMED AND NO SOIL REMEDIATION IS REQUIRED TO COMPLETE CLEAN CLOSURE. POST-CLOSURE CARE WILL NOT BE REQUIRED FOR THIS HWMU ~~SINCE PROCESS KNOWLEDGE INDICATES THAT NO SPILLS HAVE OCCURRED FROM THE TANK CAR AND "CLEAN" CLOSURE OF THE UNIT (INCLUDING SOILS) IS EXPECTED~~ because it will be "clean" closed~~, and it will not be closed as a landfill~~.

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~~If "clean" closure cannot be achieved, a revision to this CPID will be submitted to the agency. The revised CPID will describe how the RCRA closure activities, or Removal Actions required under CERCLA to mitigate any immediate threat to human health or the environment, will be coordinated with the CERCLA schedule and ongoing long term remedial activities at the site.~~

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2.0 UNIT DESCRIPTION

2.1 WASTE MANAGEMENT UNIT DESCRIPTION

THE HF TANK CAR, HWMU NO. 38, IS A RUBBER LINED MILD STEEL RAIL TANK CAR (#OROX17501). ~~The Hazardous Waste Management Unit (HWMU) is a rubber-lined mild steel rail tank car #OROX17501.~~ The age of the tank car is approximately 40 years. Its period of operation at the FEMP was approximately 15 years. It was used for storage of dilute hydrofluoric acid (DHF) generated at the FEMP. PRIOR TO OCTOBER 1988, THE HF TANK CAR WAS USED TO BATCH SHIPMENTS OF 35% SOLUTION OF DHF WHICH WERE SOLD. STANDING CONTRACTS WERE MAINTAINED FOR THE SALE OF DHF. AFTER THE DHF WAS TESTED, APPROVED AND SOLD, THE DHF WAS TRANSFERRED TO TANK TRUCKS FOR OFF-SITE TRANSPORT. IN OCTOBER 1988, THE DHF WAS RETURNED FROM A PROSPECTIVE BUYER AND PLACED IN STORAGE IN TANK CAR #OROX17501 AT THE ~~ITS~~ ORIGINAL ~~CURRENT~~ LOCATION OF THE HF TANK CAR HWMU (FIGURE 4). SINCE THAT TIME, THE DHF IN THE TANK CAR HAS EXCEEDED REGULATORY LIMITS FOR SPECULATIVE ACCUMULATION AND NINETY-DAY STORAGE. AS A RESULT, THE DHF WAS DECLARED A CORROSIVE HAZARDOUS WASTE AND, IN JUNE 1991, THE HF TANK CAR WAS IDENTIFIED AS HWMU NO. 38. THE HWMU BOUNDARIES WERE DEFINED AS THE PERIMETER OF THE TANK CAR BECAUSE THE TANK CAR HAD ~~HAS~~ NOT BEEN MOVED SINCE THE DHF WASTES WERE PLACED IN IT ~~THE TANK CAR~~ IN OCTOBER 1988. ~~AND~~ NO SPILLS HAVE BEEN REPORTED.

The HF Tank Car is approximately ten (10) feet wide by thirty-six feet (36) long by fifteen (15) feet high. The area PREVIOUSLY occupied by the rail car constitutes the physical horizontal boundary of the unit. PRIOR TO MOVEMENT, the HF Tank Car SAT ~~sits~~ on an elevated rail siding, track #6. FIGURE 4 IDENTIFIES THE LOCATION OF THE HF TANK CAR HWMU, AND THE CURRENT LOCATION OF THE RAIL CAR IN THE SECONDARY CONTAINMENT AREA WEST OF THE TANK FARM. ~~AND THE AREA SURROUNDING THE HF TANK CAR.~~

The physical condition of the tank itself is good, but the tank car as a whole is not serviceable as railway rolling stock. IN SEPTEMBER 1992, AN INDEPENDENT

RAIL CAR INSPECTOR REPORTED THAT TANK CAR #OROX17501 HAS OBSOLETE COMPONENTS WHICH PROHIBITS IT FROM INTERCHANGES; HOWEVER, THE INSPECTOR STATED THAT THE TANK CAR COULD BE SAFELY TRANSPORTED WITHIN THE CONFINES OF THE FEMP RAIL SYSTEM. THIS DETERMINATION WAS USED TO FURTHER EVALUATE THE SAFETY OF TRANSPORTING THE HF TANK CAR TO THE SECONDARY CONTAINMENT AREA (ATTACHMENT D). ON APRIL 14, 1994, FOLLOWING THE REQUIREMENTS IN ATTACHMENT D, THE HF TANK CAR WAS MOVED TO THE SECONDARY CONTAINMENT AREA WEST OF THE TANK FARM.

2.2 WASTE INVENTORY

The HF Tank Car contains a 28.7% ~~35%~~ SOLUTION OF DILUTE hydrofluoric acid (DHF). THE DHF WAS CHARACTERIZED PER THE FEMP WASTE ANALYSIS AND WASTE DETERMINATION PLANS. PROCESS KNOWLEDGE AND ANALYTICAL INFORMATION USED IN THE CHARACTERIZATION IS DOCUMENTED IN A MATERIALS EVALUATION FORM (MEF). A REVISED MATERIALS EVALUATION FORM (MEF NO. 1691R, REV. 01-04-93) IDENTIFIES THE DHF STORED IN RAIL CAR #OROX17501 TO BE RCRA HAZARDOUS FOR CORROSIVITY (EPA HAZARDOUS WASTE CODE D002). BASED ON DECEMBER 1992 SAMPLE ANALYSES (ATTACHMENT C), CORROSIVITY IS THE ONLY HAZARDOUS WASTE CHARACTERISTIC OF CONCERN. BASED ON PROCESS KNOWLEDGE, IT WAS DETERMINED THAT THE DHF WAS A PROCESS WASTE AND, THEREFORE, NOT A DISCARDED COMMERCIAL CHEMICAL PRODUCT UNDER OAC 3745-51-33. There are no records that indicate the maximum inventory of the DHF stored in the tank car; however, the maximum capacity of the tank car is approximately 8,000 gallons.

2.3 CURRENT USE

The HF Tank Car currently stores approximately 4,400 gallons of DHF ~~dilute hydrofluoric acid~~. THE HF TANK CAR HAS BEEN MOVED, AS A PRECAUTIONARY MEASURE, ~~PLANS ARE BEING FINALIZED TO MOVE THE RAIL CAR~~ TO THE SECONDARY CONTAINMENT AREA WHERE ~~UNTIL~~ THE DHF ~~CAN~~ WILL BE REMOVED AND NEUTRALIZED, AS DESCRIBED IN SECTION 3.2.

2.4 SECURITY

As with all Department of Energy (DOE) facilities, security at the FEMP is strict. The entire FEMP processing area, which includes the HF Tank Car HWMU, 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.

3.0 CLOSURE INFORMATION

3.1 CLOSURE OBJECTIVES AND PERFORMANCE STANDARDS

It is the intention of FEMP management to demonstrate RCRA "clean" closure of the HF Tank Car. Clean closure will be demonstrated by analyses of samples from the decontamination rinseate and samples of the soil underlying the unit.

This CPID for the HF Tank Car is in accordance with the closure performance standards in OAC 3745-66-11 (40 CFR 265.111). These standards include the following:

- Minimize the need for further maintenance by removing all stored materials, and by sampling residual waste materials and soils to determine that all hazardous waste has been removed from the unit. Post-closure maintenance is not required for the unit if no hazardous wastes or unacceptable levels of contamination remain in the unit or unit soils after closure (e.g., "clean" closed).

- Control, minimize or eliminate, to the extent necessary to protect human health and the environment, the escape of hazardous waste, hazardous waste constituents, leachate, contaminated run-off, or hazardous waste decomposition products to the ground water, surface waters, or to the atmosphere.

- Conduct closure actions according to the approved RCRA CPID.

3.1.1 "Clean" Standards

The HF Tank Car decontamination verification rinseate will be analyzed for pH using Method 9040 of the U.S. EPA "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Third Edition (SW-846). BASED ON DECEMBER 1992 SAMPLE ANALYSES OF THE LIQUID IN THE TANK CAR (ATTACHMENT C), CORROSIVITY IS THE ONLY HAZARDOUS WASTE CHARACTERISTIC OF

CONCERN. The interior of the tank car will be considered "clean" for RCRA closure if the decontamination verification rinseate samples ~~do not~~ have a pH GREATER THAN 2 AND LESS THAN 12.5. ~~less than or equal to 2 or greater than or equal to 12.5~~ FURTHER pH ADJUSTMENTS OF THE RINSEATE WILL BE MADE, AS NECESSARY, TO MEET THE FEMP NPDES AND LOCAL AREA WATER QUALITY DISCHARGE STANDARDS FOR BOTH RINSEATE AND WASTEWATER FROM THE NEUTRALIZATION PROCESS (SECT. 3.2).

The soil underlying the HF Tank Car WAS ~~will be~~ analyzed for pH using SW-846 Method 9045. The soil IS ~~will be~~ considered "clean" for RCRA closure BECAUSE ~~if~~ the soil ~~samples~~ ~~do not~~ ~~have a~~ pH IS GREATER THAN ~~2~~ 4.7 AND LESS THAN 9.0 PER THE CLOSURE PLAN REVIEW GUIDANCE DOCUMENT (PAGE 33). ~~12.5 less than or equal to 2 or greater than or equal to 12.5~~.

3.2 CLOSURE METHODOLOGY

This section addresses the procedures that will be followed to accomplish clean closure of the HF Tank Car. Since this plan is written only for the closure of HWMU No. 38, closure of the HF Tank Car constitutes only a partial closure of the entire FEMP facility.

According to this CPID ~~closure plan information and data~~, the following ACTIONS MUST BE TAKEN TO ACCOMPLISH CLEAN CLOSURE: ~~closure actions will be taken~~

~~1) The FEMP will notify the OEPA at least forty-five (45) days prior to the initiation of closure.~~

1) THE EMERGENCY PUMP-DOWN LINES CONNECTING THE HF TANK CAR TO THE TANK FARM WERE TESTED, DETERMINED TO BE EMPTY, ~~WILL BE~~ ~~FLUSHED OUT WITH POTABLE WATER~~ AND DISCONNECTED. ~~THE RINSEATE WILL BE COLLECTED AND SENT TO THE PLANT 8 SUMP.~~ THE HF TANK CAR WAS ~~WILL BE~~ MOVED BY RAIL ON APRIL 14, 1994, TO THE SECONDARY CONTAINMENT ~~PIT~~ AREA LOCATED WEST OF THE TANK FARM.

ATTACHMENT D DESCRIBES THE STEPS THAT WERE TAKEN PRIOR TO, AND DURING, THE MOVEMENT OF THE HF TANK CAR. DURING THE RELOCATION, A SPILL RESPONSE TEAM MONITORED ~~WILL MONITOR~~ THE TANK CAR FOR RELEASES. ~~APPROPRIATE ACTIONS WILL BE TAKEN AND DOCUMENTED IN THE EVENT OF A RELEASE.~~ NO RELEASES OCCURRED.

2) THE NEUTRALIZATION PROCESS WILL TAKE PLACE ~~AT THE RAIL CAR~~ USING AN EXISTING, BUT UNUSED, TANK SPECIFICALLY CONSTRUCTED IN 1988 FOR NEUTRALIZING DHF WITH LIME. THIS TANK IS LOCATED APPROXIMATELY 300 FEET EAST OF THE CURRENT LOCATION OF THE HF TANK CAR IN THE SECONDARY CONTAINMENT AREA ~~PIT~~ (FIGURE 4). SPILL RESPONSE SUPPLIES WILL BE LOCATED IN THE VICINITY OF THE RAIL CAR SECONDARY CONTAINMENT AREA ~~PIT~~ WEST OF THE TANK FARM (FIGURE 4). BAGGED LIME ~~SLURRY~~ WILL BE LOCATED NEAR ~~NEXT TO~~ THE CONTAINMENT AREA ~~PIT~~ TO ASSURE IMMEDIATE RESPONSE IN THE EVENT OF ANY POSSIBLE SPILLS OR LEAKS OF DHF.

3) THE FEMP HAS IDENTIFIED A LIME SLURRY - ELEMENTARY NEUTRALIZATION PROCESS USING THE DESIGN SHOWN IN FIGURE ~~6~~ 5. ~~PRIOR TO ASSEMBLING THE PROCESS COMPONENTS AND CONDUCTING THE PROCESS,~~ EXTENSIVE BENCH SCALE TESTING WAS ~~WILL BE~~ CONDUCTED TO CONFIRM THAT THE PROPOSED DESIGN WILL SAFELY ACHIEVE THE REQUIRED NEUTRALIZATION. BENCH SCALE TESTS WERE COMPLETED IN MAY 1994. RESULTS OF THE BENCH SCALE TESTS ARE DISCUSSED IN SECTION 3.2.1. A SUMMARY OF PHYSICAL AND CHEMICAL PROPERTIES OF REAGENTS AND NEUTRALIZATION PRODUCTS FOR THE SELECTED NEUTRALIZATION PROCESS IS PROVIDED IN TABLE 2.

IN THE NEUTRALIZATION PROCESS LIME SLURRY, A BASE, REACTS WITH HYDROFLUORIC ACID IN THE FOLLOWING WAY:

$$Ca(OH)_2 + 2HF \rightarrow CaF_2 \downarrow + 2H_2O$$

CALCIUM CARBONATE WILL ALSO BE ADDED WITH THE LIME TO IMPROVE THE FILTRATION PROPERTIES OF THE NEUTRALIZED SOLIDS. THE CALCIUM CARBONATE REACTS WITH HYDROFLUORIC ACID AS FOLLOWS:

$$CaCO_3 + 2HF \rightarrow CaF_2 + CO_2 \uparrow + H_2O$$

~~THE NEUTRALIZATION PROCESS WILL BE CONTROLLED TO MINIMIZE HEAT GENERATION AND STEAM EVOLUTION. THE LIME SLURRY WILL BE PREPARED UTILIZING EXCESS QUICK LIME IN AN EXISTING LIME SLAKING UNIT AT THE GENERAL SUMP AND TRANSPORTED TO THE TANK FARM AREA FOR USE IN THE NEUTRALIZATION PROCESS.~~

THE NEUTRALIZATION PROCESS (FIGURE ~~6~~ 5) WILL BE CONDUCTED AS FOLLOWS:

A. THE LIME SLURRY WILL BE PREPARED IN THE NEUTRALIZATION TANK BY ADDING THE REQUIRED WEIGHT OF LIME AND CALCIUM CARBONATE TO WATER. THE LIME SLURRY WILL CONSIST OF A 10%, BY WEIGHT, SOLUTION OF 70% LIME AND 30% CALCIUM CARBONATE.

~~THE LIME SLURRY WILL BE ADDED AT A CONTROLLED RATE TO ONE OF THE TWO STAINLESS STEEL REACTORS (REACTOR "B") LOCATED ADJACENT TO THE CONTAINMENT PIT. EACH REACTOR HAS A 5800 GALLON CAPACITY AND IS EQUIPPED WITH AN AGITATOR. THE RECIRCULATED STREAM WILL BE PUMPED VIA A LARGE CAPACITY PUMP (~250 GPM) FROM REACTOR "B" TO A HYDROCLONE TO SETTLE OUT AND SEPARATE HEAVIER SOLIDS.~~

B. THE DHF WILL BE TRANSFERRED FROM THE TANK CAR USING THE DHF METERING PUMP AND TRANSFER LINES TO

THE NEUTRALIZATION TANK. THE PUMP AND TRANSFER LINE WILL BE CONSTRUCTED WITH HF COMPATIBLE MATERIALS.

THE NEUTRALIZATION PROCESS WILL BE CONTROLLED TO MINIMIZE HEAT GENERATION AND STEAM EVOLUTION. THE DHF FROM THE TANK CAR WILL BE ADDED, AT A CONTROLLED RATE OF APPROXIMATELY 1.7 GPM, TO THE NEUTRALIZATION TANK CONTAINING THE LIME SLURRY. THE RATE OF ADDITION WILL BE CONTROLLED BY THE DHF ADDITION METERING PUMP. THE RESULTING REACTION WILL NEUTRALIZE THE DHF TO FORM CALCIUM FLUORIDE AND WATER. A SMALL QUANTITY OF CARBON DIOXIDE WILL BE RELEASED FROM THE NEUTRALIZATION TANK AS THE REACTION PROCEEDS. THE DHF METERING PUMP WILL BE ACTIVATED AND TURNED OFF BY THE pH SENSOR AND CONTROLLER SET POINTS. THE METERING PUMP IS ALSO INTERCONNECTED WITH LEVEL AND TEMPERATURE SENSORS TO STOP DHF ADDITION IF EITHER THE LEVEL OR TEMPERATURE EXCEED PROCESS LIMITS, ESTABLISHED DURING SYSTEM START UP. ~~THE RECIRCULATED STREAM FROM THE HYDROCLONE WILL PASS THROUGH A HEAT EXCHANGER TO REMOVE EXCESS HEAT FROM THE SOLUTION AND THEN RETURN TO REACTOR "A".~~

C. THE DISCHARGE OF THE DHF TRANSFER LINE WILL BE INTRODUCED NEAR THE BOTTOM OF THE NEUTRALIZATION TANK. AGITATION WILL BE MAINTAINED THROUGHOUT THE NEUTRALIZATION PROCESS. ONCE THE pH OF THE NEUTRALIZED SLURRY REACHES THE REQUIRED END POINT, AGITATION WILL CONTINUE FOR AN ADDITIONAL 15 MINUTES TO ENSURE COMPLETION OF THE NEUTRALIZATION REACTION.

