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**Neville Land Company
Pittsburgh, Pennsylvania**

**Draft Health and Safety Plan
for the Ohio River Site, Neville
Township, Pennsylvania**

ENSR Consulting and Engineering

February 1992

Document Number 4920-003-125

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HEALTH AND SAFETY PLAN
FOR
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
AT THE
NEVILLE LAND COMPANY
OHIO RIVER SITE
NEVILLE TOWNSHIP, PENNSYLVANIA

ENSR Project No. 4920-003-125

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CONTENTS

1.0 INTRODUCTION 1-1

2.0 SITE BACKGROUND 2-1

3.0 SCOPE OF WORK 3-1

4.0 HAZARD ASSESSMENT 4-1

 4.1 Compounds of Concern 4-1

 4.2 Hazards Associated with the Materials of Concern 4-1

 4.2.1 Herbicides/Pesticides 4-3

 4.2.2 Organic Compounds 4-3

 4.2.3 Inorganic Compounds 4-4

5.0 PHYSICAL HAZARD ASSESSMENT 5-1

 5.1 Heavy Equipment Operation 5-1

 5.2 Drilling Hazards 5-1

 5.3 Thermal Stress 5-1

 5.4 Water Hazards 5-2

 5.5 Steep River Banks 5-2

 5.6 Abandoned Oil Well 5-2

 5.7 Posion Ivy/Oak 5-2

6.0 AIR MONITORING 6-1

 6.1 Gases and Vapors 6-1

7.0 PERSONAL PROTECTIVE EQUIPMENT (PPE) 7-1

 7.1 General Site Work and Non-Intrusive Site Activities 7-1

 7.2 Soil Boring, Well Installation, and Associated Testing Operations 7-1

 7.3 Surface Water and Sediment Sampling 7-2

 7.4 Decontamination 7-3

8.0 SITE CONTROL 8-1

 8.1 Designation of Zones 8-1

 8.2 Exclusion Zone 8-1

 8.3 Contamination Reduction Zone 8-1

**CONTENTS
(Cont'd)**

8.4 Support Zone 8-3
8.5 Site Safety Equipment 8-4
8.6 Decontamination 8-4

9.0 MEDICAL MONITORING/TRAINING REQUIREMENTS 9-1

10.0 EMERGENCY RESPONSE 10-1

10.1 Employee Training 10-1
10.2 Alarm Systems/Emergency Signals 10-1
10.3 Escape Routes and Procedures 10-2
10.4 Critical Operations or Equipment 10-3
10.5 Rescue and Medical Duty Assignments 10-3
10.6 Designation of Responsible Parties 10-3
10.7 Emergency Reporting Procedures 10-3
10.8 Employee Accounting Method 10-4

11.0 CONFINED SPACE ENTRY 11-1

11.1 Permit Entry Form 11-1
11.2 Pre-Entry Testing 11-1
11.3 Other Hazards 11-2
11.4 Hazard Protection 11-2
11.5 Observer Procedures 11-3
11.6 Personal Protection Equipment 11-3

APPENDICES

APPENDIX A - SAFETY CERTIFICATION FORM

APPENDIX B - SAFETY MEETING LOG SHEET

APPENDIX C - SITE MAP

APPENDIX D - EMERGENCY REFERENCE SHEET

APPENDIX E - SUPERVISORS ACCIDENT/INCIDENT INVESTIGATION REPORT

LIST OF FIGURES

8-1 SITE CONTROL 8-2

1.0 INTRODUCTION

This site-specific Health and Safety Plan (HASP) has been developed by ENSR Consulting and Engineering to establish the health and safety procedures required to minimize any potential risk to personnel who will perform activities associated with the remediation activities at the Ohio River Site, Neville Township, Pennsylvania. The Ohio River Site is a CERCLA (Superfund) site.

The provisions of this plan minimally apply to all ENSR and ENSR subcontractor personnel who will potentially be exposed to safety and/or health hazards during the performance of the activities (original and additional) described in Section 3.0 of this document.

This HASP has been written to comply with the requirements of the Occupational Safety and Health Administration's (OSHA's) Hazardous Waste Operations and Emergency Response Standard (29 CFR 1910.120), the ENSR Health and Safety Policy Manual, and the ENSR Hazardous Waste Site Health and Safety Manual. All activities covered by this HASP must be conducted in complete compliance with this HASP and with all applicable federal, state and local health and safety regulations, including 29 CFR 1901.120. Specific reference is given to the OSHA General Industry Standards (29 CFR 1910), including the Hazardous Waste Operations and Emergency Response Standard and the OSHA Construction Industry Standards (29 CFR 1926). It will be the responsibility of ENSR and its subcontractors to comply with OSHA standards as they relate to the site. Personnel covered by this HASP who cannot or will not comply with these requirements will be excluded from site activities by the on-site Project Manager.

For maximum protection of ENSR and its subcontractors, the procedures in this plan have been developed based upon current knowledge regarding the specific chemical and physical hazards that are known, anticipated, or alleged for each of the specific tasks to be conducted at this site. Should additional information become available regarding site hazards, or should operations at the site change, it may be necessary to modify this HASP. All proposed modifications to this HASP must be reviewed and approved by the Regional Health and Safety Manager before such modifications are implemented. Any significant modifications must be incorporated into the written document and the HASP must be reissued.

A pre-entry health and safety briefing will be conducted prior to commencing field activities, and at other times, as necessary. The focus of the briefing will be the contents of the HASP and other health and safety concerns. All personnel covered by this HASP, including subcontractor personnel, must receive a copy of it and return the HASP signoff sheet (see Appendix A) to the ENSR Program Manager or ENSR Assistant Program Manager, prior to performing any on-site activities.

Health and safety information specific to the Ohio River Site is provided in Sections 2.0 through 6.0. The more generic HASP information is provided in Sections 7.0 through 11.0.

The performance of additional tasks, beyond those described in Section 3.0, may require modification to this HASP.

This HASP addresses the hazards associated with the activities described in the Work Plan for Remedial Investigation/Feasibility Study (RI/FS) at the Ohio River Site and (ENSR Document No. 4920-003-101).

2.0 SITE BACKGROUND

The Ohio River Site consists of approximately 32 acres on the western end of Neville Island in the Ohio River, approximately 10 miles downstream of Pittsburgh, Pennsylvania. The site is bordered by the main channel of the Ohio River along its northern boundary, a back channel of the Ohio River along its southern boundary, and residential properties in Neville Township along its eastern boundary.

The predominant land use at the site from the years 1920 to 1947 was agricultural. From the mid 1930s through the mid 1950s, a portion of the site was used to landfill municipal wastes such as construction debris and industrial materials consisting of cinders, foundry sand, brick, and slag. During the early 1950s, trenches were dug to dispose of tar acid sludges and tar decanter sludge from the Pittsburgh Coke and Chemical Company's (PC&C) coke and pig iron operations on the eastern end of the island. Agricultural chemical wastes were also disposed in these trenches. Waste disposal activities at this site were stopped in the mid 1960s.

