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SOUTH GROUNDWATER CONTAMINATION PLUME REMOVAL ACTION PART 1 ALTERNATE WATER SUPPLY WORK PLAN FEED MATERIALS PRODUCTION CENTER

12/05/90

DOE-FMPC
40
WORK PLAN

SOUTH GROUNDWATER CONTAMINATION PLUME

REMOVAL ACTION

PART I

ALTERNATE WATER SUPPLY

WORK PLAN

FEED MATERIALS PRODUCTION CENTER

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For:

The United States Department of Energy
Oak Ridge Operations Office

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I. 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. Important elements of this operable unit are the affected areas of the regionally important Great Miami Aquifer that exhibit elevated levels of uranium. Because of the location of portions of the uranium contaminated plume within sparsely developed areas south of the FMPC and the associated potential threat to human health, the Department of Energy (DOE) has initiated a removal action to address this area or "south plume". The removal action is being conducted in a manner consistent with the implementation of the final remedial action for Operable Unit 5.

The Consent Agreement under Section 106 and 120(a) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, (CERCLA) requires a work plan be submitted for implementation of the selected alternative for the South Groundwater Contamination Plume Removal Action. But, with the agreement between the United States Environmental Protection Agency (USEPA) and DOE over the Dispute Resolution concerning the Engineering Evaluation and Cost Analysis (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 work plan addresses the implementation of Part 1: the action involving the construction of an alternate water supply to selected receptors in the south plume area. All activities performed under this work plan will be in accordance with the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) and consistent with OSWER Directive 9360.0-03B, Superfund Removal Procedures, Rev.3.

A Removal Site Evaluation (RSE) has been generated and approved by the DOE consistent with the requirements of the 40CFR 300.410. Provided as an attachment to the Work Plan is a Health and Safety Plan completed pursuant to the requirements of the Consent Agreement and 29 CFR 1910.120.

II. DESCRIPTION

1.0 Removal Action

An EE/CA has been prepared, in accordance with 40 CFR 300.415, to

evaluate removal action alternatives and recommend the preferred alternative. The National Environmental Policy Act of 1969 (NEPA) requires that federal agencies include in their decision making processes appropriate and careful consideration of all environmental effects of proposed actions. The EE/CA was prepared to integrate the requirements of both the CERCLA and NEPA, and will be used by the United States Environmental Protection Agency (USEPA) and the DOE as the basis for remedy selection and implementation.

The preferred alternative, identified in the EE/CA, includes an alternate water supply to two currently affected industrial users, pumping with discharge to the Great Miami River, an interim advanced wastewater treatment system, enhanced monitoring, and institutional controls. Providing an alternate water supply to two industrial users (Industrial User A and Industrial User B) in the south plume area is Part 1 of the removal action. Part 2 of the removal action will be the design, construction, and operation of a system to pump groundwater from the leading edge of the South Plume and discharge to the Great Miami River. Part 3 of the removal action includes the installation of an interim 150 gallon per minute advanced wastewater treatment system. Part 4 of the removal action will be the monitoring of the wells in the south plume area.

This work plan includes the plans for implementation of only the alternate water supply (Part 1) of the South Groundwater Contamination Plume Removal Action. The details of Parts 2, 3 and 4 will be discussed in separate documents.The fundamental objective of Part 1 is to protect public health by limiting access to and use of groundwater with uranium concentrations exceeding the derived concentration of 30 ug/l. To meet this objective, replacement wells and associated delivery systems, as outlined in Section III-4.0, will be provided to two industrial users.

2.0 Related Actions

The following paragraphs include related actions other than those actions planned for implementation in Part 2, 3 and 4 of the South Groundwater Contamination Plume Removal Action. As mentioned previously, the details of Parts 2, 3 and 4 are discussed separate documents.

A storm water retention basin (SWRB) was constructed and placed into operation in October 1986 to intercept contaminated runoff from the FMPC production area. This runoff had previously flowed to Paddy's Run via the storm sewer outfall ditch. Construction of an additional chamber to the SWRB was completed in December of 1988. The expanded SWRB is designed to retain the runoff from a 10-year/24-hour rainfall event and

therefore greatly reduces the contribution of storm water from the FMPC Production Area to Paddy's Run. This flow is estimated to be the major source of uranium contamination to the South Groundwater Contamination Plume.

The additional following actions have been taken to date:

The public has been notified of the South Groundwater Contamination Plume. Well and cistern sampling in the south plume area has been performed by the Ohio Department of Health and the DOE.

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

An on-going groundwater monitoring program is being conducted for a number of wells in the south plume area. The results of the groundwater analysis are being reported to the well owners and the public.

Runoff from most of the surface of the FMPC waste storage area is collected and sent to the FMPC waste water treatment system. The remaining surface and perimeter runoff flows west and southwest to Paddy's Run. A separate removal action, Waste Pit Area Runoff Control, is currently underway by the DOE to address this remaining contaminated runoff and prevent it from flowing to Paddy's Run.

3.0 Integration with the Remedial Action

Following the initial testing period of each of the Alternate Water Supply systems, the respective industrial user will assume responsibility for operation, routine maintenance, and routine monitoring independent of the FMPC monitoring program outlined in the sampling and analysis plan. Each Alternate Water Supply system will be operational during implementation of the remedial action for Operable Unit 5. 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 Operable Unit 5 DOE Manager to assure consistency with the final remedial program.

III. Method of Accomplishment

1.0 Roles of the Participants

The DOE, as lead agency, will coordinate and execute this removal action.

The U.S. EPA reviewed and approved the EE/CA document pertaining to this action identifying the selected removal alternative for the South Groundwater Contamination Plume. USEPA will review and approve this Work Plan. The Ohio Environmental Protection Agency (OEPA) provides guidance and participates in the development and review of the EE/CA and Work Plan.

Advanced Science Incorporated (ASI), as a contractor to DOE, is conducting the RI/FS program including activities such as groundwater sampling and development of a groundwater flow model for the south plume. ASI is also providing analytical support through their subcontractor, International Technology (IT) Corporation.

Westinghouse Materials Company of Ohio (WMCO), as the FMPC Operations and Maintenance contractor, is responsible to implement this removal action in a manner consistent with DOE and regulatory guidance.

A.M. Kinney, Inc. (AMK), as a contractor to WMCO, is providing project design for the Part 1 removal action.

Rust Engineering, as a contractor to WMCO, will provide construction management for the Part 1 removal action.

The contractor for Part 1 installation will be determined through the DOE bid and award process.

As identified in the selected alternative, Part 1 will provide an alternative water supply to two industrial users, Industrial User A and Industrial User B. These two industrial users will be key participants during the implementation of the removal action.

