915

R-009-204.4

SOUTH GROUNDWATER CONTAMINATION PLUM REMOVAL ACTION PART 2 - PUMPING AND DISCHARGE SYSTEM AND PART 3 - INTERIM ADVANCED WASTEWATER TREATMENT SYSTEM WORK PLAN

XX/XX/XX

WMCO/DOE-ORO
80
REPORT

[redacted]

915

SOUTH GROUNDWATER CONTAMINATION PLUME REMOVAL ACTION

PART 2 - PUMPING AND DISCHARGE SYSTEM

AND

PART 3 - INTERIM ADVANCED WASTEWATER TREATMENT SYSTEM

WORK PLAN

FEED MATERIALS PRODUCTION CENTER

Prepared by:

Westinghouse Materials Company of Ohio
Cincinnati, Ohio

For:

The United States Department of Energy
Oak Ridge Operations Office

TABLE OF CONTENTS

1.0 INTRODUCTION 1

2.0 BACKGROUND 2
- 2.1 Summary of the Potential Threat 2
- 2.2 Related Actions 2
- 2.3 Roles of the Participants 4
- 2.4 Removal Action 4
- 2.5 Integration with the Final Remedial Action . 5

3.0 SUPPORT ACTIVITIES 6
- 3.1 Project Planning Activities 6
- 3.2 Additional Data 7
- 3.3 Training Requirements 8
- 3.4 Access to Private Property 8

4.0 FIELD ACTIVITIES 8

5.0 SAMPLING AND ANALYSIS PLAN 10
- 5.1 Groundwater 11
- 5.2 Wastewater 11
- 5.3 Soil and Rubble 12

6.0 HEALTH AND SAFETY PLAN 12

7.0 PERMIT INFORMATION SUMMARY 12

8.0 QUALITY ASSURANCE 12

FIGURES

Figure 1 Location Map
Figure 2 Site Map
Figure 3 South Groundwater Contamination Plume Area Site Plan

ATTACHMENTS

I South Groundwater Contamination Plume Removal Action Schedule

II Soil and Rubble Sampling and Analysis Plan

III Health and Safety Plan

IV Permit Information Summary

915

1.0 INTRODUCTION

Operable Unit 5 - Environmental Media, of the Feed Materials Production Center (FMPC) Remedial Investigation/Feasibility Study (RI/FS), includes those environmental media that serve as migration pathways and/or environmental receptors of radiological or chemical releases from the FMPC. Figure 1 shows the location of the FMPC and its surroundings. RI/FS findings have determined that a uranium contaminated plume exists in an area outside of FMPC property to the south. Because of the associated potential threat to human health and the environment, the Department of Energy (DOE) is planning a Removal Action to address this plume outside of the FMPC boundary. This plume is referred to as the South Groundwater Contamination Plume, or simply the "South Plume". The Removal Action is being conducted in a manner consistent with the implementation of the final Remedial Action for Operable Unit 5.

In accordance with 40 CFR 300.415, an Engineering Evaluation/Cost Analysis (EE/CA) has been prepared to evaluate Removal Action alternatives using available data to support the selection of a preferred alternative. The National Environmental Policy Act of 1969 (NEPA) requires federal agencies to include appropriate and careful consideration of all environmental effects of proposed actions in their decision making process. The EE/CA has been prepared for the purpose of integrating the requirements of both the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and NEPA, and will be used by the United States Environmental Protection Agency (U.S. EPA) and the DOE as the basis for remedy selection and implementation.

The Consent Agreement under CERCLA Sections 120 and 106(a), hereafter referred to as the Consent Agreement, requires a work plan be submitted for the implementation of the selected alternative for Removal Number 3, the South Groundwater Contamination Plume Removal Action. But, with the agreement between the U.S. EPA and the DOE over the Dispute Resolution concerning the EE/CA, the Removal Action has been divided into four parts:

Part 1 - Alternate Water Supply
Part 2 - Pumping and Discharge System
Part 3 - Interim Advanced Wastewater Treatment System
Part 4 - Groundwater Monitoring and Institutional Controls

This Removal Action work plan addresses the implementation of Part 2, the action involving the pumping and discharge of the South Groundwater Contamination Plume and Part 3, the installation of an Interim Advanced Wastewater Treatment System (IAWWT). The IAWWT is an action which involves the treatment of a portion of the existing FMPC wastewater discharge to remove a mass of uranium which exceeds the mass being added to the FMPC wastewater discharge as result of implementation of Part 2 of this Removal Action, as well as from the implementation of other Removal Actions. The work plan for Part 1 of the Removal Action was prepared as a separate document and has been submitted to the U.S. EPA. Part 4 of the Removal Action is being implemented through the existing FMPC groundwater monitoring program.

5

A Removal Site Evaluation (RSE) has been generated and approved by the DOE consistent with the requirements of the 40 CFR 300.410, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). All activities performed under this work plan will be in accordance with the NCP and the OSWER Directive 9360.0-03B, SUPERFUND REMOVAL PROCEDURES, Rev. 3. The Removal Action also provides for compliance with the requirements of 29 CFR 1910.120.

2.0 BACKGROUND

2.1 Summary of the Potential Threat

Storm water run-off from most of the FMPC drains to Paddys Run, a tributary to the Great Miami River, see Figure 2. Prior to October 1986, this drainage included run-off from the FMPC Production Area. Paddys Run has been identified as a major route of surface water leakage into the Great Miami Aquifer. Uranium contamination in this drainage area is therefore transported with the storm water run-off to the aquifer via Paddys Run. Once entering the aquifer, the contaminated water flows along the natural groundwater gradient to the south which forms the pathway for the South Plume.

The RI/FS analytical data indicates the presence of radionuclides, organic compounds, and inorganic constituents in the South Plume. Uranium concentrations have been detected in excess of the 30 ug/l (micrograms/liter) action level established for uranium in the South Plume Removal Action EE/CA. Other radionuclides have been found at background concentrations. None of the inorganic constituents that have been detected are above established drinking water standards. Organic compounds observed are neither consistently detected nor above allowable maximum concentration levels when detected. Therefore, uranium has been identified as the compound of concern.

The only known users of South Plume groundwater containing a level of uranium above the concentration based action level adopted for the Removal Action are two industries (identified as Industry A & B) located along Paddys Run Road, see Figure 3. Potential future receptors of the South Plume groundwater, as identified in the EE/CA, include persons who install new wells within the plume for potable use, crop irrigation, or livestock feeding; persons pumping groundwater for potable use, crop irrigation, or livestock feeding from an area located along the future migration pathway of the plume; and persons using surface waters into which contaminated groundwater has been discharged.

2.2 Related Actions

The following paragraphs describe related actions other than those actions necessary to implement Part 1 of the South Groundwater Contamination Plume Removal Action. Part 1 will be providing the two industrial users with alternate water supply wells and supply system.

Past Actions

A Storm Water Retention Basin (SWRB), see Figure 3, was constructed and placed into operation in October 1986 to intercept contaminated run-off from the FMPC Production Area and pump the collected run-off directly to the Great Miami River. This run-off had previously flowed into Paddys Run via a drainage ditch referred to as the Storm Sewer Outfall Ditch, (See Figure 3). Construction of an additional east chamber to the SWRB was completed in December 1988. The expanded SWRB was designed to retain the run-off from a 10-year/24-hour rainfall event. The two chambered sequential batch filling and discharging operation of the SWRB allows for quiescent settling conditions for removing suspended solids in the run-off and therefore greatly reduces the contribution of contamination to the Great Miami River.

The public has been notified of the South Plume. Well and cistern sampling in the South Plume area has been performed by the Ohio Department of Health on the behalf of the DOE.

An alternative water supply has been previously provided to a private residential well located along Willey Road in the northern portion of the plume.

Present and Future Actions

An on-going groundwater monitoring program is being conducted by the FMPC for a number of residential wells in the South Plume area. The results of the groundwater analysis are being reported to the public. This effort will continue in Part 4 of this Removal Action.

Run-off from most of the surface of the FMPC Waste Storage Area is collected and sent to the FMPC wastewater treatment system. The remaining surface and perimeter run-off flows west and southwest to Paddys Run. A separate Removal Action, entitled Waste Pit Area Run-off Control (referred to in the Consent Agreement as Removal Action Number 2), is currently underway by the DOE to address the remaining run-off and prevent it from flowing to Paddys Run. This Removal Action is consistent with the implementation of the Final Remedial Action for Operable Unit 1. A work plan for this Removal Action has been submitted to U.S. EPA.

The Dispute Resolution over the EE/CA for Removal Action Number 3, the South Groundwater Contamination Plume, includes installing the IAWWT. The IAWWT will address the additional mass of uranium discharged to the Great Miami River as a result of the implementation of Removal Action Numbers 1, 2, and 3. The repair of the existing FMPC outfall pipeline is being addressed in a separate Work Plan.

2.3 Roles of the Participants

The DOE is the lead agency and will coordinate and execute this Removal Action.

The U.S. EPA has reviewed and, through the Consent Agreement Dispute Resolution process, approved the EE/CA document identifying the selected removal alternative for the South Groundwater Contamination Plume. The U. S. EPA will also review and approve the Work Plans for this Removal Action.

As a contractor to the DOE, Advanced Sciences Incorporated (ASI) and their subcontractor International Technology Corporation (IT) are conducting the RI/FS program including activities such as groundwater sampling and development of a groundwater flow model for the South Plume.

Westinghouse Materials Company of Ohio (WMCO), as the FMPC prime contractor, is responsible for the coordination, management, and implementation of this Removal Action in a manner consistent with DOE and regulatory guidance.

A. M. Kinney (AMK), as contractor to WMCO, will provide the Removal Action Part 2 design effort.

Ralph M. Parsons, Co., as contractor to the DOE, will provide the Removal Action Part 3 design effort.

U.S. Army Corps of Engineers (COE) will negotiate easements with property owners affected by Removal Action Part 2 construction.

RUST Engineering, as a contractor to WMCO, will provide construction management for Part 2 and Part 3 of the Removal Action.

Property owners affected by the Part 2 construction (including groundwater recovery wells, a booster pump station, a groundwater discharge pipeline, and appurtenances) will be involved in the negotiations for the acquisition of easements.

2.4 Removal Action

The preferred alternative, identified in the EE/CA and agreed upon by U.S. EPA and the DOE through Dispute Resolution under the Consent Agreement, includes: an alternative water supply to two currently

affected industrial users (Part 1), groundwater pumping from the leading edge of the South Plume with direct discharge to the Great Miami River (Part 2), installation of the IAWWT to provide a greater than equivalent mass removal of uranium from the existing FMPC effluent discharge (Part 3), and groundwater monitoring and institutional controls (Part 4).

To support the efficient implementation of the Removal Action, the removal activities have been segmented into the four distinct parts, as previously discussed. This work plan includes the activities for Parts 2, 3, and 4. Part 2 of the Removal Action will include the design and construction of a system to pump groundwater from the leading edge of the South Groundwater Contaminated Plume to the existing FMPC outfall to the Great Miami River. The groundwater discharge pipeline will tie into the existing outfall pipeline at, or near, Manhole 177. Manhole 177 is located downstream of Manhole 175, the existing National Pollutant Discharge Elimination System (NPDES) monitoring station. Part 3 of the Removal Action will include the design, construction, and operation of a 150 gpm IAWWT which will remove uranium from a portion of the existing FMPC wastewater discharge to the Great Miami River.

A determination of which existing FMPC waste stream(s) will be treated in Part 3 has not yet been finalized. At this time, it has been tentatively decided that the IAWWT will be located at the SWRB and will treat a portion of the combined SWRB and Storm Sewer Lift Station (SSLS) discharges. To provide the 150 gpm flow to the IAWWT, the SSLS discharge to Manhole 175 would be discontinued as a daily discharge and the flow allowed to pass through to the SWRB. The discharge from the IAWWT would be tied into the groundwater discharge pipeline installed in the Part 2 construction. Backwash from the filtration portion of the IAWWT would be discharged back to the SWRB inlet pipeline.

As stated in the EE/CA, the objective of the Removal Action is to protect public health by limiting usage of the groundwater with uranium concentrations exceeding 30 ug/l as provided by Part 4. Secondary objectives have been identified to protect the groundwater environment and to control the plume migration from spreading farther south. To meet these objectives, groundwater recovery wells, a booster pump station, a groundwater discharge pipeline, and appurtenances will be required as outlined in Section 4.0.

An additional objective that has been added to the scope of this Removal Action is to reduce the discharge of uranium from the FMPC. This includes accounting for the additional uranium which will result from implementation of other Removal Actions. To meet this objective, the IAWWT system and appurtenances will be required as outlined in Section 4.0.

2.5 Integration with the Final Remedial Action

The Removal Action will contribute to the efficient performance of the final remediation to the extent practicable. All design and construction activities associated with the Removal Action will be reviewed, and approved, by the DOE Operable Unit 5 Manager to assure consistency with the final remedial program.

Parts 1, 2, 3, and 4 of the Removal Action are consistent with all selected Operable Unit 5 (OU #5) final Remedial Action alternatives which involve pumping contaminated groundwater from the South Plume area. The most likely selected alternative would involve the pumping of the contaminated water from the Great Miami Aquifer with subsequent treatment. As previously described, Part 2 is consistent with the pumping aspect of the most likely final Remedial Action alternative. Part 3 is an interim step addressing the mass of uranium discharged in the untreated contaminated groundwater. Part 3 will be replaced when an Advanced Wastewater Treatment facility (AWWT) comes on-line (expected in December 1993). The AWWT is being designed to reduce the existing FMPC wastewater discharge contaminant loading to the Great Miami River and to address the loading resulting from Remedial Actions for Operable Units 1 through 4. Expansion of the AWWT to treat the groundwater from this Removal Action and future Remedial Action recovery wells installed as part of OU #5 will be determined later.

Part 2 is also consistent with the subsequent treatment aspect of the expected final action in that the groundwater discharge pipeline is being routed back to the FMPC near the location of the future AWWT facility, see Figure 3. The groundwater discharge pipeline located outside the FMPC property boundary will be sized to handle anticipated flows from future Remedial Action recovery wells located in the South Plume area outside FMPC property. Although the pipeline will also have the capacity to receive a portion of the additional flows from future Remedial Action recovery wells located within the FMPC property boundary, a second parallel pipeline may be needed. A tie-in chamber is being provided on the groundwater discharge pipeline so that diversion of the flow to the AWWT can be readily accomplished in the future. A booster pump station is being provided near the Removal Action recovery wells. The design of the pump station will be such as to provide pumping flexibility so future Remedial Action recovery well discharges can be added to the groundwater discharge pipeline.

The South Groundwater Contamination Plume Removal Action will be implemented in advance of the final remediation for Operable Unit 5. Therefore, no scheduling conflicts are anticipated.

