MOOERS LANDFILL
REMEDIAL INVESTIGATION/FEASIBILITY STUDY

FINAL

WORK PLAN - APPENDIX B
HEALTH AND SAFETY PLAN

NOVEMBER 1990

PREPARED FOR

CLINTON COUNTY HIGHWAY DEPARTMENT

LANDFILL DIVISION

Clinton County, New York

PREPARED BY

BARTON & LOGUIDICE, P.C.
290 Elwood Davis Road
Box 3107
Syracuse, New York 13220

PROJECT NO. 244.19

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1.0 PURPOSE

The purpose of the Health and Safety Plan for the Mooers Landfill, Clinton County, New York, is to provide specific guidelines and establish procedures for the protection of personnel conducting a Remedial Investigation/Feasibility Study of the Mooers Landfill. This Site-Specific Health and Safety Plan is based on previous testing and information available to date. The Plan and procedures shall be updated based upon the on-going investigation of the site conditions, including the most current information available for each media.

All personnel conducting activities on-site, in which a potential exposure exists, must be in compliance with all applicable Federal and State rules and regulations. All personnel conducting site activities must also be familiar with the procedures, requirements and provisions of this Plan. In the event of conflicting Plans and requirements, personnel must implement those safety practices which afford the highest level of protection.

1.1 Personnel

Barton & Loguidice, P.C., Project Managers
Martin P. Chandler
Michael S. Quinn

Client Contact
Frank Madden

Barton & Loguidice, P.C., Site Safety Officer
Field Investigation Personnel

Subcontractors

2.0 SITE BACKGROUND

The Mooers Landfill site covers an area of approximately 145 acres and is located off North Star Road, in the Town of Mooers in northern Clinton County. Figure 2-1 is presented for orientation purposes.

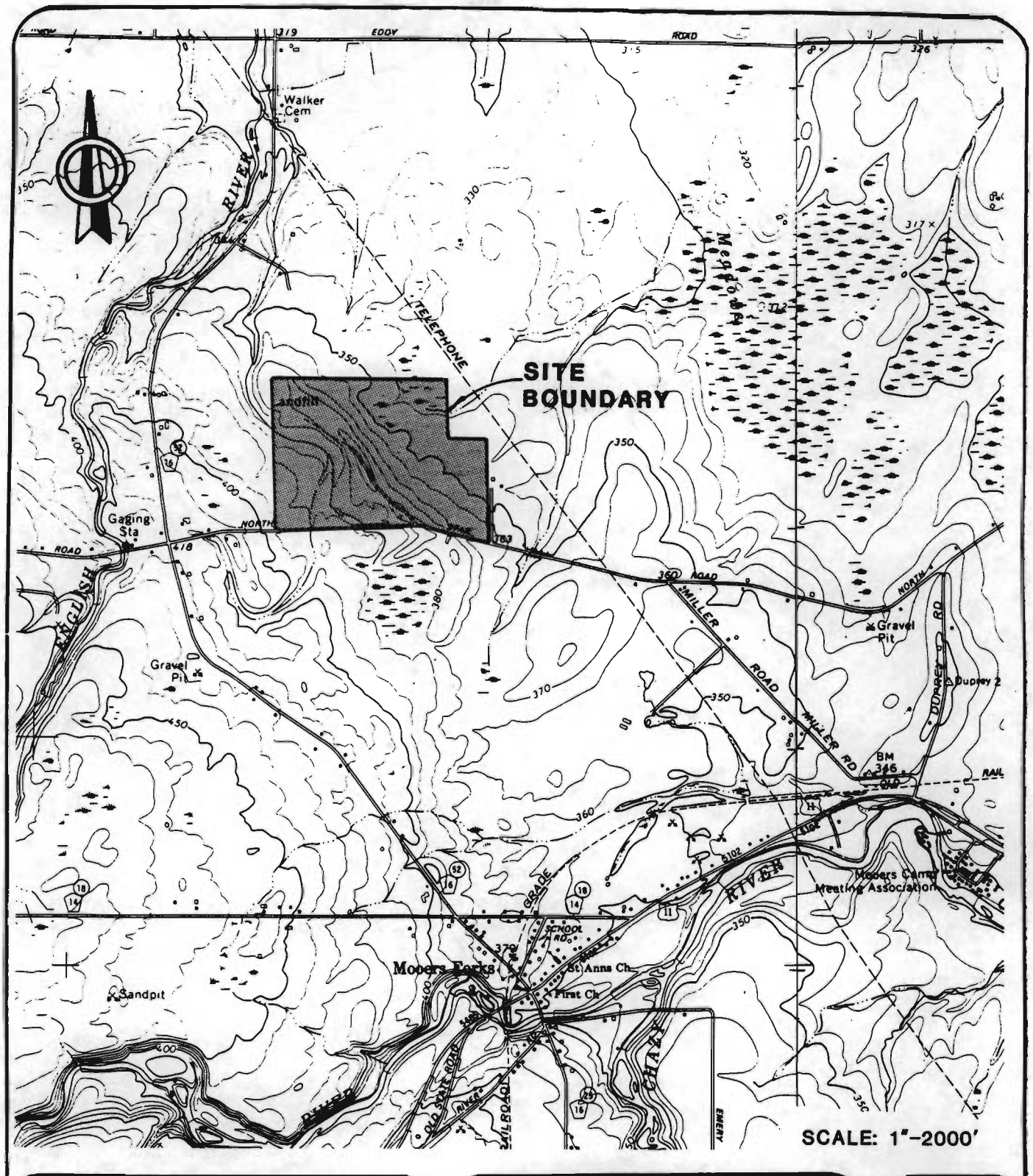
The Mooers Landfill is a municipally owned and operated landfill facility. The landfill has been in operation since 1977 and has been managed by the Clinton County Highway Department. Since opening for landfilling, the facility has accepted domestic, commercial and industrial wastes originating from the Towns of Mooers, Champlain, Chazy, Ellenburg, Clinton and part of Altona.

Wastes accepted at Mooers are primarily domestic in content. Reportedly, however, hazardous waste from the Harris Corporation has been disposed of at the landfill.

Only approximately 11.0 acres of the total 145-acre parcel of land owned by the County has been developed for landfilling. The remainder of the site serves as buffer, borrow and infrastructure areas. The surrounding land use is under residential and agricultural ownership and is sparsely populated. The Beaver Meadows wetlands and other smaller wetland areas are present in the vicinity of the Mooers site.

3.0 SITE CONTROL

The purpose of site control is to minimize potential contamination of workers, protect the public from the site's hazards, and prevent vandalism. The degree of site control necessary depends on site characteristics, site size and the surrounding community.



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MOOERS SANITARY LANDFILL

SITE LOCATION MAP

TOWN OF MOOERS CLINTON CO

Figure **2-1**

Project No. **244.19**

The Mooers Landfill provides limited access, since it is bounded north and east by densely forested property which provides no direct access to the site. West of the project site is both forested and open meadows with no access roads to the site. South of the project site is the landfill access road which is accessible only during operational hours when the access control gate is open.

A Maintenance Facility and access control gate are located at the landfill entrance just off of North Star Road. The Maintenance Facility will serve as the Field Office during the RI/FS activities. Barton & Loguidice, P.C., and Clinton County are requesting personnel, subcontractors, and visitors to report to the Maintenance Facility prior to entering the site or construction activities.

The restricted access and rural location of the project site contribute significantly to minimizing the site's hazards to the surrounding community and reduce the potential for vandalism.

3.1 Work Zones

Site work zones will be established for each work area, prior to initiation of field investigation activities. Each of these zones will be periodically monitored, and personnel protection levels will be established in accordance with procedures established in Sections 6.4 and 6.5, respectively.

Site work zones are broken down into three basic categories:

1. The Exclusion Zone - contaminated work area.

2. The Contamination Reduction Zone - the decontamination area.

3. The Support Zone - uncontaminated, clean area.

The Exclusion Zone (formally Contamination Zone) is the area where the primary field investigation activity occurs such as sampling, installation of wells, etc. This area must be clearly marked with hazard tape or other means. Only personnel involved in the work activities will be allowed in the Exclusion Zone. An Exclusion Zone surrounding each work area of field investigations will be established.