2.0 Additional Studies/Data Requirements

The specific well locations for the alternate water supply for Industrial User A and Industrial User B will be defined prior to completing the detailed design. Test wells will be installed at selected sites to verify that the technical requirements as stated in the agreement between Industrial User B and the DOE will be satisfied.

After the quality of the water and hydraulic capacity of the wells is verified as meeting the technical requirements, two alternate water supply

production wells will be installed for Industrial User B and one alternate water supply production well will be installed for Industrial User A.

Planning Activities

Activities that will be undertaken prior to the actual site work are planning, training, design, and management of the removal actions. These activities are required to render the area reasonably free of hazard to personnel and the environment until the RI/FS process has been completed and to determine if further action is required.

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 given in Attachment I.

b. Access to Private Property

The FMPC will be required to obtain the necessary easements for the rights to private property to complete Industrial User A and B's alternate water supply. Meeting of the proposed schedule is contingent upon negotiation for the easement rights with the involved property owners. Figure 1 illustrates the proposed route for the piping from an approximate location of the well locations to the sites of Industrial Users A and B.

c. Design of Removal Action

Definitive design documents will be prepared for the removal action construction work.

d. Training of Personnel

All personnel working in the construction phase of the Part 1 removal action will be trained in accordance with the Occupational Safety and

Health Administration (OSHA) standards found in 29 CFR 1910.120.

e. Construction

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.

4.0 Field Actions

After the specific well locations for the alternate water supply for Industrial Users A and B are defined and the quality of water and hydraulic capacity of the systems are verified as meeting the technical requirements, one alternate water supply well will be installed for Industrial User A and two alternate water supply wells will be installed for Industrial User B. Upon completion of the well installation, preliminary testing will be conducted on each well. The new water supplies are proposed to be located approximately one-half mile west of the intersection of Paddy's Run Road on Willey Road. The well for Industrial User A shall be sized to supply less than 50 gallons per minute (gpm). Each of the two wells for Industrial User B shall be sized to supply 175 gpm and 250 gpm when both pumps are operating in parallel. Each well will have an inlet screen that starts five feet below the top of the water table and extends downward into the aquifer. Each well shall have a permanently mounted pump. An underground supply line will run along the north side of Willey Road to Paddy's Run Road, then cross under Willey Road and run along the west side of Paddy's Run Road to the sites of Industrial Users A and B.

After construction and installation is completed for the alternate water supply for Industrial User B, initial testing will be conducted by FMPC personnel. During the initial testing, daily grab samples will be taken to verify that the water quality meets the technical requirements as stated in the agreement between Industrial User B and the DOE. The chemical parameters are listed in Attachment II. Because of the proximity of well for User A to the wells for User B, not initial testing will be performed for User A. FMPC will operate the new water supply systems for a period of 60 days prior to the DOE turning over the system to the users. This "initial testing period" will include confirmation of the system performance by Industrial User B.

5.0 Operations and Maintenance

An Operations and Maintenance Manual for each facility will be prepared during the final design stage and supplied to the two Industrial users. Following the initial testing period of the Alternate Water Supply system, the appropriate industrial user will assume responsibility for operation, routine maintenance, and routine monitoring. As such, the owners will then be responsible for meeting all requirements set by the state of Ohio.

The DOE, or its contractors/subcontractors, will be responsible for the corrective action maintenance activities for each system during the vendor warranty period for the equipment. After the warranty period, the two industrial users will be responsible for the operation, routine monitoring and all maintenance for their alternate water supply systems for the life of each system.

IV. SAMPLING AND ANALYSIS PLAN

At present, the FMPC Groundwater Monitoring Program monitors wells in the south plume area. The new wells installed in Part 1 of the removal action will be added to the Monitoring Program.

The additional sampling process for the alternate water supply will be in accordance with the FMPC Analytical Laboratories Quality Assurance Plan L.C.N. (QAP), October 1987, and its implementing procedures, and the Quality Assurance Project Plan (QAPP) approved as part of the RI/FS Work Plan. The certified laboratory results obtained from the QAPP sampling process will become part of the Administrative Record (AR).

The following table summarizes the sampling frequency and type of analysis during each activity for Part 1 of the removal action. Well siting is the point after which the test well has been drilled and the field hydraulic capacity test has been completed. The initial testing period is the first sixty days of operation of the system as defined in the agreement between Industrial User B and the DOE. The continuous operations phase is the on-going period of time after acceptance of the system by the respective industrial user. The table also reflects Ohio Environmental Protection Agency (OEPA) involvement in the well siting sampling process.

Part I Alternative Water Supply Wells

Activity	User(s)	Frequency	Plan	Analysis
Well Siting	A,B	Once/test well	QAPP	Attach II HSL, RAD
Well Siting	A,B	Once/test well	OEPA	SDWA
Initial Testing	B	Daily	QAP	Attach II
Continuous Operations	A,B	Quarterly	QAPP	Attach II HSL, RAD

The samples taken during the initial testing period will be in compliance with the QAP. These samples will also be in compliance with the approved WMCO Environmental Compliance/Monitoring Procedures and sent to the FMPC Laboratory for analysis. Results will be included in the FMPC Annual Environmental Monitoring Report. This report will be available for review in the Public Environmental Information Center.

As stated in the Consent Agreement, if the DOE determines that any activities or 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.

V. HEALTH AND SAFETY PLAN

The work to be performed will 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 the 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.

VI. QUALITY ASSURANCE

The South Groundwater Contaminated Plume Removal Action will be conducted according to 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 5700.6 and 5400.1. Specific quality assurance requirements will be incorporated into written and approved procedures and into personnel training. The FMPC will conduct periodic surveillances to verify compliance with QAP.

VII. PERMITS AND REGULATORY CONSTRAINTS

No permits are customarily required for Part 1 of the removal action. However, OEPA will approve the well siting and will verify water quality of the test well.

