TOWN OF ISLIP
SUFFOLK COUNTY, NEW YORK

SONIA ROAD LANDFILL
WEST BRENTWOOD, NEW YORK
SITE REGISTRY NO. 152013

POST CLOSURE MONITORING AND MAINTENANCE PLAN

VOLUME 2 OF 4

HEALTH AND SAFETY PLAN

Dvirka and Bartilucci
Consulting Engineers

RLA/TOSC1594(10/4/00)

OCTOBER 2000

SITE SPECIFIC HEALTH AND SAFETY PLAN

For

CAPPING/CLOSURE OF THE SONIA ROAD LANDFILL

WEST BRENTWOOD
SUFFOLK COUNTY, New York.

NYSDEC SITE No. 152013

For the

ISLIP RESOURCE RECOVERY AGENCY

Prepared for:

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October, 1998

APPROVAL PAGE

This Site Specific Health and Safety Plan (SHSP) has been prepared and reviewed in accordance with the minimum requirements of 29 CFR 1910.120.

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1.0 GENERAL

This Site Specific Health and Safety Plan (SHSP) was prepared to meet the requirements of 29 CFR parts1910 and 1926, especially 1910.120/1926.65. "Hazardous Waste Site Operations and Emergency Response"; the NIOSH/OSHA/USCG/EPA Guidance Manual for Hazardous Waste Site Activities (NIOSH No. 85-115); USEPA "Standard Operating Safety Guides"; and other relevant standards. The SHSP addresses activities associated with the capping and closure of the Sonia Road Landfill located at West Brentwood in Suffolk County, New York (see Figure 1, Site Location Map). Compliance with the SHSP is required of all Town, NYSDEC, and Engineer's on-site personnel entering the site during the project. Visitors to the Sonia Road Landfill shall be subject to the requirements of this SHSP and be accountable to the authorities having jurisdiction at the site.

This SHSP has been prepared exclusively for use for the express purpose of conducting capping/closure-related activities at the subject property. This plan has been developed based upon site investigation assessment information, records available from Dvirka & Bartilucci Consulting Engineers (D&B) and general industry accepted standards. It is the responsibility of the Engineer to insure the proper implementation of this plan or any changes to the plan dictated by any new information obtained which may require modification to the SHSP by Field Safety Corporation in the form of an addendum. Field Safety Corporation cannot be held responsible for ensuring the accuracy or completeness of this SHSP relative to new information obtained which could alter the contents of this SHSP.

1.1 Site Information

Site Name: Sonia Road Landfill,
Islip Resource Recovery Agency

Address: 655 Sonia Road
West Brentwood, New York

2.0 PURPOSE AND SCOPE

2.1 Purpose and Scope of the Closure Project

The final capping/closure of the landfill is to serve as the NYSDEC approved remedy for remediation of the Sonia Road Landfill. The capping/closure activities will include: site preparation such as shaping and grading of the existing ground surface to develop a prepared sub-grade, installing and laying a layered cap system, including: soil filter or geotextile; gas venting layer; geomembrane; geocomposite drainage layer; and barrier protection layer; and finally the laying of a topsoil layer and planting of vegetation.

2.2 Purpose and Scope of this SHSP

The purpose the SHSP is to ensure health and safety of the Town of Islip, NYSDEC and Engineer's on-site personnel during various activities of the final capping/closure of the landfill, by setting forth requirements for health and safety supervision, air monitoring, medical monitoring, personal protective equipment, controls, safe work practices, and proper decontamination.

3.0 SUMMARY OF EXISTING INFORMATION

3.1 Site Description

The Sonia Road Landfill is an inactive municipal solid waste landfill owned and operated by the Town of Islip. The landfill is located in the western portion of the Town of Islip in the hamlet of Brentwood and is in the close proximity to the western town boundary between the Towns of Islip and Babylon.

The landfill property is approximately 42.2 acres in area and is generally rectangular in shape. It is bounded to the north by industrial properties, to the east by residential properties, to the south by Dear Park Street with residential properties beyond, and to the west by Howell's Road, Secatogue Road and Corbin Avenue with industrial properties beyond. The entire landfill is fenced and main access is through a gate along Corbin Avenue. Another access gate is located along Deer Park Street toward the southeast corner of the site.

The landfill site serves as a break between the industrial areas to the north and west versus the residential area to the east and south. The landfill property itself is zoned Industrial I and Industrial II with a small portion along the southeastern boundary as residential.

The Sonia Road Landfill has been identified by the New York State Department of Environmental Conservation (NYSDEC) as an inactive hazardous waste disposal site. The site has been the subject of Phase I and Remedial Investigation/Feasibility Study (RI/FS) investigations and has been categorized as a Class 2 site which, according to the definition provided by NYSDEC, poses a significant threat to the public health or environment for which action is required.

3.2 Site History

The 42.2-acre Sonia Road Landfill site has been owned by the Town of Islip since 1965. Prior to 1965, the site was privately owned and used as a source of mined sand and gravel. As a result of this mining operation, virtually the entire site was disturbed, including the removal of vegetation, topsoil and underlying minerals. The mining operation was extensive with the removal of minerals progressing to an appreciable depth below the water table. Removal of minerals below the water table was accomplished through the use of a dredging operation. This activity resulted in the formation of a groundwater lake over a significant portion of the site. Municipal solid waste was used to backfill the excavation and a significant quantity of waste lies below the water table.

In 1965, the Town of Islip took title to the Sonia Road property and began a landfilling operation for the disposal of municipal solid waste. Landfilling of the

site occurred between 1965 and 1977. It has been estimated that between 1.5 and 2.0 million cubic yards of waste was disposed of at the site.

The landfill accepted all municipal solid waste delivered to the site. This waste is reported to include wood, concrete, metal, plastic glass, household waste in the form of refuse, rubbish, demolition materials and yard wastes. It is also reported that junk automobiles were routinely disposed of at the facility and that underground fires were common. The documentation suggests that the eastern half of the excavation was filled to grade first and that the final stages of landfilling were completed on the western half of the site.

In the early 1970s, the eastern half of the landfill was converted into a local park. Along the east and southern boundaries of the eastern half, earthen berms were constructed of soil and demolition debris to act as a buffer between the landfill and the nearby residences. However, the Town experienced difficulties in developing the site as a park due to settlement and the occurrence of waste materials, such as tires and mattresses, "floating" to the surface.

For a period in the early to mid 1970s, the western half of the landfill continued to operate as an active landfill while the eastern half was utilized as a park. In 1973 and 1974, it is alleged that a total of approximately 400 cubic yards of hazardous materials were deposited at the site by Hooker Chemical. Given the fill progression reported, these wastes were most likely deposited in the western half of the landfill. These wastes were reported to consist of gravel containing polyvinyl chloride, trimellitate plasticizers, 2-ethylhexanol and other alcohols. In addition, there have been unconfirmed allegations that trichloroethene and plating sludge may have been disposed of at the landfill.

On the basis of these allegations and the results of a groundwater investigation conducted by the Suffolk County Department of Health Services in 1981 and 1982, the site was identified as an Inactive Hazardous Waste Disposal Site (Site No. 152013) by NYSDEC. A Phase I investigation was performed by Woodward Clyde in 1986 and an Immediate Investigation Work Assignment was performed by NYSDEC in 1994. As a result of these investigations, the Sonia Road Landfill has been categorized as a Class 2 Inactive Hazardous Waste Site which poses a significant threat to public health or the environment and for which action is required.

3.3 Findings of Previous Investigations

A number of studies were conducted on and in the vicinity of the Sonia Road Landfill:

According to the Town of Islip Report dated June 1982, prior to 1965, the site of the Sonia Road landfill was a sand and gravel facility. Sand and gravel was excavated below groundwater. This created a groundwater lake at the site. The most active period of landfilling at the site occurred between 1965 and 1974. During most of its operational period, the landfill accepted all types of municipal solid waste, however, during the last few years of operation, the landfill only accepted refuse, rubbish, demolition materials and yard wastes, particularly leaves. In the early years of operation, this site was used for disposal of junk cars. It is estimated that buried refuse averages 50 feet deep over 60% of the site.

In 1979, the Suffolk County Department of Health Services (SCDHS) prepared a report entitled "Leachate Pollution Plume at the Sonia Road Landfill." As part of the investigation, 19 temporary leachate exploration wells were installed at various locations southeast and downgradient of the landfill, and one well was installed on the southeast edge of the landfill. Based on the distribution of wells and the conductivity measurements, a leachate plume was delineated. The plume was reported to extend from the landfill for a distance of 3,800 feet toward the southeast. Its maximum width was determined to be 2,300 feet. Its thickness was determined to be approximately 88 feet, being limited by the presence of an impervious layer of Gardiner's Clay. As part of this study, three test borings were constructed within the landfill.

In June 1983, Woodward-Clyde Consultants, under contract to NYSDEC, prepared a Phase I Preliminary Investigation report for the Sonia Road Landfill. The investigation comprised compilation of pertinent background information on the site. Preliminary Hazard Ranking Score (HRS) Work Sheets were prepared and site history, site hydrogeology and past sampling and analysis were evaluated. Based on the results of this background information review, additional investigation, which included site specific sampling and analysis under a Phase II investigation, was recommended. A Phase II investigation was never performed for the site.

At the request of NYSDEC, the Town of Islip installed several methane monitoring wells along the perimeter of the site. Based upon historical and continued monitoring, although methane is being produced, there is no evidence that methane is migrating off the site. Continued monitoring of the wells does not indicate any methane problems.

In a May 19, 1993 letter from NYSDEC to SCDHS, the NYSDEC indicated they had sampled two wells at the landfill. These wells are, respectively, one-half mile and three quarters of a mile downgradient from the landfill. Although low levels of chlorinated hydrocarbons were detected, NYSDEC did not feel that these wells directly monitored the landfill. Specifically, NYSDEC indicated that there were several potential sources upgradient of the landfill which could be responsible for

the volatile organic compounds detected. In particular, they identified the Baron Blakeslee Site and the Chemical Pollution Control Site. The NYSDEC further indicated that a sample from one of Chemical Pollution Control's monitoring wells was used as an upgradient well for the landfill. This well indicated that similar volatile organics are present in the groundwater upgradient of the landfill. As a result, NYSDEC requested assistance from SCDHS to install five water table wells and one deep monitoring well in the immediate vicinity of the landfill. To address the possibility of an upgradient source of contamination, information is being obtained regarding potential sources to the northwest of the landfill, in particular from the SCDHS files, which provide information on cesspool/dry well sampling and cleanout. Upgradient water quality information from this area is also being obtained from reports from investigations conducted at upgradient sites as well as, if available, SCDHS monitoring wells.

Golder Associates prepared a Hydrogeologic Assessment Report for the Sonia Road Landfill for the Islip Resource Recovery Agency (Agency) in June 1995. The report provides a brief hydrogeologic assessment of existing data, including utilization of data from wells installed upgradient and downgradient of the landfill in 1995. The report also contains a description of groundwater quality and site history. The report also provides recommendations for future actions at the site. The report concluded that there is significant evidence that groundwater at and downgradient from the site is being impacted by upgradient sources. The report recommended that the Agency collect additional information, both upgradient and downgradient of the site, to better define the impact of upgradient sources of contamination.

3.4 Results of Remedial Investigation/Feasibility Study

A RI/FS of the site was conducted by D&B in 1997 and 1998 as part of the New York State's Superfund Program to investigate and remediate hazardous waste sites. The RI/FS concluded that:

- Soil vapor screening for total organic vapors and the analytical results of the soil vapor samples did not indicate elevated levels of VOCs. Therefore, the release of VOCs from the landfill into ambient air is not a concern at the landfill. However, based on methane measurements obtained during the investigation and previous monitoring results, soil vapor/methane gas is a medium of concern.

- The concentrations of contaminants detected in surface soil, exclusive of iron and zinc found in a limited area of stressed vegetation in the central portion of the landfill, are not significant and are consistent with background levels.

- Elevated concentrations of SVOCs found in asphalt, cinder, coal and tar, and other contaminants typical of municipal solid waste, were detected in samples collected from waste buried in the landfill. However, significant levels of VOCs were not detected in the waste samples, and only low levels of contaminants were detected in soil immediately below the waste material.

- Samples of shallow groundwater collected immediately downgradient of the landfill indicated the presence of elevated concentrations of leachate parameters. However, no VOCs were detected, except for low levels of chloroethane. The presence of leachate parameters extends downgradient from the landfill and into deeper groundwater in the Upper Glacial aquifer. Significant levels of volatile organic compounds were detected in a few deep monitoring wells immediately downgradient of the landfill. Elevated levels were also detected upgradient of the landfill, including deep monitoring wells immediately upgradient of the landfill.

3.5 Potential Upgradient Sources

There are several potential upgradient sources of contamination located around the landfill that could cause groundwater contamination in the vicinity of the landfill. These potential sources include: Baron-Blakeslee; Dial Ace Uniform Supply; Chemical Pollution Control; Commercial Envelope Manufacturing Co., Inc.; Southern Container Corporation; Optica Manufacturing Corporation; Marcisak Printing, and Island Metal Finishing.

4.0 PERSONNEL ORGANIZATION AND RESPONSIBILITIES

The following subsections briefly describe the health and safety designations and general responsibilities that will be employed for the Sonia Road Landfill site. See Appendix A for important telephone numbers and emergency information.

4.1 Designations of Personnel

Engineer: (To be determined) Phone

Engineer's Project Director

Engineer's Project Manager

Engineer's Field Operations Manager

Health & Safety Officer (HSO)

Construction Contractor: (To be determined) Phone

Contractor's Superintendent

Health and Safety Contractor (To be determined) Phone

Health & Safety Manager (HSM)

Town of Islip Project Contact

Town of Islip Project Manager Phone

NYSDEC Project Contact (To be determined) Phone

NYSDEC Project Manager

Designated Physician

To be determined Phone

4.2 General Responsibilities of Health and Safety Personnel

4.2.1 Health & Safety Officer (HSO)

The HSO has overall responsibility for ensuring that the policies and procedures of this SHSP are implemented.

The HSO shall provide regular support for all health and safety activities, including upgrading or downgrading the level of personal protection, as needed.