~~THE DHF SOLUTION FROM THE TANK CAR WILL BE SLOWLY ADDED TO REACTOR "A" CONTAINING THE LIME SLURRY. THE RESULTING REACTION WILL NEUTRALIZE THE DHF TO FORM CALCIUM FLUORIDE AND WATER. THE RATE OF ADDITION WILL BE CONTROLLED USING AIR PRESSURE APPLIED TO THE DIAPHRAGM PUMP WHICH WILL BE LOCATED ON TOP OF THE TANK CAR. THE DHF FROM THE TANK CAR WILL BE TRANSFERRED USING THE TANK CAR DIP TUBE, A DIAPHRAGM PUMP AND A TRANSFER LINE TO REACTOR "A". THE PUMP AND TRANSFER LINE WILL BE CONSTRUCTED WITH HF COMPATIBLE MATERIALS.~~

~~D. THE DISCHARGE OF THE DHF TRANSFER LINE WILL EXTEND INTO THE REACTOR TANK, NEARLY TO THE BOTTOM. THE RECYCLED FLOW LINE WILL ALSO EXTEND TO THE BOTTOM OF REACTOR "A", TO ALLOW THOROUGH MIXING FOR THE 20 MINUTE RETENTION TIME BEFORE OVERFLOWING INTO REACTOR "B".~~

D ~~E~~. FOR SAFETY REASONS, THE ADDITION OF DHF WILL ONLY BE CONDUCTED DURING DAYLIGHT HOURS. HOWEVER, THE NEUTRALIZATION TANK RECYCLE FLOW AND AGITATION ~~OF THE REACTORS~~ WILL BE MAINTAINED CONTINUOUSLY IN ORDER TO MINIMIZE SETTLING AND/OR SCALING PROBLEMS. THE DHF WILL BE PROCESSED, IN A SERIES OF BATCHES, UNTIL THE TANK CAR HAS BEEN EMPTIED AND DECONTAMINATED.

4) ~~7~~) THE NEUTRALIZED SLURRY SOLIDS, PRODUCED IN THE NEUTRALIZATION TANK, ~~THE SOLIDS THAT SETTLE OUT OF THE NEUTRALIZATION SYSTEM HYDROCLONE AND THE REACTED LIME SLURRY~~ WILL BE TRANSFERRED INTO PORTABLE TANKS AND TAKEN TO PLANT 8 ~~WHERE IT WILL BE FILTERED, DRIED, AND DRUMMED~~. THE SLURRY WILL THEN BE TRANSFERRED TO AN AGITATED HOLDING TANK. UP TO FIVE NEUTRALIZATION SLURRY BATCHES WILL BE ACCUMULATED IN THE HOLDING

TANK AND THEN FILTERED. THE FILTERED SOLIDS WILL BE PLACED INTO CONTAINERS AND THE FILTRATE WILL BE DISCHARGED THROUGH THE FEMP WASTEWATER TREATMENT SYSTEM (WWTS).

5) PRIOR TO DISPOSAL AS LOW LEVEL RADIOACTIVE WASTE (LLW) AT THE NEVADA TEST SITE (NTS), THE FILTER CAKE WILL BE TESTED TO CONFIRM THAT THERE ARE NO FREE LIQUIDS AND NO RCRA METALS ARE PRESENT IN EXCESS OF TCLP LIMITS, AS INDICATED BY BENCH SCALE TEST RESULTS. IF FREE LIQUIDS ARE FOUND, SORBENT MATERIALS WILL BE ADDED TO DRY THE FILTER CAKE. IN THE UNLIKELY EVENT THAT TCLP LIMITS ARE EXCEEDED, THE FILTER CAKE WILL BE STORED, ON-SITE AS A RCRA MIXED WASTE, PENDING AVAILABILITY OF OFF-SITE TREATMENT, STORAGE, OR DISPOSAL.

6) ~~8)~~ PRIOR TO DISCHARGE FROM ~~TO~~ THE PLANT 8 ~~WASTEWATER TREATMENT SYSTEM~~ WWTS, THE FILTRATE ~~WASTEWATER~~ WILL BE ANALYZED FOR RADIOLOGICAL CONTAMINATION, FLUORIDES AND pH TO CONFIRM THAT THE FINAL WWTS EFFLUENT ~~IT~~ WILL NOT EXCEED THE FEMP NPDES LIMITS OR AREA WATER QUALITY CRITERIA. IF THE FILTRATE MEETS THE WWTS CRITERIA, IT WILL BE DISCHARGED TO THE GENERAL SUMP, TREATED IN THE BIODENITRIFICATION FACILITY (BDN), AND DISCHARGED TO THE RIVER.

7) ~~9)~~ IF THE SAMPLE ANALYSES OF THE FILTERED WASTEWATER DO ~~DOES~~ NOT MEET NPDES AND LOCAL WATER QUALITY DISCHARGE CRITERIA, THE WASTEWATER ~~IT~~ WILL BE REPROCESSED THROUGH PLANT 8 ~~RETURNED TO THE NEUTRALIZATION PROCESS REACTOR "A" FOR FURTHER PROCESSING~~.

8) ~~4)~~ AFTER THE RESIDUAL DHF IS REMOVED FROM THE HF TANK CAR, THE WALLS AND BOTTOM OF THE TANK CAR WILL BE THOROUGHLY FLUSHED WITH ~~A SOLUTION OF POTABLE~~ WATER

~~AND A NEUTRALIZING AGENT SELECTED FROM THE BENCH SCALE TEST~~ TO REMOVE ANY CORROSIVE RESIDUES. THE FLUSHING WILL BE CONDUCTED USING A ROTATING WATER SPRAYER HEAD CONNECTED TO A PIPE ASSEMBLY INSERTED INTO THE TOP OF THE HF TANK CAR. THE ROTATING WATER SPRAYER HEAD WILL BE CONNECTED TO THE WATER SUPPLY LINE. THE WATER SUPPLY PRESSURE WILL BE INCREASED WITH A PUMP, AS REQUIRED, TO MAINTAIN ADEQUATE ROTATING WATER SPRAYER HEAD MOTION. ~~WAND CAPABLE OF BEING MOVED UP AND DOWN INSIDE THE TANK. THE WAND AND SPRAYER SHALL BE CONSTRUCTED OF ACID RESISTANT MATERIALS. THE WAND ASSEMBLY WILL BE FITTED TO THE TOP OF THE TANK CAR IN A MANNER THAT PREVENTS THE RELEASE OF MISTS OR BACK SPRAY.~~ THE SPRAYER WILL BE INSERTED FOR A SUFFICIENT LENGTH OF TIME ~~CONFIGURED AND PROVIDED SUFFICIENT PRESSURE~~ TO CONTACT ALL INTERIOR SURFACE AREAS OF THE RUBBER-LINED TANK CAR.

THE RESULTING RINSE SOLUTION WILL BE PUMPED TO THE NEUTRALIZATION TANK ~~REACTOR "A"~~ AND PROCESSED THROUGH THE NEUTRALIZATION SYSTEM.

9) ~~5~~) FOLLOWING THE INITIAL DECONTAMINATION ~~NEUTRALIZATION~~ FLUSH, THE STEP 8 PROCEDURE WILL BE REPEATED TWICE, PROVIDING A TRIPLE RINSE OF THE HF TANK CAR. ~~THE INTERIOR OF THE TANK CAR WILL BE PRESSURE WASHED WITH POTABLE WATER USING A WAND AND SPRAYER ASSEMBLY TO THOROUGHLY REMOVE RESIDUES ON THE INTERIOR SURFACE OF THE RUBBER LINED TANK CAR. THE RINSEATE WILL BE PROCESSED THROUGH THE NEUTRALIZATION SYSTEM.~~

SAMPLES OF THE THIRD RINSE WILL BE COLLECTED AS SOON AS POSSIBLE AFTER THE RINSE IS COMPLETED. SAMPLES WILL BE COLLECTED FROM EITHER THE TANK CAR OR FROM A PORTION OF RINSEATE ~~PART OF THE RINSEATE WILL BE~~ RETAINED IN A DRUM LINED WITH DHF COMPATIBLE MATERIAL. ANALYSES OF

THE ~~A~~ SAMPLES ~~COLLECTED FROM THE DRUM~~ WILL BE USED TO CONFIRM THAT THE RAIL CAR IS CLEAN (I.E., pH IS GREATER THAN 2 AND LESS THAN 12.5). FIELD SAMPLES WILL BE TAKEN AND ANALYZED FOR pH USING SW-846 METHOD 9040. ~~IF WHEN~~ FIELD MEASUREMENTS INDICATE THE TANK CAR IS CLEAN, TWO ADDITIONAL SAMPLES WILL BE COLLECTED FOR LABORATORY CONFIRMATION OF THE pH ANALYSES. IF FIELD MEASUREMENTS INDICATE THE TANK CAR IS NOT CLEAN, A FOURTH RINSE WILL BE CONDUCTED. IF THE FOURTH RINSE IS UNSUCCESSFUL, REVISED DECONTAMINATION PROCEDURES WILL BE DEVELOPED AND SUBMITTED TO THE OEPA FOR REVIEW AND APPROVAL.

~~6) USING A REMOTE CAMERA A VISUAL INSPECTION OF THE TANK INTERIOR WILL BE CONDUCTED. ANY LOOSE SOLID DEBRIS OBSERVED IN THE BOTTOM OF THE NEUTRALIZED TANK CAR (E.G., PRECIPITATE FROM THE NEUTRALIZATION FLUSH OR PIECES OF RUBBER LINER LOOSENED BY PRESSURE SPRAY), WILL BE VACUUM PUMPED TO AND PROCESSED IN THE NEUTRALIZATION SYSTEM. AFTER THE TANK CAR IS DECLARED "CLEAN", THE TANK CAR WILL BE REMOVED FROM THE TRACK AND SCRAPPED.~~

~~NOTE: ALL RINSEATE AND RESIDUES REMOVED FROM THE TANK WILL BE PUMPED TO REACTOR "A" AND PROCESSED THROUGH THE DHF NEUTRALIZATION SYSTEM.~~

~~2) The hydrofluoric acid will be removed from the tank car and rendered non-hazardous by neutralization. The neutralization process will be controlled to minimize heat generation and gas evolution. The resulting non hazardous wastes will be handled in accordance with approved procedures and in compliance with all applicable regulations and DOE orders.~~

~~3) After removal of the acid from the Tank Car, the walls and bottom of the tank car will be thoroughly flushed with potable water. The wash water will be collected and neutralized. The resulting non-hazardous waste will be~~

~~handled as described in step 2. This process will be carried out to remove as much sludge as possible.~~

~~4) After flushing the tank car, the drain will be closed. The remaining sludge in the tank car will be covered with a pool of potable water. Any remaining sludge will be mechanically agitated to form a slurry and to assure a uniform pH. A dip sample will be taken and field tested using a pH meter. While continuing to agitate, the appropriate quantity of caustic (calculated based on preceding pH test) will be slowly added to adjust the pH to within the range of 3 to 8 as verified by additional dip samples and field testing. After the desired pH has been obtained, a sample will be submitted to the FEMP Analytical Laboratory for verification.~~

~~5) The neutralized waste residues (sludge, etc) and rinseate will be flushed and drained or pumped into appropriate containers, and handled as described in Step 2.~~

~~6) The interior of the tank car will be triple rinsed with potable water. A sample of the third rinseate will be analyzed for pH in the FEMP analytical laboratory to verify decontamination.~~

~~7) If needed, steps 4, 5 and 6 may be performed two additional times. If the tank car is not clean after the third attempt, the tank car will be managed as hazardous waste and will be stored in an approved FEMP RCRA storage location.~~

~~After each cleaning attempt, decontamination verification rinseate samples will be collected and analyzed in the field and in an analytical laboratory. If the analysis of the sample in the field and in the laboratory confirms that the tank car is clean, then the tank car will be disposed according to DOE requirements.~~

~~8)~~ 10) After the tank car WAS ~~has been~~ removed from the unit, the soil underlying the tank car WAS ~~will be~~ sampled AS DESCRIBED IN 3.3.2. (Figure 6.5). ~~TWELVE GRIDS (6 FT. BY 6 FT.) A six foot by six foot grid will be laid out over the area where the tank car was previously located.~~

~~9)~~ 11) All waste generated during the RCRA closure will be characterized according to the FEMP Waste Analysis and Waste Determination Plans. WASTES ~~Any hazardous waste~~ removed from the unit will be managed in a

manner consistent with DOE orders, RCRA regulations, and CERCLA Removal Action #17 - "Improved Storage of Soil and Debris". MATERIALS DETERMINED TO BE HAZARDOUS WASTES WILL BE CONTAINERIZED, STORED, AND MANAGED AS HAZARDOUS WASTE IN AN APPROVED FEMP RCRA STORAGE LOCATION. ~~If any of these materials are determined to BE contain hazardous wasteS constituents (by the "clean" standards established in Section 3.1.1), then the materials will be containerized, stored, and managed as hazardous waste in an approved FEMP RCRA storage location.~~

~~10)~~ 12) A revision to this CPID will be submitted if any soil underlying the tank car is found to be contaminated (as determined by the APPROVED "clean" standard in Section 3.1.1).

3.2.1 RESULTS OF BENCH SCALE TESTING

A TOTAL OF 51 COMPLETE NEUTRALIZATION RUNS WERE CONDUCTED BETWEEN FEBRUARY 15, 1994 AND MAY 18, 1994, AND ARE DISCUSSED IN THE "HF TANK CAR HAZARDOUS WASTE MANAGEMENT UNIT REPORT ON BENCH-SCALE TESTING OF HF TANK CAR WASTES" (DOE, 1994). THIS REPORT HAS BEEN ENTERED INTO THE FEMP OPERATING RECORD. THREE DIFFERENT NEUTRALIZATION PROCESSES WERE TESTED: DHF ACID ADDED TO LIME SLURRY (PROCESS 1), LIME SLURRY ADDED TO DHF SOLUTION (PROCESS 2), AND DIRECT ADDITION OF NEUTRALIZATION SOLIDS TO DHF (PROCESS 3). FOR EACH PROCESS, REAGENT CONCENTRATION, COMPOSITION, AND ADDITION RATES WERE ALTERED TO DETERMINE WHICH PROCESS WOULD ACHIEVE THE MOST DESIRABLE RESULTS. AS A RESULT OF THE BENCH-SCALE TESTS, PROCESS 1 WAS DETERMINED TO BE THE MOST EFFECTIVE AND FEASIBLE. THE DATA SUPPORTING THE PROCESS SELECTED IS BASED ON TEST RUNS 46, 47, AND 48, AND IS PROVIDED IN TABLE 1. A PLOT OF THE pH, TEMPERATURE, AND TOTAL VOLUME OF DHF ADDED OVER THE TIME REQUIRED TO COMPLETE THESE TESTS IS SHOWN IN FIGURE 7.

PROCESS 1, ADDITION OF DHF ACID TO LIME SLURRY, CONSISTED OF PLACING A SPECIFIC VOLUME OF LIME/CALCIUM CARBONATE SLURRY IN THE AGITATED BEAKER. AFTER THE pH PROBE AND THERMOMETER WERE INSERTED, THE FULL-STRENGTH DHF WAS ADDED. THE DHF WAS ADDED AT A CONTROLLED AND PREDETERMINED RATE AND WAS STOPPED WHEN THE pH OF THE REACTION CONTAINER HAD DECREASED FROM THE INITIAL VALUE OF APPROXIMATELY 12.4 TO A VALUE OF 6 OR BELOW. THE CONTAINER WAS THEN STIRRED FOR AN ADDITIONAL 15 MINUTES. IF THE pH INCREASED TO GREATER THAN 6, MORE DHF WAS ADDED AND MIXING CONTINUED FOR AN ADDITIONAL 15 MINUTES.