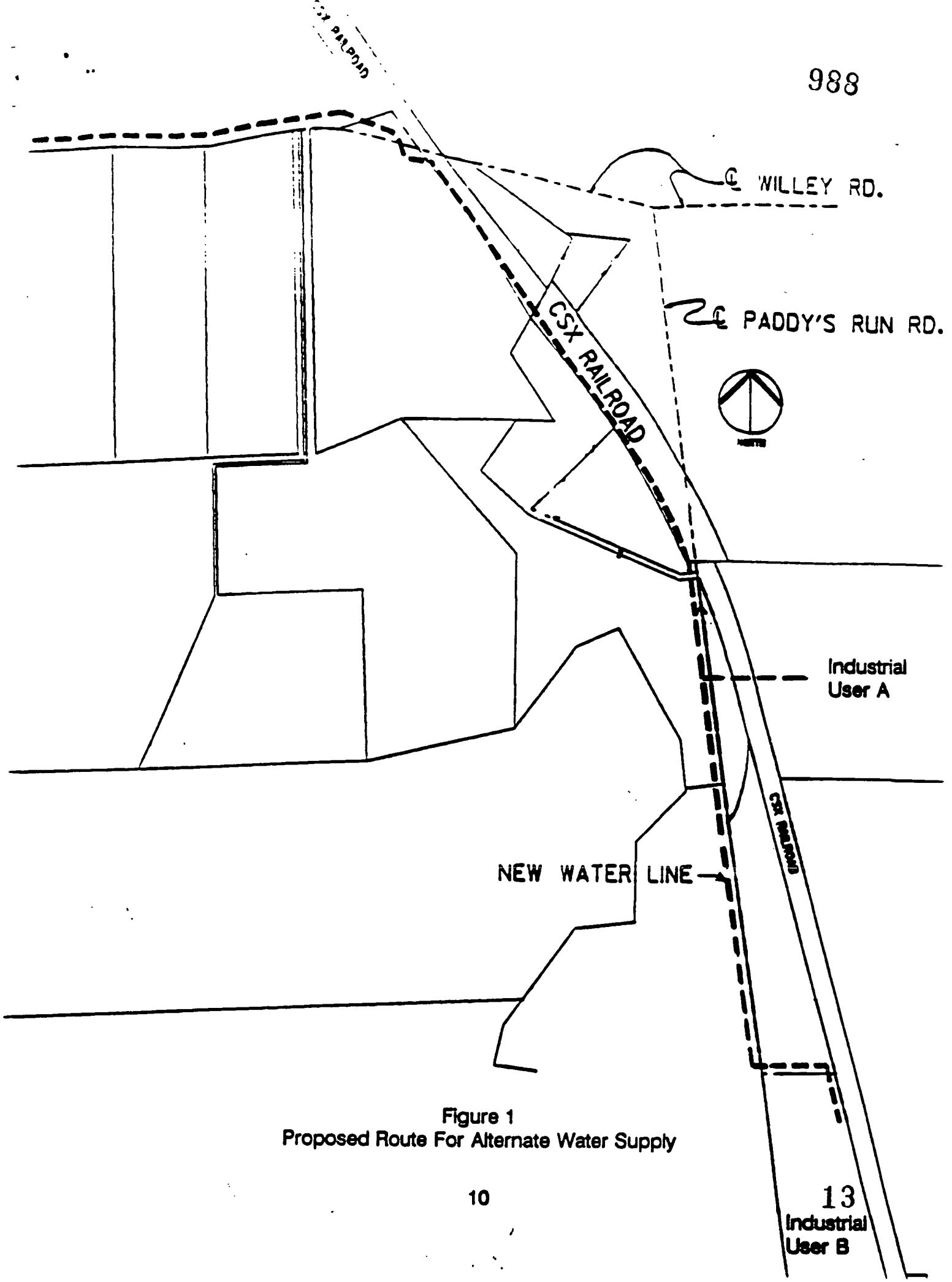


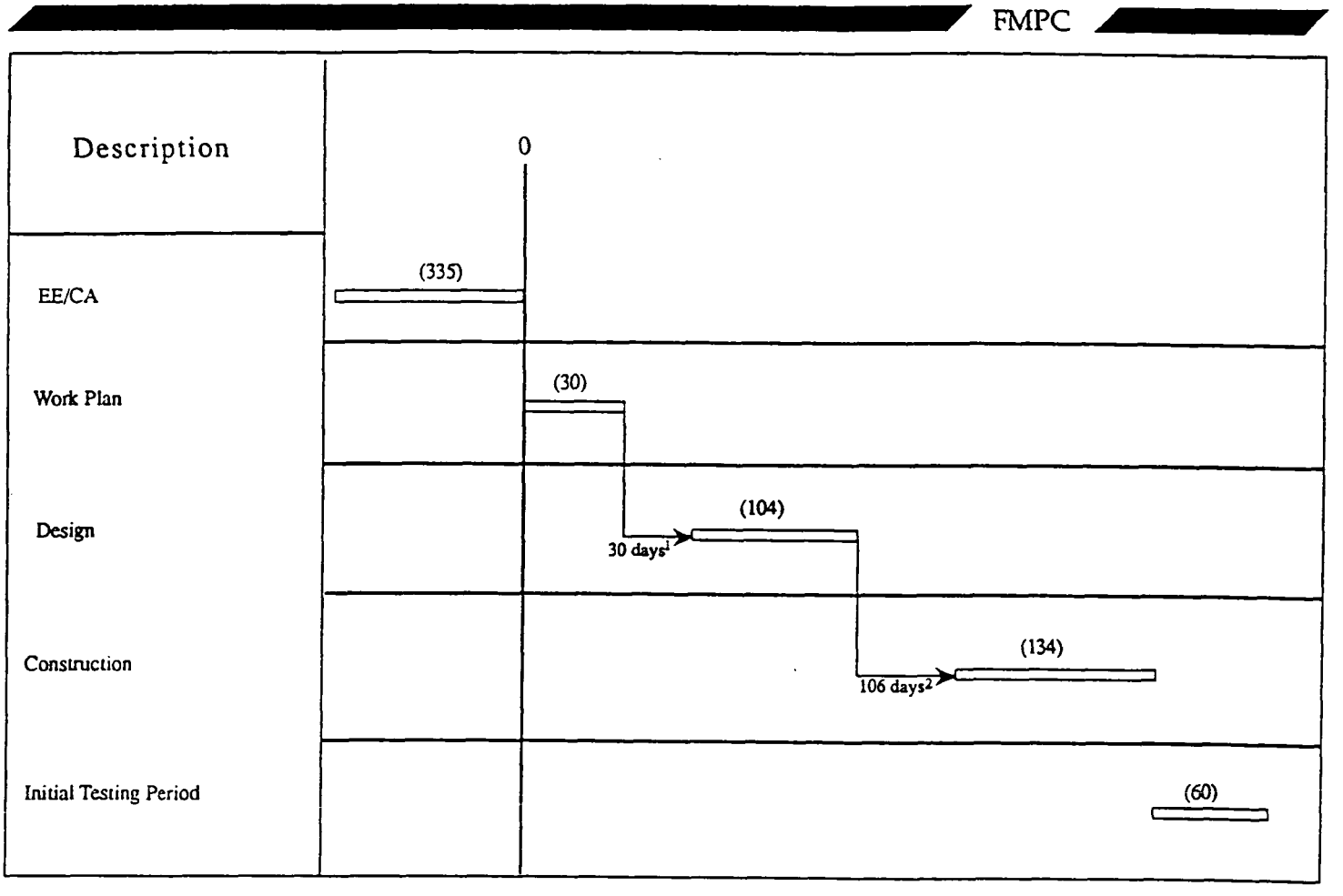
Figure 1
Proposed Route For Alternate Water Supply