The HSO is on-site full-time for the duration of the final closure of the Sonia Road Landfill Project. Any potentially hazardous condition posing a risk beyond those defined herein will require the HSO to consult with the Field Operations Manager (FOM) and/or Project Manager .

The HSO shall complete a daily diary of activities with health and safety relevance including references to maintenance and calibration of health and safety equipment. The HSO shall also maintain all safety and health records including training certificates, monitoring results, incident reports, and medical safety and health files.

4.2.2 Health and Safety Manager (HSM)

The HSM shall approve the SHSP and remain available off site on an as-needed basis to provide technical support to the HSO.

4.2.3 Project Director

The Project Director will have overall responsibility for implementation of the site-specific health and safety plan, and the supervision and monitoring of employees and subcontractors.

4.2.4 Project Manager

The Project Manager will assure that all elements of this SHSP are implemented where applicable and that all project staff are protected and working in a safe manner.

4.2.5 Field Operations Manager (FOM)

The FOM (resident engineer) or designee, will be responsible for assuring that the work performed by the construction contractor is conducted in accordance with the requirements of the Contract Document. The FOM, or designee, is on site for the duration of the Project and will observe the day-to-day activities of this project.

4.2.6 Construction Contractor

The Construction Contractor shall prepare and implement a site-specific Helath and Safety Plan (HASP) to address the health and safety of the contractor's, subcontractor's, vendor's, and suppliers on-site personnel. The Construction Contractor's Superintendent shall cooperate with the FOM and the HSO. The Construction Contractor shall implement and maintain the HASP throughout the performance of the work. In areas identified as posing a potential risk to worker health and safety, and in any other such areas beyond those identified herein, the Superintendent shall be prepared to implement appropriate health and safety measures, including but not limited to the use of PPE.

4.2.7 Physician

The Designated Physician will be responsible for all medical review, diagnosis, and certification of site personnel who may have need to enter Exclusion Zones, if and when such zones are established.

5.0 HAZARD ASSESSMENT AND RISK ANALYSIS

5.1 Potential Health Hazards

The primary concern is to protect workers from potential exposure to contaminated soils, vapors, leachate and other contaminated materials when conducting the capping/closure activities. It is not anticipated that groundwater will be encountered as a part of this work. In addition to the above-mentioned chemical hazards, physical, biological and underground hazards may also exist. These hazards are described in more detail in the following sections.

5.1.1 Physical Hazards *(This is not an inclusive list- so BEWARE!)*

- Weather conditions-lightning, rain, hurricanes, etc.
- Slips, trips, falls
- Excavation cave in and engulfment
- Explosive gas, such as methane
- Hot work during installation of capping system
- Heavy equipment traffic
- Striking and struck-by (heavy equipment, falling trees)
- Unstable footing
- Noise
- Cold stress (see Appendix B)
- Heat stress (see Appendix C)

5.1.2 Biological Hazards

Due to the nature of the site, a number of biological hazards may exist. Potential biological hazards may include, but are not limited to: ticks; microbiological agents (bacteria, viruses, molds and fungi); improperly disposed medical waste, such as syringes or materials contaminated with human blood or body fluid; poison plants, such as poison ivy, oak and sumac; animals such as rodents.

5.1.3 Potential Contaminants of Concern

It is not anticipated that groundwater will be encountered with the capping/closure of the Sonia Road Landfill. However, since previous data available from groundwater samples collected in the vicinity of the Sonia Road Landfill site identified potential contaminants of concern, they are listed for reference on the following page. If groundwater is encountered, immediately notify the HSO for further instruction.

Vinyl chloride	1,1-Dichloroethene
Trichloroethene (TCE)	Chloroethane
Tetrachloroethene (PCE)	Benzene
1,1,1-Trichloroethane (TCA)	Chlorobenzene
1,2-Dichloroethene (DCE)	1,1-dichloroethane (DCA)
Chromium	

The Remedial Investigation (RI) conducted on the site detected contaminants of concern (COCs) as a function of the media investigated (see section 3.4). These COCs are not anticipated to be encountered with the activities associated with the capping/closure of the Sonia Road Landfill.

Soil Vapor Screening	• VOCs (did not indicate elevated levels) • Methane gas (elevated levels)
Surface Soil	• Semivolatile organic compounds SVOCs (slightly elevated levels) • Metals (slightly elevated levels; elevated levels in stressed vegetation area)
Waste Mass and Subsurface (soils below the waste mass) Soil	• SVOCs (elevated levels in waste mass, lower levels in subsurface soil) which are typical of municipal solid waste • Metals (elevated levels in waste mass, lower levels in subsurface soil) which are typical of municipal solid waste
Leachate	• VOCs • Leachate parameters, including ammonia, iron, manganese, sodium and phenols.

5.1.4 Health Hazard Evaluation

The primary routes of exposure to contaminants of concern for workers at this site are by inhalation of vapors and dusts, ingestion, and skin contact with contaminated soil, waste, or leachate. The potential for these

exposures exists during the activities associated with capping/closure such as trenching, excavation, and sub-grade surface preparation, etc. While it is not anticipated that groundwater will be encountered while executing the proposed scope of work, information on the associated potential hazard is being provided as a precaution.

Based only upon a review of available site information and on-site characteristic activities, it appears that the hazardous constituents represent a low to moderate health risk to site workers based on the potential for inhalation, ingestion, and skin contact, and the potential for exposure. OSHA Permissible Exposure Levels (PEL) and American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLV) may be exceeded during intrusive activities such as excavation and trenching. Table 5-1 lists the contaminants of concern, their PELs, TLVs, STELs (short-term exposure limits) and their primary health hazards. The activities to be performed during the capping/closure process are summarized in Section 5.2. These activities must be closely monitored and evaluated to determine the potential for exceeding the standards and the need to implement control measures to protect personnel and the environment. Adequate and appropriate measures must be taken by the Construction Contractor to prevent uncontrolled releases of vapor, liquid or solid phase contaminants and to prevent the exposure of workers and the public to contaminants. The assessment and prevention strategies discussed in this SHSP should be practiced on a continuing basis by the Construction Contractor during the course of this project. All personnel will keep upwind of all soil disturbances when possible. In addition, good work practices will be implemented to avoid dust generation, or splashing or aerosolizing of any liquids encountered.

Table 5-1

PERMISSIBLE EXPOSURE LIMITS AND PRIMARY HEALTH HAZARDS FOR POTENTIAL CONTAMINANTS AT THE SONIA ROAD LANDFILL

Contaminant of Concern	ACGIH TLV (ppm)	ACGIH STEL Ceiling (ppm)	OSHA PEL (ppm)	OSHA STEL Ceiling (ppm)	Primary Health Hazards
Carbon monoxide	25	---	50	---	CVS, lungs, blood, CNS
Hydrogen sulfide	10	15	---	20	Eyes, resp. sys, CNS
Iron	5 mg/m3	---	10 mg/m3	---	Resp. sys
Zinc	10 mg/m3	---	10 mg/m3	---	Resp. sys
Manganese	0.2 mg/m3	---	5 mg/m3	---	Resp. sys, CNS, blood, kidneys
Ammonia*	25	35	50	---	Eyes, skin, resp. sys
Phenol*	5	---	5	---	Eyes, skin, resp. sys, liver, kidneys
Chromium (metal)*	0.5 mg/m3	---	1 mg/m3	---	Eyes, skin, resp. sys
Vinyl chloride*	5	---	1 Action Level 0.5	5	Liver, skin, resp. sys., CNS, lymphatic system, confirmed human carcinogen
Trichloeoethene*	50	100	100	200	Resp. sys., heart, liver, kidneys, CNS, skin
Tetrachloroethene*	25	100	100	200	Liver, kidneys, eyes, upper resp. system, CNS
1,1,1-trichloroethane*	350	450	350	---	CNS, eyes, liver, kidneys, skin, cardiovascular systems
1,2-dichloroethene*	200	---	200	---	Eyes, resp. sys., CNS

Contaminant of Concern	ACGIH TLV (ppm)	ACGIH STEL Ceiling (ppm)	OSHA PEL (ppm)	OSHA STEL Ceiling (ppm)	Primary Health Hazards
1, 1-dichloroethane*	100	---	100	---	Skin, liver, kidneys, lungs, CNS
1,1-dichloroethene*	5	20	---	---	Eyes, skin, resp. system, CNS, liver, kidneys
Chloroethane*	100	---	1000	---	Liver, kidneys, resp. sys., liver, kidneys, CVS, CNS
Benzene*	10	---	1	5	Eyes, skin, respiratory system, blood, CNS, bone marrow
Chlorobenzene*	10	---	75	---	Eyes, skin, resp. sys, CNS, liver
Bromoform*	0.5	---	0.5	---	Eyes, skin, resp. sys, CNS, liver, kidneys

*: These constituents are primarily associated with groundwater at the site. It is not anticipated that groundwater will be encountered during the normal course of work on this site. However, some of these constituents may also be associated with the waste mass soil vapors and leachate which may be encountered during specific activities such as trenching or excavation.

5.1.5 Hazard Communication Program

The Engineer and the Construction Contractor shall each maintain their Hazard Communication Program and Material Safety Data Sheets for hazardous substances used or brought to the site by them. On-site personnel shall be briefed about materials to be used on site.

All containers brought on-site shall be properly marked and labeled in accordance with 29 CFR Parts 1910.1200 and 1926.59.

The Engineer's HSO shall review the SHSP with all Town, NYSDEC and Engineer's personnel working on-site. The review shall be conducted consistent with the training requirements of the above reference OSHA regulations.

5.2 Activity Safety and Health Hazard Analysis

Field activities to be conducted by the Construction Contractor for the capping/closure project at Sonia Road Landfill will include the following:

- Clearing and grubbing of existing vegetation including grasses and other herbaceous plants, shrubs and trees.
- Cutting, digging, grading, shaping, excavating, stockpiling, transporting and relandfilling of existing surface soils and below grade waste mass to establish required contours at the site.
- Trenching and excavation of the waste mass and native soils for the installation of the anchor system for the landfill cap.
- Lifting, unrolling, fitting, sewing and heat welding of the geotextile, geomembrane and geocomposite materials to be placed on the site.
- Cutting, trenching, digging, drilling and filling of the waste mass, imported cover, native soils and roadways during the construction and installation of the subsurface gas collection system, drainage system and site utilities.
- Stockpiling, distributing, grading, proofrolling and compacting of general fill and soil materials during installation of the subgrade, gas venting, barrier protection and topsoil layers of landfill cap.

With the above activities some inherent safety risks are expected. Mechanical and physical struck-by hazards associated with equipment and installation

activities exist. There are also the potential hazards of fire and explosion due to the presence of methane gas. Electrical hazards may exist from underground lines, overhead lines and use of electrical equipment and tools. The protection of underground utilities is promulgated under New York State Department of Labor Industrial Code 53. All utilities should be clearly marked prior to undertaking site-related work.

Results of the RI/FS indicate that the characteristic of the materials incorporated into the waste mass is primarily municipal solid waste consisting of garbage, rubbish, tires, wood, metal, glass, plastic, paper, fabric, yard waste, bagged refuse, construction and demolition debris along with appliances and other household items and automobile parts. The direct handling of drums or containers containing solid or liquid chemicals or chemical waste is not expected during the capping and closure process. In the event that such materials are encountered during the construction process, the operation related to the encounter will cease and any uncovered drum or container that has been damaged will be immediately covered with soil by the Construction Contractor to minimize release of volatile compounds. This condition will be recorded and reported to the Islip Resource Recovery Agency and Town of Islip, by the Construction Contractor and the area and activity will be secured until health and safety risks are properly assessed and further actions are determined.

Grading activities including construction of gas venting and drainage systems and laying of geotextiles to be conducted during the capping and closure process represent a low* health risk while excavation and trenching activities represent a moderate* health risk given the potential to encounter contaminated materials. The risk associated with physical hazards while conducting these activities is moderate to high*. Potential levels of airborne contaminants occurring as gases, vapors or dusts or potential dermal contact with contaminated materials, soils or leachate may dictate use of appropriate personal protective equipment and safety measures as deemed necessary by the HSO. (***The risk ratings represent a qualitative description of probabilities for encountering the hazards. low - not likely to occur. moderate - likely to occur. high - very likely to occur.**)

Selection and use of proper personal protective equipment and stringent personal hygiene practices should reduce potential health hazards.

Multiple operations will be conducted simultaneously. Restricting access of on-site personnel to designated activities, maintaining safe distances from moving and operating equipment, using intrinsically safe non-sparking equipment and tools that are pneumatically or hydraulically driven where potentially explosive environments exist, and wearing proper safety equipment will reduce risk of injuries.

6.0 TRAINING REQUIREMENTS

6.1 General Health and Safety Training

6.1.1 Any on-site personnel who are assigned to work in or enter into an Exclusion Zone or a Contaminant Reduction Zone should they be established (see Section 10.0) must be trained in accordance with 29 CFR 1910.120. This training will be required for personnel performing or supervising work; for health, safety, security, or administrative purposes; for maintenance; or for any other site related function. These training requirements also apply to site visitors who enter an Exclusion Zone or a Contaminant Reduction Zone (see Section 10.0 for clarification).

6.1.2 The training shall include a minimum of forty hours of general health and safety training and three days of on-site supervised experience. Documentation of all such training shall be made available to the HSO before any person shall be allowed to enter any potentially contaminated area (namely, the Exclusion Zone or the Contaminant Reduction Zone).

6.2 Site Specific Training

6.2.1 All site personnel must receive site-specific training administered by the HSO. For those personnel who will not have access to Exclusion and Contaminant Reduction Zones should they be established, this training shall consist of site and work-practice familiarization.

Personnel who may potentially come into contact with hazardous materials or are assigned to work in an Exclusion or Contaminant Reduction Zone should they be established, shall attend a training program performed by the on-site HSO. They shall become familiar with the SHSP and certify their understanding of this plan (see Appendix D). This training program shall include, at a minimum, training in the following areas:

- Hazard analysis (chemical/physical/biological hazards).
- Standard safety operating procedures.
- Personal hygiene.
- Safety equipment to be used.
- Personal protective equipment to be worn including care, use, and proper fitting.
- Decontamination procedures.
- Areas of restricted access and prohibitions in work areas.
- Emergency procedures and plans.
- Respiratory equipment training and qualitative fit-testing protocols.