3.0 SUPPORT ACTIVITIES

3.1 Project Planning Activities

Activities that will be undertaken prior to the actual site work are planning, training, design, and management of the Removal Action.

The following distinct engineering phases will be performed to provide the necessary definition for development of accurate scope, cost, and schedule documents:

a. Project Planning
   Included in this activity will be the preparation of detailed task listings and delineation of responsibilities to support the schedule presented in Attachment I. Concerning Part 2, the number and location of both the monitoring and recovery wells along with the pumping rate of each recovery well may be modified as additional groundwater field data is analyzed and modelling continues. Concerning Part 3, a 10 gallon per minute uranium removal demonstration plant is currently undergoing proof-of-process testing on existing FMPC wastewater effluents. The test plan for the demonstration plant dated October 23, 1990 was transmitted to OEPA on November 28,1990 by DOE letter DOE-205-91. Results from this study are to be incorporated into the design of the IAWWT. Tentatively, the IAWWT will involve pH adjustment, sand filtration, and ion exchange. The options of handling spent ion exchange resin include regeneration, storage until regeneration is possible with the construction of the AWWT, or disposal as a low level radioactive waste.

b. Removal Criteria
   Detailed criteria, such as the exact number and location of the recovery wells (Part 2) and the configuration of the IAWWT system (Part 3), will be established to complete design documents.

c. Design of Removal Action
   Definitive design documents will be prepared for the Removal Action construction work.

d. Training of Personnel
   All personnel involved will be trained in accordance with the Occupational Safety and Health Administration (OSHA) standards found in 29 CFR 1910.120.

e. Bid and Award/Construction Management

All bid and award documents will be prepared for the Removal Action construction work along with the procurement of all equipment, materials and subcontractors necessary to complete the removal action construction work.

f. Removal Action Schedule

The Removal Action schedules for Part 2 and Part 3 as presented in Attachment I reflect operation dates of mid-April 1992. However, every effort will be exercised to expedite the completion of design, contract bid and award, procurement of equipment, acquisition of easements, and construction to achieve a December 1991 date as discussed in the Dispute Resolution agreement.

3.2 Additional Data

Available data from the existing monitoring wells were sufficient to calibrate the groundwater model used to predict the location of the South Groundwater Contamination Plume in the EE/CA. The location of the recovery wells has been selected to be down-gradient of the 30 ug/l plume concentration to ensure recovery of all groundwater containing uranium above this level. However, the exact concentration which will be experienced in the groundwater remains uncertain due to the scarcity of field data predicted by the model in the proposed location of the recovery wells.

The operation strategy of the recovery wells will largely be dependent on the monitoring of drawdown levels and uranium concentration in the monitoring well network. Data from the groundwater monitoring well network, consisting of both existing and proposed monitoring wells located up-gradient, down-gradient, and west of the recovery wells, will dictate the pumping rate of each recovery well. The operation of Part 2 will be determined and detailed in an Operation and Maintenance manual.

The groundwater model will be used to predict how the aquifer may behave when the Pumping and Discharge System is operational. Uranium concentration data, obtained from the monitoring well network, will be used to evaluate the accuracy of the model. The model will be periodically calibrated to reflect observed field conditions.

3.3 Training Requirements

All personnel involved with the implementation of this Removal Action will be trained in accordance with the Occupational Safety and Health Administration (OHSA) standards found in 29 CFR 1910.120.

3.4 Access to Private Property

FMPC Project Management organization aided by the COE is responsible for negotiations with the owners of private property for acquiring the necessary easements for the rights to access and completion of this Removal Action. Figure 3 shows the locations of the private property that may be affected.

4.0 FIELD ACTIVITIES

As agreed to in the Dispute Resolution, design efforts have already begun to provide a system to remove groundwater from the leading edge (south edge) of the contamination plume and return the groundwater to the FMPC through a groundwater discharge force main which will connect to the existing FMPC outfall lime at, or near, Manhole 177. The "leading edge" of the South Groundwater Contamination Plume is defined as the location where uranium concentrations are 30 ug/l or greater. However as explained in Section 3.2, the wells are being cited down-gradient of this location to ensure recovery of all groundwater above this level.

Part 2 and Part 3 of the South Groundwater Contamination Plume Removal Action will be implemented in several distinct construction segments. Construction segments are as follows:

a. Installation of groundwater monitoring and recovery wells north of New Haven Road and west of State Route 128, see Figure 3. Tentatively based on groundwater modelling results, five recovery wells (four initially with provisions made for a future fifth) are proposed that will be screened in the top 40 feet of the aquifer. The top of the screen will be set below the existing groundwater surface elevation so that no portion of the screen will be exposed when drawdown of the aquifer occurs. Each well will be provided with a throttling capability to control its pumping rate, but will have a maximum pumping rate of 500 gpm.

   Seven 2000 Series monitoring wells (3 up-gradient, 3 down-gradient, and 1 west of the recovery wells) are proposed with a 15 feet screen interval starting 5 feet above the water table and extending 10 feet below the water table. Seven 3000 Series monitoring wells (3 up-gradient, 3 down-gradient, and 1 west of the recovery wells) are proposed with a 10 feet screen interval starting 60 feet below the water table surface. The monitoring well installed to the west of the recovery wells will be used to monitor for any impacts the Removal Action may have on groundwater contamination that exists near Industries B and C located along Paddys Run Road.

b. Installation of groundwater discharge pipeline. This segment of the planned construction will involve excavations that will allow for the installation of a transmission force main

pipeline and its associated appurtenances, such as valves. The design will allow the flexibility for further recovery well installation and operation should it become necessary. At the present time, this is envisioned to also include reconstruction of an existing roadway embankment across the Storm Sewer Outfall Ditch, including the replacement of the two existing 66 inch diameter CMP (Corrugated Metal Pipe) underlying drainage culverts. The new groundwater discharge pipeline would be placed in the restored embankment.

c. Installation of a booster pump station. This will involve a structure large enough to house the necessary fittings, piping, pumps, tanks, and electrical units. The design will allow the flexibility for additional pumps to accommodate additional groundwater flows should it become necessary.

d. Installation of the 150 gpm IAWWT. The location of the system will be on FMPC property. The design of this system is presently envisioned as a trailer mounted unit and will tentatively involve pH adjustment, sand filtration, and ion exchange. On-going waste stream characterizations and AWWT proof-of-process testing will provide the optimum location for this system. The IAWWT will have the capability of removing a sufficient quantity of uranium from existing FMPC wastewater discharges so that there will be no increased uranium loading or risk to the Great Miami River as a result of implementation of the scheduled Removal Actions. The contributors to the increased uranium loading include the Perched Water, Waste Pit Area Run-Off Control, and South Groundwater Contamination Plume Removal Actions. The IAWWT will be operational before Part 2 operations begin and until the proposed AWWT facility comes on-line. At the time, the IAWWT will be taken off-line.

Prior to operation, WMCO will perform acceptance testing of the entire system. The repair of the existing FMPC outfall pipeline (addressed in a separate Work Plan) will be completed prior to Part 2 operation.

Operations and Maintenance

After completion of the performance acceptance test on the groundwater recovery pumping wells, booster pump station, groundwater discharge pipeline system, and the IAWWT, these systems will be operated and maintained by DOE. Operations and maintenance manuals for each system will be prepared during the construction to incorporate actual manufacturer's information.

5.0 SAMPLING AND ANALYSIS PLAN

As stated in the Consent Agreement, if the DOE determines that any activities of work being implemented under this Consent Agreement may create an imminent threat to human health or the environment from the release or threat of release of a hazardous substance, pollutant, contaminant, or hazardous constituent, it may stop any work or activities for such period of time as needed to respond and take whatever action is necessary to abate the danger.

5.1 Groundwater

At present, the DOE conducts a groundwater monitoring program as agreed upon in a Federal Facility Compliance Agreement between the U.S. EPA and DOE. This includes existing privately-owned wells and monitoring wells in the South Plume area. This monitoring of existing wells will continue. The groundwater monitoring program will be expanded to include groundwater monitoring data from each of the recovery and monitoring wells installed in Part 2.

The results from the WMCO groundwater monitoring program will be included in the FMPC Annual Environmental Monitoring Report. This report is available for review in the FMPC Reading Room.

5.2 Wastewater

The sampling and analysis program for the monitoring of wastewater discharges has been previously established in meeting the requirements of the Radiation Discharge Information section of the Federal Facilities Compliance Agreement and the National Pollutant Discharge Elimination System (NPDES). The monitoring point of interest is Discharge 001 (Manhole 175) in which the combined flow of all existing FMPC wastewater effluents are monitored before discharging to the Great Miami River. Discharges are analyzed daily for alpha and beta radiation, and uranium. Weekly grab samples are analyzed for thorium-234. Daily samples are composited and analyzed monthly for neptunium-237, plutonium-238, plutonium-239/240, technetium-99, potassium-40, actinium-227, lead-210, thorium-228, thorium-230, thorium-232, uranium-233, uranium-234, uranium-235, uranium-236, uranium-238, radium-226, and radium-228. Daily samples are composited and analyzed quarterly for cesium-137, ruthenium-106, and strontium-90.

A similar sampling and analysis program, as described above, will be implemented for monitoring the discharge from the South Plume Removal Action prior to mixing with the existing FMPC effluent. The sampling point will be located downstream of the IAWWT tie-in in the likely event that the IAWWT is constructed at the SWRB. Also, the conventional pollutant parameters under the NPDES will be monitored and will include total nonfilterable residue, total oil and grease, pH, and flow rate. This new discharge point monitoring information will be reported as NPDES outfall 1I000004003.

Alpha and beta radiation and uranium will be analyzed for at the inlet and outlet of the IAWWT to assess its performance. In the likely event that the IAWWT discharges into the new groundwater discharge pipeline, the conventional pollutants (total nonfilterable residue, total oil and greases, pH, and flow rate) will also be monitored at the outlet of the IAWWT. The monitored information would be reported as NPDES outfall 1I00000607. If the IAWWT is located so that it does not tie-in to the new groundwater discharge pipeline, no NPDES sampling of the IAWWT discharge will occur.

5.3 Soil and Rubble

The sampling and analysis program for the monitoring of potentially contaminated soils and rubble which could be encountered during construction is presented in Attachment II.

6.0 HEALTH AND SAFETY PLAN

The work to be performed shall be consistent with the Health and Safety Plan prepared for this Removal Action. A copy of this plan is provided as Attachment III of this work plan. The plan identifies, evaluates, and controls all safety and health hazards. In addition, it provides for emergency response for hazardous operations. The plan is consistent with 29 CFR 1910.120 and has been written to supplement the formal FMPC Site Health and Safety Plan. Safety documentation will be prepared according to FMPC-2116 Topical Manual "Implementing FMPC Policies and Procedures for System Safety Analysis and Review System" and DOE/OR-901 Guidance for Preparation of Safety Analysis Reports.

7.0 PERMIT INFORMATION SUMMARY

Attachment IV of this work plan contains information pertaining to permits which would otherwise be required during the implementation of this Removal Action in the absence of provisions of Section 121(e)(1) of CERCLA and the NCP.

8.0 QUALITY ASSURANCE

The South Groundwater Contamination Plume Removal Action work will be conducted in accordance with the requirements of the overall quality assurance program at the FMPC which is described in the site Quality Assurance Plan, FMPC 2139. The Quality Assurance Plan is based on the criteria specified in ASME NQA-1, Federal EPA Guideline QAMS-005/80 and DOE Orders 5600.6 and 5400.1. Specific quality assurance requirements will be incorporated within the written and approved procedures and within the personnel training. The Quality Assurance Department will conduct periodic surveillances to verify compliance.