Construction of a river park was initiated by Allegheny County in 1977 and completed in 1979. During the course of park construction, approximately 13,000 cubic yards of soil, fill, barrels, and various wastes were excavated. Although construction was completed, the park was never opened to the public and was subsequently dismantled during 1980.

Four site investigations have been conducted at the Ohio River Site since the cessation of waste disposal activities. These investigations include Pittsburgh Testing Laboratory's soil boring investigation in 1972 and 1973; Richardson, Gordon, and Associates site investigations prior to park construction in 1977; Fred C. Hart Associates health hazard investigation in 1979; and Environmental Research and Technology's (ERT) site investigations in 1980 and 1981, quarterly groundwater monitoring program conducted from 1983 to 1985, and biannual groundwater monitoring program conducted from 1985 to 1990.

Thirteen categories have been established for the classification of waste materials at the site. A summary of the wastes identified is presented below:

- Desulfurization Wastes
- Agricultural Chemical Wastes
- Coal Coking Sludges

- Foundry Sand
- Dry Ash
- Slag
- Crystalline Wastes
- Leachate
- Calcium Carbonate Wastes
- Miscellaneous Wastes (e.g., pitch and epoxy resin)
- Municipal Wastes
- Demolition Rubble
- Metal Barrels

In 1980 and 1981, Environmental Research and Technology, Inc. (ERT) conducted field programs designed to provide physical and chemical descriptions of the site. The collection of 455 soil and waste samples, 95 groundwater samples, and three surface water samples, was performed during these investigations. Detailed summaries of ERT's field programs and waste classification are developed in the Ohio River Site RI/FS Work Plan (Document No. 4920-003-101). A summary of the compounds detected at the site is presented below:

<u>Compound</u>	<u>Media</u>	<u>Concentration Range (ppm)</u>	<u>Site Region</u>
2,4-D	Soil and groundwater	0.001-140	Central
2,3,7,8-TCDD	Agricultural chem. waste	0.000025 - 0.00013	Test Pit 275
2,4,5,-T	Soil and Groundwater	0.0001-0.01	Central
Benzene	Soil and Groundwater	1 - 50	South Central
Toluene	Soil and Groundwater	1 - 6	South Central

Ethylbenzene	Soil and Groundwater	0.02 - 0.03	South Central
2-chlorophenol	Groundwater	0.1 - 0.4	South Central
2,4-dichlorophenol	Groundwater	0.5 - 3	South Central
Phenol	Groundwater	1.5 - 4	South Central
2,4,6-trichlorophenol	Groundwater	0.05 - 0.15	South Central
Naphthalene	Groundwater	0.05 - 0.1	South Central
2,4,5-TP (Silvex)	Groundwater	0.0001 - 0.01	South Central

3.0 SCOPE OF WORK

The scope of work covered by this HASP includes the following on-site activities associated with the Remedial Investigation/Feasibility Study at the Ohio River Site:

- abandonment of inoperable monitoring wells;
- repair of existing, operable monitoring wells;
- installation of monitoring wells (including elevation survey, monitoring well development, and groundwater level measurements);
- groundwater and subsurface soil sampling;
- aquifer testing;
- surface water and sediment sampling;
- surface soil sampling;
- ecological surveys;
- site inspection by non-field personnel;
- equipment/personnel decontamination; and
- remedial investigation waste packaging and labelling.

4.0 HAZARD ASSESSMENT

4.1 Compounds of Concern

Based on the information provided above, the materials of concern are listed in Table 4-1. These chemicals will be used as the basis for the assessment. Although this list is based on data which is not complete, it is necessary to consider all of these compounds to ensure maximum protection for those performing site-related activities.

4.2 Hazards Associated with the Materials of Concern

Table 4-1 lists the current OSHA Permissible Exposure Limits (PELs) and odor thresholds for the compounds of concern in air.

TABLE 4-1

ORIGINAL
(Red)

PELs and Odor Thresholds for Compounds of Concern
Ohio River Site RI/FS
Neville Township, Pennsylvania

Organic Compounds	PEL (ppm)	Odor Threshold (ppm)
2,4-D	10*	-
2,4,5-T	10*	-
2,4,5,-TP (Silvex)	-	-
2,3,7,8-TCDD	-	-
Benzene	1	5
Toluene	100	0.17
Ethylbenzene	100	0.25
Naphthalene	10	0.3
2-chlorophenol	N/A	1.2
2,4-dichlorophenol	N/A	0.21
Phenol	5	0.05-5
2,4,6-trichlorophenol	N/A	0.1-0.7

Inorganic Compound	PEL (ppm)	Odor Threshold (ppm)
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Lead	50**	-
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* = mg/m³

** = ug/m³

N/A = Not applicable

(-) = Not available (personal protective measures are discussed in Section 6.0).

4.2.1 Herbicides/Pesticides

Exposure to 2,4-D above its respective PEL may cause weakness, stupor, muscle twitching, and convulsions. Contact of the material with the skin may cause rashes. 2,4-D can affect the body if it is inhaled, comes in contact with the eyes or skin, or if swallowed. Because 2,4-D has a negligible vapor pressure, odor warning properties are not evident.

Exposure to 2,4,5-T above its respective PEL may cause abdominal pain, nausea, vomiting, diarrhea, and blood in the stool. It may also cause irritation of the skin. Common contaminants associated with commercial preparations of 2,4,5-T may cause acne and liver damage. 2,4,5-T can affect the body if it is inhaled, comes into contact with eyes or skin, or is swallowed. Since 2,4,5-T has a negligible vapor pressure, odor warning properties are not evident.

Exposure to 2,4,5-TP (silvex) and 2,3,7,8-TCDD may cause irritation to the eyes, skin, and mucous membranes. PELs for these substances have not been established by OSHA. 2,3,7,8 (dioxin) is classified as a teratogen.

To reduce the potential for exposure, personal protective equipment, as described in Section 6.0, is required.

4.2.2 Organic Compounds

Organic compounds may include a wide range of substances, some of very low toxicity and some very toxic. The volatile substances are generally of greater concern, as they are more likely to exist in the worker's breathing zone. In outside conditions such as this, however, exposures approaching the Permissible Exposure Limits (PELs) are unlikely, except in the case of extremely high concentrations in the waste materials, soil, or water, and warm environmental temperatures.

Benzene, toluene, ethylbenzene, and xylene (BTEX), in moderate exposures, all produce similar acute physiological effects, including headache, irritation, narcosis and anesthesia. Benzene, however, is associated with leukemia and aplastic anemia in chronic exposures and, therefore, is the primary substance of concern. Exposure to benzene vapors at levels above the its respective PEL may produce irritation of the mucous membranes (nose, throat, mouth) and upper respiratory tract. Acute symptoms of exposure may include central nervous system depression, drowsiness, headache, fatigue, and drunken-like behavior. The odor of this compound is considered sweet or aromatic.