- First aid procedures.
- On-site and off-site communications.
- Hazardous materials handling procedures.
- Air monitoring instrumentation use and calibration.
- Sample collection.
- Hazardous materials recognition.
- The "Buddy System" to be used at the site.

6.2.2 Training sessions for visitors entering any Exclusion or Contaminant Reduction Zones shall be conducted by the HSO. See Section 10.1 for descriptions of the Exclusion and Contaminant Reduction Zones. Abbreviated awareness training for visitors who remain in the Support Zone will also be provided by the HSO.

6.2.3 Safety and health meetings shall be conducted at the initiation of the project by the HSO for all personnel assigned to work at the site. (See Appendix E for Safety Meeting record.)

6.2.4 Proof of training for all Town, NYSDEC and Engineer's personnel will be listed in Appendix F. Personnel who have not successfully completed the required training shall not be permitted to enter any Exclusion Zone or Contaminant Reduction Zone.

6.2.5 Daily "Tool Box" safety meetings shall be conducted to keep all on-site personnel aware of current safety and health hazards and changes to work site conditions. Any modifications that the HSO makes to the SHSP will be communicated to personnel at this time.

6.2.6 New employees involved in hazardous activities shall be indoctrinated by the HSO prior to entering the site to work. All training requirements must be completed by a new employee prior to indoctrination. Indoctrination will be comprised of the site-specific training program, the task/operation safety and health risk analysis, and the phased accident prevention plan. This training shall be documented in the Site Worker Training and Medical Examination Record (Appendix F).

7.0 PERSONAL PROTECTIVE EQUIPMENT

7.1 General

All on-site personnel shall have appropriate PPE for their designated assignments.. All PPE is to be used properly and protective clothing is to be kept clean and well maintained. The HSO shall maintain constant communication with on-site personnel when conducting air monitoring and determining "action levels" at which the specified minimum levels of protection are either upgraded or downgraded based upon air monitoring results and direct contact potential. The HSO has the authority to require the use of additional equipment, if necessary, for specific operations, or may tailor PPE specifications to best fit the hazard control requirements as appropriate. Action levels are defined in Section 9 and are summarized in Table 9-1.

Levels of PPE or specific personal protective equipment required for the Closure Project include:

Work Tasks	PPE Level Hierarchy* (As determined by HSO, augmented by action levels)
Trenching/excavation	General site safety equipment, Level D, C or B
Subgrade preparation, including : • Clear vegetation • Cut, grade and/or fill to achieve prepared subgrade elevations • Refill excavated waste materials to areas requiring fill • Cover exposed waste and/or relandfilled areas with a 6-inch layer of daily cover • Compact • Proofroll subgrade surface • Survey prepared subgrade surface	General site safety equipment, Level D, C or B
Transporting and/or refilling waste materials	General site safety equipment, Level D, C or B
Installing geotextile fabric	General site safety equipment, Level D, C or B

Work Tasks	PPE Level Hierarchy* (As determined by HSO, augmented by action levels)
Installing gas venting layer	General site safety equipment**
Installing geomembrane	General site safety equipment**
Installing geocomposite drainage layer	General site safety equipment**
Installing barrier protection layer	General site safety equipment**
Laying topsoil and planting vegetation	General site safety equipment**
Emergency entry into Immediately Dangerous to Life or Health Environments	Level B
Welding	Welding helmets, goggles, gloves, and additional PPE as required by HSO

* The PPE levels will be augmented by action levels triggered by real time air monitoring as listed in Table 9-1. If at any time there is doubt about which level of PPE is acceptable per task, the next highest level of protection will be selected. Specific combinations of PPE will be determined by the HSO and will depend upon specific job assignment of worker.

** General site safety equipment is used when the possibility of dermal contact with waste materials is unlikely. However, respiratory protection may be needed when air monitoring indicates elevated levels of air contaminant(s) and inhalation hazard is a concern. For such situations, upgrading to Modified Level C may be needed.

7.2 General Site Safety Equipment Requirements

This is the basic work uniform and will primarily be worn outside any Exclusion Zone and Contaminant Reduction Zone that may be established at the Sonia Road Landfill Site.

7.2.1 Equipment

- Coveralls – optional, may be disposable type.

- Boots/shoes – steel toe work shoes or boots.
- Hard hat (ANSI approved).
- Gloves – for materials handling operations.
- Safety glasses with side shields- ANSI approved- as required by activity.
- Hearing protection – if work is on or near noisy equipment.

7.3 Level D Protection

Level D protective equipment shall be worn during when performing tasks involving direct handling of potentially contaminated material or when there is potential for direct skin or bodily contact with potentially contaminated material. The HSO may modify equipment requirements based upon changes in site conditions or as warranted by specific work tasks.

7.3.1 Equipment

In combination with General Site Safety Equipment, Level D may include the following as required by activity and determined by the HSO:

- One or two piece particulate resistant suit, tyvek or equivalent breathable type.
- Outer Gloves - minimum 11 mil. nitrile or equivalent;
- Inner Gloves - latex.
- Outer Boots - neoprene or equivalent;
- Inner Boots- steel toe and shank or equivalent combination (ANSI approved).
- Safety glasses or goggles (ANSI approved).
- Hard hat with splash shield if needed (ANSI approved).
- Hearing protection (if work is near noisy equipment)

7.4 Level C Protection

Level C protection shall be selected when a modified level of respiratory protection is needed. Selection shall be made when air monitoring results of the site or individual work areas exceed the action level criteria. (see Table 9-1)

7.4.1 Equipment

- Full facepiece, air purifying respirator with combination organic vapor and high efficiency particulate air (HEPA) cartridges (OSHA/NIOSH approved).
- Hooded one or two piece chemical resistant suit, PE, Tyvek or

equivalent for protection against splash or particulate.

- Outer Gloves - minimum 11 mil nitrile or equivalent.
- Inner Gloves - latex.
- Outer Boots - neoprene or equivalent.
- Inner Boots - steel toe and shank or equivalent combination (ANSI approved).
- Two way radio communications (for remote operations).
- Hard hat with splash shield (ANSI approved).
- Hearing protection (if work is near noisy equipment)

Note that modification of protective clothing may be made upon the approval of the HSO. Breathable tyvek may be used for Modified Level C when respiratory protection is needed and skin contact or absorption is not a major concern.

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7.5 Level B Protection

Level B protection requires full chemical resistant clothing with a full facepiece SCBA or supplied air respirator. Activities which may result in this level of protection being required will not be implemented until the equipment is made available at the site. The Engineer's Project Manager/Director and the Construction Contractor's Superintendent will be notified should air monitoring indicate this level of protection is required. Implementation of Level B protection will only be performed when sufficiently trained personnel (minimum of two) are available on-site.

7.6 Confined Spaces

Under no circumstances will confined spaces be entered unless discussed with the Project Director and the HSO, an addendum to the SHSP is prepared to incorporate additional safety requirements, and personnel are trained appropriately to deal with confined space hazards. For excavation or trenching operations, the Construction Contractor shall assure that a competent person is provided to oversee the operations.

7.7 Standing Orders

7.7.1 All prescription eyeglasses in use on the site shall be safety glasses. Prescription lens inserts shall be provided or personal contact lenses may be used for full-face respirators. All eye and face protection shall conform to OSHA 1910.133.

7.7.2 Programs for respiratory protection shall conform to OSHA 1910.134 and

ANSI Z88.2-1992. A respiratory procedure addressing site-specific respirator care and cleaning is described in Appendix F.

7.7.3 Should Level C be required, personnel unable to pass a fit-test shall not enter or work in the Exclusion Zone or Contaminant Reduction Zone.

7.7.4 Each respirator shall be individually assigned and not interchanged between workers without cleaning and sanitizing. Cartridges/canisters and filters shall be changed daily or upon breakthrough, whichever occurs first. If breakthrough occurs, a re-evaluation by the HSO of the protection level is warranted. A procedure for assuring periodic cleaning, maintenance, and change of filters shall be followed by each respirator wearer. This procedure is described in Appendix G - Respiratory Cleaning and Maintenance Procedure.

7.7.5 A hard hat shall be worn by all personnel. All head protection shall conform to the requirements in OSHA 1910.135.

7.7.6 All personal protective equipment which has been contaminated or is suspected of being contaminated shall be decontaminated before being reissued, or disposed of properly. Disposable equipment shall be properly disposed of (as contaminated solid waste) at the end of the work day in the Personnel Decontamination Area. The HSO is responsible for ensuring all personal protective equipment is decontaminated before being reissued. All PPE shall be inspected for physical integrity. Any PPE that fails inspection shall be removed from service and disposed of properly.

7.7.7 All safety boots shall conform to OSHA 1910.136.

7.7.8 Power equipment may generate excessive noise levels (in excess of 85 decibels). Proper ear protection shall be provided and used in accordance with OSHA 1926.52.

8.0 MEDICAL SURVEILLANCE

All personnel entering an Exclusion Zone and/or Contaminant Reduction Zone must have satisfactorily completed a comprehensive medical examination prior to the initiation of potentially hazardous operations at the Sonia Road Landfill Site.

Medical examinations are not required for people that do not enter Exclusion or Contamination Reduction Zones.

The date of required medical examination for each affected individual will be documented in Appendix E - Site Worker Training and Medical Examination Record. A specific Medical Data Sheet for each affected individual will be filed with the HSO on-site prior to commencing operations. See Appendix H for Medical Data Sheet.

8.1 Medical Surveillance Protocol

8.1.1 Selection of the medical surveillance protocol is the physician's responsibility but shall meet the requirements of OSHA Standard 29 CFR 1910.120 for all affected personnel.

8.1.2 Additional clinical tests may be included at the discretion of the attending physician performing the medical examination.

8.2 Non-Scheduled Medical Examinations

The physician shall determine the scope of the Non-Scheduled Medical Examinations.

8.2.1 Non-scheduled medical examinations shall be conducted under the following circumstances:

- After acute exposure to any toxic or hazardous material.
- At the discretion of the HSO and/or the Physician, when an employee has been exposed to potentially dangerous levels of toxic or hazardous materials.
- At the discretion of the HSO and/or the Physician, and/or at the request of an employee with demonstrated symptoms of exposure to toxic or hazardous materials.

8.3 Documentation and Recordkeeping

8.3.1 Each site employer (Town, NYSDEC, and Engineer or subconsultants) shall be responsible to provide documentation that each site worker who requires a medical examination has received one

8.3.2 . The documentation shall also describe any specific limitations upon such individual's ability to work at the project site which were identified as a result of the examination.

8.3.2 The ability of on-site personnel who may be required to wear respiratory protection shall be certified by the physician or a licensed health care professional according to the requirements under OSHA 29 CFR 1910.134.

8.3.3 The Physician shall maintain and provide access for employees to his/her medical surveillance records according to OSHA requirements in 29 CFR 1910.1020.

9.0 ENVIRONMENTAL AND PERSONAL MONITORING PROGRAM

9.1 General

In order to protect site workers from harmful levels of airborne toxic materials, potentially explosive environments, or excessively hot/cold conditions, regular environmental and personnel monitoring must be accomplished to document exposures and to decide when to increase protective measures.

9.2 Air Monitoring

Particular phases of work or tasks may require the utilization of specific air monitoring equipment to detect relative levels of contaminants or identify unknown environments. Air monitoring will be conducted by the HSO for the express purpose of safe-guarding the health and welfare of Town, NYSDEC and Engineer's workers and the general public residing in the vicinity of the Sonia Road Landfill Site. The Construction Contractor will be required to provide air monitoring for their personnel. The on-site air monitoring will include use of direct reading air monitoring equipment.

- Photoionization Detector fitted with a 10.6 eV lamp, or approved equal.
- Bachrach Sentinel 44 oxygen, combustible gas, hydrogen sulfide and carbon monoxide meter, or approved equal.
- Mini-RAM Model PDM-3 dust monitor or equivalent.

9.2.1 Work Zone Air Monitoring

The primary areas or zones to be monitored during the project are the intrusive activity areas such as trenching/excavation locations, and areas of extensive, intrusive sub-grade preparation. Stockpiled areas of excavated landfill waste materials should also be monitored.

Air monitoring conducted within excavated trenches/pits will include continuous, direct reading monitoring for volatile organic compounds (VOCs), airborne particulate, and confined space hazards (oxygen deficiency, carbon monoxide, hydrogen sulfide, and combustible gases). Sub-grade surface preparation areas where landfill waste material may be disturbed will include continuous, direct reading monitoring for airborne particulate, combustible gases, carbon monoxide, hydrogen sulfide, and VOCs. Based on previous site studies, elevated methane gas was detected at various site locations where soil vapor screening points were monitored, while only low level VOCs were detected from these points. During any intrusive work on-site the level of explosive gas such as methane must be monitored.

HSO shall closely monitor the lower explosive limit (LEL) whenever intrusive work is performed and workers addressed by this plan must enter or be in close proximity to the excavated area.

Monitoring will be documented within work zones and at the work zone and site perimeters. Air monitoring for contaminants conducted in work zones will focus on worker's breathing zones and may include personal breathing zone samples. Monitoring for combustible gases will focus on all intrusive work areas. Perimeter air monitoring will attempt to quantify the nature and extent of emissions originating from work zones.

- **Exclusion Zone Air Monitoring**

  Air monitoring conducted in an Exclusion Zone will focus on real time measurement of toxic compounds that pose inhalation hazards, levels of flammable compounds for explosive hazards, and oxygen deficient atmospheres. A summary of the action levels is provided in Table 9-1.

  General visual observation shall also be used during all intrusive activities to identify airborne releases (vapors, smoke, etc.) changes in the coloration of excavated materials, changes to the structural integrity of the surface or mechanical integrity of the equipment. Should such conditions be noticed or encountered, work shall be halted, and the area evacuated until the Engineer's FOM and the Construction Contractor's Superintendent can be contacted and specific procedures for characterizing and handling the hazard can be developed.

  The HSO, or their on-site designee, shall observe site conditions daily with special attention to the aforementioned conditions. Depending on site conditions, additional personal protection measures may be implemented during the course of site work. Air monitoring is an integral portion of determining the area covered by the exclusion zone. All air monitoring readings must be below the action levels in Table 9-1. If they exceed the action levels, the exclusion zone must be expanded to encompass contamination above the action levels. The use of engineering and administrative controls can help reduce the size of the exclusion zone and should be employed where practical.