The Contaminated Reduction Zone (CRZ), formally the Buffer Zone, is the transition area between the contaminated area and the clean area. Decontamination is the main focus in the area. The decontamination of workers and equipment limits the physical transfer of hazardous substances into the clean area. A Contamination Reduction Zone will be established surrounding all of the work areas involving field investigation activities. A Contamination Reduction Corridor containing a decontamination pad will be located in this zone. A Contamination Reduction Corridor is a pathway in which decontamination occurs. One pathway will be established for heavy equipment and one for personnel decontamination. This area will also serve as an access control point for personnel entering the Exclusion Zone.

The Support Zone (formally the Clean Zone) is an uncontaminated zone which is the location of administrative and other support functions, such as first aid, telephones, equipment supply and emergency information. The Support Zone should have negligible potential for exposure to contaminants and is equivalent to that of background.

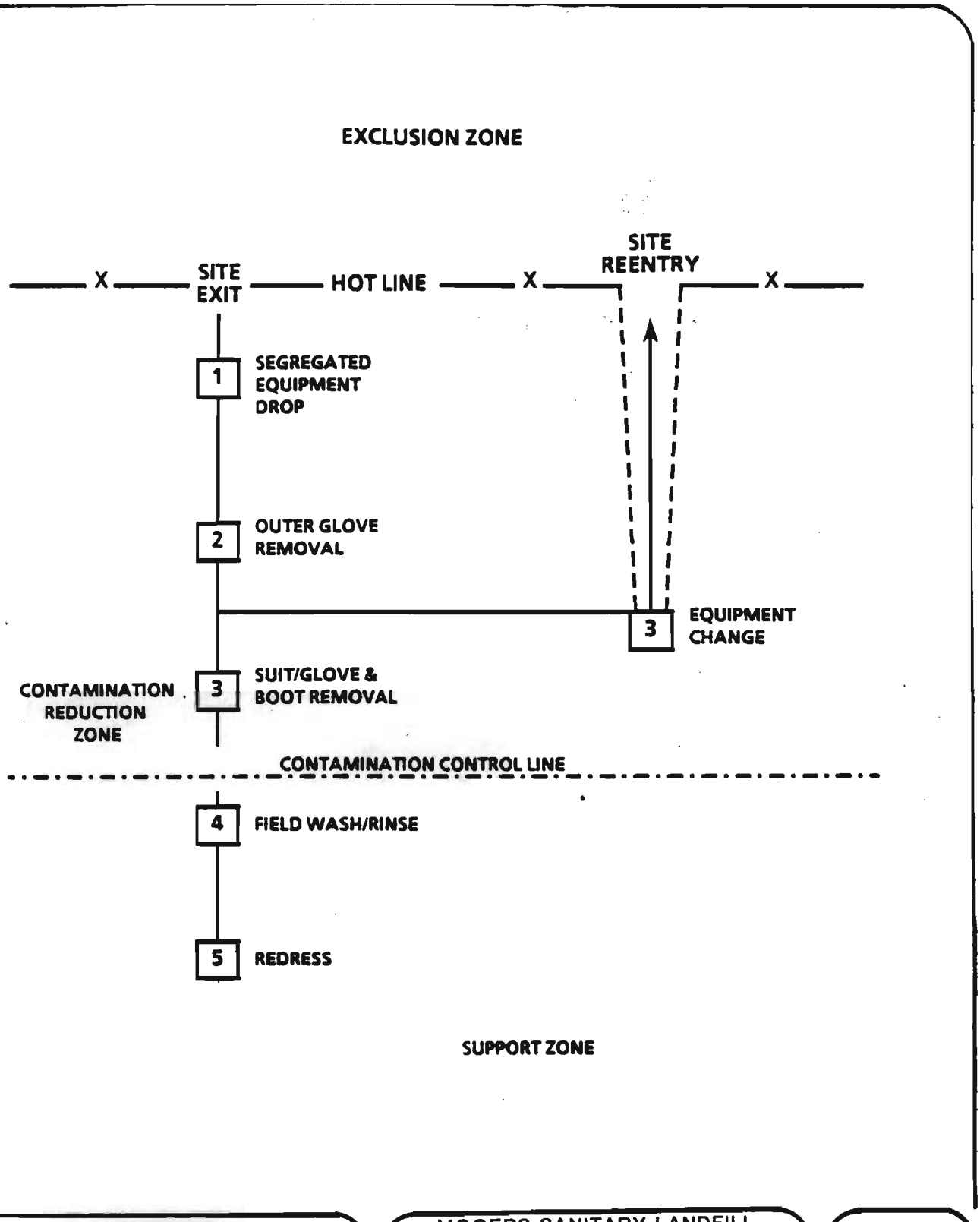
3.2 Decontamination

A personnel decontamination area will be established in the Contamination Reduction Zone. All personal protective equipment will be disposed of and/or decontaminated at the conclusion of each work day. Designated containers for Tyvek suits and other disposables will be located in the CRZ. Tyvek suits, respirator cartridges and other disposables (inner gloves) will be doffed before meal breaks and at the conclusion of the work day and replaced with new equipment prior to commencing work. Respiratory equipment, foul weather gear and other non-disposables will be fully decontaminated and then placed in a designated personal protective equipment storage area. The decontamination layout for the various levels of protection is shown in Figures 3-1, 3-2 and 3-3.

4.0 RI/FS FIELD ACTIVITIES

The following site activities will be conducted during the RI/FS:

- Geophysical Survey
- Topographic Survey
- Surface Water Sampling
- Sediment Sampling



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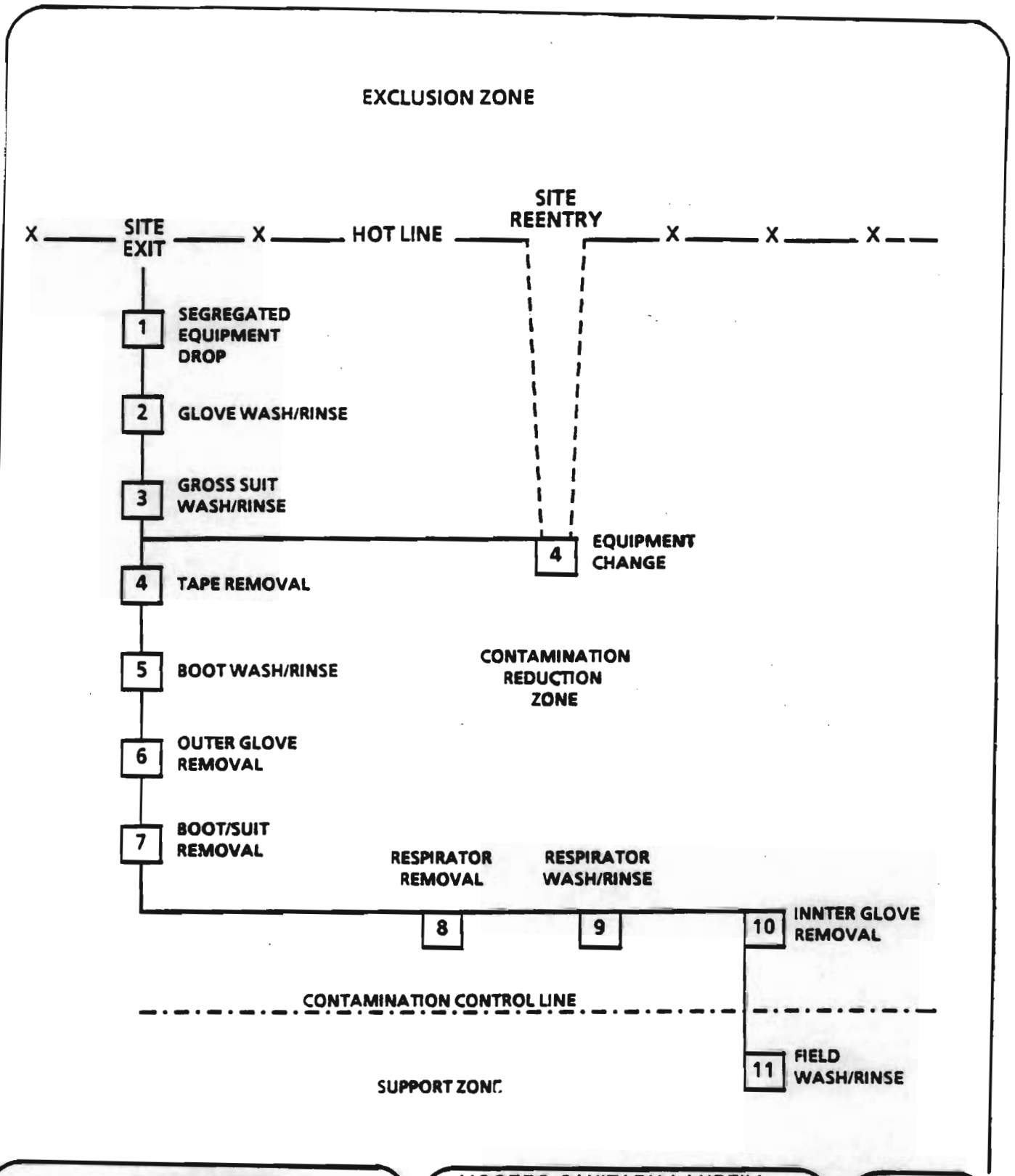
MOOERS SANITARY LANDFILL