Exposure to naphthalene above its respective PEL may cause an allergic rash. Acute symptoms of exposure may include abdominal cramps, nausea, vomiting, diarrhea, headache, tiredness, confusion, painful urination, and bloody or dark urine. The odor threshold is 0.3 ppm, a level below the PEL.

Exposure to phenolic and chlorinated phenolic compounds above their respective PELs may cause severe damage to the skin and eyes. Pain is not induced upon contact with the skin, but a whitening of the exposed area occurs. If the chemical is not removed promptly, it may cause a severe burn or systemic poisoning. Systemic effects may include paleness, weakness, sweating, headache, ringing of the ears, shock, cyanosis, excitement, frothing of the nose and mouth, dark colored urine, and death.

Exposure to some of the less volatile organic substances may occur through airborne dust generated during the drilling activities. Table 4-2 provides chemical and physical properties of compounds of concern.

To reduce the potential for exposure to the vapors of all the organic compounds of concern, respiratory protection, as described in Section 6.0 of this plan, will be donned when necessary. The requirement for use of respiratory protection is described in Section 5.0. To reduce the potential for contact with soils and groundwater containing organic compounds, personal protective equipment, as described in Section 6.0, is required.

4.2.3 Inorganic Compounds

Exposure to lead above its respective PEL may cause symptoms of diarrhea, loss of appetite, metallic taste, muscle and joint pains, nausea, vomiting, central nervous system and red blood cell damage, and anemia. Lead is readily absorbed from the respiratory tract to affect target organs. The route with the greatest potential for exposure to lead during on-site activities is by inhalation of lead-contaminated dusts.

To reduce the potential for exposure, personal protective equipment, as described in Section 6.0, is required.

TABLE 4-2

**Chemical/Physical Properties of Compounds of Concern
Ohio River Site RI/FS
Neville Township Pennsylvania**

Compound	Vapor Pressure (mm Hg @ °C)	LEL/UEL (%)	Phase
2,4-D	0	NA	L/S
2,4,5-T	0	NA	L/S
2,4,5-TP (silvex)	0	NA	L/S
2,3,7,8-TCDD	0	NA	L/S
Benzene	75	1.3/7.1	L/V
Toluene	22	1.3/7.1	L/V
Ethylbenzene	7.1	1.0/6.7	L/V
2-chlorophenol	1.0	NA	L/V
2,4-dichlorophenol	<1.0	NA	L/V
Phenol	0.36	1.7/8.6	L/V
2,4,6-trichlorophenol	<1.0	NA	L/V
Naphthalene	0.05	0.9/5.9	L/V
Lead	NA	NA	S

LEL = Lower Explosive Limit
 UEL = Upper Explosive Limit
 L = Liquid
 V = Vapor
 S = Solid
 NA = Not applicable

5.0 PHYSICAL HAZARD ASSESSMENT

5.1 Heavy Equipment Operation

The operation of heavy equipment such as excavators present a potential physical hazard to personnel. ENSR personnel should not work or stand any closer to this type of equipment than is necessary for their work. All employees working in the vicinity of operating equipment must wear steel-toed footwear and hardhats. All heavy equipment must be equipped with reverse gear alarms. Minimum clearance between overhead power lines and any part of the operating machinery must be 10 feet.

5.2 Drilling Hazards

Use of a drill rig to advance soil borings and monitoring wells requires all personnel who are in the vicinity of the operating machinery to wear, at a minimum, hardhats, safety glasses, and steel-toed footwear. Prior evaluations of noise levels during drilling operations have not indicated exposure levels above the OSHA PEL, however, hearing protection is recommended.

Drilling must be coordinated with local utility officials and site representatives to help avoid damaging underground utility lines and other hazards. Personnel will avoid placing the drill rig the minimum distance from a power line and other overhead hazards and remain clear of the operating drill rig, as loose clothing may snag on moving parts.

Personnel will not remain in the vicinity of operating equipment unless it is required by their work responsibilities.

5.3 Thermal Stress

If ambient temperatures exceed 73°F, site personnel will monitor their heart rates as an indicator of heat strain using the following method: three heart rate pulses will be taken during the last half of each of the first, second, and third minutes of any rest period. (The pulse will be checked by using the fore- and middle-fingers and applying light pressure to the pulse in the wrist or neck). The worker will record these numbers. If the difference between the first and third pulse rate measures is greater than 10 beats per minute, the worker must reduce his/her work load.

In addition, at temperatures above 73°F, provisions must be made for workers to have access to liquids, including potable water. Personal protective equipment can contribute to the heat stress load on the field crew. If necessary, work breaks and rotation of tasks must be planned

to reduce heat stress.

Workers will have access to potable water while on site to help avoid heat stress. Workers should refrain from consumption of caffeinated drinks because they increase fluid excretion from the body.

5.4 Water Hazards

A boat will be used by field personnel to collect surface water and sediment samples from the Ohio River. In order to prevent capsizing the boat, personnel will not exceed the loading capacity of the boat. A simulated sampling operation will be conducted near the shore so that sample personnel can test the procedure before moving away from shore. At no time will sample personnel stand in the boat. The boat shall have a current Pennsylvania Fish Commission Registration and shall contain a fire extinguisher, oar, one throwable ring buoy or seat cushion, horn, proper lighting, and capacity plate. PFDs shall be worn by personnel at all times while on the boat. The boat shall be operated by an individual trained in a boater's safety course or one judged by the PIC and the Health and Safety Officer to be knowledgeable of safe boating requirements.

5.5 Steep River Banks

If sampling of surface water and sediment is conducted from the river banks, site personnel shall work in teams to obtain samples. Personnel will wear neoprene hip waders and be equipped with a safety harness. A safety rope will be attached to the safety harness of the individual collecting the samples. A second individual located at the top of the river embankment will secure the other end of the rope to a stationary object, such as a tree, and play out enough rope to allow the sampler to safely traverse the steep river bank.

5.6 Abandoned Oil Well

An abandoned oil well is located on the north side of the site. Precautions should be taken while working near the well. The derrick and pump house have deteriorated and may be structurally unstable. There is also a strong petroleum odor. Operations near this well will be monitored with a combustible gas meter.

5.7 Poison Ivy/Oak

Areas of the site have heavy vegetative growth with intertwining vines and fallen timber. Patches of poison ivy and poison oak are present on the site. Precautions should be taken to avoid the poison ivy/oak patches. Poison ivy and poison oak can be identified by their trifoliate, alternate leaves usually growing as shrubs. Poison ivy may also grow as a vine, whereas poison oak does not.

6.0 AIR MONITORING

6.1 Gases and Vapors

An organic vapor analyzer (OVA) equipped with either a flame ionization detector (OVA/FID) or a 10.2 eV lamp (OVA/PID) will be used to monitor the breathing zone of workers performing soil boring activities, monitoring well installations, and sampling activities to assess the presence of volatile organic compounds (VOCs).

The breathing zone is defined as the area within a 1-foot radius of the nose and mouth. The breathing zone changes position as the worker's position changes during tasks requiring stooping, standing, and climbing.