- **Site Perimeter Air Monitoring**

  Air monitoring will be performed at the upwind and downwind perimeter of the intrusive work locations, to document levels of contaminants that might be moving off-site.

- **Background Air Monitoring**

  Background air monitoring will be conducted prior to the start of work each day. Contaminant levels shall be obtained at the upwind site perimeter of any Exclusion Zone. Wind direction will be determined prior to initiation of investigative activities. This background data must be annotated on the appropriate air sampling forms for that day. The background levels should also be checked whenever there is a change in wind direction (from the upwind side of the site) to establish a new background baseline for site air monitoring.

- **Community Air Monitoring**

  Air monitoring for combustible gas, volatile compounds and particulate levels at the perimeter of any site is necessary.

  When any intrusive work is proceeding on-site, whether an exclusion zone has been established or not, combustible gas and volatile organic compounds must be monitored at the downwind perimeter of the work area daily on a continuous basis. If combustible gas exceeds 10% LEL or total organic vapor levels exceed 5 ppm above background, field activity must be halted and monitoring continued. All readings must be recorded and be available for review.

  Particulates must also be continuously monitored (during intrusive work) at the downwind perimeter of the site with a portable particulate monitor that would have an alarm set at 150 $\mu g/m^3$. In the event downwind particulate levels exceed 150 $\mu g/m^3$, then particulate levels upwind of the zone will be measured. If the down wind particulate level is more than 2.5 times greater than the upwind particulate level, then excavation or other intrusive activity must be stopped and corrective action taken. All readings must be recorded and be available for review.

- **Vapor Emission Response Plan**

  If the ambient concentration of organic vapors exceeds 5 ppm above background at the perimeter of the work area, excavation or other intrusive activities will be halted and monitoring continued. If the organic vapor level decreases below 5 ppm above background, field activity can resume, but more frequent intervals of monitoring, as directed by HSO, must be conducted. If the organic vapor levels are greater than 5 ppm over background but less than 25 ppm over background at the perimeter of the work area, excavation or other intrusive activity can resume provided:

  - the organic vapor level 200 feet downwind of the work area or half the distance to the nearest residential or commercial structure, whichever is less, is below 5 ppm over background, and

  - more frequent intervals of monitoring, as directed by HSO, are conducted.

  If the organic vapor level is above 25 ppm at the downwind perimeter of the work area, all work causing vapor emission must be shutdown. When work shutdown occurs, downwind air monitoring directed by the HSO will be implemented to ensure vapor emission does not impact the nearest residential or commercial structure at levels exceeding those specified in the Major Vapor Emission section.

- **Major Vapor Emission**

  If any organic levels greater than 5 ppm over background are identified 200 feet downwind from the site or half the distance to the nearest residential or commercial property, whichever is less, all work activities must be halted.

  If, following the cessation of the work activities, or as the result of an emergency, organic levels persist above 5 ppm above background 200 feet downwind or half the distance to the nearest residential or commercial property from the work area, then the air quality must be monitored within 20 feet of the perimeter of the nearest residential or commercial structure (20 Foot Zone).

  If efforts to abate the emission source are unsuccessful and if any

of the following levels persist for more than 30 minutes in the 20 Foot Zone, then the Major Vapor Emission Response Plan shall automatically be placed into effect:

- Organic vapor levels approaching 5 ppm above background.

However, the Major Vapor Emission Response Plan shall be immediately placed into effect if any of the following levels are identified in the 20 Foot Zone:

- Organic vapor levels greater than 10 ppm above background.

- **Major Vapor Emission Response Plan**

  Upon activation, the following activities will be undertaken:

  - The local police authorities will immediately be contacted by the HSO and advised of the situation.
  - Air monitoring will be conducted at 30 minute intervals within the 20 Foot Zone. If two successive readings below action levels are measured, air monitoring may be halted or modified by the HSO.
  - All emergency contacts listed in Exhibit A will go into effect and as appropriate.

- **Duration, Frequency, and Protocol**

  Monitoring for combustible gas, VOCs, dusts, and other confined space hazards will be required continuously during any intrusive site activities.

9.3 Cold Stress Monitoring

Cold Stress guidelines are described in detail in Appendix B.

9.4 Heat Stress Monitoring

Heat stress guidelines are described in detail in Appendix C.

9.5 Quality Assurance and Control

All monitoring instruments will be protected from surface contamination during use to allow easy decontamination. Instrumentation shall be calibrated weekly and operational checks conducted daily in the field over the duration of the day's field activities.

9.5.1 The following data shall be recorded by the HSO on the Air Monitoring Data form:

- Date and time of monitoring;
- air monitoring location;
- wind direction
- instrument, model #, serial #;
- calibration/background levels;
- results of monitoring; and
- HSO signature.

Note: See Appendix I for Air Monitoring Results Form

9.5.2
Interpretation of the data and any further recommendations shall be made by the HSO.

9.5.3
Air monitoring results shall be given verbally to the Engineer's FOM following each site scan that indicates contaminant concentrations in excess of the action levels. Results will then be documented in writing and provided to the FOM by the end at work day.

Table 9-1

ACTION LEVELS FOR EXCLUSION ZONE ACTIVITIES

(used to determine size of exclusion zone – do not confuse these levels with those set in the Community Air Monitoring Plan which are for site perimeter monitoring levels)

Action Level	Action To Be Taken
PID	
Background	General Site Safety Equipment or as required by activity
Background to 5 units* above background in breathing zone** and no vinyl chloride or benzene present	Halt work, evacuate area and allow area to ventilate prior to resuming work. Should levels persist, upgrade to Level C protection if required upon approval by HSO and FOM.
Greater than 5 units* above background in breathing zone** and no vinyl chloride or benzene present	Halt work, evacuate work area and allow area to ventilate prior to resuming work. Should levels persist, upgrade to Level B protection if required upon approval by HSO and FOM.
DRAGER COLORIMETRIC TUBE	
Positive color change for vinyl chloride or benzene <0.5 ppm	Halt work, evacuate area and allow area to ventilate prior to resuming work. Should levels persist, upgrade to Level C protection if required upon approval by HSO and FOM.
Vinyl chloride or benzene 0.5-1.0 ppm	Halt work, evacuate work area and allow area to ventilate prior to resuming work. Should levels persist, upgrade to Level B protection if required upon approval by HSO and FOM.
Vinyl chloride or benzene > 1 ppm	Shut down work activities. Monitor for off-site migration.
COMBUSTIBLE GAS METER	
Greater that 10% LEL as measured at the source or at a representative location in a trench or confined area	Halt work, evacuate area and allow area to ventilate to below 10% LEL prior to resuming work. Notify FOM.
OXYGEN	
Less than 20.5%	Continuous monitoring. Consider engineering controls.
Less than 19.5%	Evacuate work area. Institute ventilation and engineering controls. Maintain site conditions for at least 15 minutes before proceeding. Notify FOM.
Greater than 22%	Continuous monitoring and identify

Action Level	Action To Be Taken
	combustion sources.
Greater than 23.5%	Evacuate and institute engineering controls as necessary before proceeding. Explosive condition may be present. Notify FOM.
HYDROGEN SULFIDE	
Less than 10 ppm at breathing zone (1/2 PEL)	General Site Safety equipment or as required by activity, and continuous monitoring
Above 10 ppm at breathing zone	Halt work, evacuate area and allow area to ventilate to below 10 ppm. If levels persist, upgrade to Level B protection if required upon approval by HSO and FOM.
CARBON MONOXIDE	
Less than 25 ppm at breathing zone (1/2 PEL)	General Site Safety, continue monitoring
Above 25 ppm at breathing zone	Halt work, evacuate area to ventilate below 25 ppm. Contact FOM.
RESPIRABLE DUST	
Less than 500 ug/m3	General Site Safety, continue monitoring
Above 500 ug/m3 over an integrated period of 15 minutes	Should level persist, contact the FOM prior to upgrading to Level C. Employ dust suppression method.

* **Units equal total ionizable organic/inorganic vapors and gases**

** **Reading sustained for one (1) minute (60 seconds) or longer**

10.0 SITE CONTROL MEASURES

10.1 Work Zones

The entire Sonia Road Landfill should be considered a restricted area during the capping/closure operation. Access to the site shall be limited to authorized personnel. In addition, certain tasks discussed in Section 5.0 performed in certain areas under certain conditions may be subject to zonation depending on a risk assessment by the HSO, Engineer and Construction Contractor as to the need for increased levels of restriction. At each area so designated, three work areas shall be established: the Exclusion Zone (EZ), Contaminant Reduction Zone (CRZ), and Support Zone (SZ). Only appropriately trained project related personnel will be allowed in the Exclusion Zone and Contaminant Reduction Zone. As long as an Exclusion Zone exists, a five foot wide (or distance determined by the HSO) strip of land bordering the EZ will be considered the CRZ if applicable. In addition to this strip of land, a specially demarcated area that connects the decontamination area to the CRZ will also be treated as an extension of the CRZ. All other areas inside the restricted area that are not an active Exclusion or Contaminant Reduction Zone will be treated as a Support Zone. Detailed explanations of each Zone are provided below.

10.1.1 Exclusion Zone

An Exclusion Zone (EZ) will include Sonia Road Landfill Site work areas where intrusive activities (such as excavation, trenching, sub-grade surface preparation, stockpiling, etc.) take place, **and** monitoring data substantiates the need for establishing an EZ. An EZ isolates an area of contaminant generation, and restricts (to the extent possible) the spread of contamination from active areas of the site to support areas and off-site locations. All intrusive work areas shall be evaluated to determine if establishment of an EZ is necessary. Once established, personnel entering the EZ must:

- Enter through a controlled access point (the Contaminant Reduction Zone),
- Wear the prescribed level of protection (see Section 7.0), and
- Be authorized to enter the Exclusion Zone (see Section 4.0, 6.0, and 8.0).

Personnel, equipment, or materials exiting the Exclusion Zone will be considered contaminated (with the exception of truck drivers who stay inside the vehicle cab). The HSO shall determine by visual inspection site personnel requiring decontamination. Equipment and materials will either be subject to decontamination or containerized in uncontaminated devices as deemed necessary by the HSO. The HSO

will consult the Project Director or Manager to assure compliance with work plan specifications concerning decontamination issues.

Specific access for emergency services access to areas of specific site operations will be established by the HSO prior to commencing any operation. The delineated area of an Exclusion Zone may vary with task. (See Section 5.0 for specific task descriptions and Section 7.0 for levels of protection)

10.1.2 Contaminant Reduction Zone

Moving upwind from an Exclusion Zone, starting at the Hot Line and continuing to the Contaminant Control Line is the Contaminant Reduction Zone. This zone will border the Exclusion Zone and extend a distance as deemed necessary by the HSO. The Contaminant Reduction Zone is a transition zone between contaminated and uncontaminated areas of the site. When contaminated personnel, equipment, or materials cross the Hot Line, they are assumed to be contaminated from site operations. Being subjected to the decontamination process, they become less contaminated; when they reach the Contaminant Control Line, they are considered clean and can exit this zone without spreading contamination.

Within the Contaminant Reduction Zone is the Contaminant Reduction Corridor (CRC), where materials necessary for personnel and equipment decontamination are kept. A separate area shall be established for heavy equipment decontamination. In addition, certain safety equipment (e.g.; emergency eye wash, fire extinguisher, and first aid kit) are staged in this zone.

The level of protection to be used within the Contaminant Reduction Zone will normally be Level D. However, the HSO shall determine appropriate levels of protection based upon air monitoring readings, and visual inspection of personnel, and equipment operations in the Contaminant Reduction and Exclusion Zones. Equipment operators (cranes & trucks) physically performing tasks outside the CRC may be exempt from this requirement as approved by the HSO.

10.1.3 Support Zone

The Support Zone is the outermost zone of the site, separated from the Contaminant Reduction Zone by the Contamination Control Line; it is considered a clean area. Movement of personnel and materials from this zone into restricted areas and the Contaminant Reduction Zone will be through access points controlled by the HSO.

The Support Zone contains the necessary storage of equipment, stockpiling of material and support facilities (including personal hygiene facilities) for site operations. Eating, drinking, and smoking will be allowed only in this zone. It also contains a command post, communications center, security check-point and source of emergency assistance for operations in the Exclusion Zone and Contaminant Reduction Zone. A log of all persons entering Exclusion and/or Contaminant Reduction Zones will be maintained by the HSO.

The level of protection used in this zone is general site safety equipment (see Section 7.0).

10.2 Buddy System

10.2.1 All on-site personnel shall utilize a buddy system when any task performed at the Sonia Road Landfill Site requires:

- Work performed in an Exclusion Zone
- The use of protective clothing above General Site Safety Equipment or Level D as determined by the HSO
- Communication between an Exclusion Zone and outside the Exclusion Zone.

10.2.2 The HSO and FOM shall enforce the buddy system and have the authority to modify the criteria stated above to deal with changing site specific and environmental conditions.

10.2.3 In order to ensure that help will be provided in an emergency, all on-site personnel shall be in line-of-sight contact or in communication by radio with the HSO when working in an Exclusion Zone.

10.3 Site Communications Plan

10.3.1 On-site supervisory personnel will establish internal communication procedures.

10.3.2 The HSO shall ensure all site personnel are trained to use internal communications to:

- alert personnel to on-site emergencies;
- pass along safety information (such as for heat stress control, cold stress control, or rest period time, etc.);
- note changes in work scope, scheduling or sequencing of operations

- maintain site control (such as notification of deliveries, vandalism, intruders, or violations of SHSP protocol).

10.3.3 Verbal communications and hand signals shall be used for all tasks at the Sonia Road Landfill Project. However, for some tasks performed in General Site Safety equipment, Level D or Level C, radio communications may be used.

10.3.4 Any Exclusion Zone work activity being performed out of the line of sight of the HSO, may require use of radio communications. The HSO may designate a radio operator at the location where the work activity is being performed.

10.3.5 Air horns shall be positioned at any Exclusion Zone work area to be used for emergency response only. The HSO shall designate air horn blast sequences for identification of work location, type of emergency, and need for evacuation of all personnel .

10.3.6 Wind direction indicators shall be installed such that a line-of-sight is maintained with all personnel in all work zones. The HSO shall designate specific locations for wind direction indicators.