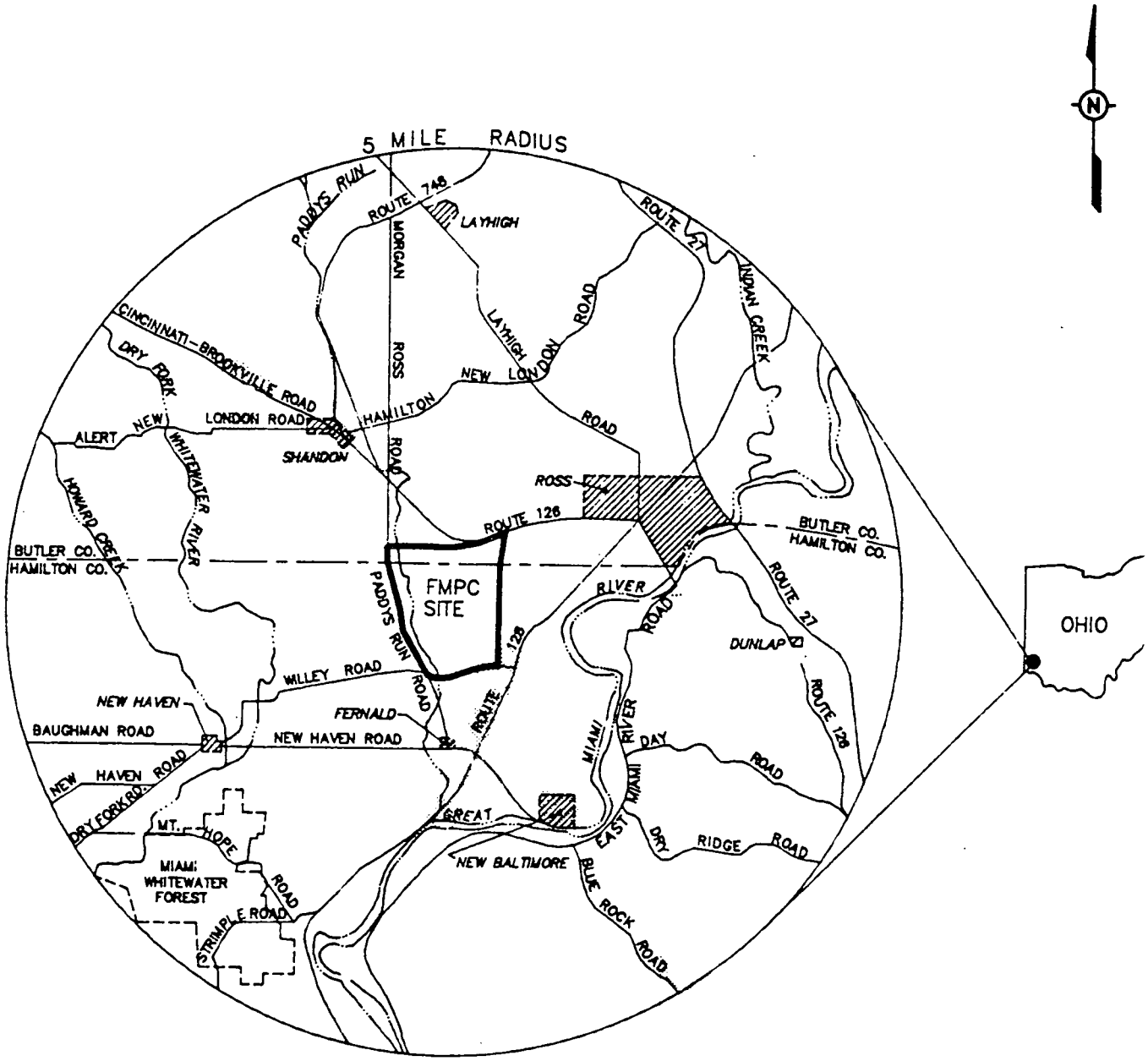


Figure 1 Location Map

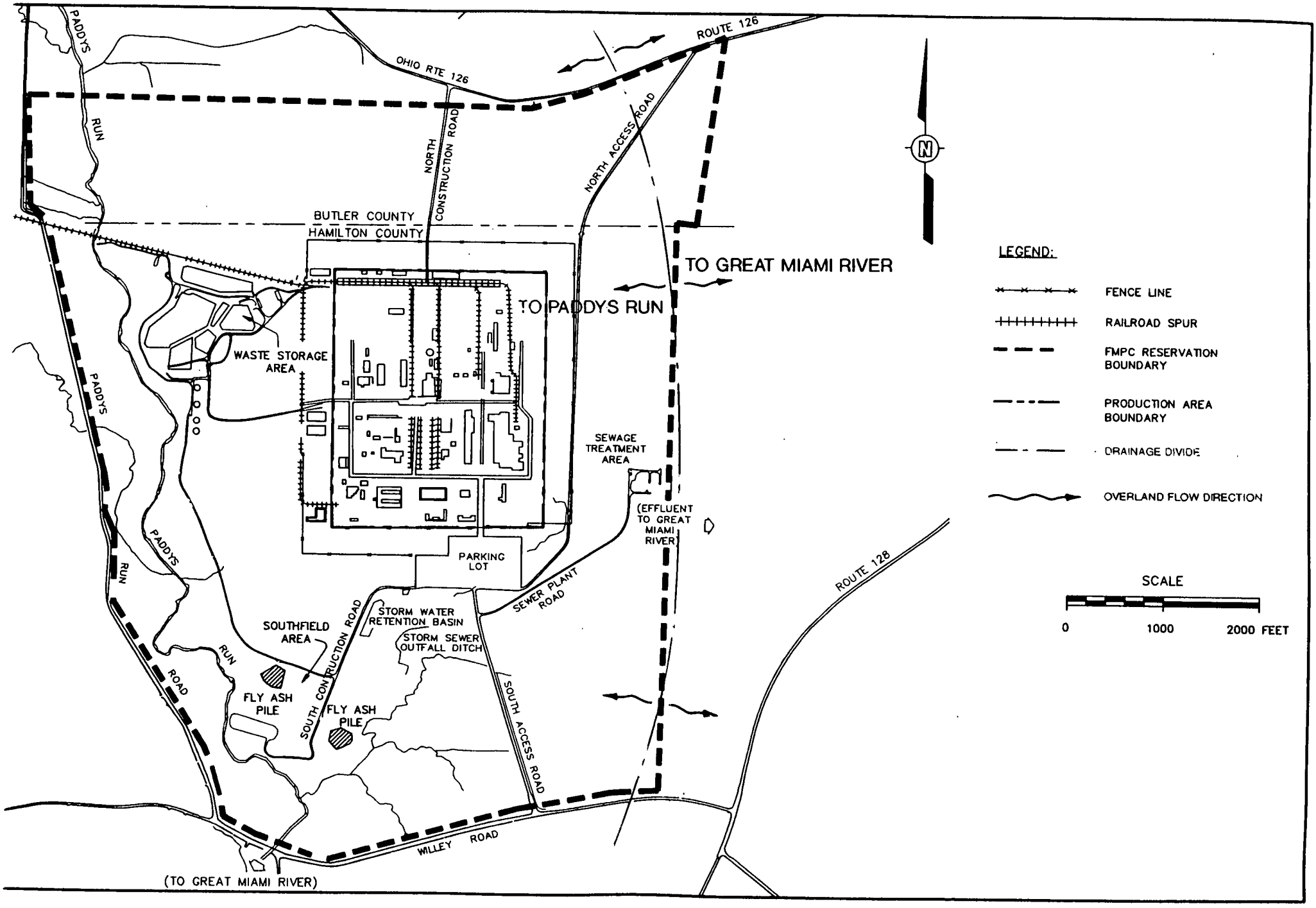


Figure 2 Site Map

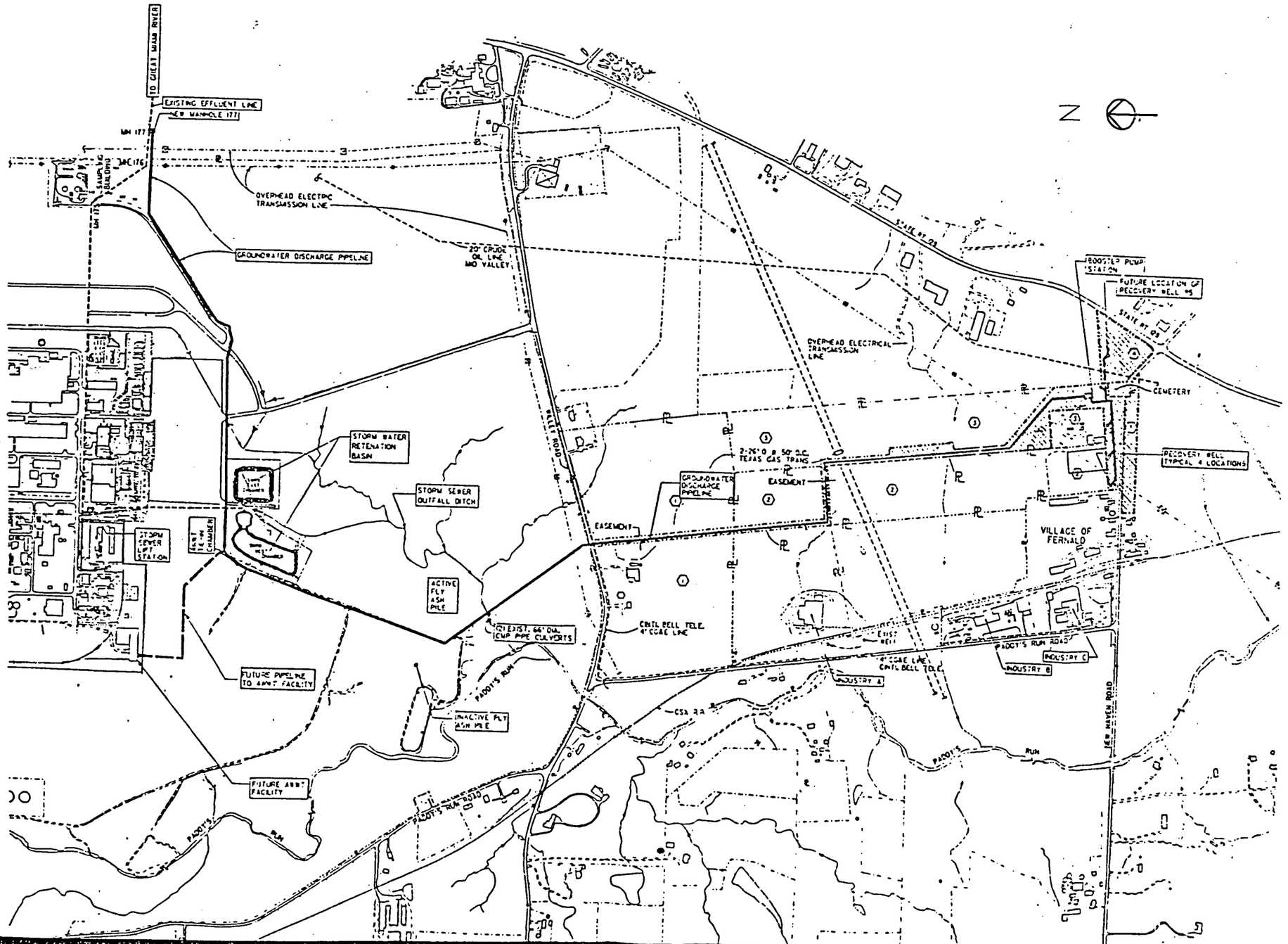


Figure 3 South Groundwater Contamination Plume Area Site Map

915

ATTACHMENT I

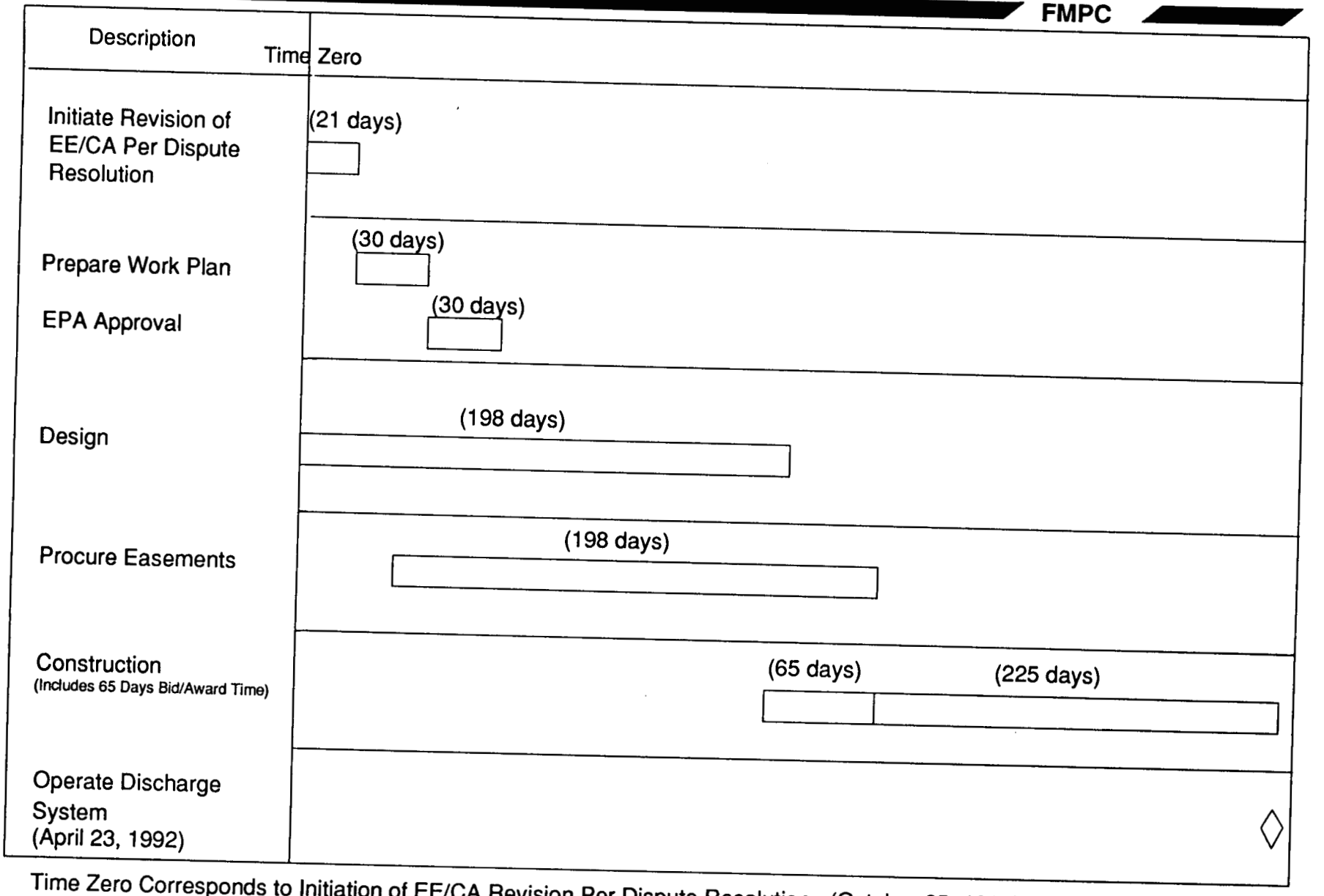
SOUTH GROUNDWATER CONTAMINATION PLUME

REMOVAL ACTION SCHEDULE

South Groundwater Contamination Plume

Part 2 - Pumping & Discharge System

FMPC



Time Zero Corresponds to Initiation of EE/CA Revision Per Dispute Resolution. (October 25, 1990)
Durations are Indicated in Calendar Days.

South Groundwater Contamination Plume

Part 3 - Interim Advanced Wastewater Treatment System

FMPC

Description	Time Zero
Initiate Revision of EE/CA Per Dispute Resolution	(21 days)
Issue/Authorize Project Work Order	(65 days)
Prepare Work Plan	(30 days)
EPA Approval	(30 days)
Performance Specification	(140 days)
Utilities Services Design	(135 days)
Construction (Includes 60 Days Bid/Award Time)	(60 days) (235 days)
Treatment System Available (April 9, 1992)	◊

Time Zero Corresponds to Initiation of EE/CA Revision Per Dispute Resolution. (October 25, 1990)
Durations are Indicated in Calendar Days.

ATTACHMENT II

SOIL AND RUBBLE
SAMPLING AND ANALYSIS PLAN
FOR THE
SOUTH GROUNDWATER CONTAMINATION PLUME REMOVAL ACTION
PART 2 - PUMPING AND DISCHARGE SYSTEM
AND
PART 3 - INTERIM ADVANCED WASTEWATER TREATMENT SYSTEM
FEED MATERIALS PRODUCTION CENTER

915

1.0 SAMPLING AND ANALYSIS

Part 2 and Part 3 of the South Groundwater Contamination Plume Removal Action involves major construction activities as listed in Section 5.0 of the Work Plan of this sampling and analysis plan. Removal and movement of soil associated with this project shall be minimized as much as possible. Environmental Monitoring will conduct sampling that will assure that contaminated soils removed to support build-over are extracted down to an activity level of 35 pCi/gm of total uranium. Build-over is defined as the construction of a permanent structure over the affected area. This will assure that the build-over criteria is in accordance with the NRC recommended guidelines for the disposal or on-site storage of thorium or uranium wastes.

Verification of the 35 pCi/gm total uranium build-over criteria shall be accomplished prior to the actual construction activity. This can be achieved by (1) performing radiological survey measurements during the excavation process, and (2) the collection of statistically representative verification soil samples from the base of each of the excavation areas that have elevated concentrations of uranium in the preconstruction sampling.