LEVEL D DECONTAMINATION PROCEDURES

TOWN OF MOOERS CLINTON CO

Figure 3-1

Project No. 244.19



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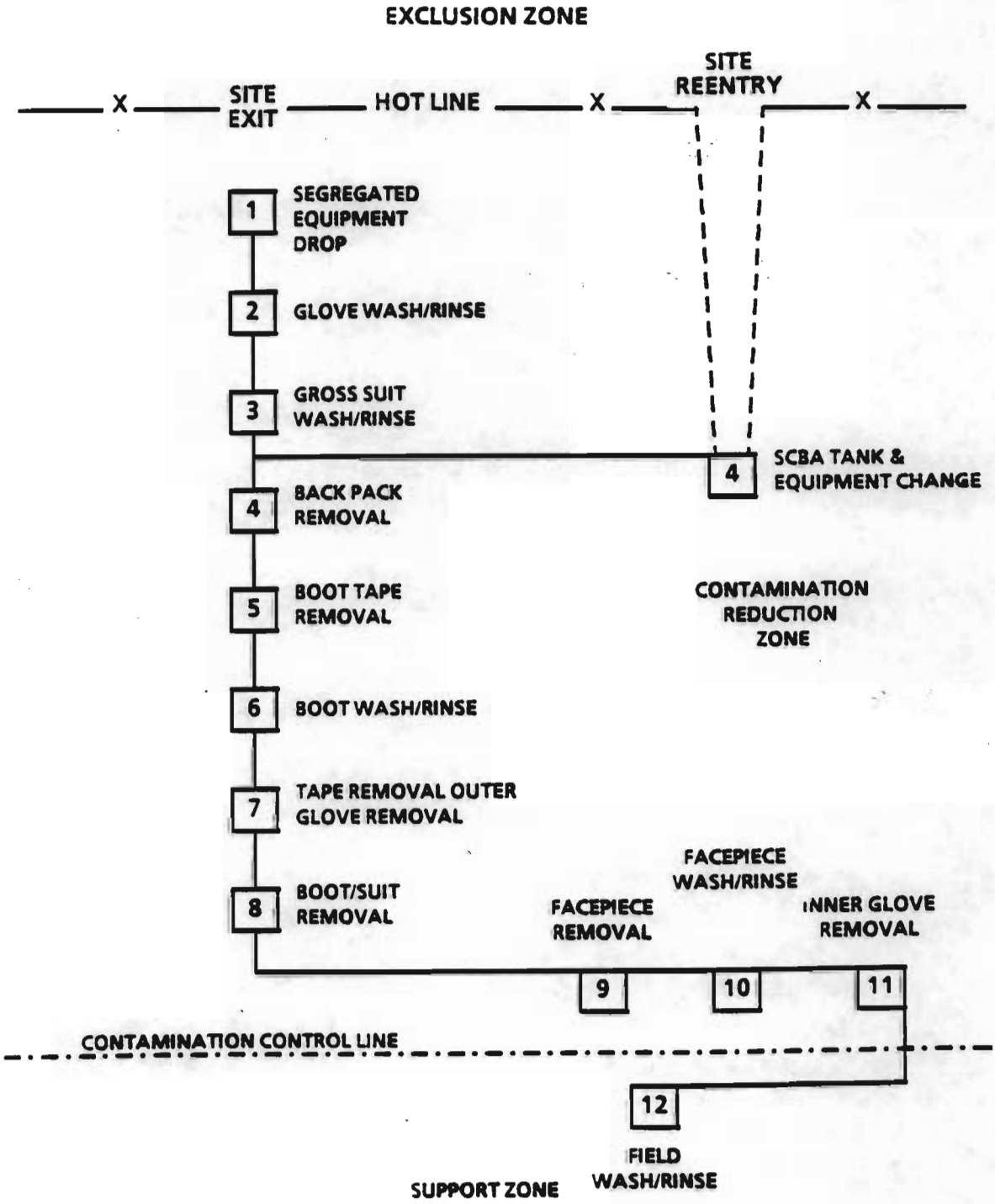
MOOERS SANITARY LANDFILL

LEVEL C DECONTAMINATION PROCEDURES

TOWN OF MOOERS CLINTON CO

Figure 3-2

Project No. 244.19



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MOOERS SANITARY LANDFILL

LEVEL B DECONTAMINATION PROCEDURES

TOWN OF MOOERS CLINTON CO.

Figure 3-3

Project No. 244.19

- Boring/Well Installations and Sampling
- Ecological Evaluation
- Groundwater Sampling
- Source Area Air Monitoring Survey

A brief description of these activities, and the company responsible for each, is presented below. Also, the need for Personal Protective Equipment (PPE) for each activity is indicated.

4.1 Geophysical Survey

Barton & Loguidice, P.C., will subcontract a geophysical surveyor to evaluate the suitability and to perform a geophysical survey using conductivity and/or resistivity methods. The survey will be performed in accordance with the Work Plan or as site conditions dictate. Because the geophysical survey methods will be nonintrusive, this activity is not considered a hazardous waste operation, and PPE is not required.

4.2 Topographic Survey

A topographic map of the site area will be prepared by Tallemy, Van Buren, Gertis and Associates, Inc., using aerial photography. A yet-to-be retained land surveyor will provide support in setting up ground control for the aerial mapping. This activity is not considered a hazardous waste operation, therefore, personnel will not be required to wear PPE.

4.3 Surface Water Sampling

Surface water samples will be collected by Barton & Loguidice, P.C., and/or a subcontractor at locations specified in the Work Plan. Samples will be collected by submerging a pail or sample bottle directly into the water at midstream. PPE equipment is required to perform this activity.

4.4 Sediment Sampling

Sediment sampling will be collected by Barton & Loguidice, P.C., and/or a subcontractor at locations specified in the Work Plan. They will consist of the top 6 inches of solid material at the sampling location. PPE equipment is required to perform this activity.

4.5 Boring/Well Installations and Sampling

Barton & Loguidice, P.C., will supervise drilling seven soil borings and the installation of monitoring wells. Borings will be advanced using an appropriate drilling method to the top of bedrock. At each boring location, a monitoring well couplet will be installed. In addition to the monitoring well couplet installations, five existing monitoring wells will be replaced.

During drilling, a field technician will collect soil samples using 2-inch split-spoon samplers. Samples will be collected continuously for the full depth of the boring. Locations of the proposed boring and monitoring wells are presented in the Work Plan Figure 4-1. The name of the drilling Contractor will be provided at a later date.

PPE will be required of both Barton & Loguidice, P.C., and the drilling Contractor personnel.

4.6 Groundwater Sampling

Groundwater samples will be collected by Barton & Loguidice, P.C., and/or a subcontractor from the newly installed monitoring wells. Groundwater will be collected from each well using Teflon bailers. PPE is required to perform this activity.