10.3.7 All moving machinery, bulldozers, cranes, dump trucks, etc. shall have working backup alarms.

10.3.8 External communication procedures shall be established and maintained by the Engineer in order to coordinate any emergency response, report to management, and maintain contact with essential off-site personnel.

10.3.9 All on-site personnel shall be informed of external communications hardware (such as telephone, etc.) and the necessary telephone numbers to contact in the event of an emergency situation (fire, police, ambulance, etc.).

10.3.10 All emergency numbers along with a site map and other emergency information shall be conspicuously posted and available in the Engineer's trailer, the Construction Contractors trailer and at any command post or other accessible location as deemed appropriate or necessary. (see Appendix A for listing of important telephone numbers).

10.3.11 Appropriate action shall be taken should any hazardous environmental

condition be observed on site. These conditions and the appropriate action to be taken are as follows:

OBSERVATION	ANTICIPATED HAZARD	ACTION
Muddy Condition	Personnel/Slip Equipment Instability	Monitor Work Until Condition Improves
Lightning	Electrocution	Stop Work Until Condition Subsides
Horn Blasts or Site Emergency		Stop Work - Evacuate Site
Other notification by Site Personnel		Follow Emergency Notification Procedures
Personal Injury	Other Personnel May Be Affected	Follow Emergency Notification Procedures
Personal Fatigue	Cold/Heat Stress	Follow Cold/Heat Stress Guidelines
Windy Condition	Overhead Hazards Visual Impairment	Stop Work Until Condition Subsides

10.4 Medical Assistance (see Appendix A for complete listing of emergency contacts): The primary source of medical assistance for the Sonia Road Landfill Site is:

Good Samaritan Hospital

Location: 1000 Montauk Hwy, West Islip, NY
Telephone: 516-376-3000

The secondary medical assistance facility for the Sonia Road Landfill Site is:

Southside Hospital

Location: 301 E. Main Street, Bayshore, New York
Telephone: For Emergencies (516) 968-3314
For general use (516) 968-3000

See Figure 2 and 3 for Hospital Route Map and Directions.

EMERGENCY TELEPHONE NUMBERS

AGENT/FACILITY	TELEPHONE	EMERGENCY
Emergency Medical Services (Ambulance)	911	911
Police Department	911	911
Fire Department	911	911
Good Samaritan Hospital	516-376-3000	
Engineer's Office	to be determined	
Construction Contractor	to be determined	
Health and Safety Office	to be determined	
NYSDEC Contact		
Town of Islip Contact	(516) 224-5644 William F. Graner P.E., Ph.D. Resource Recovery Agency	

ON-SITE FIRST AID EQUIPMENT

A first aid kit will be available at the site.

EMERGENCY MEDICAL INFORMATION FOR POTENTIAL CONTAMINANTS

Substance	Exposure Symptoms	First Aid
VOCs	Dermal: Irritation Inhalation: Dizziness, Nausea	Rinse affected area with water. Ventilate, artificial respiration
Particulate	Eye irritation Inhalation: coughing choking	Flush with copious amounts of water Ventilate, artificial respiration
H_2S	Inhalation: Irritation	Ventilate, artificial respiration
CO	Headache, weak, Dizziness, nausea	Ventilate, artificial respiration
Methane	Inhalation: Dizziness, Nausea	Ventilate, artificial respiration

GENERAL EMERGENCY PROCEDURES

On-site personnel will use the following standard emergency procedures. The HSO shall be notified of any on-site emergencies and shall be responsible for ensuring that the appropriate procedures are followed.

Personnel Injury: Administer first aid and/or CPR, and arrange for medical attention

Fire/Explosion: The fire department shall be alerted by the field engineer. Personnel shall move a safe distance from the involved area.

10.5 Safe Work Practices

Workers are expected to adhere to established safe work practices for their respective specialties. The need to exercise caution in the performance of specific work tasks is made more acute due to:

- Physical properties of site materials as well as the potential for encountering chemical and biological hazards
- Other types of hazards present, such as explosive gas, heavy equipment, falling objects, loss of balance or tripping;
- Weather restrictions;
- Restricted mobility and reduced peripheral vision caused by the use of personal protective equipment;
- The need to maintain the integrity of personal protective equipment;
- The increased difficulty in communicating when respiratory protection is used.

Work at the site will be conducted according to established protocols and guidelines as contained in this document for the safety and health of all involved. Among the most important of these principles for working at the Sonia Road Landfill Site are the following:

10.5.1 General

- In any unknown situation, always assume the worst conditions and plan responses accordingly.
- Because no personal protective equipment is 100 percent effective, all personnel must minimize contact with contaminated or potentially contaminated materials. Plan work areas, decontamination areas, and procedures accordingly.
- Smoking, eating, chewing gum or tobacco, or drinking in any Contaminant Reduction Zone and Exclusion Zone that may be required will not be allowed. Oral ingestion of contaminants is the second most likely means of introducing toxic substances into the body (inhalation is the first).
- Work breaks should be planned to prevent stress-related accidents or fatigue related to wearing protective gear.
- Medicine and alcohol can potentate the effects of exposure to toxic chemicals and cold stress. Prescribed drugs should not be taken if working in any Contaminant Reduction Zone or Exclusion Zone, unless the physician has given approval. Alcoholic beverage consumption shall be prohibited on the site.
- Personnel must be observant of not only one's own immediate

surrounding, but also those of others. Everyone will be working under constraints, therefore, a team effort is needed to notice and warn of impending dangerous situations. Extra precautions are necessary when working near heavy equipment and while utilizing personal protective gear because vision, hearing, and communication will be restricted.

- All facial hair that interferes with the respirator facepiece fit, must be removed prior to donning a respirator for all tasks requiring **Level C** or **Level B** protection.
- Personnel must be aware that chemical contaminants may mimic or enhance symptoms of other illnesses or intoxication. Avoid excess use of alcohol or working while ill during the duration of task assignment.
- The HSO will maintain records in a bound notebook (e.g.; daily activities, meetings, incidents, and data). Notebooks will remain on-site for the duration of the project so that other safety and health personnel may add information, thereby maintaining continuity. These notebooks and daily records will become part of the permanent project file.

10.5.2 Site Personnel

- All personnel at the Sonia Road Landfill Site shall be identified to the HSO.
- All personnel operating in respective work zones shall dress according to the protection levels set forth in this SHSP (see Section 7.0).
- No red head wooden matches or lighters of any kind will be allowed in any Contaminant Reduction Zone or Exclusion Zone. Methane gas was detected in previous studies at levels of >100% LEL at various vapor screening locations. Special precautions must be used to monitor for explosive gases and prevent fire and explosion from happening.
- All personnel will have their buddy with them when the buddy system is in effect.
- All personnel will notify the HSO of any unusual occurrences that might effect the overall safe operation of the site.
- Any time a fire extinguisher is used, personnel shall notify the HSO of what took place.
- All injuries and accidents shall be immediately reported to the HSO and the FOM, and the appropriate reports filed.

10.5.3 Traffic Safety Rules

- Any project related vehicles that will not be involved in the site operations will be secured and the motor shut down.
- Only personnel assigned to this job will be allowed to enter the site. Any other people, whether from OSHA, EPA, or vendors supplying equipment, etc., will have to be met prior to entering the site.
- At no time will any equipment be allowed to block any access road. If in the moving of said equipment, a temporary blockage will exist, that equipment will have an operator available to move that equipment.
- All deliveries by outside personnel will be met at the gate and escorted by personnel onto the site.

10.5.4 Equipment Safety Rules

- All equipment and tools to be operated in potentially explosive environments must be intrinsically safe and not capable of sparking or be pneumatically or hydraulically driven. Diesel powered equipment shall be used for excavation, trenching and sub-grade preparation work instead of gasoline powered equipment.
- Portable electric tools and appliances can be used where there is no potential for flammable or explosive conditions. Three-wire grounded extension cords are required to prevent electric shocks. Ground fault interrupters shall be used as well.
- With hydraulic power tools, fire-resistant fluid that is capable of retaining its operating characteristics at the most extreme temperatures shall be used.
- Hot work such as cutting or welding operations shall not be carried out without the approval of the Construction Contractor's HSO and the FOM and until areas are checked for the presence explosive gas.
- Proper loading and operation of trucks on-site shall be maintained in accordance with DOT requirements covering such items as grounding, placarding, driver qualifications and the use of wheel locks.
- Operation of heavy construction equipment shall be in accordance with OSHA regulations 29 CFR 1910 and 1926.
- All equipment that is brought on-site will be available for inspection by the Construction Contractor's HSO.
- The HSO, or designee, will assign protective equipment to all site personnel and this equipment will be made available for inspection at anytime.

- All equipment shall be installed with appropriate equipment guards and engineering controls. These include rollover protective structures.
- Safe distances will be maintained when working around heavy equipment.
- At the start of each work day and on a weekly basis, inspection of brakes, hydraulic lines, light signals, fire extinguishers, fluid levels, steering, and splash protection shall be made by the equipment operators.
- All non-essential people shall be kept out of the work area.
- Loose-fitting clothing or loose long hair around moving machinery shall be prohibited.
- Cabs shall be free of all non-essential items and all loose items shall be secured.
- The rated load capacity of a vehicle shall not be exceeded.
- Dust control measures shall be enforced by the HSO if necessary to prevent the movement of dusts from contaminated areas to clean areas or reduce personal exposure.
- Equipment operators shall report to their supervisor(s) any abnormalities such as equipment failure, oozing liquids, unusual odors, etc.
- When an equipment operator must negotiate in tight quarters, a second person shall be used to ensure adequate clearance.
- A signalman shall be used to direct backing as necessary.
- Refueling shall be done in safe areas. Engines should not be fueled while vehicle is running. Ignition sources near a fuel area shall be prohibited.
- All blades and buckets shall be lowered to the ground and parking brake set before shutting off the vehicles.
- The Construction Contractor's equipment supervisor shall implement an ongoing maintenance program for all tools and equipment. All tools and moving equipment shall be regularly inspected to ensure that parts are secured and intact with no evidence of cracks or areas of weakness, that the equipment turns smoothly with no evidence of wobble, and that it is operating according to manufacturer's specifications.
- Tools shall be stored in clean, secure areas so that they will not be damaged, lost, or stolen.

10.5.5 Excavation/Trenching Safety

- Prior to any excavation work, the Construction Contractor shall determine the existence and location of any underground

installations; i.e., sewer, telephone, water, fuel, electric lines, etc.

- No shovel, dragline, or other digging machine shall be allowed to operate close to underground installations that must be left in place. A proximity limit for machine operations shall be established, and the installation shall be hand excavated.
- Any surface objects, located so as to create a hazard to employees involved in the excavation work or in the vicinity, shall be removed or made safe before excavation begins.
- Workers should not be permitted under loads that are handled by lifting or digging equipment. Workers should not be allowed to work in the excavation above other people unless the lower level people are adequately protected.
- While the excavation is open, underground installations must be protected, supported, or removed as necessary to safeguard employees. Adjacent structures must be supported to prevent possible collapse.
- The determination of the angle of repose and design of the supporting system shall be based on careful evaluation of pertinent factors such as: depth or cut; possible variation in water content of the material while the excavation is open; anticipated changes in materials from exposure to air, sun, water, or freezing; loading imposed by structures, equipment, overlying material, or stored material; and vibration from equipment, traffic, or other sources.
- Supporting systems; i.e., piling, cribbing, shoring, etc., shall be designed by a qualified person and meet accepted engineering requirements. When tie rods are used to restrain the top of sheeting or other retaining systems, the rods shall be securely anchored well back of the angle of repose. When tight sheeting or sheet piling is used, full loading due to ground water table shall be assumed, unless prevented by weep holes or drains or other means. Additional stringers, ties, and bracing shall be provided to allow for any necessary temporary removal of individual supports.
- All slopes shall be excavated to at least the angle of repose except for areas where solid rock allows for line drilling or pre-splitting.
- The angle of repose shall be flattened when an excavation has water conditions, silty materials, loose boulders, and areas where erosion, deep frost action, and slide planes appear.
- In excavations which employees may be required to enter, excavated or other material shall be effectively stored and retained at least 3 feet or more from the edge of the excavation.
- Sides, slopes, and faces of all excavations shall meet accepted

engineering requirements by scaling, benching, barricading, rock bolting, wire meshing, or other equally effective means. Special attention shall be given to slopes which may be adversely affected by weather or moisture content.

- Support systems shall be planned and designed by a qualified person when excavation is in excess of 20 feet in depth, adjacent to structures or improvements, or subject to vibration or ground water.
- Materials used for sheeting, sheet piling, cribbing, bracing, shoring, and underpinning shall be in good serviceable condition, and timbers shall be sound, free from large or loose knots, and of proper dimensions.
- Special precautions shall be taken in sloping or shoring the sides of excavations adjacent to a previously backfilled excavation or a fill, particularly when the separation is less than the depth of the excavation. Particular attention also shall be paid to joints and seams of material comprising a face and the slope of such seams and joints.
- Except in hard rock, excavations below the level of the base of the footing of any foundation or retaining wall shall not be permitted, unless the wall is underpinned and all other precautions taken to insure the stability of the adjacent walls for the protection of employees involved in excavation work or in the vicinity.
- Diversion ditches, dikes, or other suitable means shall be used to prevent surface water from entering an excavation and to provide adequate drainage of the area adjacent to the excavation. Water shall not be allowed to accumulate in an excavation.
- If it is necessary to place or operate power shovels, derricks, trucks, materials, or other heavy objects on a level above and near an excavation, the side of the excavation shall be sheet-piled, shored, and braced as necessary to resist the extra pressure due to such superimposed loads.
- When mobile equipment is utilized or allowed adjacent to excavations, substantial stop logs or barricades shall be installed. If possible, the grade should be away from the excavation.
- Adequate barrier physical protection shall be provided at all remotely located excavations.
- In locations where oxygen deficiency, flammable gases and vapors, or toxic contaminants may accumulate, air in the excavation shall be tested, and controls required for confined space entry shall be implemented.
- Where employees or equipment are required or permitted to cross over excavations, walkways or bridges with standard guardrails

shall be provided.