Postconstruction sampling shall also be conducted by Environmental Monitoring to confirm that the suspect contamination has been contained to less than or equal to the 35 pCi/gm concentration level for total uranium. This phase of sampling will be performed by establishing a grid over the affected project areas. Statistically representative soil samples (0" to 6") will be collected from within each grid. The collected samples will be submitted to the FMPC analytical department for the following analysis:

* Total Uranium (ppm)
* Total Thorium (ppm)

In addition to the above analysis, a sample from 10% of the locations selected will be analyzed for the following. The projected analyses are as follows:

* Total Uranium (pCi/gm)
* Isotopic Uranium (pCi/gm)
* Total Thorium (pCi/gm)
* Isotopic Thorium (pCi/gm)
* Full HSL

24

Container requirements, weighted volumetric specifications, and holding times for the suggested radiometric analysis are as follows: (g/p = glass or plastic, N/A= not available)

PARAMETER	VOLUME	CONTAINER	HOLDING TIME
Total Uranium	30 gm.	g/p	N/A
Isotopic Uranium	200 gm.	g/p	3 months
Total Thorium	30 gm.	g/p	N/A
Isotopic Thorium	40 gm.	g/p	3 months

Full Hazardous Substance List

PARAMETER	VOLUME	CONTAINER	HOLDING TIME
HSL METALS	2-1 liter	g	6 months (28 days for Hg)
HSL SEMI-VOAs	4 liter	g, tlc	7 days
HSL VOAs	2-40 ml vial	g, tlc	7 days
HSL PEST/HERB	4 liter	g, tlc	7 days

The requested analysis shall be performed by the FMPC analytical department for process control. All environmental monitoring verification samples will be submitted to an appropriate off-site, QAPP identified, analytical laboratory licensed to accept and analyze low level nuclear material and identified in the RI/FS QAPP. Any sample analysis that cannot be performed by the FMPC analytical department will also be shipped off-site to an appropriate laboratory for the completion of analysis.

2.0 CONSTRUCTION GENERATED RUBBLE SAMPLING AND ANALYSIS

The FMPC defines construction rubble to include soil, rubble, wood, general refuse, metal, etc., generated during the course of any construction project. In order to dispose of this waste, materials are determined to be either contaminated or non contaminated.

All material excavated in the support of the Waste Pit Area Stormwater Control Project must meet one of three criteria. (1) Excavated soils that are 35 pCi/gm or less can be used as backfill in the uncontrolled area of the FMPC or stockpiled in the K-65 Storage Area. (2) Soils greater than 35 pCi/gm but less than 100 pCi/gm, can be used as backfill in the controlled area or stockpiled in the controlled area. (3) Soils in excess of 100 pCi/gm must be packaged for disposal as low level waste.

Excavated material (soil, concrete, etc.) that cannot be utilized in the completion of this project and exhibit an activity level of greater than or equal to 100 pCi/g of total uranium shall be containerized for storage. Generated wastes that exhibit total uranium activity levels equal to or greater than 35 pCi/g but less than 100 pCi/g shall be segregated and stockpiled in a controlled area.

The characterization of stockpiled and/or containerized stored wastes shall be accomplished by extracting statistically representative samples to determine the radiological and chemical characteristics of the suspect material.

All extracted samples shall be analyzed for the following analytical parameters:

* Total Uranium
* Isotopic Uranium
* Total Thorium
* Isotopic Thorium
* Full TCLP

Container requirements, weighted volumetric specifications, and holding times for the suggested radiometric analysis are as follows: (g/p = glass or plastic, TLC = teflon lined closure, N/A= not available)

PARAMETER	VOLUME	CONTAINER	HOLDING TIME
Total Uranium	30 gm.	g/p	N/A
Isotopic Uranium	200 gm.	g/p	3 months
Total Thorium	30 gm.	g/p	N/A
Isotopic Thorium	40 gm.	g/p	3 months
Full TCLP			
TCLP METALS	1 pint	g/p, tlc	6 months (28 days for Hg)
TCLP SEMI-VOAs	1 pint	g, tlc	14 days
TCLP VOAs	2 - 4 oz.	g, tlc	14 days
TCLP PEST/HERB	1 pint	g, tlc	14 days

The analysis for radiometric parameters shall be conducted by the FMPC analytical department. The full TCLP, analysis shall be conducted by an off - site analytical laboratory contracted by the FMPC. Analytical test methods shall be those consistent with analytical test protocols established by EPA document SW-846, Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods.

3.0 QA/QC SAMPLING REQUIREMENTS

Environmental monitoring will be conducted in accordance with the RI/FS QAPP. The procedure, EM-2-013 will be made to conform to the QAPP for trip blanks, field blanks, and duplicate sampling. Steps will be taken to separate the samples in order to be sent to off-site labs. Regardless of sample matrix, EM will extract a duplicate of every tenth sample for analysis. The sample will be noted in the field logbook as applicable to the specific project. All duplicate or QA/QC samples will be contained, sealed and labeled in such a way that the receiving lab will not know that the sample is a duplicate.

4.0 EQUIPMENT NEEDED

As a minimum the required equipment and associated forms needed will be those listed in Environmental Monitoring procedure EM-2-013. This list of equipment and forms may be added to or deleted from as directed by the needs of the specific project.

5.0 DECONTAMINATION OF EQUIPMENT

All equipment used will be decontaminated as per Environmental Monitoring procedure EM-2-013. In accordance with EPA document SW-846 and Environmental Monitoring procedure EM-2-013 a final rinseate sample will accompany all sampling conducted in the support of the project to confirm that suspect contamination is not being transported to other sample locations.

6.0 METHODOLOGY OF EXTRACTION

Environmental Monitoring will adhere to EM-EXM-90-001 (Environmental Media Sampling Extraction Methodology For Using a Stainless Steel Auger and a Stainless Steel Scoop) and EM-EXM-90-006 (Environmental Media Sampling Extraction Methodology Using the Environmentalist Subsoil Probe).

915

ATTACHMENT III

HEALTH AND SAFETY PLAN

FOR THE

SOUTH GROUNDWATER CONTAMINATION PLUME REMOVAL ACTION

PART 2 - PUMPING AND DISCHARGE SYSTEM

AND

PART 3 - INTERIM ADVANCED WASTEWATER TREATMENT SYSTEM

FEED MATERIALS PRODUCTION CENTER

APPROVAL:

S. W. Coyle, Manager
Environmental Management
Westinghouse Materials Company of Ohio

CONCURRENCE:

J. J. Volpe, Vice President
Industrial Radiological Safety and Training
Westinghouse Materials Company of Ohio

915

TABLE OF CONTENTS

1.0	History and Description of the Work Area	1
	1.1 Description of the Work Area	1
	1.2 Activities Conducted in the Work Area	1
	1.3 Unusual Features	1
2.0	Work Area Organization and Site Access Control	1
	2.1 Access	1
	2.1.1 Work Area Within FMPC Property	2
	2.1.2 Work Area Outside FMPC Property	3
	2.2 Bioassay Samples	4
	2.3 Site Entry Procedures	4
3.0	Task Activities/Work Plan	4
	3.1 Pumping and Discharge System (Part 2)	5
	3.2 Interim Advanced Wastewater Treatment System (Part 3)	6
4.0	Hazard Assessments	6
	4.1 Physical Hazards	7
	4.2 Safety Hazards	7
	4.3 Chemical Hazards	7
	4.4 Radiological Hazards	7
5.0	Standard Operating Procedures and Site Policies	8
6.0	Education and Training	8
	6.1 Worker Category	8
	6.2 Safety Meetings	9
7.0	Medical Surveillance	9
8.0	Monitoring	10
	8.1 Goals	10
	8.2 Monitoring Descriptions	10
	8.2.1 Physical Hazards	10
	8.2.2 Safety Hazards	10
	8.2.3 Chemical Hazards	11
	8.2.4 Radiological Hazards	13
	8.3 Field Action Limits	16
9.0	Personal Protective Equipment Requirements	16
10.0	Safety Equipment List	16
	10.1 Installation of the Recovery and Monitoring Wells	17
	10.2 Installation of Piping System and Booster Pump Station	18
	10.3 Initial Testing of the System for Pumping the Contaminated Groundwater	19

29

10.4 Operation of the Pumping and Discharge System 20

10.5 Installation of the Interim Advanced Wastewater Treatment System 21
10.6 Initial Start-up of the Interim Advanced Wastewater Treatment System 22
10.7 Operation of the Interim Advanced Wastewater Treatment System 23

11.0 Decontamination Procedures 24

12.0 Emergency Plans 24
12.1 Incidents or Injuries 24
12.2 Pre-Emergency Planning 25
12.3 Lines of Authority 25
12.4 Emergency Notification 26
12.5 Fire, Explosion, or Medical Emergency 26
12.6 Additional Information 27
12.6.1 Hospitals 27
12.6.2 Emergency Telephone Numbers 28
12.7 Emergency Equipment 28
12.8 Evacuation 28

13.0 Amendments 29

14.0 Approval and Compliance Statement 29

OTHER:

Figure 1 Location of Safety Hazards
Figure 2A Routes to FMPC Medical Facility
Figure 2B Routes to FMPC Medical Facility
Figure 3 Providence Hospital
Figure 4 Rally Points

1.0 History and Description of the Work Area

1.1 Description of the Work Area

Although no longer in production, the Feed Materials Production Center (FMPC) was used for the purification of uranium and thorium metals, production of derbies, ingots, and cores (early 1950's-1988), molten salt cleaning of uranium derbies (1965-1986), and decladding of uranium fuel cores. Within the FMPC property lines and in adjacent areas, soils and groundwater have the potential to be contaminated with uranium and its daughter products as a result of contaminant migration.

The work area for Parts 2, 3, and 4 of the South Groundwater Contamination Plume Removal Action includes privately owned property outside of the FMPC boundary and the FMPC property. A detailed description of the area for which work will take place is given in the Engineering Evaluation/Cost Analysis (EE/CA) for the South Groundwater Contamination Plume Removal Action.

1.2 Activities Conducted in the Work Area

The work to be performed for Part 2 includes the installation of new recovery and monitoring wells outside of the FMPC boundary, construction of a booster pump station, and installation of a groundwater discharge pipeline running back to the FMPC. Part 3 work includes the installation and operation of an Interim Advanced Wastewater Treatment system (IAWWT) located within the FMPC. The exact location of the IAWWT has not been finalized. It may be inside or outside of the Production Area.

1.3 Unusual Features

Several utilities exist traversing the area where the groundwater discharge pipeline will be aligned. They include an underground oil transmission pipeline, underground gas transmission pipelines, and overhead electric transmission lines.

2.0 Work Area Organization and Site Access Control

2.1 Access

Much of the work is not located on FMPC property. Access to private properties will be through previously approved agreements and/or easements. While the work is performed on these private properties, access to the areas will be limited to personnel trained and certified to perform such work activities as regulated by 29 CFR 1910.120.

2.1.1 Work Area Within FMPC Property

The FMPC is organized into site control zones based on radiological contamination. In addition, the site work area related to this Removal Action within FMPC property will be further organized into specific zones to reduce the potential spread of chemical or radiological contamination when such contamination is suspected or identified. Potential locations in the work area during construction where Exclusion Zones could exist are the Production Area (if it is determined that the IAWWT is to be located there), the Storm Sewer Outfall Ditch, the area between the active and in-active fly ash piles, and the monitoring and recovery wells. Preconstruction sampling will be done at the above work areas to determine if any contaminated soils are present. If contaminated soils are present, these areas shall be identified as Exclusion Zones.

The Exclusion Zone is the zone of highest potential for exposure to chemical or radiological hazards. The intent for establishing this zone is to prevent or limit the exposure and potential spread of known or unidentified contaminants. Access to the Exclusion Zone will be restricted by the supervisor-in-charge to trained and certified employees, as regulated by 29 CFR 1910.120, who are required to enter in order to perform their job functions. There will be different Exclusion Zones for the various tasks. The Exclusion Zone will be marked with barrier tape or other easily identifiable devices. The zone may be expanded if airborne hazards are detected. All areas requiring the use of respiratory protection are included in the Exclusion Zone. Entrance shall be limited to one area and controlled by the supervisor-in-charge.

If necessary, Industrial, Radiological Safety, and Training (IRS&T) representatives will establish a Contamination Reduction Zone located at the exit to the Exclusion Zone for the decontamination of personnel and equipment. This zone will be used for removal of disposable personal protective equipment and for cleaning of contaminated equipment.

Radiological Postings

Radiological areas will be posted in accordance with DOE Order 5480.11. The following is a brief summary of posting requirements based on uranium:

Regulated Area	>1000 dpm/100cm^2 removable >5000 dpm/100cm^2 fixed and removable
Contaminated Area	>10,000 dpm/100cm^2 removable >50,000 dpm/100cm^2 fixed and removable
Airborne Radioactivity Area	>2 X 10^{-12} uCi/ml
Respirator Area	>5 X 10^{-12} uCi/ml

In addition, special postings may be added for access to areas: "Radiation Work Permit Required for Entry" or "Contact Health Physics for Entry."

2.1.2 Work Area Outside FMPC Property

The site work area outside FMPC property related to this Removal Action will be organized into specified construction zones. The need to establish Exclusion Zones for the control of chemical or radioactive contamination outside FMPC property is anticipated during the installation of recovery and monitoring wells. A minimum radius of four feet from the rotating auger will be considered to be the Exclusion Zone. The zone may be expanded if airborne hazards are detected or if judged necessary by IRS&T representatives.

Exclusion Zones are not anticipated during the initial testing of the piping system and booster pump station for this Removal Action. Monitoring shall be performed to ensure that chemical or radioactive contaminants are identified and if needed Exclusion Zones are to be established. Should any contaminant be identified, it shall immediately be evaluated by IRS&T representatives who shall determine the need for the establishment of an Exclusion Zone. In the event an Exclusion Zone is established, the Health and Safety Plan will need to be revised accordingly.

Access to the zone shall be limited to personnel trained in accordance with the requirements of 29 CFR 1910.120. Such access shall be controlled by the designated supervisor-in-charge. The Exclusion Zone shall be marked with barrier tape or other easily identifiable devices. Entrance shall be limited to one area and

controlled by the supervisor-in-charge. In conjunction with the Exclusion Zone, a Contamination Reduction Zone shall be established to allow for the decontamination of personnel and equipment.

2.2 Bioassay Samples

Westinghouse Materials Company of Ohio (WMCO) personnel and subcontractors involved in this project are required to participate in a routine periodic urine assay program. Any suspected exposure to hazardous substances shall be reported and require additional sampling. Personnel are also required to wear a thermal luminescent dosimeter (TLD) at all times when in areas determined to be regulated or contaminated.

2.3 Site Entry Procedures

Controlled Areas of the FMPC are controlled in accordance with the Radiological Controls Manual (FMPC-2084) which provides requirements for the wearing of dosimeters, radiation safety training, limitations on entry for personnel with open wounds or recent medical tests with radionuclides, radiological postings, protective clothing, limitations on food, beverages, and tobacco, general rules for work, contamination control, and monitoring and showering requirements upon exiting from the Controlled Area and Radiological Areas.