4.7 Source Area Air Monitoring Survey

A Source Area Air Monitoring Survey will be performed over the approximately 11-acre refuse disposal area. The survey will be conducted in accordance with the details outlined in the Work Plan. This survey will be non-intrusive, but will require Level D PPE.

5.0 HAZARD EVALUATION

5.1 Chemical

The potential hazards for each field investigation activity include:

- Inhalation of volatile organic vapors.
- Inhalation of contaminated dusts.
- Direct contact with contaminated media (i.e., sediments, refuse, soils, groundwater).

- Oxygen deficient and/or explosive conditions.
- Physical injuries, such as heat stress, frostbite, abrasions.
- Exposure to biological hazards such as poisonous plants and insect bites.

Information collected to date has indicated the presence of a number of chemical contaminants. A Chemical Hazard Data Sheet has been prepared for each chemical substance found to date in significant concentrations. These data sheets contain information on the physical, chemical and toxicological properties of the chemical constituent. Appendix A contains the Chemical Hazard Data Sheets arranged in alphabetical order.

5.2 Mechanical, Physical, Electrical and Temperature

The mechanical, physical, electrical and temperature hazards associated with each field activity are summarized in Table 5-1, including the routes of entry for hazardous compounds.

TABLE 5-1
RI/FS SITE ACTIVITY HAZARD EVALUATION

Site Activity	Mechanical	Electrical	Chemical	Physical	Temperature
Geophysical Survey	Accidental injury from geophysical instrumentation	None anticipated	Inhalation of toxic vapors	None anticipated	Heat/Cold stress
Boring/well installation and sampling	Accidental injury from drill rig or sampling equipment	Buried power lines	Inhalation of toxic vapors, accidental ingestion, skin absorption, eye contact	Buried pipelines	Heat/Cold stress
Subsurface soil sampling	Accidental injury from sampling equipment	None anticipated	Inhalation of toxic vapors, accidental ingestion, skin absorption, eye contact	None anticipated	Heat/Cold stress
Surface water sampling	Accidental injury from sampling equipment	None anticipated	Accidental ingestion, skin absorption, eye contact	Water	Heat/Cold stress
Sediment sampling	Accidental injury from sampling equipment	None anticipated	Accidental ingestion, skin absorption, eye contact	Water	Heat/Cold stress
Groundwater sampling	Accidental injury from bailers	None anticipated	Inhalation of toxic vapors, accidental ingestion, skin absorption, eye contact	None anticipated	Heat/Cold stress
Source area air monitoring	None anticipated	None anticipated	Inhalation of toxic vapors, skin absorption, eye contact	Slope of terrain	Heat/Cold stress

6.0 PERSONNEL PROTECTION

6.1 General Guidelines

The following is a list of the general guidelines which are required for the Remedial Investigation/ Feasibility Study of Mooers Landfill. These guidelines follow the recently established guidelines of the Barton & Loguidice, P.C., Corporate Health and Safety Program:

- All field investigation activities must be coordinated through the Site Safety Officer and the Project Manager.

- During any activity conducted on-site in which a potential exists for exposure to hazardous materials, or accident or injury, at least two persons must be present who are in constant communication with each other.

- Following the procedures, requirements and provisions of Plan, all personnel who may be potentially exposed to hazardous materials or wastes must be in compliance with Federal and State Regulations, including OSHA 29 CFR 1910.120.

- Any drum or tank discovered on site will not be sampled or opened until an appropriate plan for unknown drum/tank sampling has been implemented.

- Samples from areas known or suspected to be contaminated with hazardous substances must be handled with the appropriate personal protective equipment.

- All equipment used in the site operations must be properly cleaned and maintained in good working order. Equipment must be inspected for signs of defects and/or contamination before and after each use.

- Eating, drinking, chewing gum or tobacco, and smoking are prohibited while performing site activities, and in work zones. Personnel must wash thoroughly before initiating any of the aforementioned activities.

- The discovery of any condition that would suggest the existence of a situation more hazardous than anticipated, shall result in the evacuation of site personnel and re-evaluation of the hazard and the level of protection.

6.2 Medical Surveillance

A Medical Surveillance Program is required for all personnel conducting field investigation activities for the Remedial Investigation/Feasibility Study of Mooers Landfill. The Medical Surveillance Program must be in compliance with the provisions set forth in 29 CFR 1910.120.

A copy of the physician's written opinion report containing the following information shall be submitted to the Site Safety Officer:

- The physician's opinion as to whether the employee has developed any medical condition which would place the employee at increased risk of material impairment of the employee's health from work in hazardous waste operations or from respirator use.

- The physician's recommended limitations upon the employee's assigned work.

- A statement indicating the test performed and the testing date.

6.3 Training Requirements

All personnel conducting a field investigation for the Remedial Investigation/Feasibility Study at the Mooers Landfill shall provide evidence of training to the satisfaction of the Site Health and Safety Officer. The training requirements shall be in compliance with OSHA 29 CFR 1910.120. All on-site personnel, except for unqualified visitors, shall be thoroughly familiar with the following:

- Names of personnel and alternates responsible for site safety, health and emergency response procedures.

- Safety, health and other hazards presented on site.

- Use of Personal Protective Equipment and designated levels of protection.

- Work practices that minimize risk from hazards.

- Safe use of equipment on site.

- Medical surveillance requirements, including recognition of symptoms and signs of overexposure.

- Implementation of this Site Specific Health and Safety Plan.

6.4 Air Monitoring

Monitoring shall be performed within all work areas to detect the presence and the relative level of toxic substances. Monitoring shall be conducted to identify other hazardous situations such as the presence of flammable or explosive atmospheres, and/or oxygen deficient environments. The data collected throughout monitoring shall be used to determine the appropriate levels of protection.

Monitoring shall be conducted prior to entry in the work area and periodically while conducting work on-site to evaluate any changes in conditions of the specific work area. Periodic monitoring on the site will consist of monitoring initially, during change of the site conditions (i.e., opening of a well, soil excavation, sampling, etc.), and at 30-minute intervals. Any activity which is to be conducted in a confined space or enclosed area must be monitored for explosion potential and oxygen deficient environment, as well as chemical hazards.

Available monitoring equipment will consist of an HNu Photoionizer, or a Foxboro Organic Vapor Analyzer (OVA). The HNu Photoionizer and the OVA Flame Ionization Detector have the ability to detect total organic vapor

concentrations in the atmosphere. The OVA working range is from 1 ppm to 1,000 ppm and HNu will detect from 1 ppm to 2,000 ppm.

6.5 Personal Protective Clothing and Equipment

The purpose of Personal Protective Equipment is to shield or isolate individuals from the chemical and physical hazards that may be encountered during work activities. The level of protection must correspond to the level of hazard known, or suspected, in the specific work area. There are four basic levels of personal protection (A, B, C and D) as established by the USEPA. Level A provides the highest level of protection, and Level D the lowest. Table 6-1 lists the various levels of protection and the corresponding Personal Protective Equipment.

6.6 Health and Safety Action Levels

An action level is a point at which increased protection is required due to the concentration of contaminants in the work area. Each action level is determined by the concentrations above background levels, and the ability of the Personal Protective Equipment to protect against that specific contaminant. A clean zone background level will be established away from the specific work area. All field investigation activities shall be initially conducted in Level D Personal Protective Equipment as designated in Section 6.4.

TABLE 6-1

SITE-SPECIFIC HEALTH AND SAFETY PLAN

Level D will be modified to contain the following:

Blue, White or Gray Tyvek coveralls, outer chemical resistant, boot covers, safety glasses, work boots and hard hat, where applicable.

Level C will consist of:

White Tyvek or Saranex coveralls, full-faced air purifying respirator equipped with organic vapor-acid gas combination cartridge with attached HEPA filter; inner and outer chemical resistant gloves; chemical resistant boots; work boots; and a hard hat, if applicable.

Level B will consist of:

White Tyvek or Saranex hooded coveralls; positive pressure, full-faced, self-contained breathing apparatus or supplied air respirator; inner and outer chemical resistant gloves; chemical resistant boots; work boots; and a hard hat, where applicable.