- Where ramps are used for employees or equipment, they shall be designed and constructed by qualified persons in accordance with accepted engineering requirements.
- Excavations more than 5 feet deep including the flight of the spoil piles shall be shored, laid back to a stable slope, or some other equivalent means of protection shall be provided where employees may be exposed to moving ground or cave-ins. Trenches less than 5 feet in depth shall also be effectively protected when examination of the ground indicates hazardous ground movement may be expected.
- Sides of trenches in unstable or soft material, 5 feet or more in depth, shall be shored, sheeted, braced, sloped, or otherwise supported by means of sufficient strength to protect the employees working within them.
- Sides of trenches in hard or compact soil, including embankments, shall be shored or otherwise supported when the trench is more than 5 feet in depth and 8 feet or more in length. In lieu of shoring, the sides of the trench above the 5-foot level may be sloped to preclude collapse, but shall not be steeper than a 1-foot rise to each ½-foot horizontal. When the outside diameter of a pipe is greater than 6 feet, a bench of 4-foot minimum shall be provided at the toe of the sloped portion.
- Materials used for sheeting and sheet piling, bracing, shoring, and underpinning, shall be in good serviceable condition, and timbers used shall be sound and free from large or loose knots, and shall be designed and installed so as to be effective to the bottom of the excavation.
- Additional precautions by way of shoring and bracing shall be taken to prevent slides or cave-ins when excavations or trenches are made in locations adjacent to back-filled excavations, or where excavations are subjected to vibrations from traffic, the operation of machinery, or any other source.
- When employees are required to be in trenches 4 feet deep or more, an adequate means of exit, such as a ladder or steps, shall be provided and located so as to require no more than 25 feet of lateral travel.
- Bracing or shoring of trenches shall be carried along with the excavation.
- Cross braces or trench jacks shall be placed in true horizontal position, be spaced vertically, and be secured to prevent sliding, falling, or kick-outs.
- Portable trench boxes or sliding trench shields may be used for the protection of personnel in lieu of a shoring system or sloping.

Where such trench boxes or shields are used, they shall be designed, constructed, and maintained in a manner which will provide protection equal to or greater than the sheeting or shoring required for the trench.

- Back-filling and removal of trench supports shall progress together from the bottom of the trench. Jacks or braces shall be released slowly and, in unstable soil, ropes shall be used to pull out the jacks or braces from above after employees have cleared the trench.

10.5.6 Daily Housekeeping

The site and all work zones shall be kept in an orderly fashion and the site is to be left safe and secure upon completion of each day's work.

10.5.6 Site Personnel Conduct

- All site personnel shall conduct themselves properly and in accordance with generally accepted good work practice.
- At all times, the HSO will monitor all safe operations at the site. Any operation not within the scope of the SHSP will be discussed fully before that operation begins.

11.0 PERSONAL HYGIENE AND DECONTAMINATION

11.1 General

11.1.1 All personnel performing or supervising closure activities within a hazardous work area, or exposed or subject to exposure to hazardous chemical vapors, liquids, or contaminated solids, will observe and adhere to the personal hygiene-related provisions of this section.

11.1.2 Any personnel found to be repeatedly disregarding the personal hygiene-related provisions of the SHSP shall be barred from the site by the HSO.

11.1.3 All on-site personnel shall wear personal protective equipment as required at all times whenever entering any established Contaminant Reduction Zone or Exclusion Zone.

11.1.4 Personal hygiene and decontamination facilities, in accordance with OSHA 29 CFR 1910.120 (N), will be provided on-site and include:

- Storage and disposal containers for used disposable outerwear
- Portable water for hand washing.

11.1.5 Hand washing facilities, a lunch area, and toilet facilities will be available at a pre-designated location as determined by the project manager in the event Exclusion Zone work is required.

11.2 Contamination Prevention

To minimize contact with contaminated substances and lessen the potential for contamination, the following will be adhered to during phases of excavation, sub-grade preparation and other intrusive work.

- Personnel will make every effort not to walk through any areas of obvious contamination (i.e., liquids, discolored surfaces, smoke/vapor clouds, etc.).
- Personnel will not kneel or sit on the ground in any Exclusion Zone and/or Contaminant Reduction Zone that may be established.

11.3 Personal Hygiene Policy In The Event That An Exclusion Zone Must Be Established

11.3.1 Smoking and chewing tobacco shall be prohibited except in a designated break area within the Support Zone.

11.3.2 Eating and drinking shall be prohibited except in the designated lunch or break area within the Support Zone.

11.3.3 All outer protective clothing (e.g.; chemically protective suits, gloves, and boots) shall be removed and personnel shall thoroughly cleanse their hands and other exposed areas before leaving the contaminant reduction zone.

11.3.4 Drinking of replacement fluids shall be permitted in a designated area of the Contaminant Reduction Zone. Personnel shall, as a minimum, remove outer and inner gloves, respirator and coverall top, and wash hands prior to drinking replacement fluids.

11.3.5 All personnel returning from the Contaminant Reduction Zone or the Exclusion Zone should change into fresh clothing after each working period or shift. Showering is mandatory upon return to each individuals' rest place.

11.4 Personnel Decontamination Procedures

Decontamination procedures are followed by all personnel leaving an Exclusion Zone. Under no circumstances (except emergency evacuation) will personnel be allowed to leave an Exclusion Zone prior to decontamination. Generalized procedures for decontamination follow. All procedures apply for Level C, however for Level D only steps 2, 3, and 8 apply. The HSO may modify these procedures based on site conditions.

Step 1 Drop tools, monitors, samples, and trash at designated drop stations (i.e.; plastic containers or drop sheets). See Section 9.4 for equipment decontamination specifics.

Step 2 Scrub outer boots and outer gloves with decon solution or detergent and water. Rinse with water.

Step 3 Remove tape from outer boots (if applicable) and remove boots; discard tape in disposal container. Place boots on boot rack.

Step 4 Remove tape from outer gloves (if applicable) and remove only outer gloves; discard in disposal container.

Step 5 This is the last step in the decontamination procedure if the worker has left the Exclusion Zone to exchange the cartridges on his/her air purifying respirator. The cartridges should be exchanged, new outer gloves and boot covers donned, the joints taped, if necessary, and the worker returns to duty.

Step 6 Remove outer garments and discard in disposal container. New outer garments shall be issued at the beginning of each work day or as deemed necessary by the HSO.

Step 7 Remove respirator and place or hang in the designated area.

Step 8 Remove inner gloves and discard in disposal container.

Note: Disposable items (i.e.; coveralls, gloves, and boots) will be changed on a daily basis unless there is reason to change sooner. Dual respirator cartridges will be changed daily, unless more frequent changes are deemed appropriate by site surveillance data or by assessments made by the HSO.

Pressurized sprayers or other designated equipment will be available in the decontamination area for wash down and cleaning of personnel, samples, and equipment.

A waterless hand cleaner and paper towels may be used for hands, arms, and any other skin surfaces potentially in contact with contaminated material.

Respirators (if used) will be decontaminated daily and taken from the drop area. The masks will be disassembled, the cartridges set aside, and all other parts placed in a cleansing solution. After an appropriate time in the solution, the parts will be removed and rinsed with tap water. Old cartridges will be discarded in the contaminated trash container for disposal. In the morning, the masks will be reassembled and new cartridges installed, if appropriate. Personnel will inspect their own masks and readjust the straps for proper fit.

11.5 Emergency Decontamination

Decontamination will be delayed if immediate medical treatment is required to save a life. Decontamination will then be done after the victim is stabilized. When decontamination can be performed without interfering with medical treatment, or a worker has been contaminated with an extremely toxic or corrosive material that could cause additional injury or loss of life, decontamination will be performed immediately.

When decontamination cannot be done, the victim will be wrapped in a chemical protective barrier (clothing or sheeting) to reduce contamination of other personnel. Emergency and off-site medical personnel will be informed of potential contamination and will be instructed about specific decontamination procedures. When the victim is transported off the site, personnel knowledgeable of the incident, the site, and decontamination procedure will accompany the victim.

11.6 Equipment Decontamination – General (Construction Contractor)

11.6.1 Work crews exiting from an Exclusion Zone if one is established, must pass through the Contaminant Reduction Zone. Vehicles and equipment used in an Exclusion Zone that have visible contamination on exposed surfaces shall be decontaminated in the Contaminant Reduction Zone prior to leaving the site.

11.6.2 No vehicles shall leave a Contaminant Reduction Zone until they are properly inspected and approved by the HSO for general cleanliness of exposed surfaces.

11.6.3 The HSO will instruct and monitor all vehicles to confirm proper decontamination prior to exiting. Approval shall be based on visual inspection of all exposed surfaces.

11.6.4 Personnel engaged in vehicle decontamination shall wear Level C or Level D equipment with respiratory protection consistent with the air monitoring results collected by the HSO, and perform personal decontamination at the completion of equipment decontamination.

11.6.5 An equipment decontamination area will be located within the Contaminant Reduction Zone for removing soil from all equipment leaving the work area. It will include a wash area for equipment and vehicles. This area is to be used when personnel are required, by normal practices, to come in contact with soil (i.e.; vehicle repair and refueling). All equipment being decontaminated by wash down will be located in the Contaminant Reduction Zone prior to maintenance work or refueling.

11.6.8 Only clean water will be used for personnel, equipment, and vehicle decontamination.

11.7 Small Equipment Decontamination Procedures

Small equipment used in an Exclusion Zone should be protected from contamination as much as possible by draping, masking, or otherwise covering the instruments with plastic (to the extent feasible) without hindering operation of the unit. For example, the Photoionization Detector can be placed in a clear plastic bag to allow reading the scale and operation of the controls.

Step 1 Remove coverings from equipment left in the drop area and place the coverings in appropriate waste containers.

Step 2 Any soil or moisture will be brushed or wiped with a disposal paper wipe. Place soiled wipes in appropriate containers.

Step 3 Bare units will then be placed in a clean plastic tub and wiped off with a damp, clean, disposable wipe. Equipment will then be allowed to air dry.

Step 4 Following decontamination, equipment will be checked and recharged, as necessary, for the next day's operations.

Step 5 Prior to entering an Exclusion Zone, all small equipment will be recovered with new, protective coverings, if necessary.

11.8 Heavy Equipment Decontamination Procedures (Construction Contractor)

Prior leaving the project site, any heavy equipment or vehicles used in an Exclusion Zone must be thoroughly decontaminated. Specific procedures are as follows:

Step 1 Initially, inspect equipment/vehicles to determine if gross decontamination is required first. Particular attention must be paid to tires, under surfaces, points of contact with the ground, and horizontal surfaces where dusts or aerosols might settle.

Step 2 If visible contamination is present, the equipment/vehicle must be moved to the decontamination pad where gross contamination will be scraped, brushed, or swept off.

Step 3 Following gross decontamination, or if visible contamination is no longer present, wash the equipment/vehicle with high pressure washer as deemed necessary by the HSO. Efforts should be made to minimize water usage to reduce wastewater quantities.

Step 4 Prior to releasing any heavy equipment or vehicles from the Contaminant Reduction Zone, decontamination personnel will contact the HSO for final approval.

12.0 EMERGENCY RESPONSE AND CONTINGENCY PLAN

12.1 General

This plan has been prepared in accordance with 29 CFR 1910.120 (l) and will address the following potential emergencies:

- Emergencies outside the Sonia Road Landfill Site.
- Emergencies within the Sonia Road Landfill Site.
- Chemical exposures.
- Site Evacuation.

12.2 Emergency Equipment: Specially marked and readily accessible emergency equipment will be provided as depicted in Table 12-1.

12.3 Special Requirements

12.3.1 The Construction Contractor will be on-call for any after hour emergencies resulting from adverse weather conditions. Incidents resulting from adverse weather will be reported via the HSO who will in turn contact the Project Director or FOM.

12.3.2 First aid kit locations will be specially marked and have adequate water and other supplies necessary to cleanse and decontaminate burns, wounds, or lesions. First aid stations will also stock buffer solutions for treating acid and caustic burns. Properly trained personnel shall perform first aid. Universal precaution shall be used when performing first aid. OSHA bloodborne pathogens regulation (29 CFR 1910.1030) shall be followed.

12.3.3 All site personnel shall notify each other including the HSO by verbal communications or by using emergency signals as depicted in Table 12-2.

12.4 Emergency/Accident Reporting and Investigation

In the event of an emergency associated with the site work, the HSO will, without delay take: 1) diligent action to remove or otherwise minimize the cause of the emergency, 2) alert the FOM, and 3) institute whatever measures are necessary to prevent any repetition of any conditions or actions leading to, or resulting in, the emergency. Notification of the FOM will occur immediately and initially be verbal with written notification occurring within 24 hours of the incident (i.e.; accident, explosion, serious exposure, etc.). The Incident Notification Form (See Table 12-3) and the OSHA 200 Form (available from the Project Manager) will

be used for written notifications and documentation.

TABLE 12-1

LOCATION OF EMERGENCY EQUIPMENT

EQUIPMENT	TYPE	LOCATION(S)*
Fire Extinguisher	20A-80B:C Dry Chemical	At Contractor's Field Trailer
First Aid Kit		Trailer
Eye Wash	Portable	Trailer
Emergency Sprayer	Portable	Trailer
Communication	Air Horns	Trailer
Map (Figure 2&3)	Hospital Route	Trailer

*If any Exclusion Zone is established, emergency equipment shall be provided at each work area within the zone.

Table 12-2

EMERGENCY SIGNALS

In most cases, field personnel will carry portable radios for communications. If this is the case, a transmission that indicates an emergency will take priority over all other transmissions. All other site radios will yield the frequency to the emergency transmissions.

Where radio communication is not available, the following air-horn and/or hand signals will be used:

EMERGENCY AIR-HORN SIGNALS

HELP!	Three Short Blasts	(...)
EVACUATION!	Three Long Blasts	(- - -)
ALL CLEAR!	Alternating Long and Short Blasts	(-.-.)