During the subsequent activities, the procedures listed below will apply during Part 2 and Part 3 activities:

- Identify Exclusion Zone, Contamination Reduction Zone, and break area.
- Conduct daily safety meeting to familiarize individuals with site specific hazards.
- Discuss alternate methods of communication.
- Perform respirator check out and fit test prior to use (if applicable).
- Use the buddy system. Teams of at least two individuals will be used for all activities within exclusion zone.

3.0 Task Activities/Work Plan

This Removal Action includes four parts. Part 1 will provide an alternate water supply for two industrial users. Part 2 will be the groundwater pumping and discharge system. Part 3 will provide the IAWWT until the Advanced Wastewater Treatment facility (AWWT) comes on-line. Part 4 will provide for the implementation of the existing FMPC groundwater monitoring

program and institutional controls. A description of Parts 2, 3, and 4 of the South Groundwater Contamination Plume Removal Action may be found in the Work Plan. A separate Work Plan and Health and Safety Plan for Part 1 has been submitted to the United States Environmental Protection Agency (U.S. EPA) for review. Part 4 will be accomplished under the existing Health and Safety Plan used for monitoring of the wells.

3.1 Pumping and Discharge System (Part 2)

Part 2 will provide a system to remove groundwater from the leading edge of the contaminated plume and return the water to the FMPC for discharge to the Great Miami River.

Installation of the recovery and monitoring wells will include:

yes	Disturb Surface Soil	no	Sample Surface Water
yes	Disturb Subsurface Soil	no	Sample Lagoons
yes	Use Heavy Equipment	no	Use Boat
no	Enter Confined Space	yes[1]	Involve Radioactivity
no	Disturb Containerized Matter	yes	Involve Trenches

Installation of the piping system and booster pump station will:

yes	Disturb Surface Soil	no	Sample Surface Water
yes	Disturb Subsurface Soil	no	Sample Lagoons
yes	Use Heavy Equipment	no	Use Boat
no	Enter Confined Space	yes	Involve Radioactivity
no	Disturb Containerized Matter	yes	Involve Trenches

The initial testing of the system for pumping the contaminated water will:

no	Disturb Surface Soil	no	Sample Surface Water
no	Disturb Subsurface Soil	no	Sample Lagoons
no	Use Heavy Equipment	no	Use Boat
no	Enter Confined Space	yes	Involve Radioactivity
no	Disturb Containerized Matter	no	Involve Trenches

The operation of the pumping and discharge system will:

no	Disturb Surface Soil	no	Sample Surface Water
no	Disturb Subsurface Soil	no	Sample Lagoons
no	Use Heavy Equipment	no	Use Boat
no	Enter Confined Space	yes	Involve Radioactivity
no	Disturb Containerized Matter	no	Involve Trenches

Note: [1] See the discussion presented in Section 2.1.2

3.2 Interim Advanced Wastewater Treatment System (Part 3)

Part 3 will provide an IAWWT system which will remove uranium from the existing FMPC wastewater discharge. The IAWWT system is projected to be mounted on the back of a tractor-trailer. It will be located on FMPC property and may be either inside or outside of the Production Area.

Installation of the Interim Advanced Wastewater Treatment system will:

yes	Disturb Surface Soil	no	Sample Surface Water
yes	Disturb Subsurface Soil	no	Sample Lagoons
yes	Use Heavy Equipment	no	Use Boat
no	Enter Confined Space	yes*	Involve Radioactivity
no	Disturb Containerized Matter	yes	Involve Trenches

* if the location of the IAWWT is within the Production Area.

The initial start-up of the interim advanced wastewater treatment system will:

no	Disturb Surface Soil	no	Sample Surface Water
no	Disturb Subsurface Soil	no	Sample Lagoons
no	Use Heavy Equipment	no	Use Boat
no	Enter Confined Space	yes	Involve Radioactivity
no	Disturb Containerized Matter	no	Involve Trenches

The operation of the interim advanced wastewater treatment system will:

no	Disturb Surface Soil	no	Sample Surface Water
no	Disturb Subsurface Soil	no	Sample Lagoons
no	Use Heavy Equipment	no	Use Boat
no	Enter Confined Space	yes	Involve Radioactivity
no	Disturb Containerized Matter	no	Involve Trenches

4.0 Hazard Assessments

A preliminary review of the South Plume area, including soil and groundwater analysis surveys by personnel performing the RI/FS field investigations, indicated the potential hazards identified below. Prior to the initiation of the removal field activities, a reassessment of the conditions will be conducted to ensure that conditions are such that a safe working environment can be provided. All newly identified hazards will be addressed with the IRS&T representative(s) to determine the degree of hazard and if any additional requirements to this safety plan are needed.

4.1 Physical Hazards

Heat Stress
Cold Stress
Noise

4.2 Safety Hazards

Confined Space
Cave In
Overhead Hazards
Underground Utilities
Heavy Equipment
Falling Hazards

4.3 Chemical Hazards	Permissible Exposure Limit (PEL)	Action Level
Calcium Hydroxide	Found in Ready-mix Concrete and can cause burns on prolonged contact. No airborne PEL or action level is listed since it is delivered wet.	
Sodium Hydroxide	2 mg/M	1 mg/M
Concentrated Hydrochloric Acid	5 ppm	3 ppm
Uranium	2 X 10-11 uCi/ml*	5 X 10-12 uCi/ml*

* The action level for uranium is 5 X 10^{-12} uCi/ml which is based on the DOE derived air concentraion limit of 2 X 10^{-11} uCi/ml

4.4 Radiological Hazards

The primary routes of entry of the potentially significant contaminants, uranium-238 and its daughters, are inhalation and ingestion. Direct contact may result in absorption if the compounds are water soluble.

Exposure to low levels of radioactivity do not produce acute exposure symptoms. However, chronic exposure may cause delayed effects such as cancer. Such exposures will be kept as low as reasonably achievable (ALARA). See Section 12.0 for contingency plans.

5.0 Standard Operating Procedures and Site Policies

All personnel involved in the work area shall follow the existing WMCO standard operating procedures and site policies regardless of whether within or outside the FMPC property boundary.

Site policies include, but are not limited to, the following:

FMPC Site Health and Safety Plan, dated June 1990
FMPC-503 FMPC Spill Reporting and Cleanup
FMPC-704 Minor Event Reporting System
FMPC-719 P.R.O.P.E.R. Lock and Tag Procedure
FMPC-2084 FMPC Radiation Control Manual
FMPC-2128 Industrial Hygiene and Safety Manual
FMPC-2152 FMPC Respirator Protection Manual

6.0 Education and Training

6.1 Worker Category

All WMCO and WMCO subcontractor personnel assigned to the tasks identified as being applicable to the OHSA requirements of 29 CFR 1910.120 shall, as a minimum, meet the following training requirements including:

- Documented safety meeting to review this health & safety plan including site specific hazards and procedures
- WMCO radiation safety training
- WMCO respiratory training and fit test or equivalent approved by WMCO Industrial Hygiene
- 40-hour OSHA training
- 8-hour annual refresher training
- 8-hour supervisory training (for supervisors)
- 24-hour supervised field experience

6.2 Safety Meetings

A safety meeting, which must be documented, will be conducted for all personnel assigned to work on the Part 2 and Part 3 construction activities before initial work mobilization prior to the start of each day's work and installation of the piping and pumping system. These safety meetings will cover the following applicable subjects:

[] work operations
[] personnel protective equipment
[] all monitoring data
[] hazard communications
[] monitoring tests and results
[] decontamination
[] task organization
[] physical stress
[] emergency procedures
[] communications
[] general safety
[] housekeeping
[] spill containment

Information pertaining to the above referenced subjects can be obtained from the applicable FMPC procedures and policies for this Removal Action, see Section 5.0.

7.0 Medical Surveillance

In accordance with 29 CFR 1910.120 OSHA requirements, all WMCO and WMCO subcontractor personnel assigned to the tasks identified as being applicable to 29 CFR 1910.120 requirements, are required to participate in a medical monitoring program which includes:

- A baseline medical examination
- Annual medical examination
- Medical examinations may be required after potential exposures.
- WMCO respirator clearance for users

Personnel involved in this project will be identified by name and badge number. Prior to start of work, each will be individually subject to a medical surveillance approval to work by the Director, Medical Services. An approval statement shall certify each individual is physically fit to perform the work.

Prior to the initiation of actual work, the names of all personnel that may be involved in the actual work will be supplied to WMCO Director of Medical Services.

8.0 Monitoring

8.1 Goals

No generation of air activity is expected from the Part 2 and Part 3 work activities. Radioactive contamination monitoring will be performed when soil and aquifer media is disturbed.

8.2 Monitoring Descriptions

8.2.1 Physical Hazards

Heat Stress - Industrial Hygiene will be contacted for heat stress monitoring when the temperature reaches 80° F and readings will be taken at that time to ensure that adequate control measures are taken. Control measures will include plenty of water, rest breaks, and careful attention by the supervisor-in-charge. Also, cool vests will be utilized if necessary.

Cold Stress - Industrial Hygiene will be contacted for cold stress monitoring when the air temperature reaches 39°F and readings will be taken at that time. Control measures will include periodic rests for ten minutes, cold preservation clothing, heated structures, and careful attention by the supervisor-in-charge.

Noise - Employees exposed to an average noise level of 85 dBA or above over an 8-hour day will be included in a hearing conservation program. Any time noise levels exceed 85 dBA, hearing protection will be worn, regardless of exposure duration. The monitoring of these noise levels will be performed by WMCO IRS&T representative as required.

8.2.2 Safety Hazards

Confined Space - Confined spaces are generally defined as a potential oxygen deficiency and/or limited spacial constraints. Oxygen monitoring will be required when working in a confined space location. Entry into a confined space is controlled as defined in WMCO Procedure #IH&S-IH-05-Control of Entering and/or Working in a Confined Space.

Cave In - Cave In is a potential during any excavation. Therefore, caution must be exercised. Potential cave ins during trench excavation exist whenever the proposed groundwater discharge force main crosses under an existing underground utility, see Figure 1. This is due to the increase in trench depth allowing for pipeline

placement. All excavations shall be accomplished in accordance with OSHA Requirement 29 CFR 1926.650 Subpart P.

Overhead Hazards - Overhead Hazards would include electric lines, telephone lines, light poles with associated wiring, etc., see Figure 1. Caution must be exercised any time work is being performed near these potential hazards to prevent contact and risk of electrical shock.

Underground Utilities - Underground utilities, such as electric, telephone, natural gas, and oil, will be identified and marked by the WMCO utility engineer prior to any excavation activity on FMPC property. For construction outside the FMPC property boundary, the Ohio Utility Protection Service shall be contacted who will in turn contact the appropriate utility company to locate its utility. In either case, the supervisor-in-charge will be responsible to contact each at least 48 hours before excavation begins near an underground utility, see Figure 1. Prior to any excavation, a magnetometer survey will be required to provide confidence that there are no underground utilities in the work area.

Underground electric and telephone lines present the potential risk of electrical shock if disturbed. Underground oil and natural gas pipelines present a potential hazard due to the high pressure existing within to transmit their contents. Natural gas pipelines also present the potential of ignitibility if ruptured.

Heavy Equipment Operation - When heavy equipment operations are to be performed, standard construction worker safety practices will be adequate to protect the fellow workers, and all other persons will be excluded.

Falling Hazards - The falling hazards described here refer to the potential for workers to fall into open excavations. These open excavations will be posted as a potential falling hazard.

8.2.3 Chemical Hazards

Exposure to significant chemical vapor concentrations for Part 2 of the Removal Action are not expected with the tasks associated with the South Plume Removal Action.

In general, air sampling for volatile organic compounds will be conducted as determined by the Industrial Hygiene representative. The air sampling instrument to be used will be a photoionization detector.

Instrument: Photoionization Detector (HNU)

Hazard Measured: Many organic gases and vapors

Application: Detects total concentration of many organic gases and vapors.

Detection Method: Ionizes molecules using ultaviolet radiation and produces a current that is proportional to the number of ions.

General Care: Recharge or replace battery. Regularly clean lamp window. Regularly clean and maintain the instrument and accessories.

Calibration: Daily

Exposure to significant chemical vapor concentrations for Part 3 of the Removal Action may be possible due to sodium hydroxide and concentrated hydrochloric acid used for pH adjustment of an existing FMPC wastewater stream. The design of the Part 3 pH adjustment system has not been finalized. IRS&T will evaluate and modify the Health and Safety Plan with regard to Part 3 accordingly based on any chemical hazard if there is worker exposure.

EXPOSURE SYMPTOMS

<u>Sodium Hydroxide</u>

Health Risks: An extremely caustic chemical which causes irritation to eyes, nose, and throat if inhaled. When contacts skin or eyes, causes severe burns.

Exposure Routes: Eyes, skin, and respiratory tract

First Aid: Inhalation - Remove from further exposure; provide CPR if necessary; give oxygen if necessary.

Skin/Eyes - Remove contaminated clothing. Flush with water for 15 minutes.

Concentrated Hydrochloric Acid

Health Risks: A corrosive chemical which can cause severe irritation to eyes, nose, and throat if inhaled. When contacts skin or eyes, causes severe burns

Exposure Routes: Eyes, skin, and respiratory tract

First Aid: Inhalation - Remove from further exposure; provide CPR if necessary: give oxygen ifnecessary.

Skin/Eyes - Remove contaminated clothing. Flush with water for 15 minutes.

Uranium

Health Risks: High level exposures to soluable uranium compounds causes repiratory irritation and are toxic to the kidneys. Lower level chronic exposures increase the incidence of cancers of the lungs, lymph system, and hemopoietic system.

Exposure Routes: Broken skin and respiratory tract

First Aid: Inhalation - Remove person to fresh air. If trouble breathing because of exposure to soluable compounds, start bioassay procedures (urinalysis) to quantify dose.

Broken Skin - Remove contaminated clothing. Flush with water for 15 minutes. Check cleaned skin with frisker to ensure complete uranium removal.

8.2.4 Radiological Hazards

General Work Area Radiation

A portion of the Part 2 activities will be conducted outside FMPC property. The remaining portion of the Part 2 activities will be conducted within FMPC property, but outside the Production Area. Part 3 will be conducted on FMPC property either inside or outside the Production Area. There have been no areas outside the FMPC Production Area which have exceeded 2 mR/hr. An ion chamber will be used to measure the general radiation levels. Any work conducted in an area with general radiation levels greater than a 2 mR/hr action limit will require a radiation work permit. This permit will provide a review of the work to ensure that

radiation exposure is maintained as low as reasonably achievable. Radiation surveys will be conducted by a WMCO health physics (HP) technician as needed to monitor the general radiation level.

Instrument: Ion chamber

Hazard Measured: X-ray, gamma, and beta radiation.