If, during the work activity at the Ohio River Site, air monitoring readings in the breathing zone reach a sustained reading of 1 unit on the OVA, supplemental air monitoring will be conducted with colorimetric indicator tubes (Draeger) to test for the presence of benzene. If the Draeger test indicates 0.5 ppm or greater for benzene, respiratory protection, as specified in Table 6-1 must be donned. In the absence of an identified gas or vapor hazard (benzene, etc.), an action limit for organic compounds has been established (see Table 6-1). If the organic compound action limit of 400 ppm or the benzene action limit of 25 ppm is exceeded, project personnel will evacuate the immediate area and contact the Health and Safety Officer and the Program Manager. A detailed evaluation of the work activity will determine the continued work approach including the use of Level B protection.

Calibration procedures for the OVA will be performed in accordance with the Quality Assurance Project Plan (QAPP), ENSR Document No. 4920-003-105 and ENSR's Standard Operating Procedures. Records of equipment calibration will be maintained according to procedures outlined in the Data Management Plan included in the RI/FS Work Plan (ENSR Document No. 4920-003-101). A log documenting instrument air monitoring calibration readings will be kept in the Field Activities Notebook.

Based on planned field activities, organic vapor badges will be worn in the breathing zone of field personnel. The badges rely on passive diffusion of organic vapors onto an activated charcoal adsorbent to collect breathing zone airborne samples. The badges will be analyzed at an American Industrial Hygiene Association (AIHA) accredited laboratory to provide additional documentation of air monitoring readings.

6.2 Airborne Particulates

Volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), herbicide and pesticide air monitoring will be performed during soil boring and soil sampling activities. Airborne particulates will be collected using PUF sample media for the SVOCs, pesticides, herbicides, and tenax tubes for the VOCs, and analyzed for those compounds identified during previous investigations. The use of protective equipment (as discussed in Section 7.0) and proper decontamination provide the means for reduction of potential exposures.

TABLE 6-1

Action levels for Respiratory Protection

Contaminant	Level D	Level C (Half Mask)	Level C (Full Face)	Level B Supplied Air
Organic Compounds	8 units	9-80 units	80-400 units	> 400 units
Benzene	< 1 ppm	0.5-5 ppm	5-25 ppm	> 25 ppm

7.0 PERSONAL PROTECTIVE EQUIPMENT (PPE)

Based upon information contained in the "Interim Monitoring Report for the Neville Island Site" (ERT, 1981c) and in the RI/FS Work Plan for the Ohio River Site, Neville Township, Pennsylvania (ENSR Document No. 4920-003-101), most work activities at the site will take place in Level D protection. Protection will be upgraded to Level C (air purifying respirators) if air monitoring indicates such protection is necessary.

7.1 General Site Work and Non-Intrusive Site Activities

General site work (outside the exclusion zone and contamination reduction zone) and non-intrusive site activities will require the following Level D protective equipment:

- steel-toed work boots,
- work clothes, and
- neoprene boots or disposable booties.

7.2 Soil Boring, Well Installation, and Associated Testing Operations

For soil boring, well installation, and related testing activities, the following modified, Level D protective equipment will be required, unless air monitoring indicates otherwise:

- work clothes;
- regular Tyvek coveralls;
- poly-coated Tyvek coveralls (when contact with liquids or oily wastes is anticipated);
- steel-toed, neoprene boots;
- polyvinyl alcohol gloves (required when handling potentially contaminated materials);
- hard hat (when in the vicinity of the operating drill rig);
- eye protection; and
- hearing protection.

If required (by air monitoring results), the following respiratory protection will be worn:

- Level C: MSA half-face air purifying respirators with GMC-H cartridges (combined organic and dust protection) or equivalent; or
- Level C: MSA full-face air purifying respirators with GMC-H cartridges or equivalent; or

- Level B: MSA pressure demand self-contained breathing apparatus (SCBA) or equivalent, or an air line system equipped with full facepieces operating in the pressure demand mode and equipped with emergency egress units.

Should Level B respiratory protection be required, field staff will immediately contact the ENSR Health and Safety Officer for further instruction.

All personnel who will be required to don air purifying respirators will have been qualitatively or quantitatively fit-tested within the last 12 months for the particular brand and size of respirator he/she will be wearing on site. Normal eyeglasses cannot be worn under full-face respirators because the temple bars interfere with the face seal. For workers requiring corrective lenses, special spectacles designed for use with full face respirators will be available.

Except for eye protection, personal protective equipment requirements for Level C and Level B will be as stated for Level D.

7.3 Surface Water and Sediment Sampling

Surface water and sediment samples will be collected from areas upstream and downstream of the Ohio River Site and in the vicinity of Outfalls 1, 2, and 3. Water and sediment will be sampled from a boat with appropriate Pennsylvania Fish Commission Registration. The following protective equipment will be worn when collecting samples from the river.

- Personal Flotation Device (PFD) Type 1
- Nitrile Gloves
- Work clothes

7.4 Decontamination

During pressure washing of equipment, the following will be worn:

- hardhat/faceshield;
- steel-toed, neoprene boots;
- nitrile gloves; and
- poly-coated Tyvek coveralls.

Portable emergency eyewash units and a first aid kit will be available on site.

8.0 SITE CONTROL

To prevent both exposure of unprotected personnel and migration of contamination due to tracking by personnel or equipment, work areas, along with personal protective equipment requirements will be clearly identified. Access to the work area will be restricted to qualified ENSR, subcontractor, regulatory agency, and Owner's personnel only.

8.1 Designation of Zones

ENSR designates work areas or zones as suggested in the "Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities," NIOSH/USCG/EPA, November 1985. OSHA recommends the areas surrounding each of the work areas to be divided into three zones (see Figure 8-1):

- Exclusion or "Hot" Zone
- Contamination Reduction Zone (CRZ)
- Support Zone

8.2 Exclusion Zone

The exclusion zone will consist of the active work areas where monitoring well installation, soil boring, and sampling activities are taking place. The perimeter of the zone should be sufficiently large to help unprotected personnel avoid contact with hazardous materials that may arise from these operations. The perimeters of the exclusion zone will be marked and may be relocated with the work activity. All personnel entering these areas must wear the prescribed level of protective equipment.

8.3 Contamination Reduction Zone

The contamination reduction zone will be a clearly marked corridor(s) between the exclusion and support zones; that is where personnel will begin the sequential decontamination process when exiting the exclusion zone. The contamination reduction zone will be extended from the exclusion zone and encompass the decontamination pad. To prevent cross contamination and for accountability purposes, all personnel will enter and leave the exclusion zone through the contamination reduction zone. To help avoid tracking potentially contaminated material off site, gloves and Tyvek coveralls should be removed when leaving the contamination reduction zone. Chemically resistant boots should be decontaminated in this area.