A TOTAL OF 34 NEUTRALIZATION TESTS WERE PERFORMED USING THIS PROCESS APPROACH. THE EARLY RUNS WERE COMPLETED PRIMARILY FOR INITIAL SCREENING OF THE PROCESS FEASIBILITY AND TO IDENTIFY PROCESS LIMITS PRIOR TO PERFORMING THE LATER TESTS. THESE TESTS USED A LIME SLURRY VOLUME OF 100 ML, A LIME SOLIDS

CONCENTRATION OF 5 WT. PERCENT, AND DHF ADDITION RATES WHICH VARIED FROM 0.5 TO 8 ML PER MINUTE. ADDITIONAL SCREENING TESTS WERE COMPLETED WITH A LIME SLURRY VOLUME OF 300 ML AND ADDITION RATES OF 8 AND 16 ML/MINUTE, A LIME SLURRY VOLUME OF 600 ML AND ADDITION RATES OF 0.5, 3.0, AND 10 ML/MIN, AND A LIME SLURRY VOLUME OF 1200 ML AND ADDITION RATES OF 6, 10, AND 12 ML/MIN. IT WAS FOUND DURING THESE RUNS THAT A HIGHER ADDITION RATE OF DHF GENERALLY INCREASED THE AMOUNT OF FROTHING AND SPATTERING IN THE REACTION MIXTURE.

BASED ON CALCULATIONS MADE FROM DATA OBTAINED DURING BENCH-SCALE TESTING, PHYSICAL AND CHEMICAL PROPERTIES OF REAGENTS AND NEUTRALIZATION PRODUCTS FOR PROCESS 1 WERE DETERMINED. A SUMMARY OF THESE PROPERTIES IS PROVIDED IN TABLE 2.

3.3 SAMPLING AND ANALYSIS

3.3.1 HF Tank Car Decontamination Verification Rinseate Samples

After each decontamination attempt, samples of the final decontamination rinseate will be collected from the tank car using the procedures described in the HF Tank Car SAP, Attachment A. These samples will be analyzed in the field for pH using SW-846 Method 9040. If the final decontamination rinseate field analysis indicates that the tank car is "clean" according to the standards listed in section 3.1.1, two additional grab samples of the decontamination rinseate will be analyzed for pH by the FEMP analytical laboratory.

3.3.2 Soil Samples

SINCE THERE IS NO DISTINCTION BETWEEN POTENTIAL CONTAMINATION FROM THE TANK FARM SUMP (HWMU NO. 11) AND THE HF TANK CAR, ADJACENT SOILS OUTSIDE OF THE IMMEDIATE HF TANK CAR BOUNDARIES WILL BE ADDRESSED IN THE CLEAN UP/CLOSURE OF THE TANK FARM SUMP. AS A RESULT, SOIL SAMPLES ~~WILL ONLY BE~~ WERE COLLECTED FROM THE SOIL UNDERLYING THE HF TANK CAR (FIGURE ~~5~~ 6). TWELVE GRIDS (6' X 6') WERE LAID OUT OVER THE AREA WHERE THE

TANK CAR WAS PREVIOUSLY LOCATED (FIGURE 6). The thirty-six (36) soil samples ~~will be~~ WERE collected from the ~~soil underlying the HF Tank Car. The soil samples will be collected~~ FOLLOWING INTERVALS: from the interval starting just below the rail sub-base to six (6) inches below the sub-base, six (6) inches to eighteen (18) inches below the sub-base, and eighteen (18) to thirty (30) inches below the sub-base. A grab sample ~~will be~~ WAS collected from the center of each grid or from a directed sampling location within the grid, using the procedures outlined in the HF Tank Car SAP (Attachment A). The soil samples ~~will be~~ WERE submitted to the FEMP analytical laboratory to be analyzed for pH.

THE ANALYTICAL RESULTS SHOW A pH MEASUREMENT BETWEEN 6.27 AND 8.11. THE CLEAN STANDARDS FOR SOIL (SECTION 3.1.1) HAVE BEEN CONFIRMED; THEREFORE, NO SOIL REMEDIATION IS REQUIRED TO COMPLETE CLEAN CLOSURE. THE RESULTS OF THE SOIL SAMPLING ARE INCLUDED IN TABLE 3. LOW CONCENTRATIONS OF RADIOLOGICAL CONTAMINATION WERE DETECTED IN SOME LOCATIONS.

3.3.3 Quality Assurance/Quality Control

The Quality Assurance/Quality Control procedures that will be used during the closure of the HF Tank Car are outlined in THE SAP (Attachment A). One (1) duplicate sample will be collected for every twenty samples collected from the tank car decontamination verification rinseate, and one (1) duplicate sample WAS ~~will be~~ collected for every twenty samples collected from the soil underlying the tank car. If less than twenty decontamination verification rinseate samples are collected during each sampling day, then one duplicate sample will be collected for each sampling day. ~~If less than twenty soil samples are collected in one sampling day, then one~~ ONE duplicate sample WAS ~~will be~~ collected ~~for~~ each sampling day. Laboratory bias will be reduced by labeling and numbering the duplicate samples in such a manner that does not indicate the sample is a duplicate. The field logbook will identify all duplicate samples by the sample location and their sample identification number.

The FEMP analytical laboratory will follow the appropriate U.S. EPA Test Methods for Evaluating Solid Wastes (SW-846), and will follow the approved or current draft version of the FEMP Site-Wide CERCLA Quality Assurance Project Plan (SCQ)~~(QAPjP)~~. The

laboratory shall have on file a quality assurance/quality control plan to be followed for analytical determinations as required in this CPID.

3.4 EQUIPMENT DECONTAMINATION AND DISPOSAL

Before any closure activities, all equipment that will be used during the decontamination and sampling will be cleaned or properly decontaminated, reducing the possibility of cross contamination from other RCRA units. All non-disposable SAMPLING equipment used will be decontaminated following each cleaning or sample collection effort using the methods listed in THE SAP (Attachment A). The equipment decontamination will be conducted adjacent to the HF Tank Car. The equipment decontamination procedures will minimize the potential for release of hazardous waste or hazardous waste constituents to the environment. An impervious layer of synthetic sheeting will line the equipment decontamination area. Temporary dikes will be placed on the impervious sheeting to prevent run-off of decontamination liquids.

THE NEUTRALIZATION SYSTEM PIPING, ANCILLARY EQUIPMENT, AND TANK WILL BE RINSED IN-PLACE BY PUMPING WATER THROUGH THEM. RINSE WATERS WILL BE COLLECTED, TESTED TO CONFIRM pH IS GREATER THAN 2 AND LESS THAN 12.5 AND WITHIN THE RANGE OF PLANT 8 ACCEPTANCE CRITERIA, AND TRANSFERRED TO PLANT 8 FOR ROUTINE PROCESSING OF CONTAMINATED RAIN WATER PRIOR TO DISCHARGE TO THE FEMP WWTS. THE DECONTAMINATED PROCESS EQUIPMENT WILL BE MAINTAINED IN OPERATING CONDITION FOR POSSIBLE FUTURE USE IN SUPPORT OF REMOVAL OF PROCESS RESIDUES UNDER REMOVAL ACTION 12, SAFE SHUTDOWN.

All decontamination wastes will be evaluated in accordance with the approved FEMP Waste Analysis and Waste Determination Plans. Wastes generated during closure will be placed in appropriate containers, properly labeled, and managed in accordance with all applicable regulations and DOE orders.

3.5 HEALTH AND SAFETY

Before conducting any field activities at the FEMP, a health and safety assessment will be conducted to characterize current hazards and conditions. The Project/Task Specific

Health and Safety Plan will specify the health and safety procedures required for performing the closure activities. This plan will include personnel protection equipment requirements, entry and exit requirements, EMERGENCY PROCEDURES, and personnel and equipment decontamination procedures. A copy of Guidelines for the Preparation of FEMP Project/Task Specific Health and Safety Plan is included in Attachment B.

As part of the safety assessment, radioactivity screening will be done over the area to determine radiation protection requirements. Additional screening, including laboratory analyses for radionuclides, may be required to further categorize the samples for level of radiation hazard.

4.0 CLOSURE CERTIFICATION

The RCRA closure certification will be made as described in this section unless the sampling and analysis indicates that the HF Tank Car cannot be decontaminated (i.e., remains outside the "clean" standards listed in section 3.1.1).

If contamination levels cannot be reduced below the "clean" standards described in section 3.1.1, a revision to the HF Tank Car CPID will be submitted. Response actions under CERCLA necessary to remove or remediate soil, ground water, or other media contaminated by RCRA hazardous waste managed in this unit will be determined according to the requirements of the Consent Agreement, as amended. Any actions taken under CERCLA will be consistent with RCRA regulations and all others ARARs and identified guidance.

4.1 CERTIFICATION INSPECTIONS AND DOCUMENTATION

Certification inspections by the owner and an independent, qualified, registered, Professional Engineer, or his/her designated representatives, are an integral part of the closure process. The purpose of closure inspections is to confirm that closure actions conform to the approved CPID.

RCRA closure certification documentation shall include: a daily log of activities; field notes recorded by the owner and or the owner's representative during closure activities; copies of the laboratory analysis reports; copies of the hazardous waste manifests (if used); chain of custody forms used for sample handling and tracking; and certification statements by both the owner and Professional Engineer. All RCRA closure certification documentation will be compiled and retained at the FEMP for access and inspection by the OEPA.

4.2 STATEMENT OF CERTIFICATION

The DOE, and an independent, qualified, registered Professional Engineer will submit certification of closure within 60 days after unit closure is complete. The certification will meet the requirements of OAC 3745-50-42(D) and OAC 3745-66-15 (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 the hazardous waste management unit has been closed in accordance with the specifications in the approved closure plan.

_____

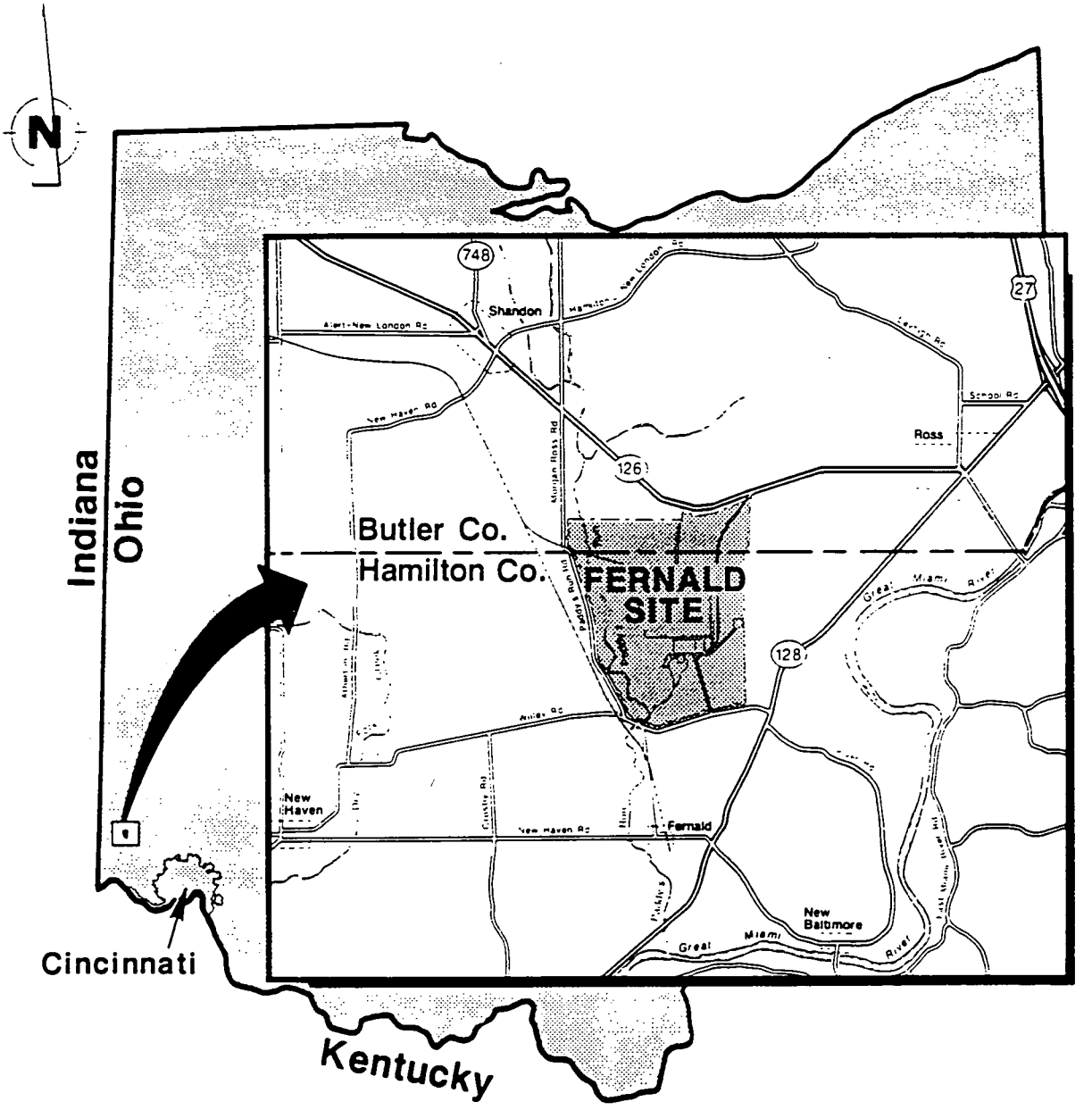
Ohio Registered Professional Engineer

5.0 CLOSURE SCHEDULE

To comply with ~~internal~~ DOE orders and other FEDERAL regulatory requirements, several activities must be undertaken before physical closure of HWMU NO. 38 can begin at the FEMP. These activities include PREPARING AND SUBMITTING AIR PERMITS (IF REQUIRED), preparation of NEPA documentation, assessment surveys, preparation of a project/task specific health and safety plan, assembly of the neutralization treatment equipment equipped with appropriate control devices, preparation of internal work plans, preparation and approval of Operational Readiness Review (ORR), and training of personnel involved in closure activities. It is expected that these activities will ~~require a minimum of 180 days to complete~~ OCCUR SIMULTANEOUSLY WITH BENCH SCALE TESTING AND ASSEMBLY OF THE NEUTRALIZATION SYSTEM. ~~These activities are indicated in the Schedule for Closure of the HF Tank Car (Figure 7) as internal activities to prepare for closure. Some portions may be initiated before CPID approval; however, to incorporate changes required by OEPA, certain activities would need to be completed after OEPA approval.~~

~~The OEPA will be notified at least 45 days prior to beginning closure of the HF Tank Car.~~ Assuming no modifications to the plan are required or unexpected events are encountered, it is expected that physical closure activities can be completed within 180 days AFTER APPROVAL OF THE CPID ~~from the date closure begins~~. The schedule for closure is provided in Figure ~~7~~ 8. The schedule assumes that funding is available to complete all closure 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. Any request for an extension of the time required for completion of closure, if necessary, 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 the independent, qualified, registered Professional Engineer will be notified at least five (5) business days before any critical closure activities. These critical activities are noted on the Schedule for Closure.



The Fernald Site covers about 425 hectares (1,050 acres).

2011

Figure 1. Fernald Site and Vicinity. (Source: FERMCO 1993. Fernald Environmental Management. Project Site Environmental Report, 1992.)