EMERGENCY HAND SIGNALS

OUT OF AIR, CAN'T BREATH!	Hand gripping throat
LEAVE AREA IMMEDIATELY, NO DEBATE!	Grip partner's wrist or place both hands around waist
NEED ASSISTANCE!	Hands on top of head
OKAY! - I'M ALL RIGHT! - I UNDERSTAND!	Thumbs up
NO! - NEGATIVE!	Thumbs down

Table 12-3

INCIDENT NOTIFICATION FORM

TO: Project Director, Sonia Road Landfill Capping/Closure Project

Date:_____

FROM: HSO and/or_____
(someone who has direct knowledge of the incident)

1. Contractor's name:_____

2. Organization:_____

3. Telephone Number:_____

4. Location:_____

5. Reporter Name:_____

6. Name of Injured:_____ Birth date_____

7. Company Employing Injured:_____

8. Date of Incident:_____

9. Company Employing Injured:_____

10. Location of Incident:_____

11. Brief Summary of Incident (provide pertinent details including type of operation at time of incident):

_____

_____

_____

Table 12-3 (continued)

12. Cause, if known:_____

13. Casualties, if any:_____

14. Details of Any Existing Chemical Hazards or Contamination:

_____

_____

15. Estimated Property Damage:_____

16. Affect on Contract Schedule:_____

17. Actions Taken by Contractor:_____

18. What Medical Help was Given:_____

_____

_____

19. Doctor and/or Hospital (if known):_____

_____

20. When did Employee Return to Work:_____

21. Other Damages/Injuries Sustained (public or private):

_____

_____

_____

22. Additional Information:

_____

_____

12.5 Emergency Medical Care

12.5.1 Emergency medical care will be provided to site workers and visitors by Good Samaritan Hospital at 1000 Montauk Hwy, West Islip, New York.

12.5.2 The hospital will be informed by the HSO or FOM of potential medical emergencies that could result from site operations and have been advised on the types of hazardous materials that may be on site. In the event of an incident requiring their assistance, specific details of hazardous materials should be provided to Good Samaritan Hospital medical staff, if available.

12.5.3 A list of Emergency Information will be posted at every work site telephone.

12.6 Emergencies Outside the Sonia Road Landfill Site

12.6.1 All work in the Sonia Road Landfill area will stop when advised by any authorized personnel and will remain so until otherwise instructed.

12.6.2 The HSO and FOM will be fully advised of any work that may affect the safety of on-site employees or property.

12.6.3 Actions to be taken in the event of an outside emergency will include:

- Cease all operations immediately; shut all equipment down and secure that equipment.
- All personnel will leave vehicles in work zone in a safe manner making sure any remaining vehicles will not hamper any emergency traffic in the area or block any fire hydrants or foam supply systems.
- All personnel will evacuate to a prearranged master area.
- All personnel will remain in the master area to await further instructions.

12.7 Emergencies Within Sonia Road Landfill Site

12.7.1 The Sonia Road Landfill Site will be the site of the capping/closure operation. The HSO will monitor all operations and assist any emergency personnel responding to any site emergency.

12.7.2 It will be the HSO's responsibility to maintain communications with all Project Field Team Members.

12.7.3 In the event of an emergency within the work zone at the Sonia Road Landfill Site, the emergency notification procedures shall be followed as described in Section 12.0 and Appendix A of this SHSP.

12.7.4 In all emergency situations, it will be the responsibility of the HSO, to ensure that all site personnel are accounted for.

12.8 Personnel Exposures

The emergency procedures to be used in the event of acute exposure (eyes, skin contact, inhalation) are described in Appendix A.

12.9 Site Evacuation

The site area will be evacuated and fire and police departments will be notified in the event of fire, explosion or their potential. Depending on the cause and magnitude of the conditions requiring evacuation, three stages have been designated as follows:

12.9.1 Upwind withdrawal - withdraw to a safe upwind location if:

- Air quality is outside of safe limits for volatile organics, combustible gases, particulates, or oxygen percentage for the level of protection being worn. The field team will withdraw to a safe upwind location determined by the HSO.
- A minor accident occurs. The victim will undergo decontamination procedures as appropriate and be transported to a safe upwind location. Field operations will resume after first aid and/or decontamination procedures have been administered to the affected individual.
- Protective clothing and/or respirator malfunctions.

12.9.2 Withdrawal from site - evacuate the site if:

- Explosive levels of combustible gases, toxic gases, or volatile organics are recorded.

- A major accident or injury occurs.
- Fire and/or explosion occurs.
- Shock-sensitive, unstable, or explosive materials are discovered.
- High levels of radioactive materials are discovered.

12.9.3 Evacuation of nearby facilities -

A continuous release of toxic, flammable, or explosive vapors from the site could affect people off-site. Air quality should be monitored downwind to assess the situation. Th FOM, or the on-site designee, is responsible for determining if circumstances exist for any level of off-site contamination warranting concern for people off-site. Always assume worst case conditions until proven otherwise. If conditions are marginal, evacuation should be conducted until acceptable conditions resume. Key personnel identified in the SHSP should be contacted when evacuation of nearby facilities becomes necessary.

A meeting area for evacuation purposes shall be designated by the HSO and the FOM prior to the start of the project. The HSO or designee will conduct head counts after any evacuations.

12.10 Community Health And Safety

12.10.1 Community Air Monitoring

As listed in Section 9.2 Air Monitoring, community air monitoring shall be conducted by real-time air monitoring for combustible gas, volatile organic compounds and particulate levels at the perimeter of the work area. The Vapor Emission Response Plan listed in Section 9.2 addresses major emission situations in case they occur. When the Vapor Emission Response Plan is active, the local police authorities shall be immediately contacted by the HSO and advised of the situation. All emergency contacts listed in Exhibit A Emergency Telephone Numbers will go into effect as appropriate.

12.10.2 Other On-site Situations that May Affect the Community

If at any time the Sonia Road Landfill Site needs to be evacuated due to fire, explosion, contaminant emission or their potential, the emergency procedures in Section 12.9 Site Evacuation shall be followed. Notification procedures to the community shall also follow Section 12 Emergency Response and Contingency Plan.

When the community needs to be notified in the event of an emergency,

local police and other authorities shall be contacted.

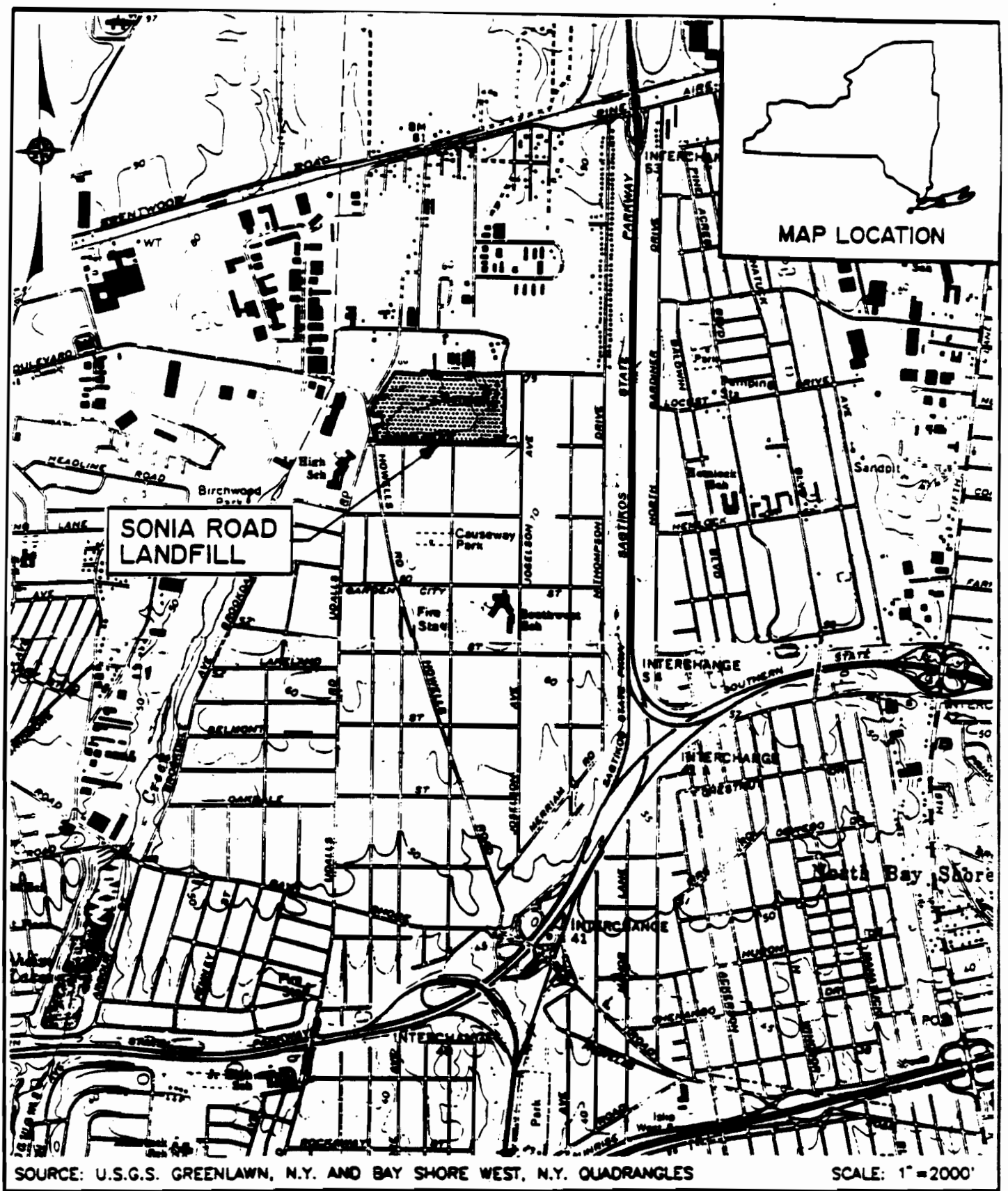
Information regarding the location of the emergency in relation to a specific recognizable landmark, nature of the emergency, and other relevant information shall be communicated to the local authority.

13.0 REGULATIONS

Regulations will be made available to all personnel involved in the Sonia Road Landfill project by the HSO. The regulations will cover three specific areas:

- Use of personal protective equipment.
- Personal hygiene.
- Provisions for smoking, eating, chewing, and drinking.

These regulations may be amended based on a need to disseminate information or policy. All regulations will be coordinated through the Engineer for approval prior to distribution. The three specified regulations are shown as Appendix J, K and L.



SITE LOCATION MAP

FIGURE 1

APPENDICES

APPENDIX A

EMERGENCY INFORMATION

HOSPITAL (Primary):	Good Samaritan Hospital 1000 Montauk HWY West Islip, NY Tel.: 516-376-3000
HOSPITAL (Secondary):	Southside Hospital 301 E. Main Street Bayshore, NY Tel.: (Emergency) 516-968-3314 Tel.: (General) 516-968-3000

EMERGENCY SERVICES	TELEPHONE EMERGENCY NO.
Police	911
Fire	911
Medical Services	911
Town of Islip-Public Safety	(516) 224-5300
Board Certified Physician:	to be determined
Engineer's Office:	to be determined
Construction Contractor:	to be determined
Health and Safety Manager:	to be determined
NYSDEC Project Contact:	
Town of Islip Project Contact:	William F. Graner, P.E., Ph.D. Islip Resource Recovery Agency (516) 224-5644

Appendix A (Continued)

EMERGENCIES WITHIN THE SONIA ROAD LANDFILL SITE

- Contact the HSO
- Contact the FOM
- Contact Town of Islip-Public Safety at (516)224-5300
- Report the following:
  - Location of emergency in relation to a specific recognizable landmark.
  - Nature of emergency:
    - **FIRE**, if so of what kind and what equipment is involved.

EMERGENCY MEDICAL INCIDENT, ALL INJURIES, ACCIDENTS) OR FIRES.

Communication will include:

- Number of injured people.
- Nature of injuries.
- If Project Field Team Members can't handle injuries with its resources, what emergency medical services will be needed.

- If any outside personnel must enter the Sonia Road Landfill site, any hazards will be communicated and those people will be supervised by the HSO.
- In the event that any site personnel wearing protective equipment in an Exclusion Zone becomes injured, the HSO or designated individual will do whatever decontamination is necessary to remove that equipment.
- Any emergency treatment information dealing with the injury will accompany the injured party so that those treating that person will have any and all information.

REQUEST FOR POLICE. If any person entering the Sonia Road Landfill Site who does not belong there becomes a problem, the Police will be notified. If that person either endangers the safe operation of Project Field Team members or himself, the HSO will suspend all work until that person can be removed.

- If site personnel will be evacuating the Sonia Road Landfill Site due to emergency.

Appendix A (Continued)

PERSONNEL EXPOSURES WITHIN THE SONIA ROAD LANDFILL SITE

- Contact the HSO
- Contact the FOM
- Provide Treatment as follows:

1. Eye Exposure - treat by immediate flushing with distilled water (portable eyewash). Transport for examination and treatment to Good Samaritan Hospital (516-376-3000) or alternate emergency care facility.
2. Skin Exposure - remove contaminated clothing and treat by washing with soap and water.
3. Inhalation - if a person inhales a large amount of organic vapor, the person will be removed from the work area to fresh air and artificial respiration will be administered if breathing has ceased. The affected person will be transported to Good Samaritan Hospital if overexposure to lungs has occurred.
4. Personal Injuries - in case of severe injury, the victim will receive emergency first aid at the site, as appropriate, and will be transported by ambulance or emergency vehicle to Good Samaritan Hospital. An accident form must be completed for any accident or occupational exposure and forwarded to the FOM and HSO.

Appendix A (Continued)

EVACUATING THE SONIA ROAD LANDFILL SITE

- Contact the HSO
- Contact the FOM
- Contact the Town of Islip-Public Safety at (516)224-5300
- Follow the directions below:

1. Upwind withdrawal - withdraw to a safe upwind location if:

    - Air quality is outside of safe limits for volatile organics, combustible gases, particulates, or oxygen percentage for the level of protection being worn. The field team will withdraw to a safe upwind location determined by the HSO.
    - A minor accident occurs. The victim will undergo appropriate decontamination procedures and be transported to a safe upwind location. Field operations will resume after first aid and/or decontamination procedures have been administered to the affected individual.
    - Protective clothing and/or respirator malfunctions.

2. Withdrawal from site - evacuate the site if:

    - Explosive levels of combustible gases, toxic gases, or volatile organics are recorded.
    - A major accident or injury occurs.
    - Fire and/or explosion occurs.
    - Shock-sensitive, unstable, or explosive materials are discovered.
    - High levels of radioactive materials are discovered.