ATTACHMENT I

Schedule

South Groundwater Contamination Plume

Part 1: Alternate Water Supply Schedule



Time Zero is USEPA's Approval of EE/CA document
Note ( ) durations are calendar days.
[1]30 days for USEPA's review and approval
[2]FMPC Bid and Award Process Time

ATTACHMENT II

Chemical Parameters for Part I

Water Quality

Analysis of the samples taken in support of Phase I will include the following chemical parameters:

- Uranium
- Specific Conductance
- Sulfate and Sulfite
- Chloride
- Total Hardness
- Calcium Hardness
- Magnesium Hardness
- Total Copper
- Total Iron
- Sodium
- Total Phosphate
- Total Silica
- Alkalinity
- Water Quantity
- Water Pressure
- Water Temperature

ATTACHMENT III

HEALTH AND SAFETY PLAN

FOR THE

SOUTH GROUNDWATER CONTAMINATION PLUME

REMOVAL ACTION

PART 1

ALTERNATE WATER SUPPLY

FEED MATERIALS PRODUCTION CENTER

September 1990

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1.0 TASKS TO BE PERFORMED

This removal action will include four parts. This health and safety plan includes the plans for implementation of the alternate water supply, Part 1, of the South Groundwater Contamination Plume Removal Action.

The specific well locations for the alternate water supply wells will be defined. A test well will be installed at each selected site. After acceptable sample analysis results, the production wells will then be installed.

The inspection and determining well location activities at the well sites 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	Involve Radioactivity
no	Disturb Containerized Matter	yes	Involve Trenches

Installation of the piping and pumping system will:

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

The initial testing of the system for pumping from the alternate water supply 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	no	Involve Radioactivity
no	Disturb Containerized Matter	no	Involve Trenches

The monitoring of the alternate water supply 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	no	Involve Radio- activity
no	Disturb Containerized Matter	no	Involve Trenches

2.0 SITE HISTORY

The proposed well sites for Part 1 are not located within the FMPC property lines area. The work area for Part 1 is on the property of two industrial users of the groundwater, private property, along the highway, etc (see Figure 1). There is no history of contaminants for Part 1.

3.0 TASK SPECIFIC HAZARD ASSESSMENT

A preliminary review of the area and soil and groundwater analysis surveys of the South Plume area 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 Industrial, Radiological, Safety and Training (IRS&T) representative(s) to determine the degree of hazard and if any additional requirements to this safety plan are needed.

3.1 Physical Hazards

Noise
Heat Stress
Overhead Hazards *(Utility Lines - along Willey Road and Paddy's Run Road)
Underground Utilities *(Commercial Gas Line - crossing Paddy's Run Road)
* Specific locations to be noted on design documents

3.2 Chemical Hazards

No chemical hazards are anticipated based on results of recent soil characterizations performed as a result of well monitoring installations under RI/FS scope of work.

3.3 Radiation Hazards

No radiation hazards are anticipated based on results of recent soil characterizations performed as a result of well monitoring installations under RI/FS scope of work.

4.0 MONITORING

4.1 Goals

During the contaminant source detection task, air monitoring will be performed as determined to be necessary at the time of issuance of the

work permit(s) to ensure that exposure levels do not exceed established exposure limits.

4.2 Monitoring Equipment and Frequency of Monitoring

In the event that action limits are exceeded for the following areas, all work will be discontinued pending specific evaluation of the construction area.

4.2.1 Airborne Radioactivity

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

4.2.2 Radioactive Surface Contamination

Radioactive surface contamination, identified by WMCO Health & Safety personnel as they perform the survey, requires radiation work permits. Phase I activities will be conducted outside the FMPC site. Radioactive surface contamination will be monitored intermittently (minimum of every 2 hours) whenever soil is disturbed by drilling or digging.

4.2.3 Chemical Hazard

Exposure to significant chemical vapor concentrations are not expected with the tasks associated with the South Plume removal action. Air sampling for chemicals will be conducted as determined to be necessary by the Industrial Hygiene representative.

The following monitoring equipment will be used if necessary for this removal action:

Instrument: Beta-Gamma Contamination Monitor

Hazard Measured: Beta and gamma radiation.

Application: Monitors surfaces for radioactive contamination.

Detection Method: Geiger-Mueller tube.

General Care: Daily source and battery check.

Calibration: Six (6) months.

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: Performed in laboratory.

General Care: Daily inspection.

Calibration: Six (6) months.

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 UV 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

4.3 Action Levels

Measurement	Level	Action
Beta-Gamma contamination on open surfaces	5,000 cpm above background	Note 1
Airborne radioactivity (long lived)	5×10^{-12} uCi/ml	Note 1

Measurement	Level	Action
HNu Meter (Breathing Zone)	Detection to 10 ppm (Note 2)	Note 1
	10-25 ppm	Supplied Air Respirator
	>25 ppm	Withdrawn

Notes

1 Full-face air purifying respirators with combination HEPA filter and organic vapor, acid gas, fume cartridges.

2 1 ppm above background

5.0 **PERSONAL PROTECTIVE EQUIPMENT** (PPE)

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

5.1 Inspection and determining well location activities at the well sites

ITEM	NEED	JUSTIFICATION
Air Purifying Respirator	No (yes)	Required if action levels are exceeded, or as specified by IRS&T representative
Cartridges: HEPA	No (yes)	Required if action levels are exceeded as specified by IRS&T representative
Hard Hat	Yes	As needed for overhead work
Hearing Protection	Yes	During concrete breaking/cutting
Inner Gloves	No	

ITEM	NEED	JUSTIFICATION
Rubber/Latex Boots	Yes	As needed to protect personnel during construction
Leather-Palm Gloves	Yes	Required as a minimum level for protection of hands
Rubber/Nitrile Gloves	Yes	As needed to Protect personnel during construction
Coveralls	Yes	Minimum requirement
Plain Tyvek	No	
Process Coveralls	No	
PVC Gloves	No	
Supplied Air Respirator (SAR)	No	
Safety Glasses	Yes	Minimum requirement
Safety Goggles	Yes	Required during any particulate hazard, acid, or dusty conditions, as a result of equipment operation
Safety Shoes	Yes	Minimum requirement
Face Shield	Yes	Face protection. Safety glasses required if goggles are not used.
Saranex Tyvek	No	
Shoe Covers	No	