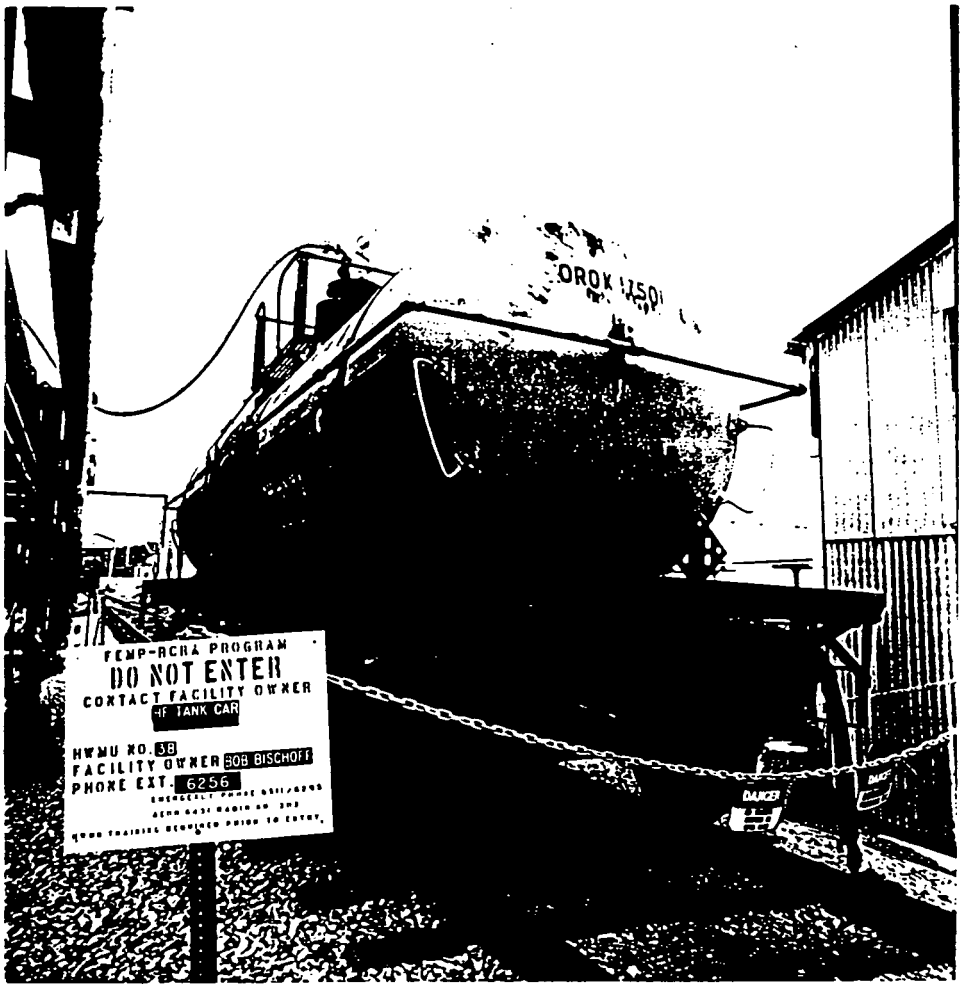


Figure 2. Photograph of HF Tank Car in its Original Location.

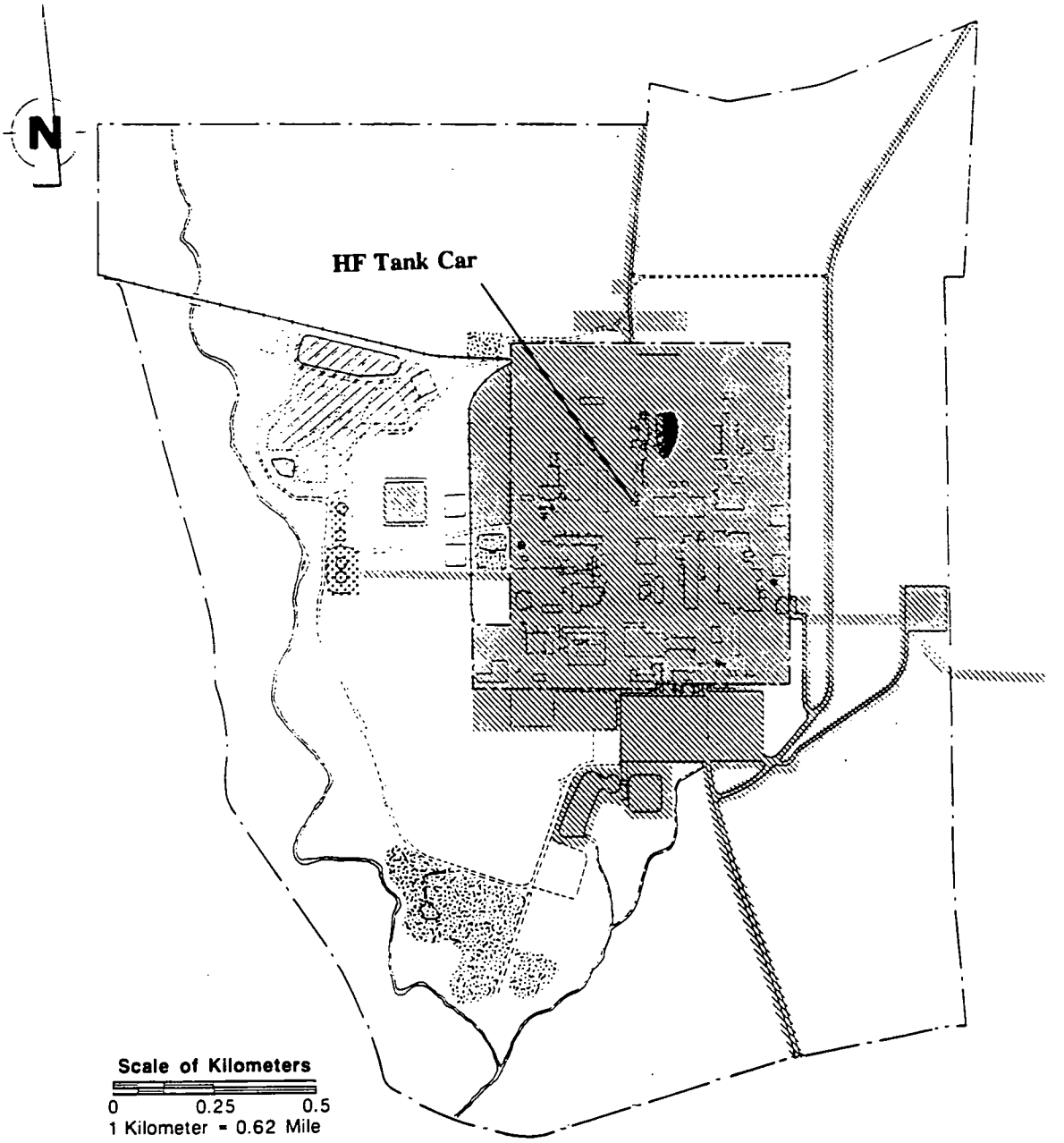


Figure 3. HF Tank Car Location. (Source: FERMCO 1993. Fernald Environmental Management. Project Site Environmental Report, 1992.)

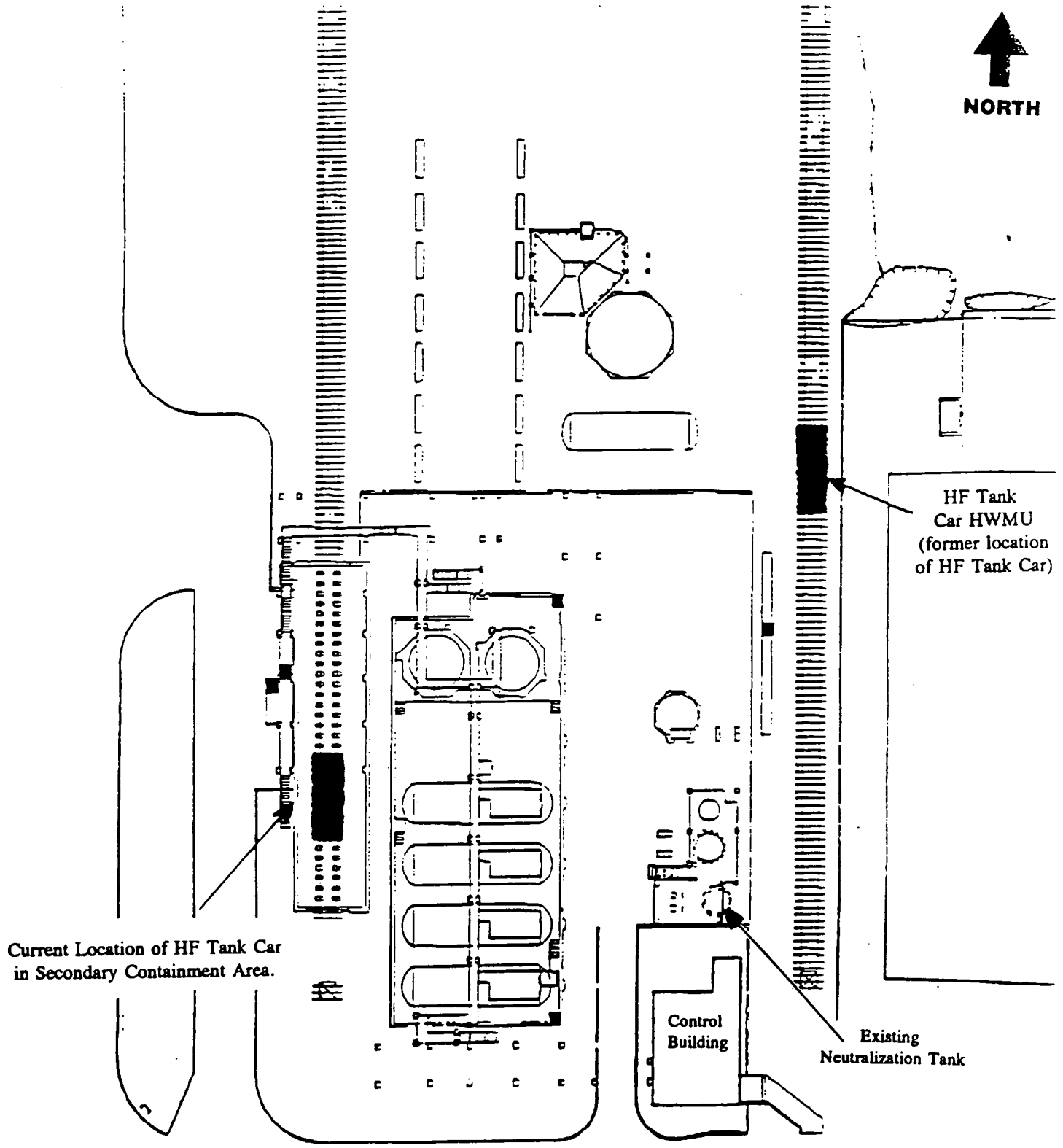


Figure 4. Vicinity of HF Tank Car and Secondary Containment Area.

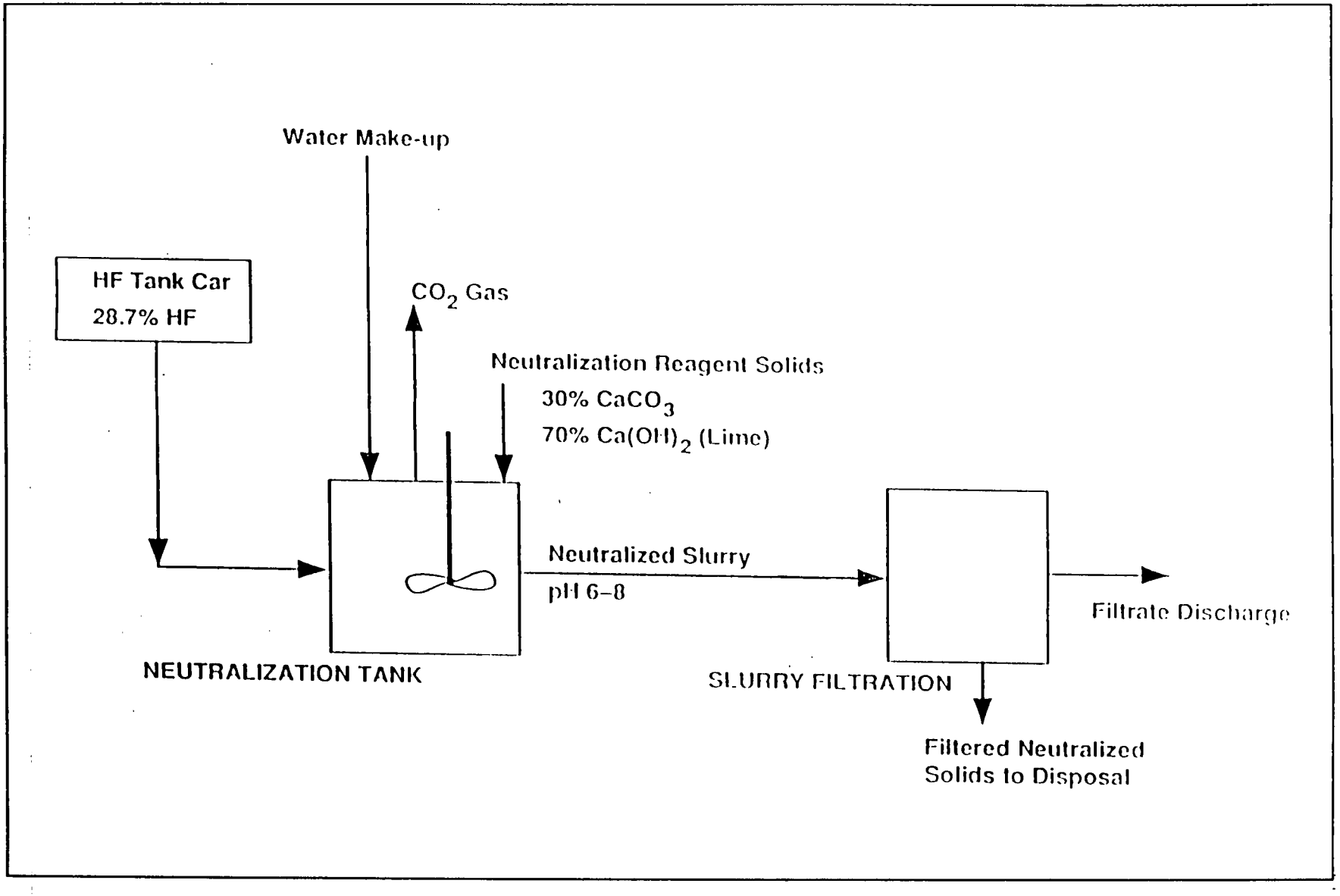


Figure 5. Lime Slurry - Elementary Neutralization Equipment Schematic.

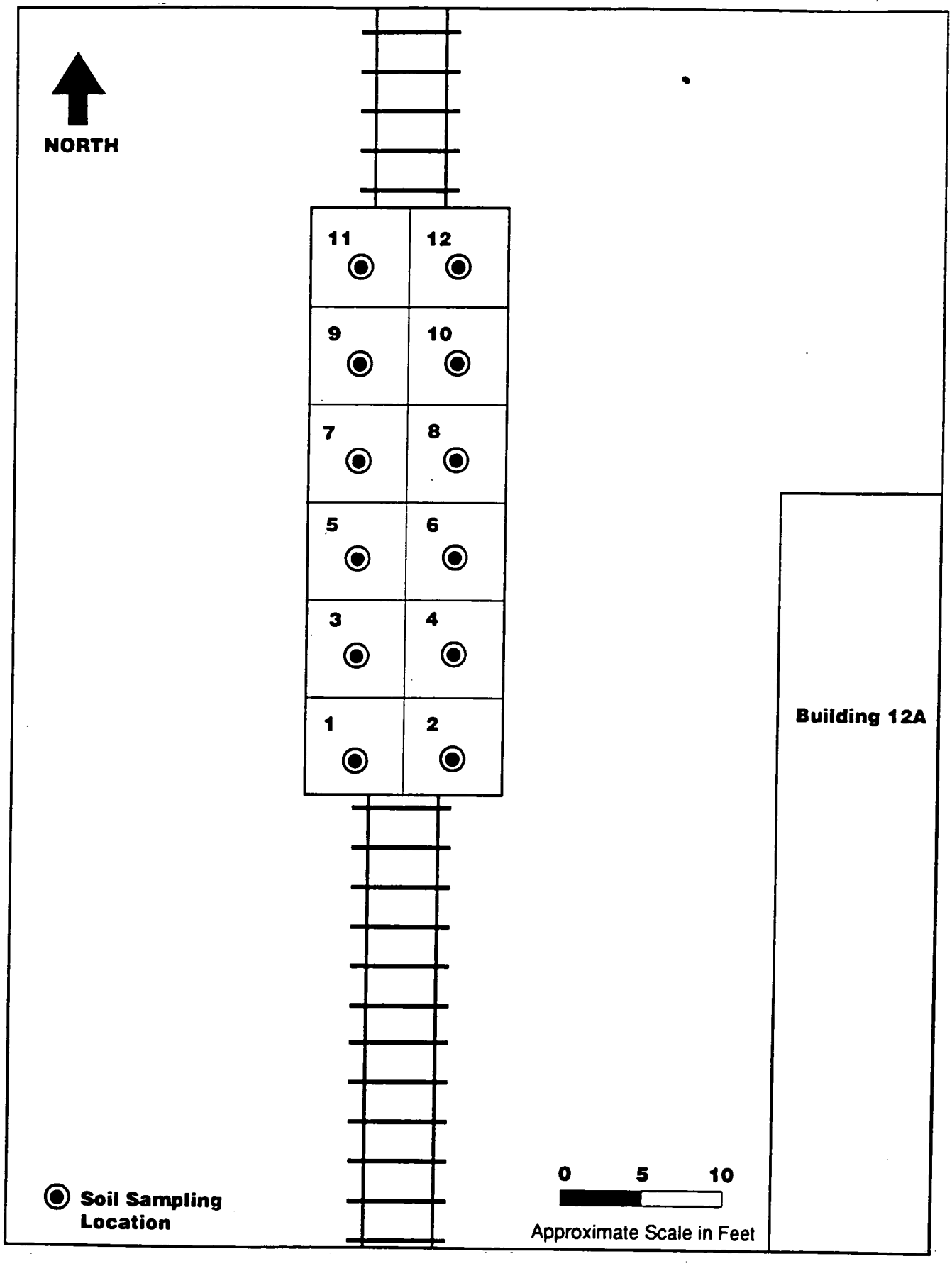


Figure 6. HF Tank Car HWMU Soil Sampling Locations.