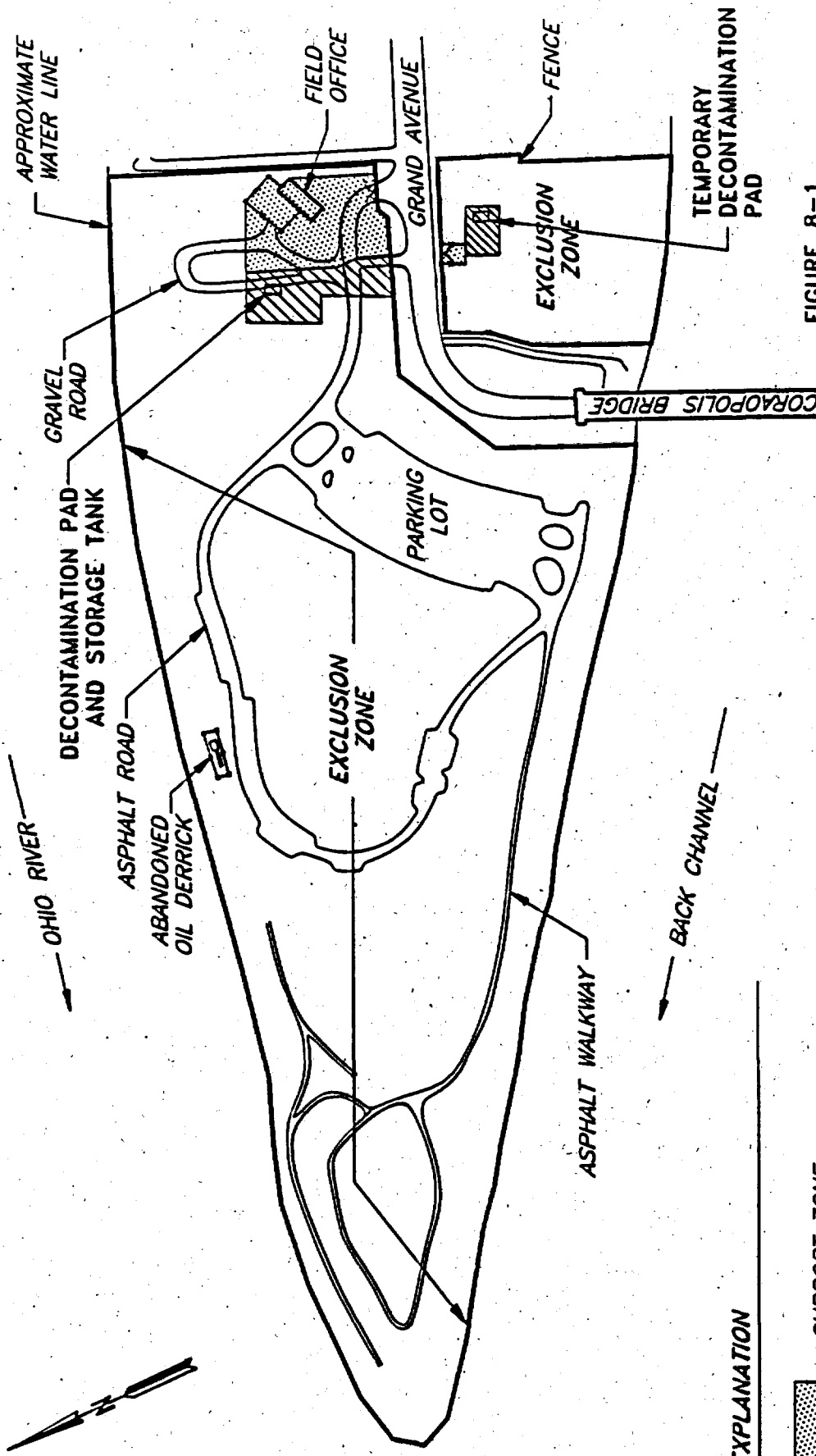


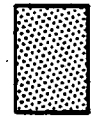
FIGURE 8-1



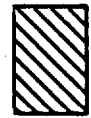
SITE CONTROL
OHIO RIVER SITE RI/FS
NEVILLE TOWNSHIP, PENNSYLVANIA

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App'd	CPS	Revised	1/29/92				93

EXPLANATION



SUPPORT ZONE



CONTAMINANT REDUCTION ZONE



8.4 Support Zone

The support zone will consist of those areas around the exclusion zone where support trailers and equipment are staged. Eating and drinking will be allowed in this area only. Smoking will be limited to areas within the confines of the site specifically set up for that purpose.

Support vehicles are permitted on uncontaminated portions of the site.

All contaminated personal protective equipment, drilling equipment, and vehicles (including floor mats) will be decontaminated prior to leaving the site.

The following measures are designed to augment the specific health and safety guidelines provided in this plan:

- Whenever possible, engineering source controls shall be used to control the release of the chemical hazards described in Section 4.
- Eating, drinking, chewing gum or tobacco, smoking, or any practice that increases the probability of hand-to-mouth transfer and ingestion of materials, is prohibited in the work area.
- Hands and face must be thoroughly washed upon leaving the site, before eating, drinking or any other activities.
- Beards or other facial hair that interfere with respirator fit are prohibited for those individuals who may be required to use respiratory protection.
- The use of alcohol or illicit drugs is prohibited during the conduct of field operations.
- Safety field equipment, as described in Section 7.0, will be required for all field personnel, unless otherwise approved by the Regional Health and Safety Manager or the Health and Safety Officer.
- The "buddy system" will be used at all times by all field personnel. No one is to perform any on-site activities alone. The standby team member must be intimately familiar with the procedures for initiating emergency response.

- Avoiding contamination is of the utmost importance. Whenever possible, avoid contact with contaminated (or potentially contaminated) surfaces or materials. Walk around (not through) areas of contamination. Do not kneel or set equipment on the ground. Protect air monitoring equipment from water by bagging.
- Site control will be maintained through the use of a sign-in/out log for all site personnel and visitors.

8.5 Site Safety Equipment

The following safety equipment will be available for ENSR personnel. Each subcontractor will be responsible for supplying their own site safety equipment.

- portable, A-B-C fire extinguishers;
- portable, 6-gallon, gravity-fed eyewash units;
- first aid kits;
- portable, emergency shower in the event of severe splashing or drum rupture;
- airhorns of sufficient power to be heard throughout the work area in the event of site evacuation
- portable two-way radios

Smaller hand-held eyewash bottles will be available during sample equipment decontamination and sample preservation. The gravity fed eyewash station, emergency shower, fire extinguisher and first aid kit will be maintained in the CRZ. Fire extinguishers will also be available in each exclusion zone. Airhorns will be used to alert employees of an emergency. One employee in each work area will carry an airhorn. Spare airhorns will be located in the CRZ. Portable two-way radios will be used by site personnel to maintain communications with the field office personnel.

8.6 Decontamination

Proper decontamination is required of all personnel before leaving the site. Personnel decontamination will be accomplished by following a systematic procedure of cleaning and removing personal protective clothing. Reusable protective clothing (e.g. boots, gloves, etc.) that has come into contact with contaminated materials will be decontaminated by washing first in a detergent solution, followed by a clean water rinse. Disposable protective clothing (e.g., tyvek suits and gloves) will be placed in polyethylene bags for disposal in a manner that is consistent with applicable disposal regulations and project management standards.