Application: Measures general area dose rates.

Detection Method: Ion chamber

General Care: Daily Inspection, battery check

Calibration: Six months

Airborne Radioactivity

Air samples will be taken in the general area where work will be performed, as required by the WMCO health physics technician.

Air sampling will also be performed for long-lived alpha radioactivity if surface contamination levels exceed 500 cpm with a beta/gamma Geiger-Mueller probe. Minimum detectable activity shall be at least 2×10^{-12} uCi/ml.

Instrument: Air Sampler (High Volume)

Hazard Measured: Collects airborne particulate for laboratory measurement.

Application: Measure of air activity when surface contamination is present.

Detection Method: Low level background proportional counter.

General Care: Daily Inspection

Calibration: Six months

Radioactive Surface Contamination

Radioactive surface contamination will be identified by WMCO IRS&T personnel as they perform the survey for the required radiation work permits. Radioactive surface contamination will be monitored whenever soil is disturbed by drilling or digging.

Instrument: Alpha and Beta-Gamma Contamination Monitor

Hazard Measured: Alpha, Beta, and Gamma radiation.

Application: Monitors surfaces for radioactive contamination.

Detection Method: Alpha Scintillator and Geiger-Mueller tube.

General Care: Daily source and battery check.

Calibration: Six months

8.3 Field Action Limits

Instrument	Interval[1]	Limit	Action
Exposure Rate Meter	Pre-Job	>2mR/hr	HP Review
Alpha Probe[2]	Pre-Job & Intermittent	>500 cpm [3]	APR[4]
		>25,000 cpm	Withdraw
Beta/Gamma Probe[2]	Pre-Job & Intermittent	>5,000 cpm [3]	APR[4]
		>250,000 cpm	Withdraw
HNU Meter	Intermittent	Detection to 10 ppm [5]	APR[4]
		10-25 ppm	SAR[6]
		>25 ppm	Withdraw
High Volume Air Sampler for Radionuclides	Continuous	No real time results	Stated in Section 8.2.4

NOTES:

1 "Intermittent is as deemed necessary by the Safety and Health Officer, or at a minimum of once a day.

2 "Frisking" for alpha contamination and beta/gamma contamination using handheld alpha scintillator and Geiger-Mueller detectors respectively. Limits are based on prevented average airborne radioactive exposure from exceeding $5x10^{-12}$ uCi/ml.

3 Above background

4 Full-face air purifying respirators with HEPA or organic vapor, acid gas, fume cartridges (H.P. Review). Disposable protective clothing, such as Saranax coveralls and a step-off decontamination will also be required at any time APR are used.

5 1 ppm above background.

6 Supplied Air Respirator

9.0 Personal Protective Equipment Requirements

Each activity necessary to perform the work described in this plan will require a minimum level of personal protection. Section 10.0 will provide a list of safety supplies and equipment available for use by workers for their protection.

10.0 Safety Equipment List

All employees in the work areas will wear the following personal protective equipment while performing the required tasks.

10.1 Installation of the Recovery and Monitoring Wells

ITEM	NEED	JUSTIFICATION
Air Purifying Respirator	No (Yes)	See Note
Cartridges: HEPA and/or OV,A6	No (Yes)	See Note
Hard Hat	Yes	Minimum Requirement
Hearing Protection	Yes	Any activity with noise levels 85 dBA or greater
Inner Gloves	No	
Rubber/Latex Boots	No (Yes)	See Note
Leather-Palm Gloves	Yes	As determined by the Construction Manager
Rubber/Nitrile Gloves	No (Yes)	See Note
Work Coveralls	Yes	
Plain Tyvek	No	
Process Coveralls	No	
PVC Gloves	No	
Supplied Air Respirator	No	
Safety Glasses	Yes	Minimum Requirement
Safety Goggles	No	
Face Shield	No (Yes)	For grinding operations
Welder's Face Shield	No (Yes)	For welding operations
Safety Shoes	Yes	Minimum Requirement
Saranex Tyvek	No	
Shoe Covers	No	

Note: Item required if Action Levels (Section 8.3) are exceeded or as specified by IRS&T representative.

10.2 Installation of Piping System and Booster Pump Station

ITEM	NEED	JUSTIFICATION
Air Purifying Respirator	No (Yes)	See Note
Cartridges: HEPA	No (Yes)	See Note
Hard Hat	Yes	Minimum Requirement
Hearing Protection	Yes	Any activity with noise levels 85 dBA or greater
Inner Gloves	No	
Rubber/Latex Boots	No	
Leather-Palm Gloves	Yes	As determined by the Construction Manager
Rubber/Nitrile Gloves	No	
Work Coveralls	Yes	
Plain Tyvek	No	
Process Coveralls	No	
PVC Gloves	No	
Supplied Air Respirator	No	
Safety Glasses	Yes	Minimum Requirement
Safety Goggles	No	
Face Shield	No (Yes)	For grinding operations
Welder's Face Shield	No (Yes)	For welding operations
Safety Shoes	Yes	Minimum Requirement
Saranex Tyvek	No	
Shoe Covers	No	

Note: Item required if Action Levels (Section 8.3) are exceeded or as specified by IRS&T representative.

10.3 Initial Testing of the System for Pumping the Contaminated Groundwater

ITEM	NEED	JUSTIFICATION
Air Purifying Respirator	No (Yes)	See Note
Cartridges: HEPA	No (Yes)	See Note
Hard Hat	Yes	Minimum Requirement
Hearing Protection	Yes	Any activity with noise levels 85 dBA or greater
Inner Gloves	No	
Rubber/Latex Boots	No (Yes)	See Note
Leather-Palm Gloves	Yes	As determined by the Construction Manager
Rubber/Nitrile Gloves	No (Yes)	See Note
Work Coveralls	Yes	
Plain Tyvek	No	
Process Coveralls	No	
PVC Gloves	No	
Supplied Air Respirator	No	
Safety Glasses	Yes	Minimum Requirement
Face Shield	No	
Welder's Face Shield	No	
Safety Goggles	No	
Safety Shoes	Yes	Minimum Requirement
Saranex Tyvek	No	
Shoe Covers	No	

Note: Item required if Action Levels (Section 8.3) are exceeded or as specified by IRS&T representative.

10.4 Operation of the Pumping and Discharge System

ITEM	NEED	JUSTIFICATION
Air Purifying Respirator	No (Yes)	See Note
Cartridges: HEPA	No (Yes)	See Note
Hard Hat	Yes	Minimum Requirement
Hearing Protection	Yes	Any activity with noise levels 85 dBA or greater
Inner Gloves	No	
Rubber/Latex Boots	No (Yes)	See Note
Leather-Palm Gloves	Yes	As determined by the Construction Manager
Rubber/Nitrile Gloves	No (Yes)	See Note
Work Coveralls	Yes	
Plain Tyvek	No	
Process Coveralls	No	
PVC Gloves	No	
Supplied Air Respirator	No	
Safety Glasses	Yes	Minimum Requirement
Welder's Face Shield	No	
Safety Goggles	No	
Safety Shoes	Yes	Minimum Requirement
Saranex Tyvek	No	
Shoe Covers	No	

Note: Item required if Action Levels (Section 8.3) are exceeded or as specified by IRS&T representative.

10.5 Installation of the Interim Advanced Wastewater Treatment System

ITEM	NEED	JUSTIFICATION
Air Purifying Respirator	No (Yes)	See Note
Cartridges: HEPA	No (Yes)	See Note
Hard Hat	Yes	Minimum Requirement
Hearing Protection	Yes	Any activity with noise levels 85 dBA or greater
Inner Gloves	No	
Rubber/Latex Boots	No (Yes)	See Note
Leather-Palm Gloves	Yes	As determined by the Construction Manager
Rubber/Nitrile Gloves	No (Yes)	See Note
Work Coveralls	Yes	
Plain Tyvek	No	
Process Coveralls	No	
PVC Gloves	No	
Supplied Air Respirator	No	
Safety Glasses	Yes	Minimum Requirement
Safety Goggles	No	
Face Shield	No (Yes)	For grinding operations
Welder's Face Shield	No (Yes)	For welding operations
Safety Shoes	Yes	Minimum Requirement
Saranex Tyvek	No	
Shoe Covers	No	

Note: Item required if Action Levels (Section 8.3) are exceeded or as specified by IRS&T representative.

10.6 Initial Start-up of the Interim Advanced Wastewater Treatment System

ITEM	NEED	JUSTIFICATION
Air Purifying Respirator	No (Yes)	See Note
Cartridges: HEPA	No (Yes)	See Note
Hard Hat	Yes	Minimum Requirment
Hearing Protection	No	
Inner Gloves	No	
Rubber/Latex Boots	No (Yes)	See Note
Leather-Palm Gloves	Yes	As determined by the Construction Manager
Rubber/Nitrile Gloves	No (Yes)	See Note
Work Coveralls	Yes	
Plain Tyvek	No	
Process Coveralls	No	
PVC Gloves	No	
Supplied Air Respirator	No	
Safety Glasses	Yes	Minimum Requirement
Safety Goggles	No	
Face Shield	No	
Welder's Face Shield	No	
Safety Shoes	Yes	Minimum Requirement
Saranex Tyvek	No	
Shoe Covers	No	

Note: Item required if Action Levels (Section 8.3) are exceeded or as specified by IRS&T representative.

10.7 Operation of the Interim Advanced Wastewater Treatment System

ITEM	NEED	JUSTIFICATION
Air Purifying Respirator	No (yes)	See Note 1
Cartridges: HEPA	No (yes)	See Note 1
Hard Hat	Yes	Minimum Requirement
Hearing Protection	No	
Inner Gloves	No	
Rubber/Latex Boots	No (Yes)	See Note
Leather-Palm Gloves	Yes	As determined by the Construction Manager
Rubber/Nitrile Gloves	No (Yes)	See Note 1
Work Coveralls	Yes	
Plain Tyvek	No	
Process Coveralls	No	
PVC Gloves	No	
Supplied Air Respirator	No	
Safety Glasses	Yes	Minimum Requirement
Safety Goggles	No (Yes)	See Note 2
Face Shield	No	
Welder's Face Shield	No	
Safety Shoes	Yes	Minimum Requirement
Saranex Tyvek	No	
Shoe Covers	No	

Note 1: Item required if Action Levels (Section 8.3) are exceeded or as specified by IRS&T representative.

Note 2: Safety Goggles required during any particulate hazard, acid, or dusty conditions as a result of equipment operations or as specified by IRS&T representative.

11.0 Decontamination Procedures

Equipment for decontamination of radiological or chemical hazards will be kept available in the area surrounding the Exclusion Zone.

Contamination should be avoided where possible by making minimum contact with the contaminant. All instances of personnel contamination must be reported to Radiological Safety.

The following measures will be employed to accomplish necessary decontamination on exit from the Exclusion Zone:

Personnel: Decontamination shall be performed in accordance with FMPC Standard Operating Procedure, OSH(SP)-P-35-017, "Procedure for Personnel Decontamination," and topical manual FMPC-2084. Dry removal of disposable protective equipment, wash hands, face and any other exposed skin, detergent and water should be used to wash skin surfaces which have contacted potentially contaminated wastes.

The effectiveness of decontamination must be confirmed by frisking or the use of hand and foot monitors.

Monitoring Equipment: Any exposed areas of the monitoring equipment surface will be wiped with a damp paper towel/cloth to remove contamination. Wiping with cloth dampened with detergent solution may be necessary to remove greasy materials.

Heavy Equipment: Heavy equipment in the Production Area generally requires decontamination at the WMCO operated D&D facility (Building 69). Heavy equipment outside the Production Area determined to be contaminated will be brought to the D&D facility by trailer for decontamination. Frisking and/or wipe tests will be performed to confirm the effectiveness of decontamination.

12.0 Emergency Plans

12.1 Incidents or Injuries

All injuries shall be reported be reported to the FMPC Medical Facility.

Within FMPC Property Boundary

For the possible intake of radiological substances, special and end of shift follow-up urine samples will be submitted pursuant to instructions in WMCO Standard Operation Procedure (SOP) 11-C-245.

Incidents or injuries involving potential intake of hazardous materials or other suspect substances will be reported to the supervisor-in-charge or the Emergency Response Team. Notification of response personnel will be done by telephone or two-way radio.

The affected individual will be transported to the site medical facility for further evaluation and treatment, if required, by the medical section. An Incident Investigation Report will be completed and submitted through the supervisor by the involved employee.

Outside FMPC Property Boundary

The Crosby Township Fire Department will have jurisdiction on the treatment, transport, or extinguishment method for any incident or injury occurring outside the FMPC property boundary. The FMPC emergency response team will respond to provide any additional assistance.

12.2 Pre-Emergency Planning

Within FMPC Property Boundary

During the training and pre-work safety meetings, employees involved in the construction for Part 2 and Part 3 will be trained and reminded of the provisions of the plant emergency procedure, alarm signals and communications, evacuation routes, emergency reporting, and the importance of maintaining communications with FMPC communications center via two-way radio or cellular phone. A test must be performed on all equipment prior to initiation of daily activities to verify performance.

Outside FMPC Property Boundary

The supervisor-in-charge will notify FMPC emergency personnel and make initial contact only with Crosby Township Fire Department at least 48 hours before construction crosses the FMPC property boundary. The supervisor-in-charge is to maintain daily communications with the FMPC emergency personnel at the start of each work day as to where the construction activities are located. Locations reported will be based on the construction stationing of the groundwater discharge pipeline as established during design. Design drawings showing the stationing will be supplied to the supervisor-in-charge and to the FMPC emergency personnel.

12.3 Lines of Authority

Inside FMPC Property Boundary

The construction supervisor-in-charge or his designated alternate has the primary responsibility for the prevention of and the initial response to emergency conditions. The supervisor-in-charge will direct emergency response actions at the work site until relieved by the WMCO Assistant Emergency Duty Officer (AEDO), or the Emergency Response Team. In the event an emergency does occur, the individual involved in or observing the condition will immediately notify the following in order of availability: the supervisor-in-charge; the communications center; the AEDO; the Project Engineer/Operable Unit

Manager. The AEDO is responsible for ensuring that corrective actions have been implemented, the appropriate personnel notified, and reports completed as specified in Section 12.1.

Outside FMPC Property Boundary

The construction supervisor-in-charge or his designated alternate has the primary responsibility for the prevention of and the initial response to emergency conditions. The supervisor-in-charge will direct emergency response actions at the work site until relieved by the Crosby Township Fire Department. Concurrently, the FMPC Emergency Response Team is to be notified to provide any assistance. The supervisor-in-charge can be relieved by the FMPC Emergency Response Team if given permission by the Crosby Township Fire Department.

12.4 Emergency Notification

Inside FMPC Property Boundary

All emergencies will be reported immediately. Emergencies can be reported by telephone dialing 738-6511; by contacting the communications center via two-way radio; or by pulling a manual fire alarm (if available). Any additional information pertaining to the emergency will be reported to the responding personnel to assist in defining an appropriate response to the emergency.