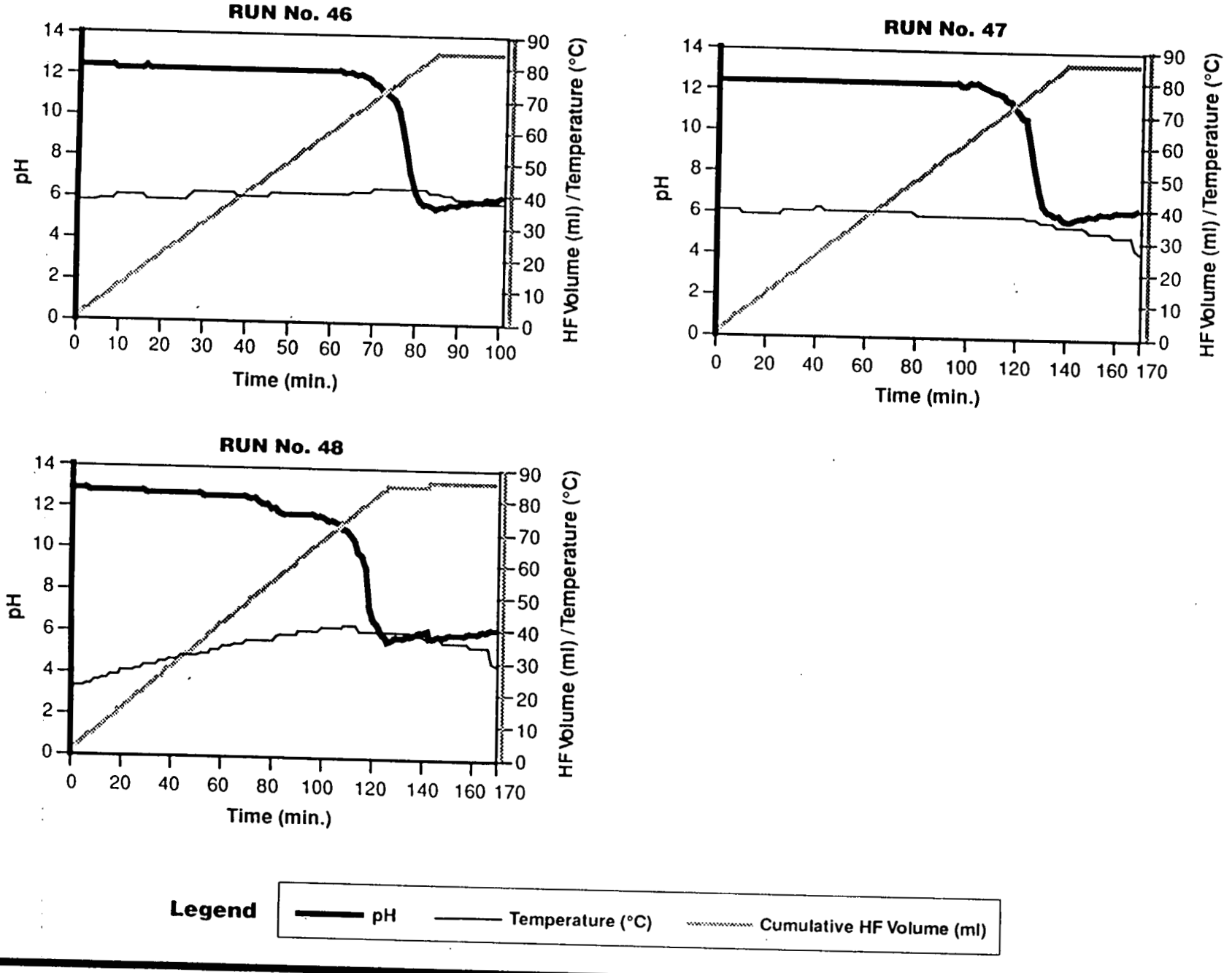
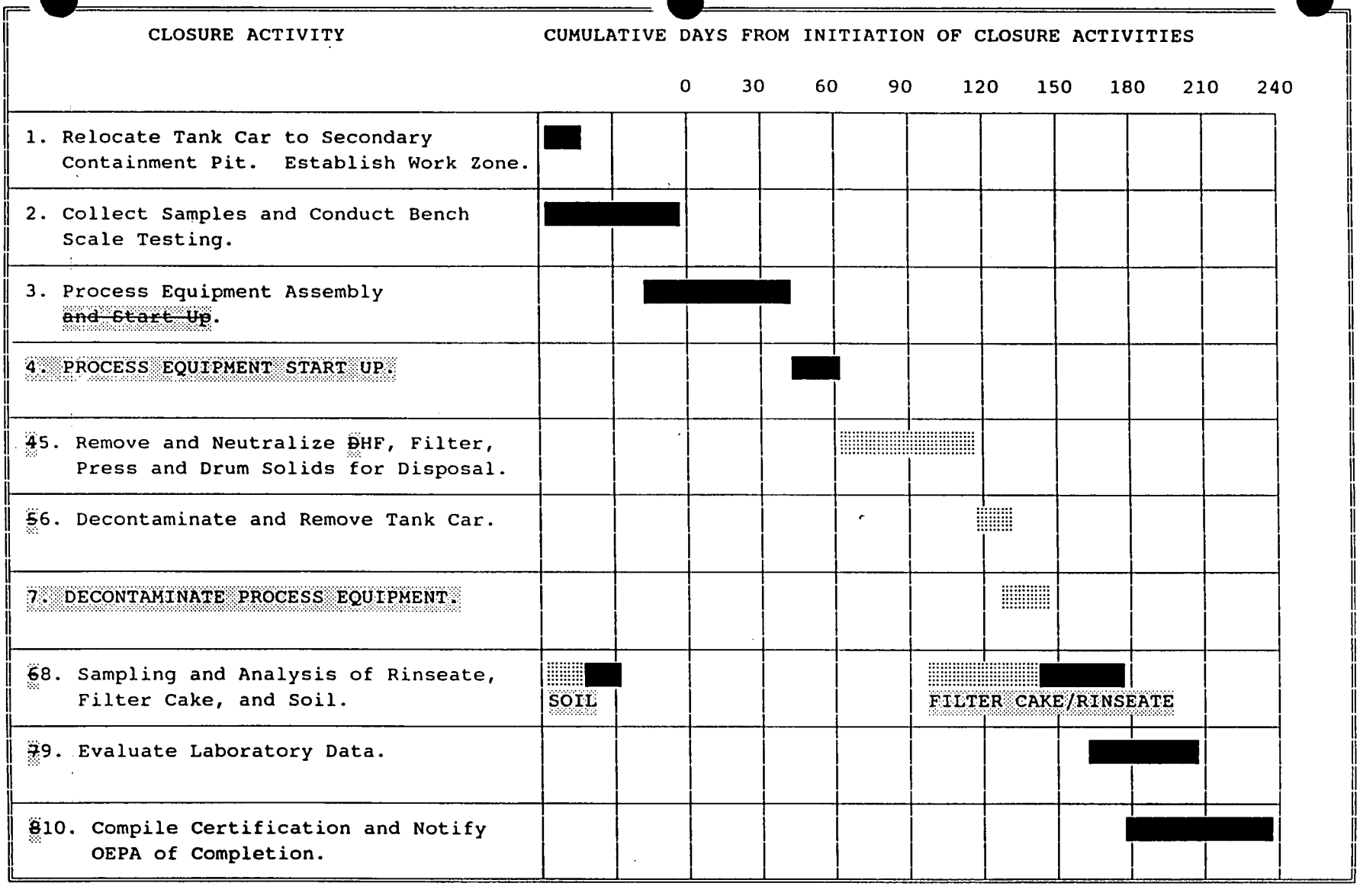


Figure 7. HF Added to 10 Percent Lime Slurry with 30/70 Mix of Calcium Carbonate/Lime.



Notes:

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

DAY 0 IN THE SCHEDULE REPRESENTS THE DATE OF OHIO EPA APPROVAL OF THE CPID.

Figure 8. Schedule for Closure of the HF Tank Car.

TABLE 1 SUMMARIZED RESULTS OF TESTING FOR RUNS 46, 47, AND 48

Run No.	Run Date	Total DHF Added (ml)	Lime/ $CaCO_3$ Solids (%)	Initial Lime Slurry Vol. (ml)	Lime[1/] Solids (%)	$CaCO_3$ Solids (%)	Pressure Filt. Rate (ml/min)	Vacuum Filt. Rate (ml/min)	Neutralized Slurry Visc (cp)	DHF Add. rate (ml/min)	Settling Dist. in 30 min. (cm)	Filtrate Fluoride (mg/l)	Filtrate Fl, 10x Dil. (mg/l)
46	10-May-94	84.0	10%	600	70%	30%	104.7	53.1	30	1.0	3.0	8.3	<1.0
47	11-May-94	85.0	10%	600	70%	30%	128.6	50.4	30	1.0	2.5	6.3	1.7
48	18-May-94	85.0	10%	600	70%	30%	31.0	NA	NA	1.0	NA	2.7	<1.0

1/ Commercial bagged lime used for runs.

TABLE 2 SUMMARY OF PHYSICAL AND CHEMICAL PROPERTIES OF REAGENTS AND NEUTRALIZATION PRODUCTS FOR THE SELECTED NEUTRALIZATION PROCESS INVOLVING ADDITION OF DHF TO LIME SLURRY

Material	English Units	Value	Metric Units	Value
HF Tank Car Acid				
Acid Type	-	HF	-	HF
Concentration	wt.%	28.7	wt.%	28.7
Density (estimated)	lb/gal	9.063	g/ml	1.086
Lime/$CaCO_3$ Slurry				
Solids Content	wt.%	10	wt.%	10
Lime % of Solids	wt.%	70	wt.%	70
$CaCO_3$ % of Solids	wt.%	30	wt.%	30
Slurry Density	lb/gal	8.85	g/ml	1.06
pH	unit	12.4	unit	12.4
Neutralized Slurry				
Solids Content	wt.%	9.8	wt.%	9.8
Density (estimated)	lb/gal	8.85	g/ml	1.06
pH	unit	6-8	unit	6-8
Viscosity	cp	30	cp	30
Solids Settling Velocity	in/min	0.03	cm/min	0.08
Temperature	°F	130	°C	54.4
Heat Evolved	BTU/lb HF	1209	cal/g HF	671.6
Filtered Solids				
Solids Content	wt.%	51.6	wt.%	51.6
Density	lb/cu. ft.	70.9	g/cc	1.14
pH	unit	6-8	unit	6-8
Solids Composition:				
CaF_2, % (estimated)	wt.%	85	wt.%	85
$CaCO_3$, % (estimated)	wt.%	3	wt.%	3
$Ca(OH)_2$, % (estimated)	wt.%	12	wt.%	12
Filtrate				
Solids Content (estimated)	ppm	<20	ppm	<20
Density	lb/gal	8.3	g/ml	1.0
pH	unit	6-8	unit	6-8
Fluoride	ppm	5.8	ppm	5.8

TABLE 3: SUMMARY OF SOIL SAMPLING

SAMPLE POINT	pH	ALPHA (pCi/g)	BETA (pCi/g)	TOTAL U (ppm)
1-1	8.01	9.1 U	19	2
1-2	7.92	10	16	NA
1-3	7.86	7.5	15	NA
FB	6.37	NA	NA	NA
RB	6.27	NA	NA	NA
2-1	8.11	7.1 U	15 U	NA
2-2	7.55	6.7 U	17 U	NA
2-3	7.64	6.6 U	16 U	NA
FB	7.69	NA	NA	NA
RB	8.57	NA	NA	NA
3-1	7.98	5.8	17	NA
3-2	7.68	13	21	NA
3-3	7.13	8.5	13 U	NA
FB	6.75	NA	NA	NA
4-1	7.62	21	51	NA
4-2	7.48	12	20 U	NA
4-3	7.55	8.7	16	NA
13-2 (duplicate 4-3)	7.51	7.9	15	NA
FB	6.33	NA	NA	NA
RB	8.36	NA	NA	NA
5-1	8.01	12	17	NA
5-2	7.46	7 U	16 U	NA
5-3	6.45	6.2 U	16 U	NA
6-1	7.87	7.7	13	NA
13-3 (duplicate 6-1)	7.93	12	19	NA
6-2	7.91	5.6	12	NA
6-3	7.40	5.3	8.7	NA

FB = Field Blank RB = Rinse Blank
NA = Not Analyzed U = Undetected

TABLE 3: SUMMARY OF SOIL SAMPLING

SAMPLE POINT	pH	ALPHA (pCi/g)	BETA (pCi/g)	TOTAL U (ppm)
7-1	8.06	13	23	NA
7-2	7.12	9.7	11 U	NA
7-3	7.04	9.7	12	NA
8-1	7.99	5.6	14	NA
13-4 (duplicate 8-1)	7.98	21	25	NA
8-2	7.83	8.6	11	NA
8-3	7.32	7.3	11	NA
9-1	7.73	6.8	15	79
9-2	7.56	6.5	10	NA
9-3	7.57	8.8	12	NA
10-1	7.56	11	15	NA
10-2	7.22	6.9	12	NA
10-3	6.94	8.0	9.9	NA
11-1	7.33	9.2	15	NA
11-2	6.92	6.9	18	NA
13-1 (duplicate 11-2)	7.57	6.5 U	15 U	NA
11-3	7.17	6.5	11 U	NA
12-1	7.44	11	15	22
12-2	7.21	5.1	10	NA
12-3	7.56	8.4	11	NA
13-5 (duplicate 12-3)	7.33	9.0	9.0	NA
FB	6.42	NA	NA	NA
RB	7.15	NA	NA	NA

FB = Field Blank RB = Rinse Blank
NA = Not Analyzed U = Undetected

HF Tank Car
Closure Plan Information and Data
Revision 2 (Resubmittal)

ATTACHMENT A

HF TANK CAR
SAMPLING AND ANALYSIS PLAN

6240 - .

SAMPLING AND ANALYSIS PLAN
for the
HF Tank Car

Revision 2 (Resubmittal)

Fernald Environmental Management Project

July 1994

U.S. DEPARTMENT OF ENERGY

0240 -4

CONTENTS

1.0 INTRODUCTION

This HF Tank Car Sampling and Analysis Plan (SAP) describes the sample collection and handling procedures, references analytical methods, and specifies the quality assurance/quality control procedures for the closure of the HF Tank Car. All closure sampling and analysis 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)~~(QAPjP)~~. Sampling and analytical procedures referenced in this SAP will also comply with the U.S. EPA "Test Methods for Evaluating Solid Wastes" (SW-846).

This RCRA closure plan information and data (CPID) specifies sampling and analysis to determine if the hazardous waste management unit (HWMU) and the underlying media is contaminated. The sample types, sample locations, and number of samples to be collected during closure of the unit are specified in the plan. The closure analytical results will be used to evaluate closure performance.

1.1 SAMPLING OBJECTIVES

Sampling in support of RCRA closure actions will be performed to:

1) Confirm decontamination of the unit.

2) Determine the presence of contamination resulting from waste management practices associated with the HWMU being closed.

3) Screen for radiological parameters in the samples.

4) Characterize waste materials generated during RCRA closures. (Waste characterizations and determinations referenced in this SAP will be conducted according to the Feed Materials Production Center (FMPC) Waste Analysis and Waste Determination Plans, as approved by the OEPA.)

All wastes and materials being held for RCRA determinations will be managed in a manner consistent with hazardous waste management practices. Wastes determined to

be RCRA hazardous will be managed and disposed according to applicable hazardous waste rules and regulations.

1.2 SAMPLE ANALYSIS

To evaluate HWMU closure performance, samples collected during RCRA closures will be analyzed for pH. The analyses will be conducted using applicable SW-846 analytical methods.

Radiological analyses, using analytical methods specified in the FEMP Laboratory Analytical Methods Manual, will be conducted to determine gross alpha and gross beta levels on samples that will be collected during closure.

2.0 SAMPLE COLLECTION

The following sections discuss the procedures that will be used for sampling in support of this RCRA closure as specified in the CPID ~~closure plan information and data~~.