Personal Protective Equipment will be selected with specific considerations to the hazards associated with the Remedial Investigation/Feasibility Studies for Mooers Landfill.

An upgrade from Level D to Level C is required if:

- Concentrations of total organic vapors recorded in the work area by air monitoring equipment are above 5 ppm.

- Requested by an individual performing the task.

An upgrade to Level B is required if:

- Concentrations of organic vapors recorded by air monitoring equipment in the work area reach or exceed 50 ppm above background.

- Activities are conducted in areas of confined or enclosed spaces.

Should the on-site volatile organic concentration exceed 10 ppm above background, air screening will be conducted at the perimeter of the site to determine whether Personal Protective Equipment use should be extended beyond the site boundary. If fugitive emissions are leaving the site, steps will be taken to eliminate community exposure.

A work stoppage and evacuation (cease and desist) at the specific work area is required if:

- Concentrations of organic vapors recorded in the work area are greater than 1,000 ppm.

If ambient levels are measured which exceed the above criteria in areas which are accessible to the public or unprotected personnel, necessary site control measures

must be implemented prior to commencing activities at the specific work site.

Personnel should be able to upgrade or downgrade their level of protection with the concurrence of the Site Safety Officer and Project Manager.

7.0 EMERGENCY RESPONSE PLAN

If any situation or unplanned occurrence requires outside or support service, the appropriate contact from the following list will be made:

Contact	Person or Agency	
Clinton County Representatives	William Bingel Frank Madden Donald Rabideau	(518) 565-4600 (518) 565-4626 (518) 563-5514
NYSDEC Region 5 Regional Engineer	Daniel Steenberge	(518) 891-1370
Clinton County Health Department Director of Environmental Health	Dr. Peter Fields	(518) 565-3250
Law Enforcement	New York State Police	(518) 298-5200
Fire Department	Mooers Fire Department	Dial 911 (518) 561-2280
Ambulance	Mooers Ambulance Service	Dial 911
Hospital	CVPH Medical Center	(518) 561-2000
B&L Project Managers	Martin Chandler Michael Quinn	(315) 457-5200 (315) 457-5200
B&L Principal-in-Charge	Paul Dudden	(315) 457-5200

7.1 Site Resources

A telephone for emergency use, restroom facilities and a water supply will be available at the Landfill Maintenance Facility.

7.2 Emergency Routes

The closest hospital in to the site is CVPH Hospital. The route to be used in transport to the hospital is shown in Figure 7-1.

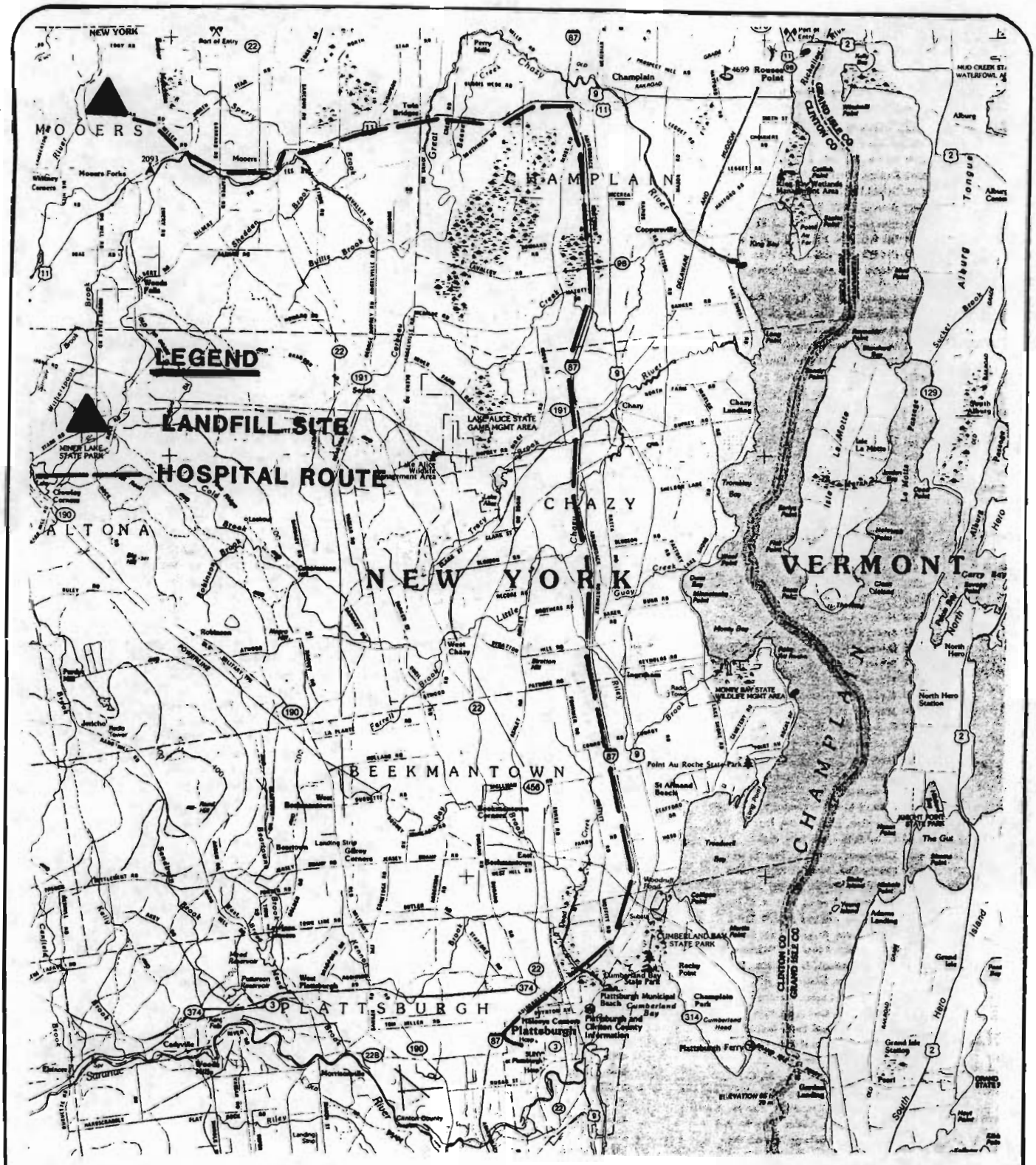
Medical emergency procedures for exposure to individual compounds suspected at the site are listed in Appendix A.

7.3 Emergency Procedures

In the event that an emergency developes on-site, the procedures delineated herein are to be immediately followed. Emergency conditions are considered to exist if:

- Any member of the field team is involved in an accident or experiences any adverse effects or symptoms of exposure while on the scene.

- A condition is discovered that suggests the existence of a situation more hazardous than anticipated.



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MOOERS SANITARY LANDFILL

EMERGENCY HOSPITAL ROUTE

TOWN OF MOOERS CLINTON CO.

Figure 7-1

Project No. 244.19

The following emergency procedures should be followed:

- Site work area entrance and exit routes should be planned, and emergency escape routes delineated by the Site Safety Officer.

- In the event that any member of the field team experiences any adverse effects or symptoms of exposure while on the scene, the entire field crew should immediately halt work, and act according to the instructions provided by the Site Safety Officer.

- For applicable site activities, wind indicators visible to all on-site personnel will be provided by the Site Safety Officer to indicate possible routes for upwind escape.

- The discovery of any condition that would suggest the existence of a situation more hazardous than anticipated will result in the suspension of work until the Office Safety Coordinator has been notified and appropriate instructions have been provided to the field team.

- In the event that an accident occurs, the Project Manager is to complete an Accident Report Form for submittal to the Managing Principal-in-Charge of the office. A copy will be forwarded to the firm-wide Health and Safety Program Office.

8.0 FORMS

The following forms will be used in implementing this Health and Safety Plan:

Plan Acceptance Form
Plan Feedback Form
Accident Report Form
Instrument Calibration Form
Air Monitoring Form
Exposure History Form

The Plan Acceptance Form will be filled out by all employees working at the site prior to commencement of site activities. The Plan Feedback Form will be filled out by the Site Safety Officer and any other on-site employee who wishes to fill one out. The Accident Report Form will be filled out by the Project Manager in the event that an accident occurs. Instrument Calibration and Air Monitoring forms will be completed by those field technicians assigned for operation of the equipment. The Exposure History Form will be completed by both the Project Manager and the individual for which the form is intended.