5.2 Installation of Piping and Pumping System

ITEM	NEED	JUSTIFICATION
Air Purifying Respirator	No (yes)	Required if action levels are exceeded, or as specified by IRS&T representative
Cartridges: HEPA	No (yes)	Required if action levels are exceeded, or as specified by IRS&T representative
Hard Hat	Yes	As needed for overhead work
Hearing Protection	Yes	During concrete breaking/cutting
Inner Gloves	No	
Rubber/Latex Boots	Yes	Protect personnel during construction
Leather-Palm Gloves	Yes	Required as a minimum level protection of hands
Rubber/Nitrile Gloves	Yes	As needed to protect personnel during
Coveralls	Yes	
Plain Tyvek	No	
Process Coveralls	No	
PVC Gloves	No	
SAR	No	
Safety Glasses	Yes	Minimum Requirement
Safety Goggles	Yes	During hydrostatic testing

and as needed

ITEM	NEED	JUSTIFICATION
Safety Shoes	Yes	Minimum Requirement
Saranex Tyvek	No	
Shoe Covers	No	
Face Shield	No	

5.3 Initial Testing for Pumping from the Alternate Water Supply

ITEM	NEED	JUSTIFICATION
Air Purifying Respirator	No (yes)	Required if action levels are exceeded, or as specified by IRS&T representative
Cartridges: HEPA	No (yes)	Required if action levels are exceeded, or as specified by IRS&T representative
Hard Hat	Yes	As needed for overhead work
Hearing Protection	No	
Inner Gloves	No	
Rubber/Latex Boots	Yes	As needed to Protect personnel during construction
Leather-Palm Gloves	Yes	Required as a minimum level for protection of hands
Rubber/Nitrile Gloves	Yes	As needed to protect personnel during construction

Coveralls	Yes	Minimum requirement
Plain Tyvek	No	
ITEM	NEED	JUSTIFICATION
Process Coveralls	No	
PVC Gloves	No	
SAR	No	
Safety Glasses	Yes	Minimum requirement
Safety Goggles	Yes	Required during any particulate hazard, acid, or dusty conditions as a result of equipment operation
Safety Shoes	Yes	Minimum requirement
Face Shield	Yes	Face protection. Safety glasses required if goggles are not used
Saranex Tyvek	No	
Shoe Covers	No	
Face Shield	No	

5.4 Monitoring of the Alternate Water Supply

ITEM	NEED	JUSTIFICATION
Air Purifying Respirator	No (yes)	Required if action levels are exceeded, or as specified by IRS&T representative
Cartridges: HEPA	No (yes)	Required if action levels are exceeded, or as specified by IRS&T representative
Hearing Protection	No	

Inner Gloves	No	
Rubber/Latex Boots	Yes	As needed to protect personnel during construction
ITEM	NEED	JUSTIFICATION
Leather-Palm Gloves	Yes	Required as a minimum level for physical protection of hands
Rubber/Nitrile Gloves	Yes	As needed to protect personnel during construction
Coveralls	Yes	Minimum requirement
Plain Tyvek	No	
Process Coveralls	No	
PVC Gloves	No	
SAR	No	
Safety Glasses	Yes	Minimum requirement
Safety Goggles	Yes	During hydrostatic testing and as needed
Safety Shoes	Yes	Minimum requirement
Saranex Tyvek	No	
Shoe Covers	No	
Face Shield	No	

6.0 SITE CONTROL

6.1 Access

Many of the task sites are not located within the FMPC property lines area. The work area for Part 1 is on the property of two industrial users of the groundwater and on private property. The work area includes wells on

private property with a piping system running back to the two industrial users. Access to these private properties will be through previously approved agreements and/or easements. While the tasks are 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.

Chemical and/or radiological contamination is not foreseen as an impending problem with respect to this removal action. However, the construction work area related to this removal action will be, if necessary, organized into a specific zone to further reduce the potential spread of chemical or radiological contamination. This is referred to as an Exclusion Zone.

The Exclusion Zone is the zone of high potential hazard due to physical or chemical dangers. 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 established after the specific location of the supply wells are known for each of the various tasks. The Exclusion Zone will be marked with barrier tape or other easily recognizable 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. A map delineating the Exclusion Zones for each of the tasks will be generated prior to personnel performing work in any area associated with implementation of this removal action.

If necessary, IRS&T representatives will establish a Contamination Reduction Zone, consisting of step-off pads, at the exit to the Exclusion Zone. This zone will be used for removal of disposable personal protective equipment and for cleaning of contaminated equipment.

6.2 Bioassay Samples

WMCO personnel and WMCO 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.

6.3 Medical Monitoring

In accordance with 29 CFR 1910.120 OSHA requirements, all WMCO and WMCO subcontractor personnel are required to participate in a medical

monitoring program which includes:

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

Personnel involved in this project shall be identified by name and badge number. Prior to start of work, each shall be individually subject to a medical surveillance approval to work by the Director, Medical Services.

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.

6.4 Training Requirements

All WMCO and WMCO subcontractor personnel assigned to the tasks will, as a minimum, meet the following training requirements including:

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

6.5 Safety Meetings

A safety meeting, which must be documented, shall be conducted prior to the start of each day's work activities. Phase I activities include determination and inspection of well locations, the well sites, 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

7.0 EXPOSURE SYMPTOMS

Exposure to low levels of radioactivity do not produce acute exposure symptoms. Such exposures may cause delayed effects such as cancer. Such exposures are to be kept as low as reasonably achievable. No treatment is anticipated for the predicted contaminants and concentrations. See Section 11 for contingency plans.

8.0 SITE ENTRY PROCEDURES

During the Phase I activities, which include determination and inspection of well locations, the well sites, and installation of the piping and pumping system, the following procedures will apply:

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

9.0 DECONTAMINATION

Equipment for decontamination of radiological or chemical hazards shall be kept available in the area surrounding the Exclusion Zone if such is determined necessary by supervisor or by either Radiological Safety or Industrial Hygiene prior to the initiation of the activity.

Decontamination will be performed consistent with the following FMPC Standard Operating Procedure, OSH(SP)-P-35-017, and Topical Manual FMPC-2084.. In addition, specific RI/FS decontamination procedures for the Facilities Testing Program will be followed when appropriate.

10.0 WASTES

Wastes include, but are not limited to:

- o Disposable PPE
- o Excess materials such as soil or drill cuttings.

All potentially contaminated waste materials resulting from site activities will be collected and placed in drums or other containers. Disposable protective clothing will be placed in plastic bags and disposed of as compactable, potentially contaminated waste.

Drums or containers shall meet DOE 49 CFR Parts 171-178, EPA, 40 CFR Parts 264-265 and 300, and OSHA requirements. Hazard warning shall be immediately applied to all drums as specified by WMCO management/supervisors and WMCO Solid Waste Compliance.