2.1 SAMPLING EQUIPMENT

The following equipment may be used in the process of collecting samples during closure of the HF Tank Car:

- 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
- 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
- Teflon coliwasa samplers

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 DECONTAMINATION VERIFICATION RINSEATE SAMPLING PROCEDURES

Two decontamination verification rinseate samples will be collected, AS SOON AS POSSIBLE, from the final rinse after each decontamination attempt. SAMPLES WILL BE COLLECTED FROM THE TANK CAR OR FROM A DRUM. IF A DRUM IS USED, THE SAMPLES WILL BE COLLECTED AFTER THE RINSEATE IS PUMPED OUT OF THE TANK CAR AND INTO THE A DRUM LINED WITH HF COMPATIBLE MATERIALS ; THE SAMPLES WILL BE COLLECTED USING A CLEAN TEFLON COLIWASA, OR OTHER APPROPRIATE SAMPLING DEVICE.-

~~These samples will be collected from manways located on top of the tank car or from the container receiving the rinseate using a clean teflon coliwasa, or other appropriate sampling device.~~ These samples will be analyzed in the field for pH using SW-846 Method 9040. Two additional samples will be collected using a clean teflon coliwasa, or other appropriate sampling device. The samples will be placed into appropriate containers, labeled, and transported to the FEMP analytical laboratory. These samples will be analyzed for pH using SW-846 Method 9040.

2.3 SOIL SAMPLING

2.3.1 Soil Sampling Locations

The soil sampling locations will be selected using a grid. The grid interval was determined using the following formula from SW-846:

$$GI = [(A/3.14)^{1/2}]/2,$$

where GI is the grid interval and A is the area to be gridded.

The calculation for the grid interval for the storage area (including the ramp) is shown below:

Width = 12 feet
Length = 36 feet
Area = 12' X 36' = 432 ft^2
$GI = [(432/3.14)^{1/2}]/2 = 5.865$ ft.

To facilitate the gridding, the grid interval was increased to 6 ft. The grids have been numbered 1 through 12. Directed samples will be collected from within the grids where signs of contamination are present, or in areas where leaks may have occurred (under valves). Otherwise the samples will be collected from the center of the grid. The grid and proposed sample locations are displayed on Figure 6 ~~3~~ in the HF Tank Car CPID ~~Closure Plan information and data~~.

2.3.2 Soil Sampling Procedures

Samples of the soil underlying the tank car will be taken, as indicated in the CPID ~~closure plan information and data~~, to determine whether a hazardous waste release has occurred at the HF Tank Car.

Before initiating any sampling activities at the HF Tank Car, 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).

The following procedures will be used to collect samples of the soil underlying the HF Tank Car. The soil samples will be collected from the locations described in Section 2.3.1 of the SAP.

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

2) Use a decontaminated stainless steel bucket auger or soil coring device to advance the soil boring to extract a 6 inch soil sample.

3) Use a decontaminated spatula (stainless steel or other suitable material), or other approved device to remove soils from the auger. Transfer the sample into the appropriate sample container.

4) Follow container management procedures in Section 2.4.

5) REPEAT STEPS 2, 3, AND 4 TO OBTAIN SOIL SAMPLES FROM 6" TO 18" AND 18" TO 30" DEPTHS FROM THE SURFACE.

6 ~~5~~) Using the above procedures, collect one (1) duplicate sample of the soil from a randomly selected sampling location.

7 ~~6~~) Upon completion of sampling at a sampling location, decontaminate all sampling equipment used, following procedures in Section 2.5. 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, seal sample coolers and transfer them to the designated FEMP sample receiving area. These samples will be analyzed by the FEMP analytical laboratory using SW-846 Method 9045.

2.4 MANAGEMENT OF SAMPLE CONTAINERS

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

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

2) Document and record sample label and container information in the field sampling logbook, and on a sample Analysis Request/Custody Record 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 Analysis Request/Custody Record 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.

2.5 SAMPLING EQUIPMENT DECONTAMINATION

All decontamination and sampling equipment to be used during closures must be clean or decontaminated. Before beginning any decontamination procedures, all personnel shall inspect their clothing to ensure that clean clothing or clean disposable outer

coveralls are used. Clean chemically resistant gloves will be used during the decontamination process, and when handling any clean equipment. Sampling equipment decontamination procedures are discussed in the following sections.

2.5.1 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)
- Polyethylene or other approved impervious sheeting
- Heavy duty plastic bags
- Absorbent materials, socks, and pads
- Wash/rinse tubs, buckets, or other approved containers

2.5.2 Decontamination Procedures

All reusable SAMPLING 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) Triple rinse with deionized, organic-free water.

8) Air dry in a dust-free environment. Cover with plastic or aluminum foil.

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.

2.6 WASTES GENERATED DURING CLOSURE

Non-liquid wastes and wastewaters collected during closure of the HF Tank Car including the wastes generated from the 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 conducted 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 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. The logbook will be bound, with consecutively numbered pages. 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 completed sample Analysis Request/Custody Record form, will be taken to the designated FEMP sample receiving/shipping area. Each person who takes possession of the samples or sample coolers shall sign the Custody Record 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 analysis.

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 analysis. At a minimum, these records will include:

- an updated field sampling logbook
- properly completed sample labels
- field and laboratory QA/QC samples
- completed sample Analysis Request/Custody Record 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 conducted during RCRA closures shall be consistent with applicable FEMP and THE SCQ ~~draft QAPjP (as revised or approved)~~ QA/QC procedures. The following sections discuss field QA/QC, laboratory QA/QC, and sample Analysis Request/Custody Record forms.

4.1 FIELD QA/QC PROCEDURES

To prevent cross-contamination between samples and locations, only clean or decontaminated sampling equipment will be used. SAMPLING OF

DECONTAMINATION RINSEATE WILL BE CONDUCTED TO CONFIRM EFFECTIVENESS AND IDENTIFY POSSIBLE CROSS-CONTAMINATION OF SAMPLES. AT A MINIMUM, ONE (1) SAMPLE OF THE RINSEATE WILL BE COLLECTED EACH DAY OR ONE (1) FOR EVERY TWENTY SAMPLES COLLECTED EACH DAY, WHICHEVER IS GREATER. THE FINAL RINSEATE SAMPLES WILL BE ANALYZED FOR pH BY THE DESIGNATED ANALYTICAL LABORATORY USING SW-846 METHOD 9040. THE FOLLOWING PROCEDURE WILL BE USED TO COLLECT THE FINAL RINSEATE SAMPLES: ~~When sampling equipment is decontaminated following collection of a sample, a sample of the final rinseate will be collected and analyzed for pH by the FEMP analytical laboratory using SW-846 Method 9040. These samples will confirm that decontamination was effective. One (1) sample of final sampling equipment decontamination rinseate 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 2.4.

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 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 OR FOR EACH TWENTY SAMPLES COLLECTED, WHICHEVER IS GREATER. ~~, and~~ One (1) duplicate sample of the soil underlying the unit will be collected for each sampling event OR FOR EACH TWENTY SAMPLES

COLLECTED, WHICHEVER IS GREATER. If requested, additional duplicate samples will be collected for QC confirmation by an independent laboratory.

4.2 LABORATORY QA/QC PROCEDURES

The FEMP analytical laboratory shall use the approved SW-846 methods, as specified in this SAP.

The laboratory will document the use and results of laboratory quality control samples and analyses. Laboratory samples for quality control (QC) may include:

- laboratory equipment 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).

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 analysis
- 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 reduce any 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 sample Analysis Request/Custody Record form. A sample Analysis Request/Custody Record form shall be filled out according to procedures in sections 2.4. The Analysis Request/Custody Record form shall accompany all samples throughout the sample handling and analysis process. The Custody Record will document sample possession from the time of collection through analysis by the FEMP analytical 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.

The completed sample Analysis Request/Custody Record form shall be signed by the laboratory and returned with the analytical report for the samples identified on the form(s).

HF Tank Car
Closure Plan Information and Data
Revision 2 (Resubmittal)

ATTACHMENT B

HF TANK CAR PROJECT/TASK SPECIFIC HEALTH AND SAFETY PLAN

6240 - -

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5.2 Required Training to Perform Work in the Defined Work Zones 6240

5.3 Operation Training of Construction Type Equipment

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5.5 Safety Meetings and Daily Work Plans

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- 11.1.2 Heavy Metals
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11.3 Industrial Safety Issues (Identify the Physical, Chemical and Health Hazards)

11.4 Fire Protection Issues (Identify the Physical, Chemical and Health Hazards)

11.5 Nuclear Safety Issues (Identify the Physical, Chemical and Health Hazards)

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- 12.1.2 Site Notification Procedure
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- 12.2.1 Rally Point Accountability
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- 12.3.1 Site Equipment
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- 12.4.3 Explosion Emergency
- 12.4.4 Chemical Emergency
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- 12.4.5 Radiological Emergencies
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- 12.4.7 Accident Investigation

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Attachment C

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ATTACHMENT C

SAMPLE ANALYSES FROM DECEMBER 1992

ATTACHMENT C: Analytical Report for the HF Tank Car Sample Analyses from December 1992

6240

Westinghouse Materials Co of Ohio
Analytical Chemistry Department
Results of Analyses

AnaLIS ID: 921203-069 Project: 0020 0001 Customer Sample ID: DHF-1
Customer: FAC. & WAREHOUSE Requisition Number: 2227
Date Sampled: 2-DEC-1992 Date Sample Received: 3-DEC-1992
Sampled By: D. ZAHNER Date Sample Completed: 10-DEC-1992
Material Description: HF RAILCAR DISPOSITION Charge Number: SGC00

Activ. Number	Procedure No.	Analysis	Result	Units	Data Entered By	QA File Number	Date Completed
105620	1056	As - GFAA AnL INORG	1311	ug/L	LA WALLER	92WF134/FA1[illegible]	8-DEC-1992
105920	1059	Hg - CVAA AnL INORG	<0.2	ug/L	JE REILMAN	92VW051MA 018	8-DEC-1992
106020	1060	Pb - GFAA AnL INORG	3.2	ug/L	MJ HARPER	92WF134/FB224	7-DEC-1992
106120	1061	Se - GFAA AnL INORG	<5.0	ug/L	MJ HARPER	92WF134/FB223	7-DEC-1992
904320	9043	Ag - ICP AnL INORG	94.5	ug/L	GJ KUNZE	92WP171/P2217	8-DEC-1992
	9043	Ba - ICP AnL INORG	13622	ug/L	GJ KUNZE	92WP171/P2217	8-DEC-1992
	9043	Cd - ICP AnL INORG	26.5	ug/L	GJ KUNZE	92WP171/P2216	7-DEC-1992
	9043	Cr - ICP AnL INORG	690.1	ug/L	GJ KUNZE	92WP171/P2216	7-DEC-1992

Westinghouse Materials Co of Ohio
Analytical Chemistry Department
Results of Analyses

AnaLIS ID: 921203-070 Project: 0020 0001 Customer Sample ID: DHF-2
Customer: FAC. & WAREHOUSE Requisition Number: 2227
Date Sampled: 2-DEC-1992 Date Sample Received: 3-DEC-1992
Sampled By: D. ZAHNER Date Sample Completed: 8-DEC-1992
Material Description: HF RAILCAR DISPOSITION Charge Number: SGC00

Activ. Number	Procedure No.	Analysis	Result	Units	Data Entered By	QA File Number	Date Completed
300220	3002	U - BrPADAP AnL	63	ppm	FL MILLER	BRENNAN	7-DEC-1992
[illegible]220	3059	Total Th - Color. AnL	<45	ppm	JJ STOECKEL	MILLER/JJS	7-DEC-1992

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ATTACHMENT D

TRANSPORTATION SAFETY PLAN

6240 - -

TRANSPORTATION SAFETY PLAN
for the
HF Tank Car

Revision 0

Fernald Environmental Management Project

October 1993

U.S. DEPARTMENT OF ENERGY

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CONTENTS

FIGURES

PLATES

1.0 INTRODUCTION

This Hydrofluoric Acid (HF) Tank Car Transportation Safety Plan describes the procedures that will be implemented to ensure that movement of the HF Tank Car from its present location to the Main Tank Farm, for unloading and decontamination, is done safely with respect to the protection of on-site workers and the environment. Section 1.0, Introduction, describes the HF Tank Car transportation route and Fernald Environmental Management Project (FEMP) standard practices for rail operations. Section 2.0 describes the actions taken prior to transport and Section 3.0 describes the actions taken during transport.

1.1 DESCRIPTION OF THE TRANSPORT ROUTE

The HF Tank Car is currently located on track #6, west of Building 12A (Main Maintenance Building) and east of the Main Tank Farm (Component 19A). In order to safely neutralize the HF and decontaminate the HF Tank Car, the tank car will be moved to the west side of the Main Tank Farm and positioned over the diked sump for secondary containment. The route that will be taken to move the HF Tank Car runs north on track #6, then merges with track #2 running west to Quonset Hut #2. At that point, the route proceeds south on track #7, terminating on the west side of the Main Tank Farm. This route, which is shown in Figure 1-1 and Plates 1 through 12, covers approximately 2,900 feet of track.

The route segment running north on track #6 from the HF Tank Car's present location passes the Maintenance Building Warehouse (Component 12D), Cooling Towers (Component 20C), Process Water Storage Tank (Component 20H), Boiler Plant (Component 10A), and the Coal Pile (Component P-005). The top of the tracks adjacent to the Boiler Plant are flush with the surrounding soil. There are overhead steam lines running along the tracks from the Boiler Plant to the HF Tank Car's current location. There are also overhead steam lines crossing the tracks just north of the Maintenance Building Warehouse. There is one walkway crossing the tracks between the present location of the HF Tank Car and the Boiler Plant. The tracks adjacent to the Coal Pile Runoff Basin (Component 18C) have soil mounded next to and spilling onto them. At the north end of the coal pile, the tracks begin slowly turning from a northerly direction to a westerly direction. These tracks pass the Outside Equipment Storage Area (Component P-007), a covered soil pile, and "B" Street. At "B" Street,

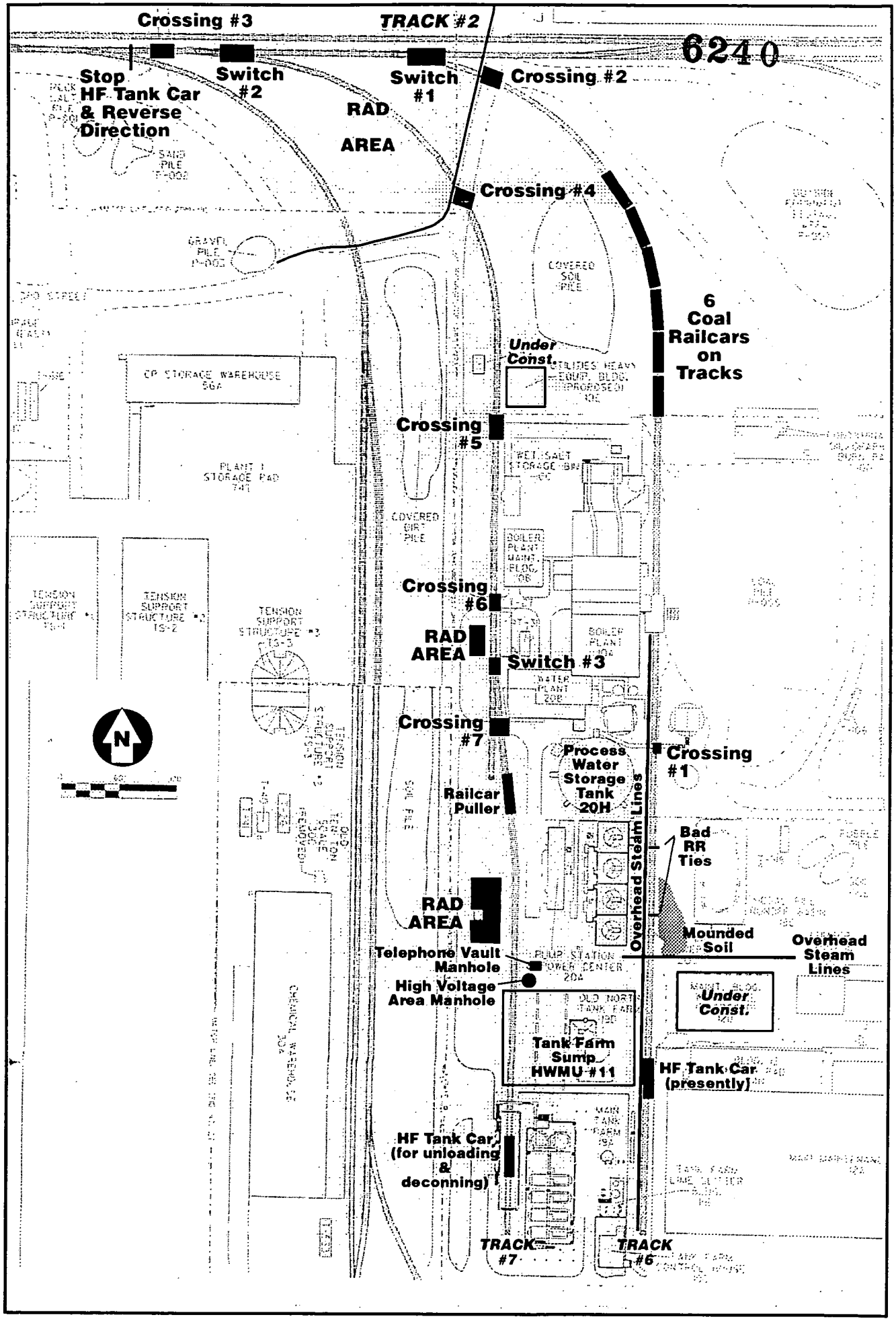

Figure 1-1. HF Tank Car Transportation Route.