A copy of each form is given in Appendix B of this Health and Safety Plan.

All completed forms must be returned to the Office Safety Coordinator.

HEALTH AND SAFETY PLAN
APPENDIX A
CHEMICAL HAZARD DATA SHEETS

CHEMICAL HAZARD DATA SHEET

Chemical Name: 1,1,1-Trichloroethane **Date:** 2/89
Synonym: Methyl Chloroform
CAS Number: 71-55-6

EXPOSURE LIMITS

ACGIH Threshold Limit Value (TLV)	350 ppm
OSHA Permissible Exposure Limit (PEL)	350 ppm
Short Term Exposure Limit (STEL)	450 ppm
Immediately Dangerous to Life and Health (IDLH)	1000 ppm

INSTRUMENT RESPONSE

PID Ionization Potential 11.0 eV

FID Relative Response 105 %

RESPIRATORY PROTECTION

Recommended Air Purifying Cartridge Organic Vapor

Cartridge Efficiency Index 40 Minutes

Odor Detection 100 ppm (20-200)

ROUTES OF EXPOSURE

Inhalation Skin Absorption Ingestion

SYMPTOMS OF EXPOSURE

INHALATION: Loss in equilibrium to loss of consciousness; high concentrations my be fatal due to asphyxiation. INGESTION: Nausea. SKIN AND EYES: Dermatitis of skin and slightly irritating and lachrymatory to eyes.

TREATMENT OF EXPOSURE

EYES: Get medical attention, and flush thoroughly with water for fifteen minutes. INHALATION: Remove victim to fresh air. INGESTION: Drink water, induce vomiting. SKIN: Remove contaminated clothing and wash skin.

FIRE HAZARD

Flash Point: None. Poisonous gases are produced in fire. Extinguish fire with dry chemical, or carbon dioxide.

CHEMICAL HAZARD DATA SHEET

Chemical Name: 1,1,1-Trichloroethane Date: 2/89
Synonym: Methyl Chloroform
CAS Number: 71-55-6

EXPOSURE LIMITS

ACGIH Threshold Limit Value (TLV)	350 ppm
OSHA Permissible Exposure Limit (PEL)	350 ppm
Short Term Exposure Limit (STEL)	450 ppm
Immediately Dangerous to Life and Health (IDLH)	1000 ppm

INSTRUMENT RESPONSE

PID Ionization Potential 11.0 eV

FID Relative Response 105 %

RESPIRATORY PROTECTION

Recommended Air Purifying Cartridge Organic Vapor

Cartridge Efficiency Index 40 Minutes

Odor Detection 100 ppm (20-200)

ROUTES OF EXPOSURE

Inhalation Skin Absorption Ingestion

SYMPTOMS OF EXPOSURE

INHALATION: Loss in equilibrium to loss of consciousness; high concentrations my be fatal due to asphyxiation. INGESTION: Nausea. SKIN AND EYES: Dermatitis of skin and slightly irritating and lachrymatory to eyes.

TREATMENT OF EXPOSURE

EYES: Get medical attention, and flush thoroughly with water for fifteen minutes. INHALATION: Remove victim to fresh air. INGESTION: Drink water, induce vomiting. SKIN: Remove contaminated clothing and wash skin.

FIRE HAZARD

Flash Point: None. Poisonous gases are produced in fire. Extinguish fire with dry chemical, or carbon dioxide.

CHEMICAL HAZARD DATA SHEET

Chemical Name: 1,1 Dichloroethane **Date:** 2/89

CAS Number: 75-34-3

EXPOSURE LIMITS

ACGIH Threshold Limit Value (TLV)	200 ppm
OSHA Permissible Exposure Limit (PEL)	100 ppm
Short Term Exposure Limit (STEL)	250 ppm
Immediately Dangerous to Life and Health (IDLH)	4000 ppm

INSTRUMENT RESPONSE

PID Ionization Potential	11.06 eV
FID Relative Response	80 %

RESPIRATORY PROTECTION

Recommended Air Purifying Cartridge	Organic Vapor
Cartridge Efficiency Index	23 minutes
Odor Detection	120 ppm

ROUTES OF EXPOSURE

Inhalation Skin Absorption Ingestion

SYMPTOMS OF EXPOSURE

Irritation of respiratory tract. Salvation, sneezing, coughing, dizziness, nausea and vomiting. Irritant to skin.

TREATMENT OF EXPOSURE

Call doctor. INHALATION: Remove from contaminated area. EYES: Flush with large amounts of water or weak bicarbonate of soda solution for 15 minutes. SKIN: Remove clothing, dilute skin with water. INGESTION: Empty stomach by administering fluids.

FIRE HAZARD

Flash Point: 17^{0} F
Extinguish fire with alcohol foam, carbon dioxide or dry chemical.

CHEMICAL HAZARD DATA SHEET

Chemical Name: Chloroethane
Synonym: Ethyl Chloride
CAS Number: 75-00-3

Date: 2/89

EXPOSURE LIMITS

ACGIH Threshold Limit Value (TLV)	1000 ppm
OSHA Permissible Exposure Limit (PEL)	1000 ppm
Short Term Exposure Limit (STEL)	none ppm
Immediately Dangerous to Life and Health (IDLH)	20,000 ppm

INSTRUMENT RESPONSE

PID Ionization Potential 10.97 eV

FID Relative Response NA

RESPIRATORY PROTECTION

Recommended Air Purifying Cartridge Organic Vapor

Cartridge Efficiency Index NA

Odor Detection NA

ROUTES OF EXPOSURE

Inhalation Skin Absorption Ingestion

SYMPTOMS OF EXPOSURE

INHALATION: Vapor causes drunkenness, anesthesia, possible lung injury.
EYE AND SKIN CONTACT: May cause frostbite.

TREATMENT OF EXPOSURE

INHALATION: Remove person to fresh air. Keep warm and quiet. Get medical attention. Administer artificial respiration if necessary. SKIN AND EYES: Treat for frostbite. Flush with water for fifteen minutes.

FIRE HAZARD

Flash Point: -58^{0} F. Flammable. Extinguish with dry chemical or carbon dioxide. Poisonous gases produced in fire.

CHEMICAL HAZARD DATA SHEET

Chemical Name: Acetone **Date:** 1/89
Synonym: 2-Propanone
CAS Number: 67-64-1

EXPOSURE LIMITS

ACGIH Threshold Limit Value (TLV)	750 ppm
OSHA Permissible Exposure Limit (PEL)	1000 ppm
Short Term Exposure Limit (STEL)	1000 ppm
Immediately Dangerous to Life and Health (IDLH)	20,000 ppm

INSTRUMENT RESPONSE

PID Ionization Potential	9.69 eV
FID Relative Response	60 %

RESPIRATORY PROTECTION

Recommended Air Purifying Cartridge	Organic Vapor
Cartridge Efficiency Index	37 Minutes
Odor Detection	100 ppm

ROUTES OF EXPOSURE

Inhalation Skin Absorption Ingestion

SYMPTOMS OF EXPOSURE

INHALATION: Vapors irritating to mucous membranes and respiratory tract; acts as an anesthetic in very high concentrations. EYES: irritant. INGESTION: Very irritating to mucous membranes. SKIN: Prolonged contact causes defatting of the skin, possibly dermatitis.

TREATMENT OF EXPOSURE

INHALATION: Remove to fresh air; call physician; administer artificial respiration if breathing stops. INGESTION: If large amounts are ingested and victim is conscious and not having convulsions, induce vomiting and get medical help. EYES: Flush with water for at least fifteen minutes.

FIRE HAZARD

Flash Point: 4° F. Flammable. Extinguish with foam, dry chemical or carbon dioxide.