11.0 CONTINGENCY PLANS

11.1 Incidents or Injuries

For the possible intake of radiological substances see statement on submission of urine samples for radiation exposures in WMCO Standard Operating Procedure (SOP) 11-C-245.

Incidents of injuries involving potential intake of other hazardous substances shall be reported to supervisor and the WMCO Communications Center by the involved employee. An Incident Investigation Report will be completed by the involved employee.

The WMCO Communications Center will notify local authorities of the incident or injury and the authority having jurisdiction will respond in a joint effort with the FMPC Response Team.

11.2 Pre-Emergency Planning

During the training and pre-work safety meetings, all employees involved in this task shall 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 emergency preparedness personnel via 2-way

radio or cellular phone. A test must be performed on all equipment prior to initiation of daily activities to verify performance.

11.3 Lines of Authority

The supervisor in charge has the primary responsibility for the prevention of emergency conditions. In the event that an emergency does occur, the individual involved or observing the condition shall immediately notify a supervisor, the communications center or the WMCO Assistant Emergency Duty Officer (AEDO). The AEDO is responsible for ensuring that corrective actions have been implemented, the appropriate personnel notified, and reports completed as specified in Section 11.1.

11.4 Evacuation

In the event of an evacuation of the construction site, which is off DOE property, the supervisor-in-charge will be responsible for notifying all personnel involved. Personnel performing these tasks off DOE property 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.

If there are any tasks performed on the DOE property 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 shall immediately proceed to the rally point. The FMPC designated rally points within the DOE property are shown on Figure 2. 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.

When construction zone is on property of the industrial users, all personnel involved will follow the specific evacuation plan as outlined by the respective user.

11.5 Emergency Equipment

The following safety equipment, locations to be identified at safety meetings, is available for employee usage at each construction zone.

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

[] absorbent [] local evacuation alarm

11.6 Emergency Notification

All emergencies shall be reported immediately. Emergencies can be reported by cellular telephone dialing 738-6511; by contacting the communications center EOC, via two-way radio; or by pulling a manual fire alarm.

11.7 Fire, Explosion, or Medical Emergency

In the event of a fire, explosion or medical emergency, the communication center shall be notified immediately by manual fire alarm (if on industrial users property) 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 (Refer to 11.1). Personnel in the immediate area should evacuate to a safe position and await instructions.

A map delineating the route to the nearest medical facility, which is in back of Building 53, is shown on Figures 3A, 3B. Complete medical assistance will be provided by trained professional FMPC medical personnel.

11.8 Additional Information

11.8.1 Hospitals

The WMCO Medical Facility (Building 53) is the primary choice for on-site injuries. Off-site emergencies can also be handled utilizing the FMPC facilities. The WMCO ambulance will transport the injured to the nearest hospital if necessary. WMCO maintains an emergency response capability which includes an ambulance and EMT medical personnel.

11.8.2 Emergency Telephone Numbers

The following telephone numbers are FMPC site telephone numbers.

Name	Number	Radio
Ambulance:	738-6511	202 or control
Hospital:	738-6511	202 or control
Fire:	738-6511	202 or control

Emergency Response	738-6511	202 or control	988
Industrial Hygiene	738-6207	357	
Radiological Safety	738-6889	355	
Fire and Safety	738-6235	303	
Assistant Emergency Duty Officer (AEDO)	738-6431 or 738-6295	202	

12.0 CONFINED SPACE ENTRY

A Confined Space Entry Permit will not be required for the activities to implement this removal action.

13.0 SPILL CONTAINMENT PROGRAM

Since no hazardous chemicals or radiological conditions exceeding the limits listed in Section 4.3 are expected to be found in the areas of well placement, no spill prevention plan is provided. However, if during sampling and/or surveying, conditions change during the course of work, spill prevention/control measures will be taken in accordance with FMPC 2065, FMPC Spill Prevention Control and Countermeasure Plan.

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 following activities:

The inspection and determining well location activities at the well sites

Installation of the piping and pumping system

The initial testing of the system for pumping from the alternate water supply

The monitoring of the alternate water supply wells

The personnel performing these tasks must read and understood the attached site specific health and safety plan and agree to follow its provisions[1]. Written documentation with signatures of those personnel performing these tasks must be

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[1]Compliance with the provisions of the Health and Safety Plan may be audited through announced or unannounced site visits. Be sure that the provisions of this safety plan are implemented and document the reasons for field actions/changes when they are necessary. Site visits may be performed by the DOE or WMCO personnel.

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maintained.