Decontamination Procedures

1. Remove hardhat and wipe clean (if worn).
2. Remove outer boots or disposable booties.
- 3a. Rinse boots and gloves of gross contamination.
- 3b. Scrub boots and gloves clean.
- 3c. Rinse boots and gloves.
4. Remove outer gloves.
5. Remove Tyvek coveralls.
6. Remove respirator, wipe clean and store properly.
5. Remove inner gloves.

All decontamination procedures shall take place within a decontamination corridor. This area shall act as the sole means of access to and exit from the exclusion zone to the support zone (clean area). These three areas shall be determined and clearly marked by the on-site manager, as necessary, during the project.

All heavy equipment will be cleaned using a power wash system, if necessary, before leaving the site. Only qualified personnel, in the proper protective clothing, will decontaminate equipment.

Prior to steam-cleaning or high-pressure washing of drilling equipment and associated tools, PPE, and vehicles, measurements for VOCs will be taken near the surface of the equipment. If VOC measurements are 1 unit or greater, the equipment will be allowed to air prior to decontamination.

9.0 MEDICAL MONITORING/TRAINING REQUIREMENTS

All personnel performing activities covered by this HASP on the Ohio River Site must be active participants in ENSR's Medical Monitoring Program or in a similar program that complies with 29 CFR 1910.120(f). Each individual must have completed an annual surveillance examination and/or an initial baseline examination within the last year, prior to performing any work on the site that is covered by this HASP.

All personnel performing activities on the site that are covered by this HASP must also have completed the appropriate training requirements specified in 29 CFR 1910.120(e). Each individual must have completed an annual 8-hour refresher training course and/or initial 40-hour training course within the last year. Also, on-site managers and supervisors directly responsible for supervising individuals engaged in hazardous waste operations must have completed the specified 8-hour manager's training course. ENSR will provide at least one person on site who has taken the manager's health and safety training course.

Although not required under 29 CFR 1910.120, it is recommended that one person qualified in First Aid and CPR be present during all site work.

Subcontractors to ENSR will be required to provide to the ENSR project manager specific written documentation that each individual assigned to this project has completed the medical monitoring and training requirements specified above. This information must be provided prior to the subcontractor's performance of any work on site.

A copy of the HASP will be issued to each member of the field team, including all subcontractors. All field personnel, including subcontractors, will be required to sign the safety certification form shown in Appendix A. Copies of the signed safety certification forms will be stored in the project files.

A site safety meeting will be held at the beginning of field activities for the RI and thereafter when new personnel are assigned to work on the project and/or when field tasks change. A safety meeting log sheet, presented in Appendix B, will be completed at each meeting, and copies will be stored in the project files. The site health and safety coordinator (HSC) will record results of field monitoring for organic vapors and personal protective equipment utilized by site personnel in his Field Activities Notebook (FAN). Any nonconformities with the HASP and any corrective action taken will also be recorded in the HSC's FAN.

10.0 EMERGENCY RESPONSE

OSHA defines emergency response as any "response effort by employees from outside the immediate release area or by other designated responders (e.g., mutual-aid groups, local fire departments) to an occurrence which results, or is likely to result, in an uncontrolled release of a hazardous substance." According to ENSR policy, ENSR personnel will not participate in any emergency response that involves potential safety or health hazards (i.e., fire, explosion, or chemical exposure). ENSR response actions will be limited to evacuation and medical/first aid, as described below.

The basic elements of an emergency evacuation plan include employee training, alarm systems, escape routes, escape procedures, critical operations or equipment, rescue and medical duty assignments, designation of responsible parties, emergency reporting procedures, and methods to account for all employees after evacuation.

10.1 Employee Training

General training for emergency evacuation procedures is included in the ENSR initial and refresher training as described in Section 9.0 of this HASP. Employees must be instructed in the specific aspects of emergency evacuation applicable to the site as part of the site safety meeting, prior to the commencement of all on-site activities. On-site refresher or update training is required any time escape routes or procedures are modified or personnel assignments are changed.

10.2 Alarm Systems/Emergency Signals

An emergency communication system must be in effect at all sites. The most simple and effective emergency communication system in many situations will be direct verbal communication. Each work area must be assessed at the time of initial site activity and periodically as the work progresses. Verbal communications must be supplemented any time voices cannot be clearly perceived above ambient noise levels (e.g., noise from heavy equipment, drilling rigs, backhoes) and any time a clear line-of-sight cannot be easily maintained between ENSR personnel because of distance, terrain, or other obstructions.

When verbal communications must be supplemented, the following emergency signals (using hand-held portable airhorns or vehicle horns) will be used:

- **One Horn Blast: General Warning.** One horn blast is used to signal relatively minor, yet important events on site. An example of this type of event would be a minor chemical spill where there is no immediate danger to life or health, yet personnel working on site should be aware of the situation so that unnecessary problems can be avoided. If one horn blast is sounded, personnel must stop all activity and equipment on site and await further instructions from the on-site field manager or health and safety coordinator (HSC).
- **Two Horn Blasts: Medical Emergency.** Two horn blasts are used to signal a medical emergency where immediate first aid or emergency medical care is required. If two horn blasts are sounded, all first aid and/or CPR-trained personnel should respond as appropriate. All other activity and equipment should stop and personnel should await further instructions from the on-site field manager or HSC.
- **Three Horns Blasts Followed by One Continuous Blast: Immediate Danger to Life or Health.** Three horn blasts followed by another extended or continuous horn blast signals a situation that could present an immediate danger to the life or health (IDLH) of all personnel on site. Examples of possible IDLH situations include fires, explosions, hazardous chemical spills or releases, hurricanes, tornadoes, blizzards, or floods. If three horn blasts followed by a continuous blast are sounded, all activity and equipment must stop. All personnel must evacuate the site to an appropriately designated site located either outside the contamination reduction zone or off-site. All personnel must be accounted for by the field manager or HSC, and other response actions determined by the field manager or HSC must be observed.

10.3 Escape Routes and Procedures

A map of the site is included in Appendix C. Copies of emergency telephone contacts are to be posted in an easily accessible and visible location where they may be used by ENSR personnel as reference guides. Should an emergency occur on site, personnel will assemble at the Administration Building near the entrance of the Ohio River Site. The site is fenced, therefore, the escape route is through the main gate.

10.4 Critical Operations or Equipment

All equipment and operations are required to cease in accordance with the established signal procedure. The only exception will be activity related to health and safety. The field manager or HSC must determine at the time of an emergency if health and safety will be jeopardized by immediate stoppage of any particular piece of equipment or activity. If such a determination is made, personnel involved in critical duties must be minimized, and special instructions established.

10.5 Rescue and Medical Duty Assignments

The phone numbers of the police and fire departments, ambulance service, local hospital, and ENSR representatives are provided in the emergency reference sheet (Appendix D). A map indicating direct and alternative routes to the hospital is also provided in Appendix D. Prior to conducting work activities at the site, the hospital and ambulance service will be contacted to review the procedures for transporting and providing emergency medical service to potentially contaminated workers. Directions to Sewickley Valley Hospital should be taped to the dashboard of all on-site vehicles that may be used for emergency transport.