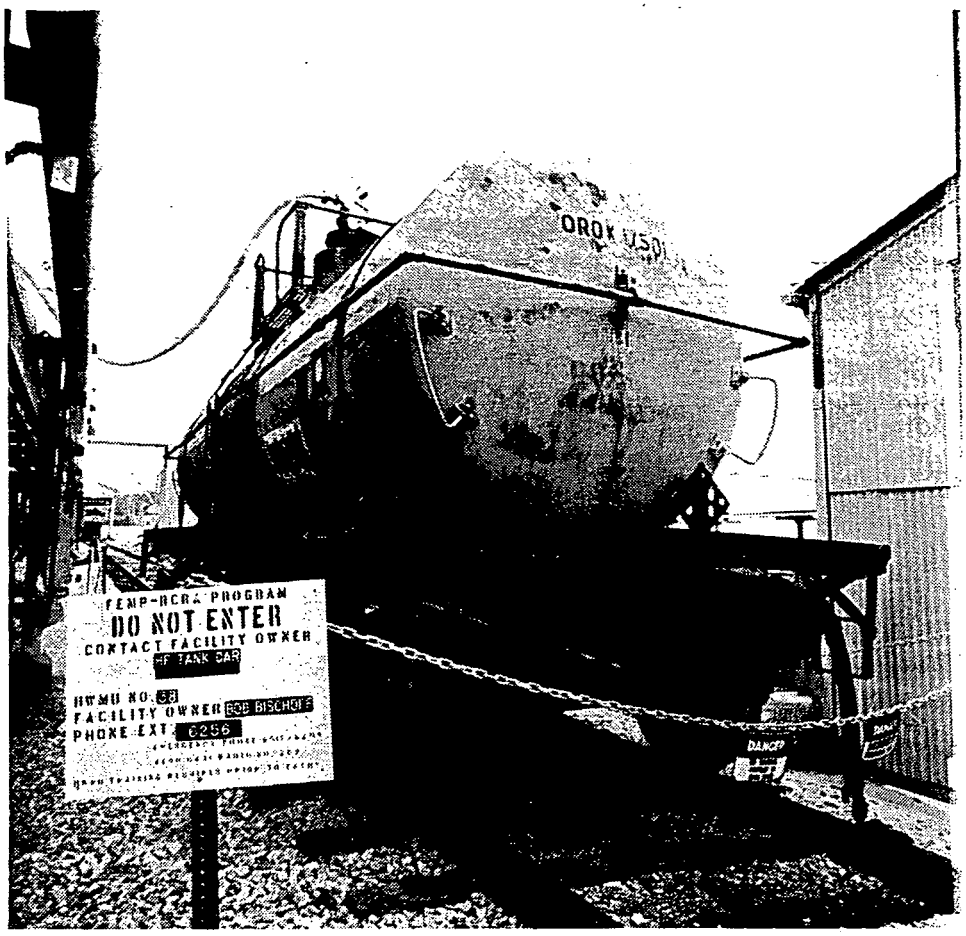

Plate 1. Current Location of HF Tank Car on Elevated Tracks Next to the Steam Lines.

Plate 2. Maintenance Building Warehouse Construction Area and Mounded Soil Next to Tracks.

Plate 3. Crossing #1 Next to the Process Water Storage Tank.

Plate 4. Coal Handling Area with Heavy Equipment.

Plate 5. Crossing #2 and Radiation Area Boundary.

Plate 6. Switches #1 and #2 and Crossing #3 in Radiation Area Along with Stopping Point to Reverse Direction.

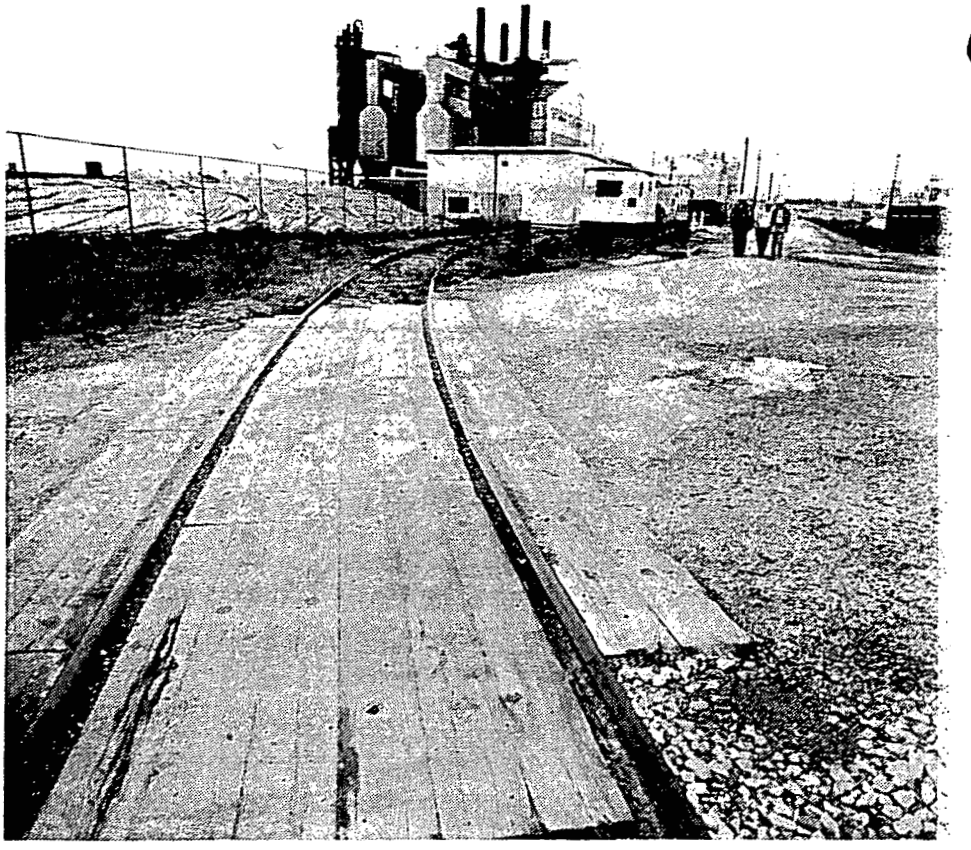

Plate 7. Crossing #4.

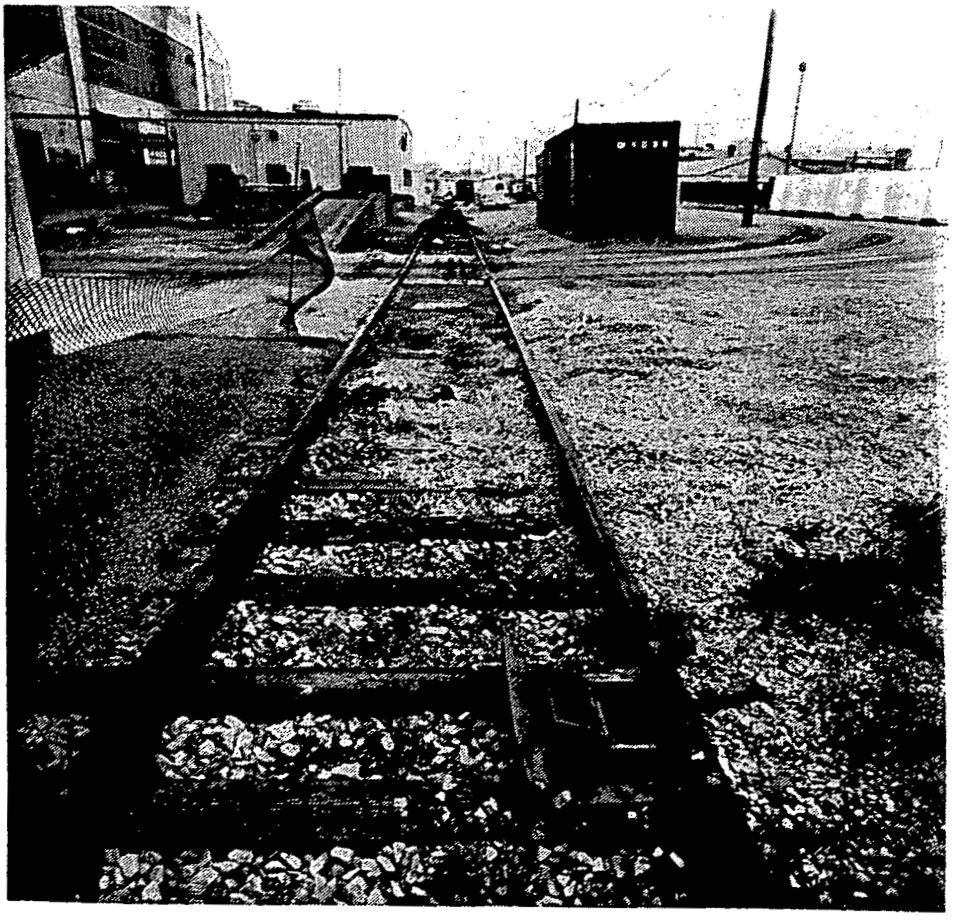

Plate 8. Utilities Heavy Equipment Building Construction Area and Crossing #5.

Plate 9. Crossing #6, Switch #3, and Radiation Area Next to T-27.

Plate 10. Crossing #7.

Plate 11. Radiation Area and HWMU #11.

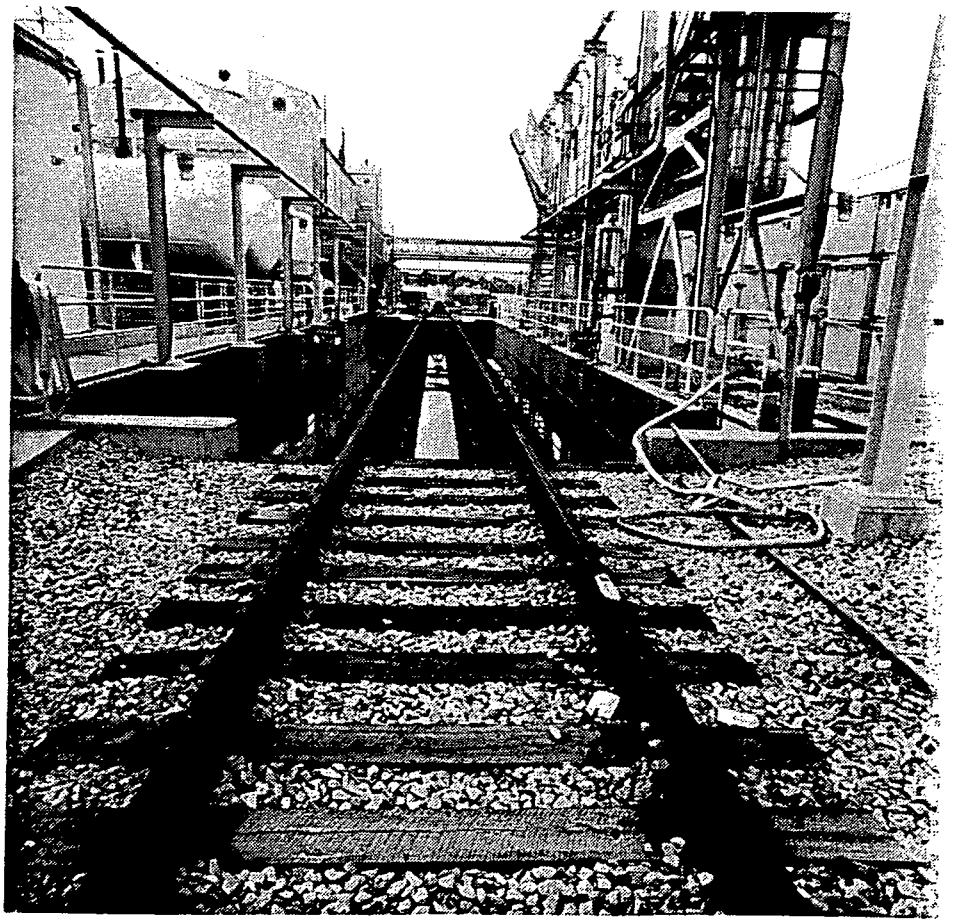

Plate 12. Main Tank Farm (Where the HF Tank Car Will Be Unloaded and Decontminated).

there is a road crossing and the tracks enter a radiation area, where they merge with track #2, which runs in a westerly direction passing Quonset Hut #1 and #2 (Components 60 & 61). There are two track switches between "B" street and Quonset Hut #2. There is one road crossing between Quonset Hut #1 and Quonset Hut #2.

Adjacent to Quonset Hut #2, the HF Tank Car will be stopped and the direction of travel will be reversed to proceed south on track #7, which will take it to the west side of the Main Tank Farm. These tracks begin turning from an eastern direction to a southern direction as they again move through the radiation area and cross "B" Street. These tracks then pass the covered soil pile, Utilities Heavy Equipment Building (Component 10E), Wet Salt Storage Bin (Component 10C), Boiler Plant Maintenance Building (Component 10B), Water Plant (Component 20B), Pump Station and Power Center (Component 20A), and finally the west side of the Main Tank Farm. There are three road crossings and one track switch along the track path between "B" Street and the west side of the Main Tank Farm. There is a radiation area between the tracks and "B" Street by Trailer 27. There is another radiation area between the tracks and "B" Street by the Pump Station and Power Center. There is a high voltage vault manhole and a telephone vault manhole located adjacent to the tracks between the Pump Station and Power Center and the Old North Tank Farm. The Tank Farm Sump (HWMU #11) encompasses part of the tracks north of the Main Tank Farm.

1.2 FEMP STANDARD PRACTICES

The FEMP Transportation Department is responsible for all on site railroad operations and rail car movements. A supervisor, qualified locomotive operator, and qualified switch attendant are present at all times when moving a rail car. These three individuals maintain direct radio contact during the operations.

The locomotive operator is trained and qualified in operating the locomotive and trackmobile as well as in hand signals, coupling and uncoupling, operational checks, switching and traveling, rail system inspecting, and reporting derailments and mechanical failures. A checklist for training and re-training the locomotive operator is shown in Figure 1-2.

The switch attendant is trained and qualified in operating the switches as well as in hand signals, spotting, boarding, traveling, descending, coupling, and rail system inspecting. A checklist for training and re-training the switch attendant is shown in Figure 1-3.

CHECKLIST FOR TRAINING OR RE-TRAINING OF LOCOMOTIVE OPERATOR

Locomotive Operator: _____ Date: _____ 6240

Y = Yes
N = No

Hand Signals

_____ Understands standard hand signals from switch person.

_____ Keeps switch person in view at all times. Stops the train movement when he/she passes from view.

Coupling And Uncoupling

_____ Humps cars when coupling.

_____ Participates in flying switches (letting cars roll after uncoupled)

_____ Tests couplings prior to movement of train.

_____ Maintains a safe operating speed in approaching cars for spotting or coupling.

_____ Assures air line pressure for brakes is sufficient prior to movement of cars.

General

_____ Assists the switch person in inspection of railway system and completion of Inspection Form - FMPC Railroad System.

_____ Reports derailments and mechanical failures of locomotive to his/her supervisor.

_____ Demonstrates knowledge of operation to prevent abuse of equipment and facilities.

Evaluation Reviewed With:

_____
Locomotive Operator

Date: _____

Operational Checks

_____ Checks mechanical condition of locomotive daily or prior to each day's use and completes Gas, LPG or Diesel Equipment Operator's Checklist.

_____ Housekeeping of the locomotive and engine house.

Switching And Traveling

_____ Adheres to hand signals given by switch person.

_____ Utilizes the locomotive horn when approaching read crossings.

_____ Utilizes the bell when approaching congested areas.

_____ Travels at a speed that will assure a safe and efficient train movement.

_____ Maintains visible view of switch person at all times.

_____ Assures the tracks are free of debris prior to train movement.

_____ Obeys marked work areas of the rail system and engaged derails.

_____
Transportation Supervisor

June 10, 1980

M-541 (6/13/80) **Figure 1-2.** Checklist for Training or Re-Training of Locomotive Operator.