Outside FMPC Property Boundary

All emergencies will be reported immediately. The FMPC Emergency Response Team will be the primary point of contact for all emergencies outside the FMPC property boundary. They can be contacted by telephone by dialing 738-6511 or by contacting the FMPC communications center via two-way radio who will in turn notify the Crosby Township Fire Department. If for any reason the FMPC Emergency Response Team cannot be contacted, call 911. Emergency information requested by 911 personnel will be used to notify Crosby Township Fire Department. Any additional information pertaining to the emergency will be reported to the responding personnel to assist in defining appropriate response to the emergency.

12.5 Fire, Explosion, or Medical Emergency

Inside FMPC Property Boundary

In the event of a fire, explosion, or medical emergency, the communication center will be notified immediately by manual fire alarm, two-way radio, or by calling 738-6511. The communication center operator will activate the emergency response team and dispatch them to the appropriate location. Non-essential personnel

in the immediate area should evacuate to a safe position and await instruction.

If medical attention is required, and the nature of the injury or illness is minor, the affected personnel shall be taken to the FMPC Medical Facility (see Figure 2). The FMPC ambulance will be called to transport individuals who have suffered a major injury or illness.

Outside FMPC Property Boundary

In the event of a fire, explosion, or medical emergency, the FMPC Emergency Response Team will be contacted by telephone by dialing 738-6511 or by contacting the FMPC communications center by two-way radio who will in turn contact the Crosby Township Fire Department

If medical attention is required, and the nature of the injury or illness is minor, the affected personnel can be taken to the FMPC Medical Facility if so directed. Alternatively, the affected personnel can be taken to the nearest hospital (see Figure 3).

12.6 Additional Information

12.6.1 Hospitals

The FMPC Medical Facility (Building 53) is the primary choice for injuries occurring within the FMPC property boundary. An ambulance will transport the injured to the nearest hospital if necessary. FMPC maintains an emergency response capability which includes an ambulance and Emergency Medical Technicians (EMTs).

Although the FMPC Medical Facility will be available, Providence Hospital is the primary medical facility for injuries occurring outside the FMPC property boundary.

12.6.2 Emergency Telephone Numbers

Below lists the FMPC emergency telephone numbers. For emergencies occuring outside the FMPC property boundary, see Section 12.4

Name	FMPC Telephone	FMPC Radio
Ambulance	738-6511	Control
Hospital	738-6511	Control
Fire	738-6511	Control
Security	738-6511	Control
Emergency Response	738-6511	
Industrial Hygiene	738-6207	357
Radiological Safety	738-6889	355
Fire and Safety	738-6235	303
Assistant Emergency Duty Officer (AEDO)	738-6431 738-6295	202

12.7 Emergency Equipment

The following safety equipment and locations to be identified at safety meetings are available for employee usage:

[] fire extinguisher
[] manual fire alarm
[] clean-up materials
[] local evacuation alarm
[] eye wash
[] safety shower
[] spill drums
[] absorbent
[] two-way radio
[] telephone
[] respirators
[] SCBA units

12.8 Evacuation

Inside FMPC Property Boundary

The 3-3, 3-3 shall be sounded over the plant alarm system; a voice message will follow over the Emergency Message System instructing employees to go to their designated rally point. Personnel will immediately proceed to the rally point. The FMPC rally points within the FMPC property are shown in Figure 4. Personnel will follow instructions given by the rally point coordinator and

participate in the accountability process. When an all-clear condition has been achieved, personnel will be released from the rally point.

Outside FMPC Property Boundary

In the event of an evacuation of the construction work area which is off FMPC property, the supervisor-in-charge will be responsible for notifying all personnel involved. Personnel performing these tasks will proceed to the rally point as designated by the supervisor-in-charge. When the supervisor-in-charge is informed that an all-clear condition has been achieved, personnel will be released from the rally point.

13.0 Amendments

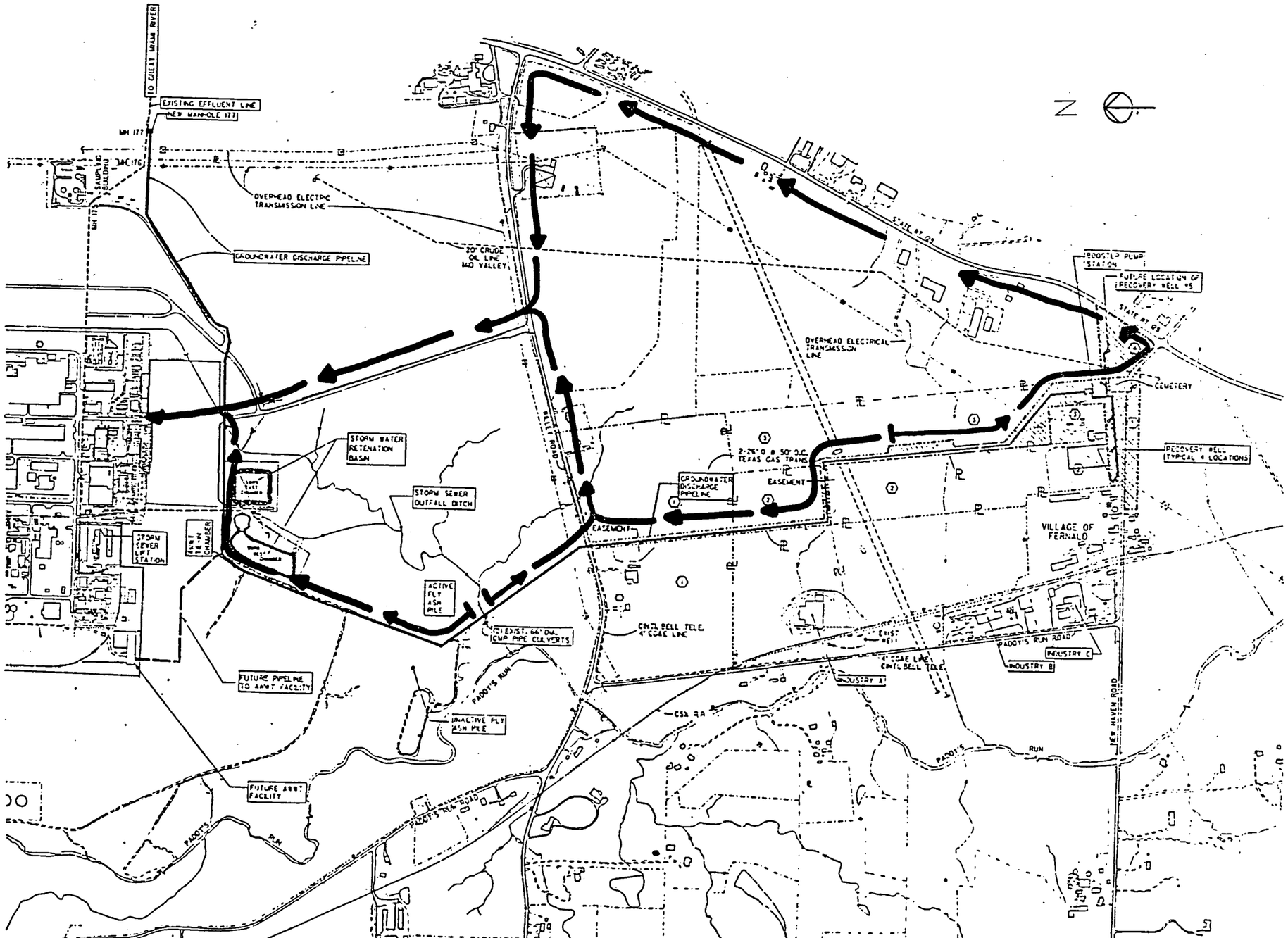
This Health and Safety Plan is based on information available at the time of preparation. Unexpected conditions may arise which require reassessment of safety procedures. It is important that personnel protective measures be thoroughly assessed by the supervisor in charge and IRS&T representative prior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

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

14.0 Approval and Compliance Statement

This site specific safety plan was produced for the use of WMCO employees and subcontractors. It was intended for the FMPC and specifically for personnel performing the activities described in this Health and Safety Plan.

The personnel performing these tasks must read and understand this site specific health and safety plan and agree to follow its provisions. Compliance with the provisions of the Health and Safety Plan may be audited through announced of unannounced site visits. Provisions of this plan are implemented and reasons documented for field action/changes when they are necessary. Written documentation with signatures of those personnel performing these tasks must be maintained.