CHEMICAL HAZARD DATA SHEET

Chemical Name: Methyl Ethyl Ketone Date 1/89
Synonyms: MEK, 2-Butanone
CAS Number: 78-93-3

EXPOSURE LIMITS

ACGIH Threshold Limit Value (TLV)	200 ppm
OSHA Permissible Exposure Limit (PEL)	200 ppm
Short Term Exposure Limit (STEL)	300 ppm
Immediately Dangerous to Life and Health (IDLH)	3000 ppm

INSTRUMENT RESPONSE

PID Ionization Potential	9.48 eV
FID Relative Response	80 %

RESPIRATORY PROTECTION

Recommended Air Purifying Cartridge	Organic Vapor
Cartridge Efficiency Index	82 Minutes
Odor Detection	4.8 - 25 ppm

ROUTES OF EXPOSURE

Inhalation Skin Absorption Ingestion

SYMPTOMS OF EXPOSURE

Liquid cause eye burns. Vapor irritates eyes, nose, and throat; can cause headache, dizziness, nausea, weakness and loss of consciousness. If inhaled will cause nausea, vomiting, headache, dizziness, difficult breathing, and loss of consciousness.

TREATMENT OF EXPOSURE

INHALATION: Remove to fresh air, if breathing irregular of has stopped, start resuscitation or administer oxygen. EYES: Wash with plenty of water for at least fifteen (15) minutes.

FIRE HAZARD

Flash Point 73° F. Flammable. Extinguish with dry chemical or carbon dioxide.

CHEMICAL HAZARD DATA SHEET

Chemical Name: Methyl Isobutyl Ketone Date: 1/89
Synonyms: Hexone
CAS Number: 108-10-1

EXPOSURE LIMITS

ACGIH Threshold Limit Value (TLV)	50 ppm
OSHA Permissible Exposure Limit (PEL)	100 ppm
Short Term Exposure Limit (STEL)	75 ppm
Immediately Dangerous to Life and Health (IDLH)	3000 ppm

INSTRUMENT RESPONSE

PID Ionization Potential	9.30 eV
FID Relative Response	80 %

RESPIRATORY PROTECTION

Recommended Air Purifying Cartridge	Organic Vapor
Cartridge Efficiency Index	96 Minutes
Odor Detection	0.28ppm - 8ppm

ROUTES OF EXPOSURE

Inhalation Skin Absorption Ingestion

SYMPTOMS OF EXPOSURE

Vapors irritating to eyes, nose and throat. If inhaled will cause dizziness and loss of consciousness. High concentrations cause anesthesia, depression. Liquid dries out skin causes dermatitis.

TREATMENT OF EXPOSURE

INHALATION: Remove to fresh air, give artificial respiration if needed. Call a physician. SKIN or EYES: Wash eyes thoroughly with water. Wash skin with soap and water until irritation stops.

FIRE HAZARD

Flash Point: 20° F. Flammable. Flashback may occur along vapor trail. Extinguish with dry chemical, alcohol foam, or carbon dioxide.

CHEMICAL HAZARD DATA SHEET

Chemical Name: Toluene **Date:** 1/89
Synonym: Toluol
CAS Number: 108-88-3

EXPOSURE LIMITS

ACGIH Threshold Limit Value (TLV)	100 ppm
OSHA Permissible Exposure Limit (PEL)	100 ppm
Short Term Exposure Limit (STEL)	150 ppm
Immediately Dangerous to Life and Health (IDLH)	2000 ppm

INSTRUMENT RESPONSE

PID Ionization Potential	8.82 eV
FID Relative Response	110 %

RESPIRATORY PROTECTION

Recommended Air Purifying Cartridge	Organic Vapor
Cartridge Efficiency Index	94 Minutes
Odor Detection	0.17 - 40 ppm

ROUTES OF EXPOSURE

Inhalation Skin Absorption Ingestion

SYMPTOMS OF EXPOSURE

Vapors irritate eyes and upper respiratory tract; cause dizziness, headache, anesthesia. Liquid irritates eyes and causes drying of skin. If aspirated, causes coughing, gagging, distress, and rapidly developing pulmonary edema. If ingested causes vomiting, griping, diarrhea, depressed respiration.

TREATMENT OF EXPOSURE

INHALATION: Remove to fresh air, give artificial respiration if needed: call a doctor. INGESTION: Do NOT induce vomiting; call a doctor. EYES: Flush with water for at least fifteen minutes. SKIN: Wipe off and wash with soap and water.

FIRE HAZARD

Flash Point: 40° F, Flammable. Flashback may occur along vapor trail. Extinguish with dry chemical, or carbon dioxide.

Chemical Fact Sheet* Version 1

BENZOIC ACID

The information in this sheet applies to workplace exposure resulting from processing, manufacturing, storing or handling and is not designed for the population at large. Any generalization beyond occupational exposures should not be made. The best industrial hygiene practice is to maintain concentrations of all chemicals at levels as low as is practical.

Chemical Names: Benzene carboxylic acid, carboxybenzene, phenylcarboxylic acid; CAS 65-85-0.

Trade Names: Retardex, Retarder BA, Tenn-Plas, and others.

Uses: Preservation of foods, in the manufacture of benzoates and benzoyl compounds, manufacture of dyes, a dye binder in calico printing, curing of tobacco.

PHYSICAL INFORMATION

Appearance: White powder.

Odor: None or faint.

Behavior in Water: Slightly soluble, a saturated solution is moderately acidic with a pH=2.8.

HEALTH HAZARD INFORMATION

OSHA Limit: None established.

NIOSH Recommended Limit: None established.

ACGIH Recommended Limit: None established.

Short Term Exposure:

Inhalation: Inhalation of dust may result in irritation of the nose, throat, or mouth; allergic reactions may occur.

Skin: Contact may result in irritation; allergic reactions may also occur.

Eyes: Contact may result in irritation.

Ingestion: For most people, ingestion of 1/10 to 2/10 ounce will have no effect although some sensitive people may experience allergic reactions. Larger amounts may cause stomach upset. Information from animal studies show that about 6 ounces may be lethal to a 150 pound person.

Long Term Exposure:

Nausea, stomach and intestinal pain and upset, and allergic reactions are possible. These symptoms usually disappear upon removal from exposure.

*Prepared by the Bureau of Toxic Substance Assessment, New York State Department of Health. For an explanation of the terms and abbreviations used, see "Toxic Substances: How Toxic is Toxic" available from the New York State Department of Health.

EMERGENCY AND FIRST AID INSTRUCTIONS

Inhalation: Remove from contaminated area; rinse dust from nose and mouth. Seek medical attention if allergic reaction occurs.

Skin: Wash with soap and large amounts of water.

Eyes: Wash with large amounts of water.

Ingestion: Seek medical attention, if necessary.

Note to Physician: Gastric lavage, induced emesis, and forced diuresis have been used to reduce body burden. Establishment of respiration and creation of artificial airway may be necessary.

FIRE AND EXPLOSION INFORMATION

General: Benzoic acid will burn. Ignites at 126°C (259°F).

Extinguisher: Water, carbon dioxide or dry chemical.

REACTIVITY

General: Reacts with strong oxidizing agents such as permanganates and dichromates.

PROTECTIVE MEASURES

Storage and Handling: Store away from excessive heat and strong oxidizing agents.

Engineering Controls: Ventilation to reduce airborne dusts.

Protective Clothing (Should not be substituted for proper handling and engineering controls): Rubber gloves and dust mask should be worn if contact with benzoic acid is likely.

PROCEDURES FOR SPILLS AND LEAKS

General: Powders may be swept up and disposed of in a suitable container. Solutions should be neutralized with soda ash. For final disposal contact your regional office of the New York State Department of Environmental Conservation.

For more information:
Contact the Industrial Hygienist or Safety Officer at your worksite or the New York State Department of Health, Bureau of Toxic Substance Assessment, 2 University Place, Albany, New York 12203.

Chemical Fact Sheet* Version 1

PHENOL

The information in this sheet applies to workplace exposure resulting from processing, manufacturing, storing or handling and is not designed for the population at large. Any generalization beyond occupational exposures should not be made. The best industrial hygiene practice is to maintain concentrations of all chemicals at levels as low as is practical.