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

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

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

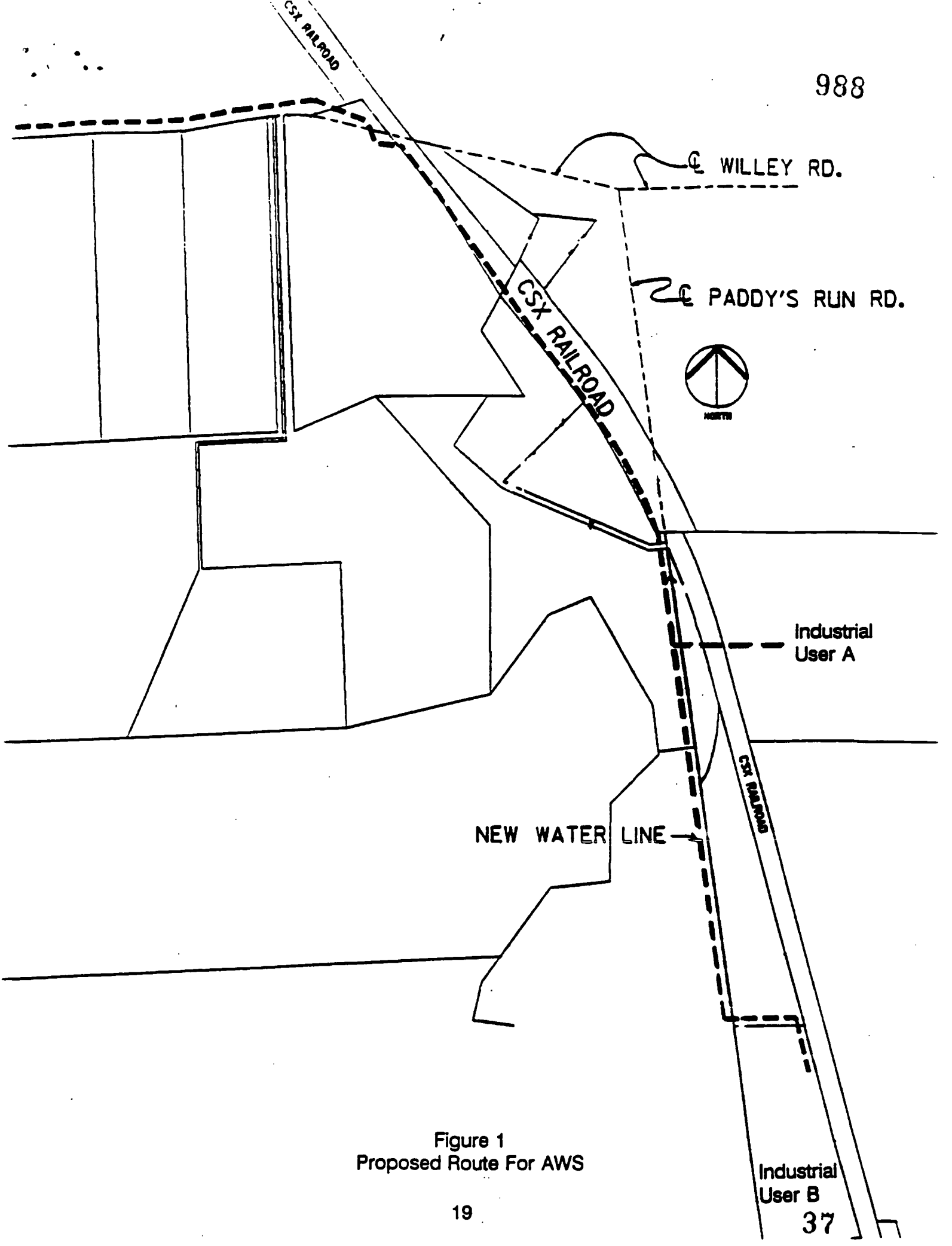

Figure 1
Proposed Route For AWS

FMPC RALLY POINTS