CHECKLIST FOR TRAINING OR RE-TRAINING OF SWITCH PERSONS

6240

Switch Person: _____ Date: _____

Y = Yes
N = No

Hand Signals

____ Uses standard hand signals

____ Positions self to be in view of operator at all times.

____ Guides the operator in a safe and efficient manner for spotting and rail care movements.

Spotting

____ Assure cars are placed in proper location relative to connections, docks, etc.

____ Sets hand brakes on the car.

____ Checks wheels of the car.

____ Installs derails after spotting.

____ Stays clear of cars while uncoupling.

Boarding Traveling Or Descending

____ Rides the leading foot board of locomotive.

____ Boards and rides locomotive or car by side stirrup.

____ Rides on top of box cars.

____ Jumps from one car to another while train is in motion.

Coupling

____ Assures that all cars are coupled before signaling operator for movement.

____ Assures couplings are tested prior to movement of train.

____ Performs flying switches (uncoupling or bumping cars on the move).

____ Assures cars are free of personnel connections, etc., prior to coupling or uncoupling.

Switching

____ Stays clear of switch lever movement.

____ Assures the switch is properly set prior to train movement.

____ Stays clear of cars when coupling or uncoupling.

____ Assures tracks are free of debris prior to train movement.

____ Assures proper clearance is maintained when walking or riding beside a car around buildings, docks, etc.

____ Inspects rail cars for Railroad Defect Cards prior to movement.

General

____ Completes Inspection Form - FMPC Railroad System.

Evaluation Rviewed With:

_____
Switch Person

Date: _____

_____
Transportation Supervisor

June 10, 1980

M-541 (6/13/80)

Figure 1-3. Checklist for Training or Re-Training of Switch Persons.

Each shift that an engine is to be used in moving rail cars, the rail crew must complete an inspection of the route tracks. The results of the inspection are recorded on an inspection form which is submitted to the transportation supervisor at the end of each applicable shift.

A trackmobile is normally used to push or pull rail cars. It is a third the size of a locomotive engine and operates at slow speeds (walking speed).

Following receipt of a request for rail car movements, the Transportation Department, in conjunction with the requesting organization, develops task-specific procedures. In the case of the HF Tank Car, a Task Order Implementation Plan will be developed, following Ohio Environmental Protection Agency (OEPA) approval of the Closure Plan Information and Data (CPID), that describes the specific requirements for this action. Safety related requirements associated with transporting the HF Tank Car are described in the sections that follow.

2.0 ACTIONS PRIOR TO TRANSPORT

This section describes actions that will be taken prior to transporting the HF Tank Car from its present location to the Main Tank Farm. These actions will be taken to ensure the tank car is moved safely with minimal risk to workers and the environment. The actions include route inspection and preparation, and tank car inspections and maintenance.

2.1 ROUTE INSPECTION AND PREPARATION

This section describes the actions taken prior moving the HF Tank Car with respect to route inspections and preparations of the tracks, switches, and adjacent facilities and operations.

2.1.1 Tracks and Switches

Before the HF Tank Car can be moved from its present location to the Main Tank Farm, the train crew will complete an inspection of the route tracks. A completed

inspection form will be submitted to the Transportation Department supervisor for review and approval prior to tank car movements. This inspection form is shown in Figure 1-4.

Any obstacles (rail cars, vehicles, soil, debris, etc.) on the route tracks will be moved to give a clear pathway for the tank car. Any railroad ties or rails that are damaged or otherwise unsuitable will be repaired. Any crossings that are damaged or dirty will be repaired or cleaned. All switches will be tested and repaired as necessary. Finally, when the entire HF Tank Car route has been inspected and all necessary repairs or cleanings have been completed, a rail vehicle of comparable weight will traverse the route to ensure that the route tracks are structurally stable for the HF Tank Car.

2.1.2 Adjacent Facilities and Operations

There are two buildings currently under construction next to the route. They are the Maintenance Building Warehouse and the Utilities Heavy Equipment Building. Construction activities and the tank car transport schedule will be coordinated to ensure that any heavy equipment being used would not impact the tracks or tank car. This will also ensure that the construction workers are aware of the rail activities to avoid injury by the trackmobile, tank car, or an accidental HF spill.

There are overhead steam lines running parallel to the tracks between the HF Tank Car's present location and the Boiler Plant. There are also overhead steam lines crossing the tracks between the Maintenance Building Warehouse and the Coal Pile Runoff Basin. These steam lines could be impacted in the unlikely event of a derailment at their location. Additional caution will be followed in these areas.

The first 200 feet of the route presents the greatest risk for a serious spill in the event of a derailment. In this section the track bed is built up above grade with the surrounding soil sloping away from the tracks. Additional caution will be followed in this area.

The HF Tank Car transport schedule will be coordinated with the Boiler Plant to ensure that the heavy equipment associated with the Coal Pile and Boiler Plant does not impact the tracks or tank car. This heavy equipment consists of a bulldozer and a front end loader.

6240

HF Tank Car's Route

Inspection Form

Date: _____

The Train Crew will complete this Inspection Form on each shift the engine is utilized in the movement of railcars and is to be turned into your Supervisor at the end of each applicable shift.

Please describe any defects in need of repairs (FMPC railroad drawing posted in cab of each locomotive). Be as specific as you can: i.e., broken railroad crossing filled, etc. (If additional space is required, use additional sheets and attach to this form).

Track #6 From Present Location To Crossing #1: _____

_____

_____

Track #6 From Crossing #1 To Crossing #2: _____

_____

_____

Track #6 From Crossing #2 To Switch #1: _____

_____

_____

Track #2 From Switch #1 To Switch #2: _____

_____

_____

Track #2 From Switch #2 To Crossing #3: _____

_____

_____

Track #2 From Crossing #3 To Stopping Point: _____

_____

_____

Figure 1-4. HF Tank Car's Route Inspection Form.

Track #7 From Switch #2 To Crossing #4: _____

_____

_____

Track #7 From Crossing #4 To Crossing #5: _____

_____

_____

Track #7 From Crossing #5 To Crossing #6: _____

_____

_____

Track #7 From Crossing #6 To Switch #3: _____

_____

_____

Track #7 From Switch #3 To Crossing #7: _____

_____

_____

Track #7 From Crossing #7 To Main Tank Farm: _____

_____

_____

Distribution: _____

Original - Transportation Office

Locomotive Operator and/or
Switch Attendant

Figure 1-4. HF Tank Car's Route Inspection Form (continued).

The section of tracks along the route that is west of "B" Street, is located in a radiation area. The tank car transport schedule will be coordinated with the Radiation Protection Organization to ensure the presence of a Radiation Technician.

There is a high voltage vault manhole and a telephone vault manhole located adjacent to the tracks between the Pump Station and Power Center and the Old North Tank Farm. These utilities could be affected in the event of a spill in this area. The tank car transport schedule will be coordinated with Utility Operations and additional caution will be followed in this area.

The Tank Farm Sump (HWMU #11) encompasses part of the tracks north of the Main Tank Farm. The tank car transport schedule will be coordinated with the facility owner of Tank Farm Sump to ensure the HWMU #11 boundary chains are taken down to allow the tank car past and then put back up to remark the boundary.

2.2 TANK CAR INSPECTION AND MAINTENANCE

This section describes the actions that will be taken prior moving the HF Tank Car with respect to the inspections and maintenance of the HF Tank Car's tank, fittings, and undercarriage.

2.2.1 Tank and Fittings

Before the HF Tank Car can be moved from its present location to the Main Tank Farm, the tank, valves, and fittings must be visually inspected by a qualified person to ensure that they are not leaking or have the potential to leak. Any damaged or corroded fittings will be replaced prior to the HF Tank Car being moved. There is a hose connecting the HF Tank Car to the Dilute HF Storage Tank such that the contents of the tank car can be transferred to the storage tank in the event of a tank car leak. This hose will be disconnected and all valves will be checked to ensure they are closed prior to moving the tank car.

2.2.2 Undercarriage

Besides the HF Tank Car's tank and fittings, its undercarriage must also be inspected and tested by a qualified individual. The undercarriage consists of the coupling mechanisms, wheels and bearings, chocks, brakes and air lines, and structural frame.

The coupling mechanisms are used to attach the tank car to the trackmobile. The couplings will be inspected and tested, and any required maintenance will be performed prior to moving the tank car.

The wheels and bearings will be inspected and greased prior to moving the tank car. Also any unexpected maintenance required, discovered in the inspection, will be performed prior to moving the tank car.

Chocks are used to block the wheels of the tank car to ensure that it does not roll after it has been stopped and/or disconnected from the trackmobile. The chocks will be inspected and tested prior to being used on HF Tank Car.

The brakes and pneumatic air lines will be carefully inspected and tested prior to moving the HF Tank Car. Any required maintenance will be performed before the tank car is moved. Before the tank car can begin moving, the proper air pressure must be built up in the air lines after it has been connected to the trackmobile. During freezing weather, the locomotive operator will drain the condensate out of the air brake reservoir at least once every 2 hours during operation.

The structural frame holding the tank will be inspected to ensure that it is structurally stable prior to moving the HF Tank Car. Any structural defects discovered will be repaired before the tank car is moved.

3.0 ACTIONS DURING TRANSPORT

This section describes the actions that will be taken during transport of the HF Tank Car from its present location to the Main Tank Farm. These actions will be taken to ensure that the tank car is moved safely with minimal risk to workers and the environment. They include correct tank car movement procedures, a spill response and contingency plan to minimize the consequences of any accident, and any actions necessary to ensure adjacent facilities and operations are not impacted and do not impact the tank car.

3.1 PROCEDURES FOR TANK CAR MOVEMENT

After the HF Tank Car and its route have been inspected and prepared for use, the movement procedures will begin. A trackmobile and a qualified crew of three will be used to move the HF Tank Car from its present location.

The trackmobile is about a third the size of a locomotive engine and operates at slow speeds (walking speed). Trackmobiles are either powered by diesel or gasoline depending upon the model. The tank car will be coupled to and have its air lines connected to the trackmobile. Proper air pressure will be built up in the air lines before the tank car can begin moving. A pre-use inspection of the trackmobile will be completed and any problems discovered will be corrected.

The HF Tank Car crew will consist of a supervisor, qualified locomotive operator, and qualified switch attendant. The qualified locomotive operator will operate the trackmobile and coordinate closely with the switch attendant. The switch attendant will monitor the movement process in clear view of the locomotive operator and will be in direct radio contact with both the locomotive operator and the supervisor. Hand signals will be used when necessary. The switch attendant will also be responsible for correctly performing any switch alignments that are required, for placing and removing chocks, and for keeping crossings free of traffic. Before the trackmobile and tank car approach a crossing, the switch attendant will stop all vehicles and personnel attempting to use the crossing, until the tank car is safely past. The supervisor, locomotive operator, and switch attendant will all be alert for any safety hazards associated with road crossings, rail switches, other equipment, other facilities, or any other miscellaneous hazards that may arise.

3.2 SPILL RESPONSE AND CONTINGENCY PLAN

This safety plan was developed to provide spill response guidance and contingency plans (SRCP) to the operations personnel during transport of the HF Tank Car from its present location to the Main Tank Farm. All persons involved with the transport of the Tank Car will be trained relative to the information, instructions, and emergency response procedures contained in this document, the Health and Safety Plan (HSP) and the Feed Materials Production Center (FMPC) Spill Prevention Control and Countermeasures Plan (SPCC).

3.2.1 SRCP Authorities and Responsibilities

The following section delineates the division of responsibility for the movement of the HF Tank Car.

3.2.1.1 Spill Response Team

The spill response team will be responsible for event mitigation and damage control, spill and release control, firefighting, environmental monitoring, medical assistance and rescue. The spill response team will be led by a safety and fire inspector, who serves as the emergency chief. The spill response team will also be supported by emergency responders who have expertise in specific areas such as radiological and chemical air sampling and monitoring.

3.2.1.2 Rail Supervisor

The rail supervisor will be responsible for ensuring that all operations personnel involved with the movement of the HF Tank Car have the proper resources and are adequately trained to effectively carry out the requirements as specified in this plan. The rail supervisor shall have the authority to terminate all operations when the requirements of this plan are not being followed and will conduct periodic inspections to ensure that the requirements of this plan are maintained and implemented properly.

The rail supervisor will serve as the Site Emergency Response Coordinator in the event of a spill and will immediately notify the on-site spill response team and FEMP Emergency Duty Officer. The rail supervisor responsibilities include prior notification of the spill response team and the Emergency Duty Officer prior to movement of the tank car. The rail supervisor will inform the spill response team and Emergency Duty Officer about the nature and duration of the movement, the types of contaminants, possible Health and Safety effects, and the contents of this plan.

3.2.1.3 Locomotive Operator

The locomotive operator will be responsible for the operation of the trackmobile and the movement of the tank car. The locomotive operator has the authority to stop all tank car movement operations in the event of procedural non-compliance. The locomotive

operator will ensure that the HF Tank Car is adequately prepared and that the required maintenance has been performed prior to tank car movement.

3.2.1.4 Switch Attendant

The switch attendant will be responsible for monitoring the movement process of the tank car and will maintain radio contact with the locomotive operator during movement of the tank car. The switch attendant will be responsible for manipulating track switches to allow for transfer of the tank car from one rail spur to another. The switch attendant will be cognizant of potential problems or safety hazards associated with road crossings, rail switches, ancillary operations and equipment and other miscellaneous hazards associated with the movement of the HF Tank Car.

3.2.2 Emergency Spill Response

All personnel involved in the movement of the HF Tank Car will be trained relative to the hazards of a HF acid spill and should be appropriately trained in first aid and evacuation procedures.

If a spill does occur, the rail supervisor will immediately contact the spill response team and Emergency Duty Officer. All non-essential personnel will be immediately evacuated from the area. First responders will wear the appropriate personnel protective equipment specified by the spill response team leader, but as a minimum Class B clothing and Self Contained Breathing Apparatus (SCBA).

Spill response team members will allow the aqueous HF acid to vaporize and disperse as hydrogen fluoride gas. Response personnel will cover and slowly neutralize the spill with sodium carbonate/slaked lime mixture and add large quantities of water. Dams will be constructed as necessary to prevent the spill or flush water from migrating to storm sewers. The neutralization process causes heat generation, the release of hydrogen fluoride, and in some instances spattering. All contaminated porous material (concrete, wood, plastic) will be washed thoroughly with ammonia or lye solution since these materials absorb HF acid and become a hazard for an indefinite time.

3.2.3 Site Emergency Spill Response Equipment

An emergency first aid kit containing a topical fluoride-neutralizing agent (e.g. calcium gluconate (2.5% gel) or iced Zephiran (0.13%) or Hyamine (0.2%) solutions), a 5 gallon container of water, and a portable eyewash station will be available to the operations personnel involved in the movement of the HF Tank Car. The rail supervisor, locomotive operator, and switch attendant will all have portable radios in their possession at the time of the tank car movement. All other spill response equipment will be provided by the spill response team in the event of a spill.

3.2.4 Emergency Response Procedures

The Emergency Response Procedures will be provided in detail in the Emergency procedures section of the HSP that will be prepared in accordance with Attachment to this HF Tank Car CPID.

3.3 ADJACENT FACILITIES AND OPERATIONS

Additional caution will be exercised on those sections of the route that are adjacent to certain structures and activities. These include the two buildings being constructed, overhead steam lines running parallel to the tracks and also crossing the tracks, the section of raised track bed, heavy equipment that could impact the tracks or tank car, a radiation zone, a high voltage vault and a telephone vault, and a Hazardous Waste Management Unit are all areas that will require special actions to ensure that the HF Tank Car's movement is free of accidents. Construction activities at the Maintenance Building Warehouse and the Utilities Heavy Equipment Building and the tank car transport schedule will be coordinated to ensure that any heavy equipment being used would not impact the tracks or tank car. Additional caution will be followed while the tank car is being moved along the tracks where overhead steam piping is located and where a derailment could lead to an overturned tank car and spill. The tank car transport schedule will be coordinated with the Boiler Plant to ensure that the heavy equipment associated with the Coal Pile and Boiler Plant does not impact the tracks or tank car. The tank car transport schedule will be coordinated with the Radiation Protection Organization to ensure the presence of a Radiation Technician when tank car proceeds in the radiation area west of "B" Street. The tank car transport schedule will be coordinated with the facility owner of Tank Farm Sump to ensure the HWMU #11

boundary chains are taken down to allow the tank car past and then put back up to remark the boundary.