Chemical Names: Hydroxybenzene, carbolic acid, phenyl hydroxide, phenylic alcohol; CAS 108-95-2.

Trade Names: None found.

Uses: A general disinfectant; used in the manufacture of resins, dyes and other industrial products; a reagent in chemical analysis.

PHYSICAL INFORMATION

Appearance: Colorless or white crystalline solid that may redden on exposure to light and heat. Also sold as a liquid solution.

Odor: Sweet, tarry. Minimum Detectable by Odor: 0.05 ppm

Behavior in Water: Slightly soluble. Evaporation: Slow.

HEALTH HAZARD INFORMATION

OSHA Standard: Average 8 hour exposure -- 5 ppm.

NIOSH Recommended Limit: Average 10 hour day/40 hour week -- 5 ppm.

ACGIH Recommended Limit: Average 8 hour exposure -- 5 ppm.

Short Term Exposure:

Inhalation: At levels of 48 ppm can cause irritation of nose and throat, nausea, vomiting, and other symptoms as listed under skin. No reported deaths from inhalation alone.

Skin: Can cause white patches and wrinkles on skin. Intense pain may develop if not promptly removed. Absorption through skin may cause severe poisoning and death.

Eyes: Can cause irritation, swelling and severe damage that can lead to blindness.

Ingestion: Can cause burning sensation and pain in mouth and throat, sores, abdominal pain, nausea, vomiting, diarrhea and skin rash. Larger doses may also cause muscle weakness, irregular rapid breathing, blue coloration of skin, shock, unconsciousness, collapse and death. Death may occur from as little as 1 gram (1/30 ounce).

Long Term Exposure:

Prolonged exposure by any route to levels above the standard may cause difficult swallowing, loss of appetite, headache, dizziness, fainting, mental disturbances, dark coloration of urine, skin rash, liver and kidney damage and death.

*Prepared by the Bureau of Toxic Substance Assessment, New York State Department of Health. For an explanation of the terms and abbreviations used, see "Toxic Substances: How Toxic is Toxic" available from the New York State Department of Health.

EMERGENCY AND FIRST AID INSTRUCTIONS

Inhalation: Move person to fresh air. Give oxygen or artificial respiration as required. Seek medical attention, if necessary.

Skin: Immediately remove soaked clothing. Wash affected area for at least 5 minutes. Seek medial attention if large area is affected.

Eyes: Immediately wash with water for at least 15 minutes. Seek medical attention immediately, preferably an eye doctor (ophthalmologist).

Ingestion: If conscious, give large quantities of milk or water. Seek medical attention immediately.

Note to Physician: Urine analysis may be useful in determining severity of exposure. Diazepam (I.V.) may be useful in treating convulsions.

FIRE AND EXPLOSION INFORMATION

General: Flammable, may ignite at 79°C,(175°F).

Explosive Limits: Upper -- 8.6% Lower -- 1.7%, .

Extinguisher: Alcohol foam, carbon dioxide or dry chemical.

REACTIVITY

Materials to Avoid: Can react violently with butadiene and mixtures of aluminum chloride and nitrobenzene. May react vigorously with strong oxidizers such as permanganates or chlorine.

Conditions to Avoid: May give off toxic fumes of carbon monoxide when heated.

PROTECTIVE MEASURES

Storage and Handling: Keep in tightly closed container protected from light. Do not hand without good skin protection. Do not eat, drink or smoke when using phenol. Wash hands thoroughly after use.

Engineering Controls: Adequate ventilation or process enclosure. Sinks, showers and eyewash stations should be readily available.

Protective Clothing (Should not be substituted for proper handling and engineering controls): Splash-proof goggles or faceshield, rubber propylene gloves and apron should be used if contact with phenol is likely.

Protective Equipment: For levels up to 50 ppm use a chemical cartridge respirator with organic vapor cartridges and dust and mist filters, a supplied-air respirator or a self-contained breathing apparatus. For levels up to 100 ppm use any of the above with full facepiece or a gas mask with an organic vapor canister and dust and mist filters, a supplied-air respirator operated in continuous flow mode or a powered air-purifying respirator with organic vapor cartridges and dust and mist filters. For levels above 100 ppm or use in areas of areas of unknown concentrations use a self-contained breathing apparatus with full facepiece operated in a positive pressure mode or a combination Type C supplied-air respirator with full facepiece and an auxiliary self-contained breathing apparatus both operated in a positive pressure mode. For escape from a contaminated area use a gas mask with organic vapor canister and a high-efficiency particulate filter or an escape self-contained breathing apparatus

PROCEDURES FOR SPILLS AND LEAKS

Warn other workers of spill and make sure persons not wearing protective clothing and equipment are kept out of the area. Put on proper protective clothing and equipment. Absorb liquid on inert material. Sweep into suitable container. For final disposal contact your regional office of the New York State Department of Environmental Conservation.

For more information:
Contact the Industrial Hygienist or Safety Officer at your worksite or the New York St Department of Health, Bureau of Toxic Substance Assessment, 2 University Place, Albany, New York 12203.

HEALTH AND SAFETY PLAN
APPENDIX B
HEALTH AND SAFETY FORMS

PLAN ACCEPTANCE FORM

PROJECT HEALTH AND SAFETY PLAN

INSTRUCTIONS: This form is to be completed by each person working on the project work site and returned to the Office Safety Coordinator .

Job No. _____

Project RI/FS

I represent that I have read and understand the contents of the above plan and agree to perform my work in accordance with it.

_____
Signed

_____
Print Name

_____
Company

_____
Date

PLAN FEEDBACK FORM

Problems with plan requirements:

Unexpected situations encountered:

Recommendations for future revisions:

ACCIDENT REPORT FORM

SUPERVISORS REPORT OF ACCIDENT	DO NOT USE FOR MOTOR VEHICLE OR AIRCRAFT ACCIDENTS
TO	FROM TELEPHONE (Include area code)

NAME OF INJURED OR ILL WORKER AND COMPANY

WORKER'S SOCIAL SECURITY NUMBER

DATE OF ACCIDENT	TIME OF ACCIDENT	EXACT LOCATION OF ACCIDENT

NARRATIVE DESCRIPTION OF ACCIDENT

NATURE OF ILLNESS OR INJURY AND PART OF BODY INVOLVED

LOST TIME

YES ☐
NO ☐

PROBABLE DISABILITY (Check one)

FATAL ☐

LOST WORK DAY WITH ___ DAYS AWAY FROM WORK

LOST WORK DAY WITH ___ DAYS OF RESTRICTED ACTIVITY

NO LOST WORK DAY ☐

FIRST-AID ONLY ☐

CORRECTIVE ACTION RECOMMENDED (By whom and by when)

NAME OF SUPERVISOR	TITLE
SIGNATURE	DATE

DAILY INSTRUMENT CALIBRATION CHECK SHEET

INSTRUMENT _____

SERIAL # _____

Date	Pure Air Y/N	Calibration Gas (ppm)	Battery Check (Good/bad)	Calibrated By	Remarks

AIR MONITORING

GENERAL INFORMATION

Name(s): _____ Background Level: _____

Date: _____ Weather Conditions: _____

Time: _____ _____

Project: _____ _____

Job No.: _____

Estimated Wind Direction: _____

Estimated Wind Speed (i.e., calm, moderate, strong, etc.): _____

Location Where Background Level Was Obtained: _____

EQUIPMENT SETTINGS

HNU	EXPLOSIMETER
Range: _____	Alarm Trigger - %LEL ≥ _____
Span Pot: _____	Alarm Trigger - $\%0_2$ ≤ _____
Calibration Gas: _____	Calibration Gas: _____

FIELD ACTIVITIES

Field Activities Conducted: _____

_____

	HNU			DETECTOR TUBES	CGI	
TIME					%LEL	$\%0_2$
	ppm			ppm	ppm - constituent	

EMPLOYEE EXPOSURE HISTORY FORM

EMPLOYEE NAME: _____

JOB NAME: _____

JOB NUMBER: _____

DATE(S) FROM/TO: _____

HOURS ON SITE: _____

CONTAMINANTS (SUSPECTED/REPORTED):

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

(SEE ATTACHED LABORATORY ANALYSIS)