Prior to initiating work at the Ohio River Site, an ENSR field team member, usually the HSC, will be appointed to activate emergency response actions. In the event an injury or illness requires more than first aid treatment, that individual will accompany the injured person to Sewickley Valley Hospital and will remain with the person until release or admittance is determined. The escort will relay all appropriate medical information to the on-site field manager and the Regional Health and Safety Manager.

10.6 Designation of Responsible Parties

The individuals responsible for coordination of all emergency response activities are the on-site field manager and the designated HSC. All on-site personnel are responsible for compliance.

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10.7 Emergency Reporting Procedures

In addition to the reporting requirements described above under "Rescue and Medical Duty Assignments," the following internal reporting is required.

Any incident (other than minor first aid treatment) resulting in injury, illness, or property damage requires an accident investigation and report. The investigation will be initiated as soon as emergency conditions are under control. The purpose of this investigation is not to attribute blame but to determine the pertinent facts, so that similar occurrences can be avoided.

The investigation should begin while details are still fresh in the mind of anyone involved. The person administering first aid may be able to start the fact-gathering process if the injured are able to speak. Pertinent facts must be determined: Questions, beginning with who, what, when, where, and how, are usually most effective to discover ways to improve job performance in terms of efficiency, quality of work, as well as safety and health concerns.

Attached to this plan is a supervisor's accident/incident investigation report (Appendix E). A written report (accident investigation report) of all injuries must be reported to the regional Health and Safety Manager within 48 hours after the incident.

10.8 Employee Accounting Method

The on-site field manager is responsible for identifying all ENSR personnel on site at all times. This should be done in the form of a sign-in/out log.

11.0 CONFINED SPACE ENTRY

Entrance into confined spaces is not anticipated for the scope of work outlined in Section 3.0. However, confined space entry procedures have been developed and are listed below.

11.1 Permit Entry Form

A permit entry form will be issued to help ensure that all safety procedures have been carried out before entrance into a confined space. A confined space may include one of the following:

tanks	pits
dike areas	vats
tunnels	boilers
silos	ducts
digestors	manholes
sewers	stacks
storage bins	pipelines
barges	tank cars
shafts	septic tanks
hoppers	steam condensers
holds of ships	trenches
process vessels	bunkers
underground utility vaults	pumping or lift stations
cisterns	equipment housings
degreasers	

The permit will expire on the line and date listed on the permit and will not be used at any other time.

11.2 Pre-Entry Testing

Pre-entry testing for atmospheric hazards must be done prior to working in the confined space. The following parameters will be characterized:

- 1 oxygen deficiency or excess,
- 2 flammable gases and vapors, and
- 3 toxic gases and vapors.

Tests will be conducted using an oxygen meter, LEL meter, and PID. The following table is a guideline for safe entry.

<u>Oxygen</u>	<u>Flammable Gases</u>	<u>Toxic Gases</u>
20.9%	0%LEL	0 Units

The confined space will be continually monitored for the above parameters. Any deviation from the stated parameters will require evacuation from the confined space for re-evaluation of the airborne hazard.

11.3 Other Hazards

Other hazards that may exist include:

Engulfment. Sinking into or getting covered by loose material such as fine coal, sawdust or grains. The material may quickly enter breathing passages, causing suffocation. A harness and lifeline may be required.

Entrapment or Capture. People have been trapped in confined spaces and died of exposure or suffocation before anyone even knew they were missing. Confined spaces are not to be entered without an attendant.

Mechanical Equipment. Machinery such as blades, rotors, or conveyors can shift because of tensioned springs, hydraulic pressure, or gravity. Drives and belts should be mechanically disconnected or physically blocked.

11.4 Hazard Protection

Standard isolation procedures include:

- Disconnecting lines entering a space.
- Inserting a blank or blind in a line to block it completely.
- Locking and/or tagging valves, and installing a blank in the line.
- Using a double block and bleed.

- Locking and/or tagging out all electrical circuits to the space.

11.5 Observer Procedures

Whenever entrance into a confined space is required, an observer must be present. An observer must:

- Know who is in the space.
- Keep unauthorized people out of the area.
- Maintain voice or visual contact with entrants.
- Recognize early symptoms of danger in the space.
- Watch for hazards outside as well as inside the space.
- Maintain clear access to and from the space.

If rescue is necessary, the observer must:

- Call for rescue personnel.
- Stay outside the space until his own backup attendant arrives.
- Perform the rescue from outside the space when possible.
- Assist the rescuers and victims.

11.6 Personal Protection Equipment

Personal protective equipment for a confined space entry includes, at a minimum, steel-toed work boots and work clothes. The need for other personal protective equipment will be determined at the time a confined space entry is planned.

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APPENDIX A

SAFETY CERTIFICATION FORM

**HEALTH AND SAFETY PLAN
SIGNOFF SHEET
FOR THE**

Ohio River Site

Neville Township, Pennsylvania

ENSR Project #:4920-003

I have received a copy of the Health and Safety Plan prepared for the above referenced site, I have read and understand its contents and agree that I will abide by its requirements.

Name

Signature

Company

Date

ENSR

APPENDIX B

PFE

SAFETY MEETING LOG SHEET

**ORIGINAL
(Red)**

AR300077

PRE **ENSR**

**OHIO RIVER SITE
PRE-JOB SAFETY MEETING**

**ORIGINAL
(Red)**

Date: _____

Attended by:

<u>Name</u>	<u>Company</u>	<u>Signature</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Topic(s) Covered:

Conducted by:

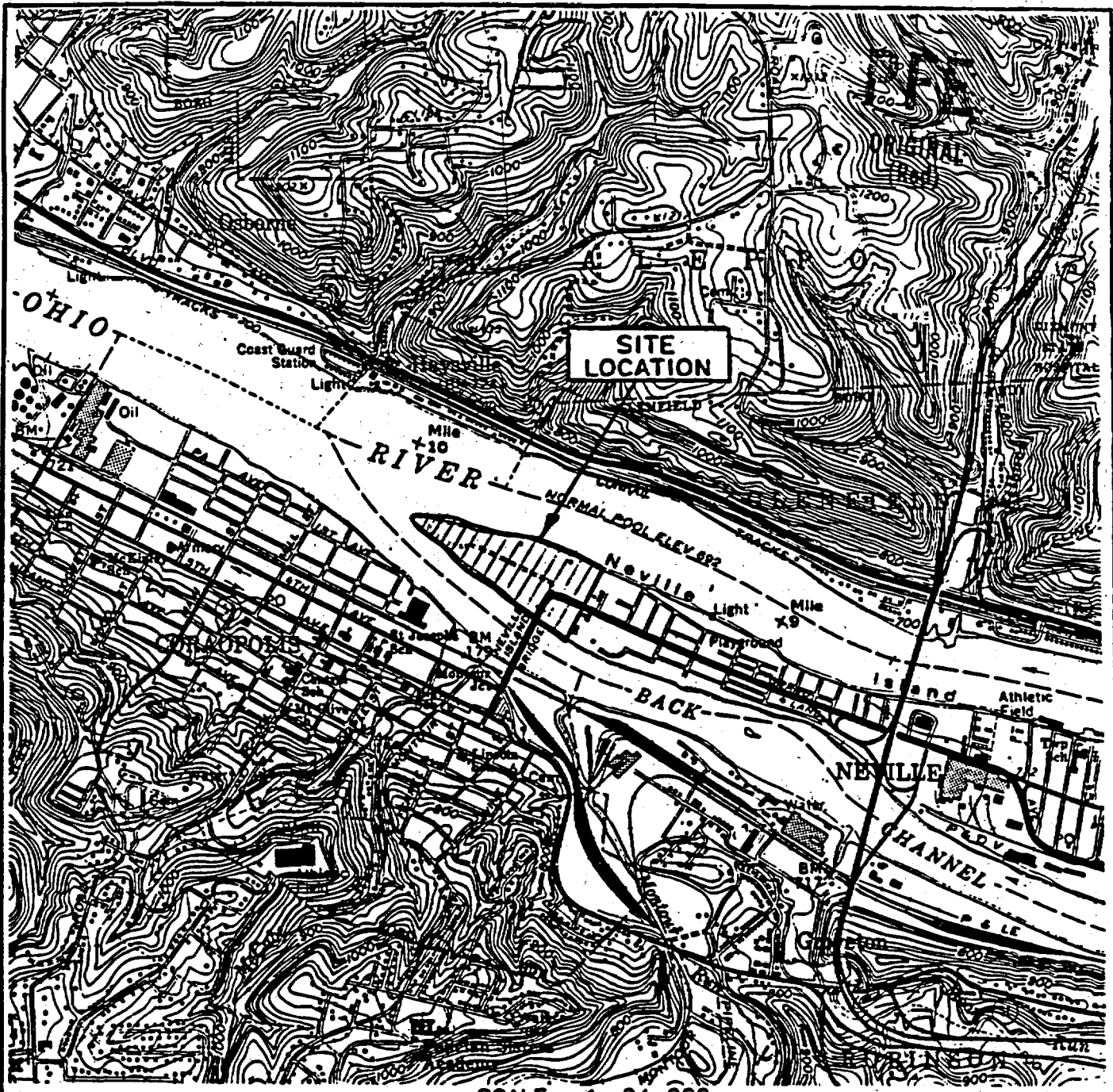
AR300078

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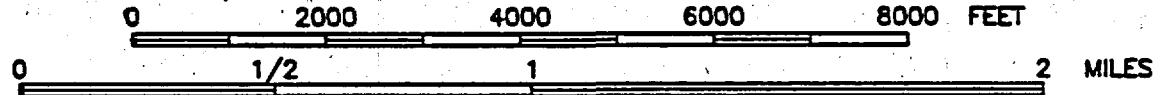
ORIGINAL
(Red)

APPENDIX C

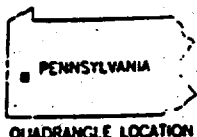
SITE MAP



SCALE: 1: 24 000



DATUM MEAN SEA LEVEL



REFERENCE:
Ambridge, Pennsylvania
USGS 7.5 Minute Quadrangle



ENSRTM
ENSR CONSULTING AND ENGINEERING

SITE LOCATION MAP
OHIO RIVER SITE RI/FS
NEVILLE TOWNSHIP, PENNSYLVANIA

Drawn	MSH	Date	1/28/92	Project Number	Rev
App'd		Revised		4920-003	0

AR300080

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APPENDIX D

ORIGINAL
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EMERGENCY REFERENCE SHEET

EMERGENCY REFERENCES**PFE****ORIGINAL
(Red)****AMBULANCE: 412/331-0778****POLICE: 412/331-0778****FIRE: 412/331-0778****FIRST AID: Kit available on site.****HOSPITAL: Sewickley Valley Hospital (412) 741-6600
Blackburn Road
Sewickley, PA**

DIRECTIONS TO HOSPITAL: Upon leaving site gate, turn right and proceed across Coraopolis Bridge. Turn right after crossing bridge onto 4th Avenue. Follow 4th Avenue to Sewickley Bridge and turn right onto bridge. After crossing bridge, go straight into Sewickley on Broad Street. Sewickley Valley Hospital is approximately ½ mile on left.

ALTERNATE ROUTE (if Coraopolis Bridge is closed): Upon leaving site gate, turn left onto Grand Avenue, proceed approximately one and one half miles to Interstate 79 North entrance ramp. Follow I-79 across the Ohio River to Sewickley exit. Take Route 65 south to Sewickley. Turn right onto Broad Street. Sewickley Valley Hospital is approximately ½ mile on left.

POISON CONTROL CENTER : 1-800-942-5969**NATIONAL RESPONSE CENTER: 1-800-424-8802****o ENSR REPRESENTATIVES:****ROBERT RITTMAYER (PRINCIPAL-IN-CHARGE) 412-261-2910****PETER BARTH (Project Manager) 412-261-2910****CHRISTOPHER STRZEMPKA, (RI Task Manager) 412-261-2910****DARRYL BRANDON (Health & Safety Officer) 412-261-2910****JOSEPH E. SANDERS (Regional Health and Safety Manager) 303-493-8878**

o (CLIENT) REPRESENTATIVES: H. Vaughan Blaxter, III

412-281-2620

ENSR

APPENDIX E

PFE

SUPERVISORS ACCIDENT/INCIDENT INVESTIGATION REPORT ORIGINAL
(Red)

AR300085

ATTACHMENT 8.1 - SUPERVISOR'S ACCIDENT INVESTIGATION REPORT

ORIGINAL
(Red)

Injured Employee _____ Job Title _____

Home Office _____ Division/Department _____

Date/Time of Accident _____

Location of Accident _____

Witnesses to the Accident _____

Injury Incurred? _____ Nature of Injury _____

Engaged in What Task When Injured? _____

Will Lost Time Occur? _____ How Long? _____ Date Lost Time Began _____

Were Other Persons Involved/Injured? _____

How Did the Accident Occur? _____

What Could Be Done to Prevent Recurrence of the Accident? _____

What Actions Have You Taken Thus Far to Prevent Recurrence? _____

Supervisor's Signature _____ Title _____ Date _____

Reviewer's Signature _____ Title _____ Date _____

NOTE: IF THE SPACE PROVIDED ON THIS FORM IS INSUFFICIENT, PROVIDE ADDITIONAL INFORMATION ON SEPARATE PAPER AND ATTACH. THE COMPLETED ACCIDENT INVESTIGATION REPORT MUST SUBMITTED TO THE REGIONAL HEALTH AND SAFETY MANAGER WITHIN FIVE DAYS OF THE OCCURRENCE OF THE ACCIDENT.