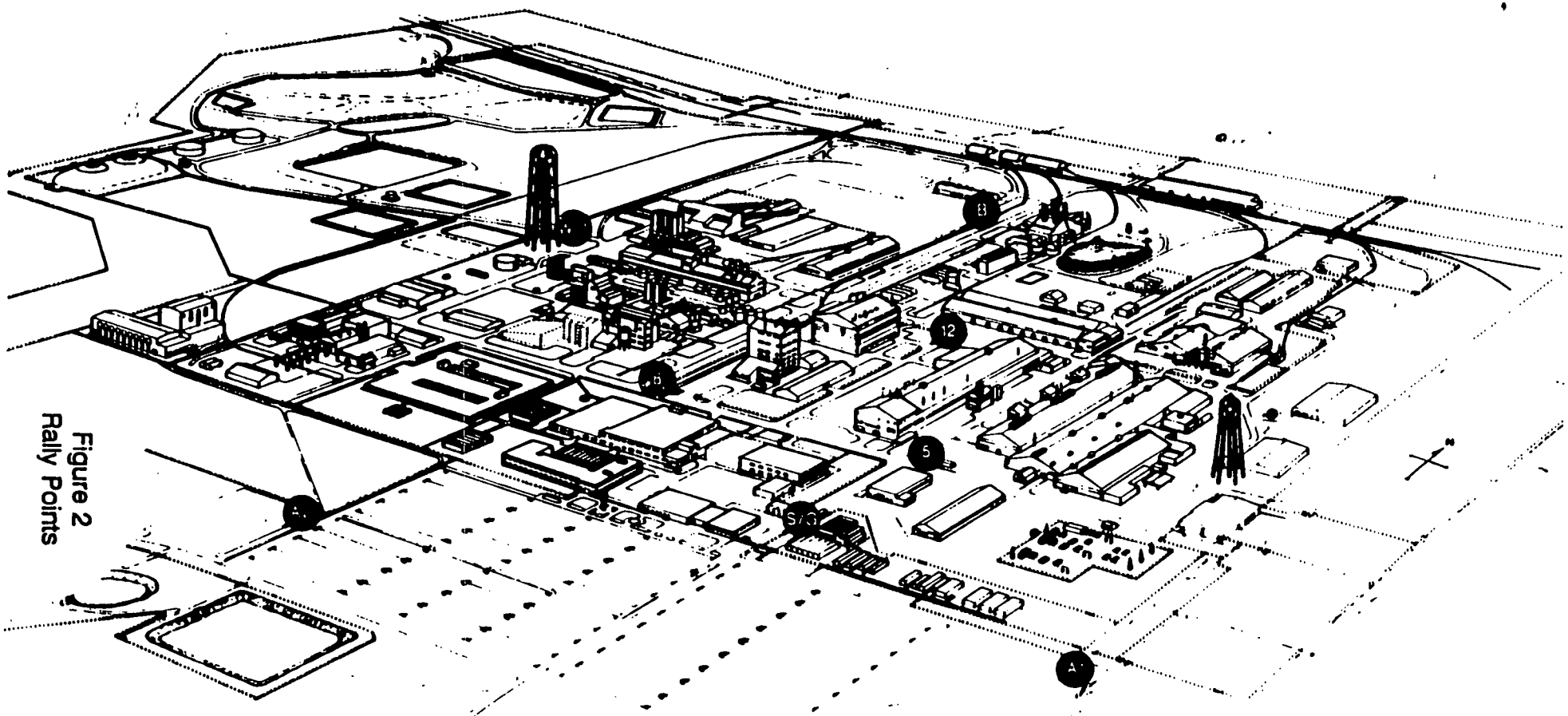

Figure 2
Rally Points

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

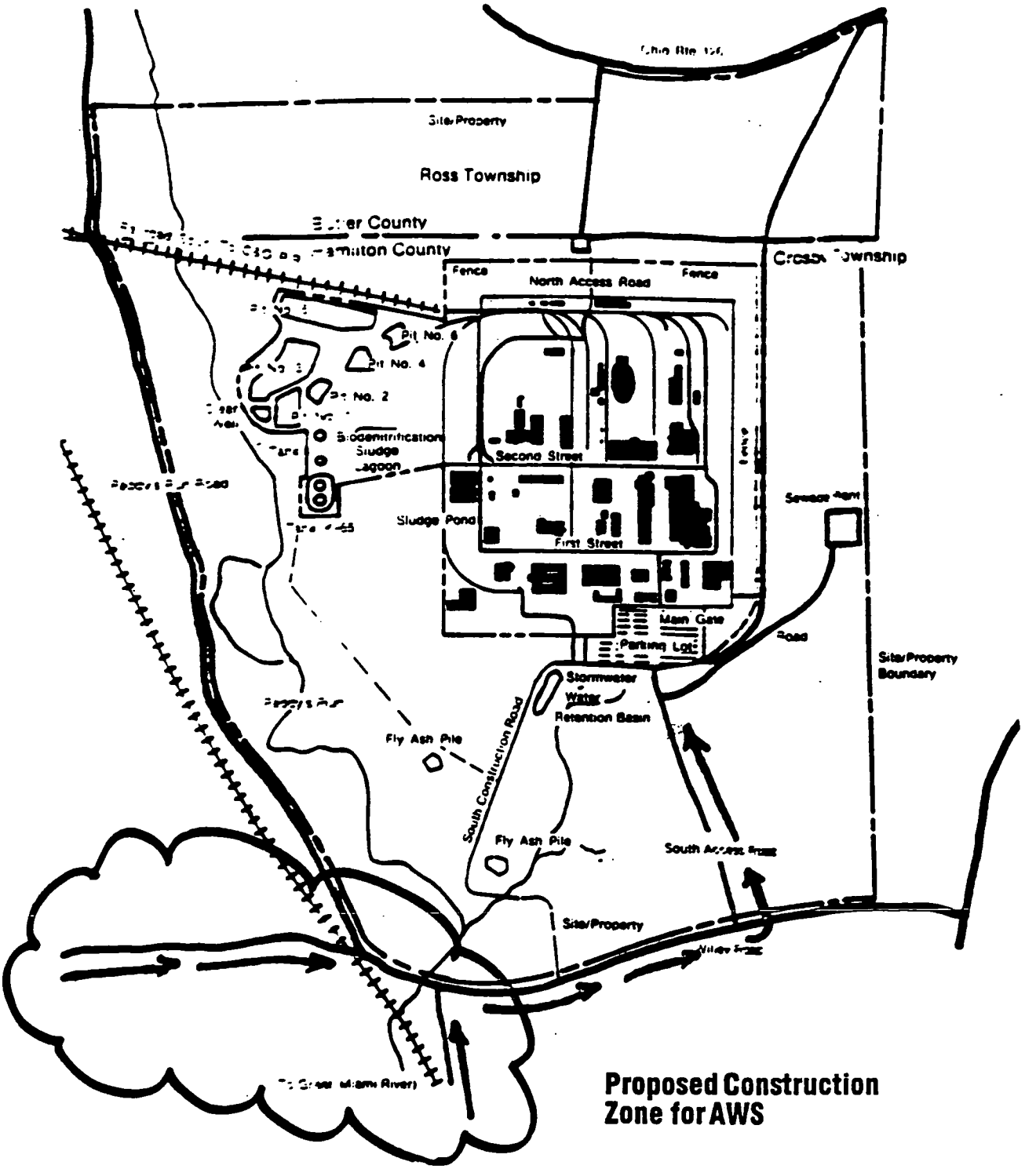

Figure 3A
Route To Medical Facility

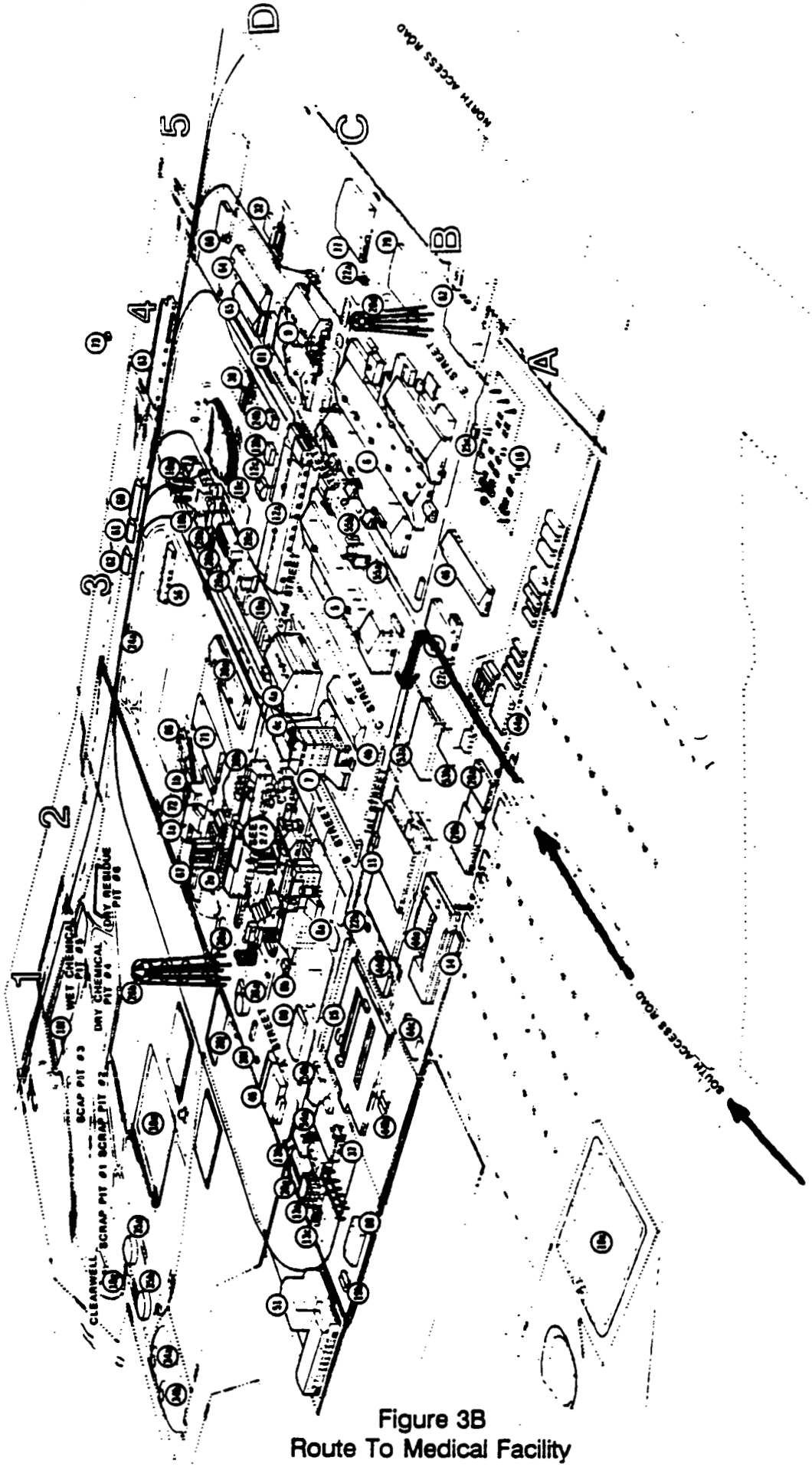

Figure 3B
Route To Medical Facility