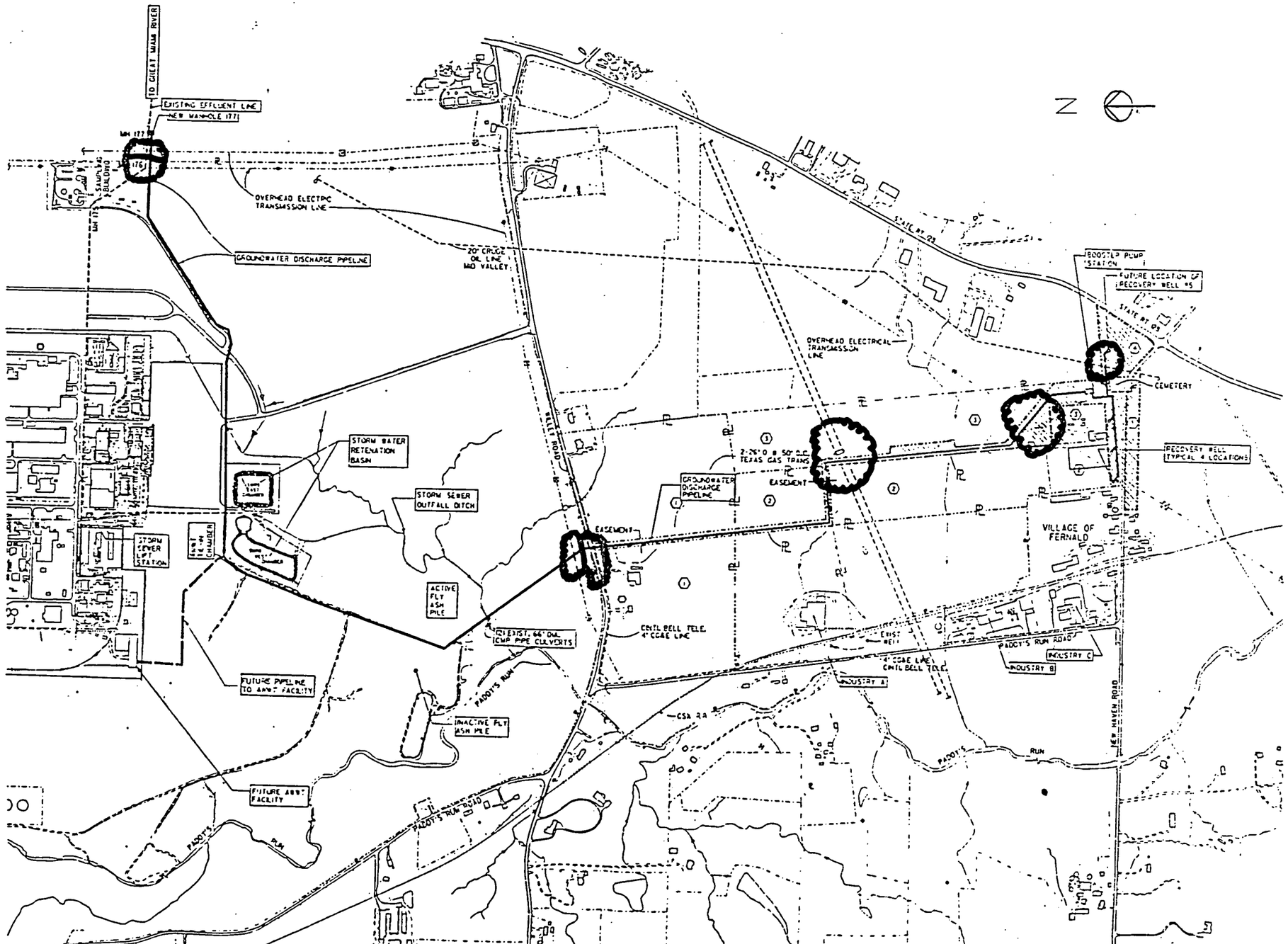


GRAPHIC SCALE

Figure 2A Route To FMPC Medical Facility

PROPERTY OWNERS

DENOTES PROPERTY LINE



GRAPHIC SCALE

Figure 1 Location of Safety Hazards

PROPERTY OWNERS

DENOTES PROPERTY LINE

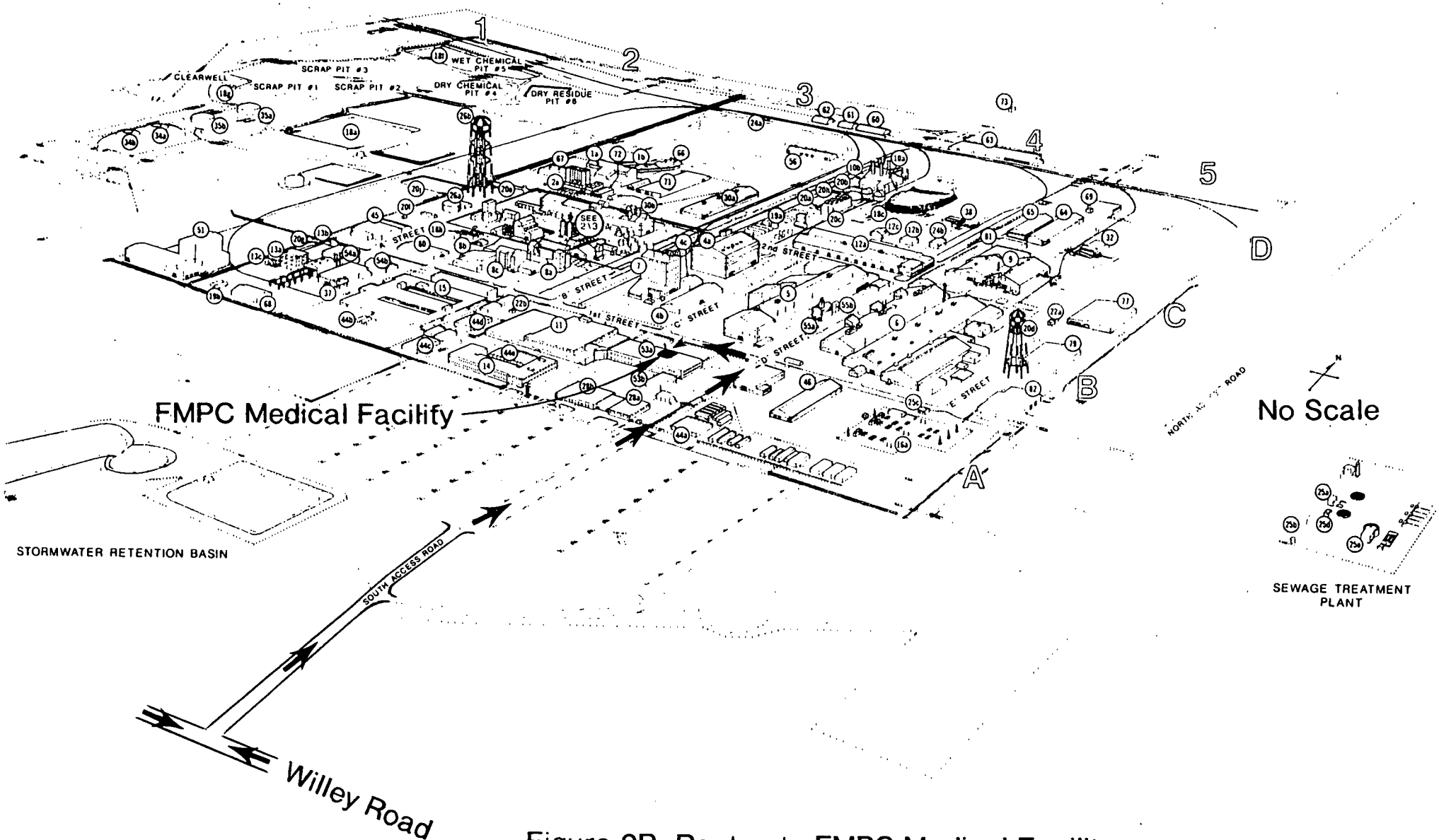


Figure 2B Routes to FMPC Medical Facility

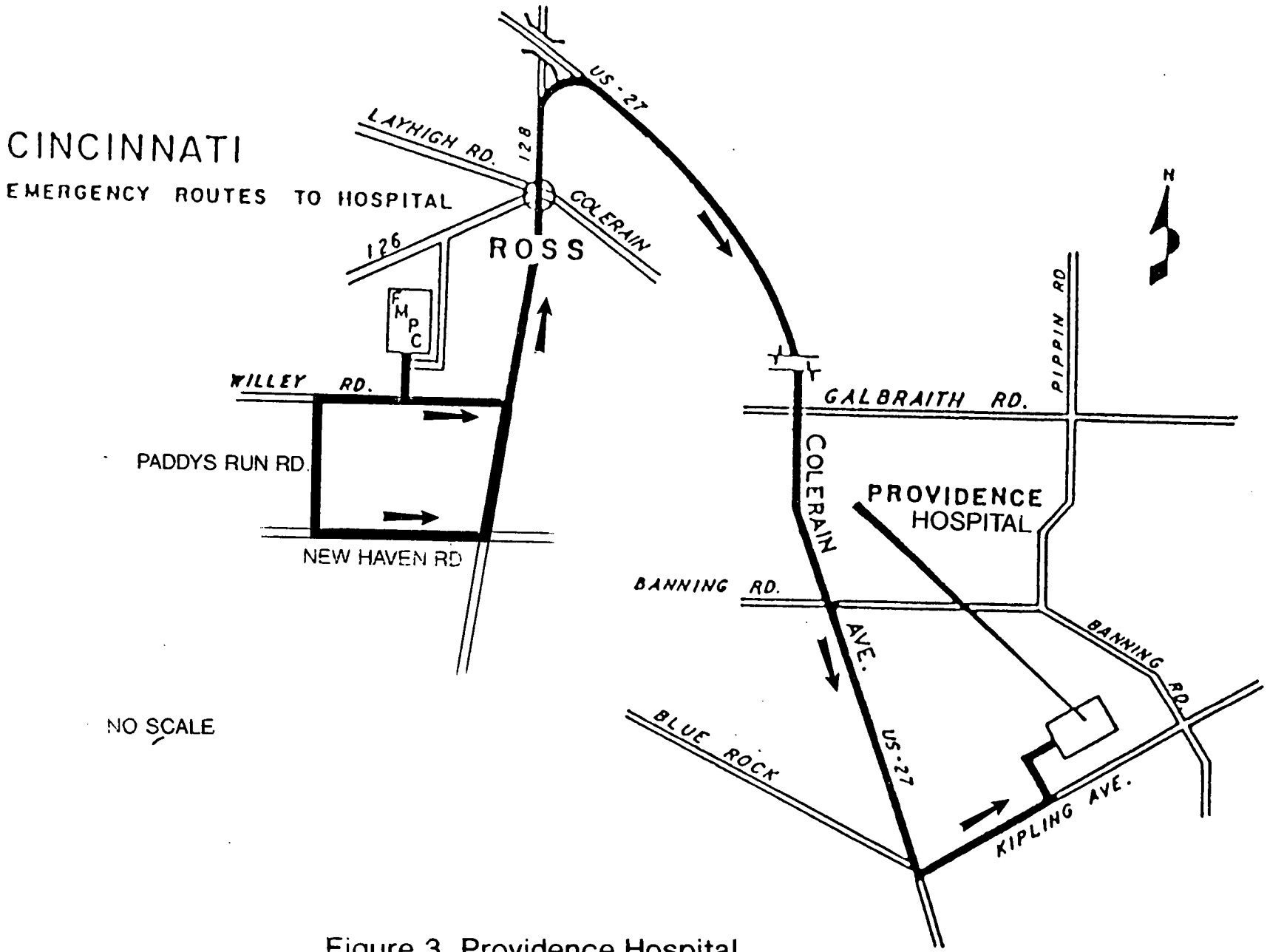
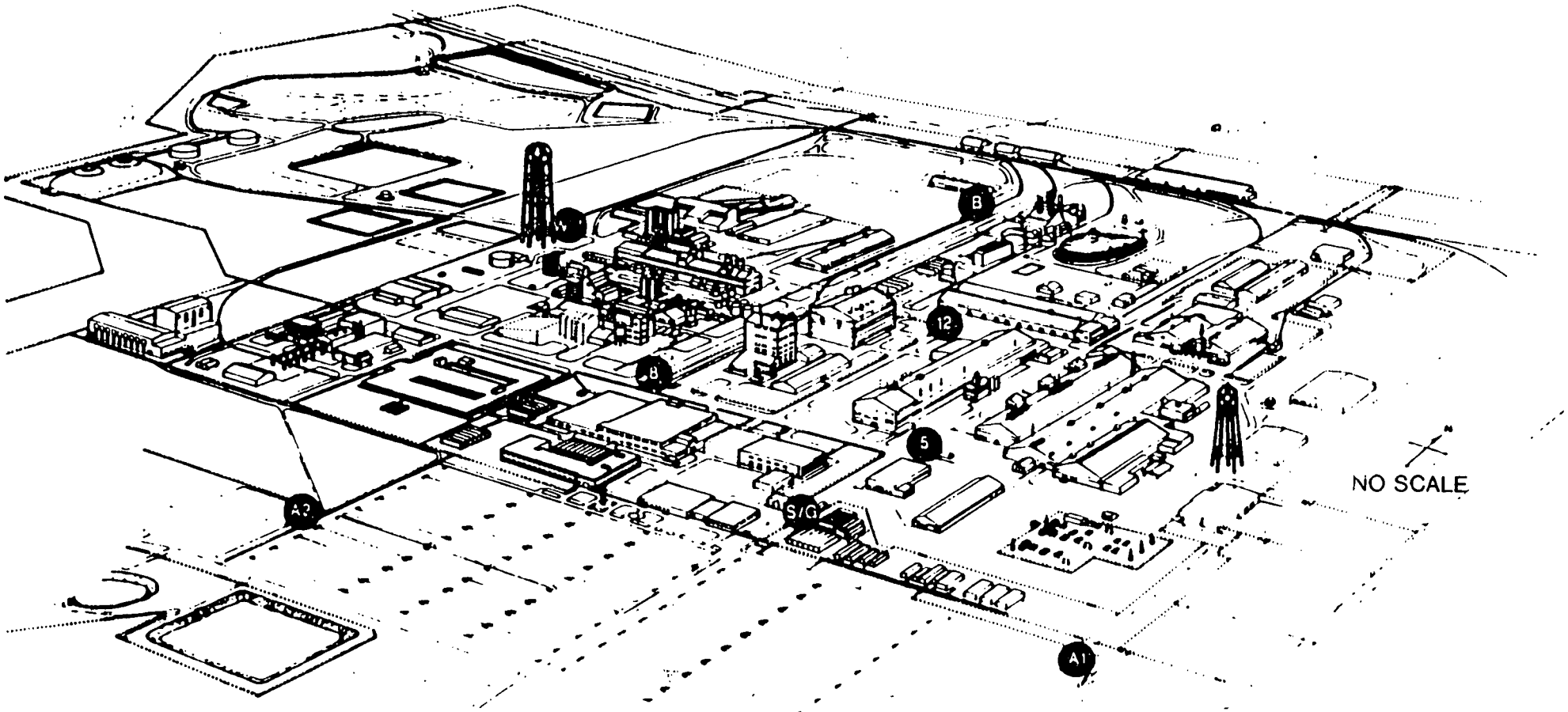


Figure 3 Providence Hospital

FMPC RALLY POINTS



RALLY POINTS

I.D. Label	Plant or Area Description
A1	Administration
A2	Alternate Administration
B	Boiler Plant
S/G	Security & Garage
W/1	Waste Pit Area & Plant 1
5	Plant 5
8	Plant 8
12	Building 12

Figure 4 Rally Points

ATTACHMENT IV

PERMIT INFORMATION SUMMARY

FOR THE

SOUTH GROUNDWATER CONTAMINATION PLUME REMOVAL ACTION

PART 2 - PUMPING AND DISCHARGE SYSTEM

AND

PART 3 - INTERIM ADVANCED WASTEWATER TREATMENT SYSTEM

FEED MATERIALS PRODUCTION CENTER

915

Introduction

This Permit Information Summary for Part 2 and Part 3 of the South Groundwater Contamination Plume Removal Action is provided pursuant to requirements of the Consent Agreement under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) Section 120 and 106(a). Specifically, Section XIII, subparagraph B identifies three items of information pertaining to permits which would otherwise be required in the absence of provisions of Section 121(e)(1) of CERCLA and the NCP. The information required includes:

1. Required Permits

   Identification of each permit that would otherwise be required;

2. Criteria and Limitations

   Identification of the standards, requirements, criteria, or limitations that would have had to have been met to obtain each such permit; and

3. Response Action Compliance Plan

   Explanation of how the response action will meet the standards, requirements, criteria, or limitations identified in Item 2 above.

Required Permits

The permits which would otherwise be required for this Removal Action include:

A. Modification of the National Pollutant Discharge Elimination System (NPDES) permit; and

B. Water Permit to Install (PTI) from Ohio EPA;

66

915

A. Modification of the NPDES permit

Criteria and Limitations

An application for a NPDES permit is a requirement of Ohio Administration Code 3745-33 (ED-31), Ohio NPDES Permits. The State of Ohio has been given primacy for implementation of the NPDES program as authorized in Section 402 of the Clean Water Act and as implemented by 40 CFR Parts 121-125. This requires that all discharges to a navigable waterway requires a NPDES permit.

A new NPDES permit (No. 1I000004*BD) for the FMPC was issued in February, 1990. The application for this permit included the data and calculations necessary to establish the contribution to site discharges which would be accumulated from operations at the FMPC.

The operation of Part 2 of the South Groundwater Contamination Plume Removal Action, groundwater removal from the leading edge of the South Plume with discharge to the Great Miami River (GMR), was not recognized in the new NPDES permit. Typically, if the action was not a CERCLA response action it would be necessary to apply for a modification of the NPDES permit after the Removal Action commences. However, the NPDES permit does not include uranium, the contaminant of concern for this Removal Action.

The effluent from the Part 2, Pumping and Discharge System, will be discharged to the existing FMPC outfall line at, or near, Manhole 177. Manhole 177 is located approximately seven hundred and fifty feet downstream of Manhole 175, the current NPDES sampling point for monitoring of FMPC discharge to the GMR. As Manhole 177 is located approximately thirty-eight hundred feet from the outfall structure, the effluent from the Removal Action will be mixed with all other FMPC effluent discharges prior to reaching the GMR.

Response Action Compliance Plan

A sampling and analysis program will be implemented for monitoring the flow in the new South Plume groundwater discharge pipeline upstream of Manhole 177, prior to mixing with the existing FMPC effluent discharge. The conventional pollutant parameters monitored under the existing NPDES permit shall be monitored and include total nonfilterable residue, total oil and grease, Ph, and flow rate. This new discharge point monitoring information will be reported as NPDES outfall 1I000004003.

67

915

B. Water PTI

Required Permit: Water PTI

Criteria and Limitations

An application for a water PTI is a requirement of Ohio Administrative Code 3745-31-02, paragraph (a), Permits to Install. The DOE FMPC is providing an Interim Advanced Wastewater Treatment system (IAWWT) that will remove a mass of uranium from a portion of existing FMPC wastewater discharge that will exceed the mass of uranium added to the discharge as a result of pumping from the leading edge of the South Groundwater Contamination Plume. This is pursuant to the agreement set forth in the South Groundwater Contamination Plume Engineering Evaluation/Cost Analysis (EE/EA). The implementation of planned Removal Actions from other Operable Units will also be accounted in the design of the IAWWT. As the result of the IAWWT, the uranium loading to the GMR will not be increased.

Because the construction of the IAWWT will constitute a modification to the FMPC Wastewater treatment system, the IAWWT would require a wastewater PTI.

Response Action Compliance Plan

A determination of which existing FMPC waste stream(s) will be treated has not yet been finalized. At this time, it has been tentatively decided that the IAWWT will be located at the Storm Water Retention Basin (SWRB) and will treat a portion of the combined SWRB and Storm Sewer Lift Station (SSLS) discharges. To provide the 150 gpm flow to the IAWWT, the SSLS discharge to Manhole 175 would be discontinued a daily discharge and the flow allowed to pass through Manhole 34 to the SWRB. The discharge from the IAWWT would be tied into the groundwater discharge pipeline installed in the Part 2 construction. Backwash from the filtration portion of the IAWWT would be discharged back to the SWRB inlet pipeline.

Alpha and beta radiation and uranium will be analyzed at the inlet and outlet of the IAWWT to assess its performance.
In the likely event that the IAWWT discharges into the groundwater discharge pipeline, the existing conventional pollutants (total nonfilterable residue, total oil and grease, pH, and flow rate) monitored at the SWRB under the NPDES will also be monitored for the outlet of the IAWWT. The monitored information would be reported as NPDES outfall 1I00000607. If the IAWWT is located so that it does not tie-in to the new groundwater discharge pipeline, no NPDES sampling of the IAWWT discharge will occur.

68