3. Evacuation of nearby facilities - a continuous release of toxic, flammable, or explosive vapors from the site could affect people off-site. Air quality should be monitored downwind to assess the situation. The FOM, or the on-site designee, is responsible for determining if circumstances exist for any level of off-site contamination warranting concern for people off-site. Always assume worst case conditions until proven otherwise. If conditions are marginal, evacuation should be conducted until acceptable conditions resume. Key personnel identified in the SHSP should be contacted when evacuation of nearby facilities becomes necessary.

The HSO and the FOM prior to the start of the project shall designate a meeting area for evacuation purposes. The HSO or designee will conduct head counts after any evacuations.

APPENDIX B

COLD STRESS

The purpose of this section is to make all workers on-site aware of the problems associated with cold weather operations. As with heat related emergencies, cold weather injuries are progressive. That means that if the worker is aware of the problems beforehand he may prevent further damage and remain working.

Cold related injuries may be divided into two types:

LOCAL COOLING affects the particular part of the body coming in direct contact with the cold air. This is commonly known as FROSTBITE.

GENERAL COOLING affects the entire body and is known as HYPOTHERMIA. Hypothermia is a true medical emergency and should be recognized as such and treated immediately by trained medical personnel.

As stated, cold related injuries are progressive. The body loses heat either by CONDUCTION or direct transfer of body heat into the cold environment. An example would be an unprotected head allowing the surface area of the head to come in direct contact with the colder air. The other means by which the body loses heat is by CONVECTION. This occurs when colder air is allowed to pass over the body surface. When that air is also moist or the work garments become wet, a WATER CHILL or more commonly recognized WIND CHILL occurs. An example of wind chill would be a 20 mph wind during a 10 degree day would produce the same effect as -25 degree temperature. Proper work attire and safe work practices may easily prevent both of these conditions. Hardhat liners prevent the wind from blowing under the brim but will also affect your hearing ability. Loose layers of work clothes rather than bulky garments will allow the wearer to adapt to changing conditions. Use of rubber overboots will prevent leather work-boots from getting wet and are excellent for stationary work to stop cold penetration.

SIGNS TO LOOK FOR:

FROSTNIP, the first stage of frostbite occurs when a body part comes in direct contact to a cold object or cold air. This condition is not serious and can be remedied by warming of the region. The real problem is that a numbing effect can occur and keep the worker from realizing that he is going into the next stage SUPERFICIAL FROSTBITE.

The skin and under layers become effected. If not treated this can become a FREEZING condition in which the deeper structures of the body become effected.

CONDITION	SKIN SURFACE	TISSUE UNDER SKIN	SKIN COLOR
frostnip	soft	soft	red-white
frostbite	hard	soft	white/waxy
freezing	hard	hard	white/gray

HYPOTHERMIA occurs when the body is unable to maintain its proper temperature of 98.6 degrees. It is important for the worker to realize that this can occur in temperatures of 50 degrees and below. Submersion of a body part in cold water will also cause hypothermia very quickly. Some early signs are:

1. Shivering
2. Numbness in extremities
3. Drowsiness
4. Slow breathing and pulse rates
5. Failing eyesight
6. Loss of coordination, inability to do easy tasks
7. Freezing of body parts

Proper treatment begins by activation of emergency medical service procedure. Hypothermia requires prompt qualified medical treatment. Initial site action would revolve around getting the affected worker out of the weather and begin the warming process. The most important thing to realize is that Hypothermia is a MEDICAL EMERGENCY.

Workers exposed to cool temperatures for extended period of time can experience lesions in the form of red swollen areas that seem hot and itchy. These chronic lingering lesions are known as CHILBLAINS. Although not an emergency, the Chilblains indicate that the worker in not adequately protecting the affected area.

A common problem in wet work areas is TRENCHFOOT. The worker whose feet remain unprotected by leather footwear in water close to freezing will have swollen limbs that appear waxy and mottled in color. The affected limb will appear cold to the touch. Basic treatment revolves around getting the worker to a warm place and slowly removing the wet footwear. The obvious way to prevent Trenchfoot is to wear rubber protective footwear.

Some suggestions to prevent cold weather operation problems:

1. Plan ahead as to the proper work clothes to be worn.
2. Avoid early overheating which dampens clothes and hastens the release of body heat by evaporation.
3. Use of windbreaks in the work zone.
4. Elimination of standing water or avoid prolonged immersion in that water.
5. Provision of heated rest area i.e. trailer or vehicle.
6. Avoid overheating of the rest area. Extreme temperature differentials between the work area and the rest area will lead to chilling upon return to work.

7. Proper diet and eating habits.
8. Avoid or cut down smoking which constricts the blood vessels.

REMEMBER, YOU ARE THE BEST PROVIDER OF INFORMATION ABOUT HOW YOU FEEL. THE BEST WAY TO PREVENT INJURIES FROM COLD WEATHER OPERATIONS IS TO RECOGNIZE THE EARLY SIGNS AND PREVENT SERIOUS INJURY.

APPENDIX C

HEAT STRESS

1.0 WORKING CONDITIONS AS RELATED TO HEAT STRESS

Operations at the Site are scheduled for start up in early spring. Since all operations will be conducted in some level of personal protection, consideration of the effects of heat stress is in order.

1.1 Personal Protective Clothing

The entire protective ensemble does not lend itself to the release of body heat generated during work. With this in mind, the following will be taken into consideration during the work schedule so as to minimize the heat stress to all personnel:

A. All personnel will be advised to wear lightweight undergarments with short sleeves, under their protective outer garments.

B. Personnel will be advised that extra clothing be on-site for use as the workday progresses due to the clothing becoming wet from perspiration.

C. Dressing-out, if required, will be done in a designated trailer and be scheduled so as not to extend time in the protective ensembles.

D. The dress-out area will have a table with fresh water and/or other water replenishing liquids along with disposable cups. All personnel will be expected to drink liquids before each work cycle. The HSO will supervise the dressing and water intake.

E. As the job progresses and more information becomes available as to the materials that the workers are coming in contact with, consideration as to modifications to the protective ensemble will be examined. Such things as allowing personnel to keep the protective garment's hood down allowing for the release of heat. All decisions regarding the protective ensemble will be the HSO's decision based on available information.

F. After completion of each work cycle in an Exclusion Zone if established, personnel will pass through personnel decontamination and remove their protective ensembles in the designated area. All personnel will then be medically monitored, if deemed necessary by the HSO. Liquid replenishment will be mandatory after each work cycle.

G. If an Exclusion Zone has been established, eating facilities will allow for meal periods to be taken in a designated lunch area. On days of extreme temperatures, the use of air conditioning in the decontamination trailer will be limited so as not to have personnel exposed to temperature extremes.

1.2 Causes of Heat Stress

Wearing increased levels of protection on-site can put personnel at risk of developing heat stress. This section will discuss heat stress and what steps will be taken to monitor personnel for the signs of it.

The body's chemical activities take place in a limited temperature range. Heat is generated by these processes. Any heat not needed to sustain the activities must be lost from the body to maintain a balance. HYPERTHERMIA is an abnormally high body temperature. The three main avenues for the release of body heat are:

A. Respiration is our breathing pattern. Care should be taken that the body is not fooled into believing it is cool based on skin temperature.

B. Radiation is how heat is released from the skin. Blood will pool on the surface of the skin as body temperatures increase. Should a protective ensemble be required, it will significantly reduce or prevent this type of heat release.

C. Evaporative Heat Loss normally allows a body to cool itself by the evaporation of perspiration. Protective ensembles stop any contact with moving air and the sweat coming off of the body will not evaporate.

If any of these release mechanisms are out of balance, the following conditions can occur and may be considered emergencies needing care:

A. **Heat Rash** is a common occurrence in areas where body parts rub causing friction. The level of protection will heighten its effects. Proper treatment would be personal washing of the affected areas and administering powder to help healing.

B. **Heat Cramps** occur when people are exposed to heat for extended periods of time. If a protective ensemble is required, this can be expected. The person will sweat heavily and drink large quantities of water. The more the person sweats, the more electrolytes are lost. If enough body salts are lost, the individual will begin to experience body cramps and pain in the extremities.

Proper treatment includes slow replenishment of body fluids augmented by a proper salt solution along with cooling the individual down, taking care not to

expose the person to extreme cooling measures. The worker will not be allowed to return to work until the HSO has monitored and approved re-entry.

C. **Heat Exhaustion** occurs as the blood pools at the skin surface in an attempt to cool the body. Sweating is profuse, skin is moist and cool, and the patient will experience dizziness, nausea, or fainting. This condition is an indicator of overwork in the environmental conditions. Treatment includes all for heat cramps with an extended rest period before re-entry. Depending on the worker's physical condition, rest periods may be from 30-60 minutes. After experiencing heat exhaustion, the worker should be closely monitored for symptoms reoccurring.

D. **Heat Stroke** can occur if heat exhaustion is not cared for. This occurs when the body loses its ability to regulate its temperature. Sweating stops and, if not treated, can lead to death. Signs and symptoms include dry red skin with no perspiration along with nausea, dizziness and confusion. A strong, rapid pulse should be carefully monitored as this condition can lead to coma. Proper treatment begins by understanding that this is a true medical emergency and requires activating the emergency medical system as covered in other sections. When notifying the Emergency Medical Response organization, emphasis should be placed on the words HEAT STROKE and the need for rapid transportation to the medical facility. (See Appendix A of the HASP). Emergency medical treatment in the field includes immediate cooling of the body with total body immersion preferable. Water temperature should be cool enough to absorb the high body heat but not cold. Ice packs can be applied to the person's head area and under the arms. Due to the personnel needed to treat the patient while awaiting emergency medical care, all work will stop and all attention will be devoted to the person in stress. The First Aid Technician will evaluate all personnel after the patient is transported to determine if they also are showing signs of heat stroke.

To facilitate treatment of all of the above, the trailer, with its air conditioning, fresh water supply and shower, will be used if necessary. In all cases requiring treatment, emergency decontamination procedures based on the individual's degree of contamination if any, will be done before entry into the trailer. Remember: *You* are your own best indicator of signs of heat stress.

1.3 Heat Stress Monitoring

The use of PPE may place site workers at risk of developing heat stress. This can result in health effects ranging from transient heat fatigue to serious illness or death. Because heat stress is probably one of the most common illnesses associated with the use of PPE, regular monitoring, and other preventative measures, will be taken to protect site workers when increased levels of PPE are required. The HSO may modify heat stress monitoring. Specific measures to be taken include (See Table I - Apparent Temperature Dangers Posed by Heat Stress):

- Using a thermometer to measure ambient temperatures.
- Periodically measure heart rate, oral temperature, blood pressure, and body water loss, whenever workers are in impervious clothing in temperatures above 70 F.
- Instituting work cycles and rest periods accordingly.

1.3.1 Ambient Temperature Measurements - Permeable Personal Protective Equipment

The HSO, or designee, will utilize a thermometer to measure the ambient temperature in any Exclusion Zone if established whenever temperatures are expected to exceed 70 F.

Once the ambient temperature has been calculated, it must be compared to Table I.

1.3.2 Worker Monitoring-Permeable Personal Protective Equipment

If an Exclusion Zone is established, Exclusion Zone worker monitoring for heart rate, oral temperature, and body water loss will be accomplished jointly by each individual and by the HSO. Once temperatures exceed 70 F, Exclusion Zone workers should be weighed before donning protective clothing/equipment and following final decon/doffing protective gear. During these days or periods of days where temperatures exceed 70 F, site workers may have their oral temperatures and heart rates monitored by the HSO during rest periods, at the discretion of the HSO. Specific procedures and guidelines for monitoring bodily functions are discussed below.

Heart Rate - Count the radial pulse during a 30 second period as early as possible in the rest period. If the heart rate exceeds 110 beats per minute at the beginning of the rest period, the HSO, will shorten the next work cycle by 1/3 and keep the rest period the same. If the heart

rate still exceeds 110 beats per minute at the next rest period, the HSO will shorten the following work cycle by 1/3.

Oral Temperature - Using a clinical thermometer, the HSO, or designee, will place the thermometer under the worker's tongue, to measure the oral temperature at the end of the work period (before drinking). If the oral temperature exceeds 99.6 F, the HSO, or designee, will shorten the next work cycle by 1/3 without changing the rest period. If the worker's oral temperature still exceeds 99.6 F at the beginning of the next rest period, the following work cycle will be shortened by 1/3.

Body Water Loss - The HSO, or designee, will measure site workers' weights on a scale at the beginning and end of each workday to account for body fluid loss. To ensure consistency, weights will be measured while workers wear similar clothing or are nude. The body water loss should not exceed 1.5 percent total body weight loss in a workday.

Heat stress monitoring frequency will increase as ambient temperatures increase or as slow recovery rates are observed.

TABLE I

Suggested Frequency of Physiological Monitoring for Fit and Acclimatized Workers [a]

ADJUSTED TEMPERATURE [b]	NORMAL WORK ENSEMBLE [c]	IMPERMEABLE ENSEMBLE
90 F (32.2) or above	After each 45 minutes of work	After each 15 minutes of work
87.5 -90 F (30.8 -32.2 C)	After each 60 minutes of work	After each 30 minutes of work
82.5 -87.5 (28.1 -30.8 C)	After each 90 minutes of work	After each 60 minutes of work
77.5 -82.5 F (25.3 -28.1 C)	After each 120 minutes of work	After each 90 minutes of work
72.5 -77.5 F (22.5 -25.3 C)	After each 150 minutes of work	After each 120 minutes of work

Source: NIOSH/OSHA/USCG/EPA guidance manual for hazardous waste site activities (NIOSH No. 85-115)

a For work levels of 250 kilocalories/hour

b Calculate the adjusted air temperature (ta adj) by using this equation: ta adj F + (13 x % sunshine). Measure air temperature (ta) with a standard mercury-in-glass thermometer, with the bulb shielded from radiant heat. Estimate percent sunshine by judging what percent time the sun is not covered by clouds that are thick enough to produce a shadow. (100 percent sunshine = no cloud cover and a sharp, distinct shadow; 0 percent sunshine = no shadows.)

c A normal work ensemble consists of cotton coveralls or other cotton clothing with long sleeves and pants.

APPENDIX D

FIELD TEAM REVIEW FORM

PROJECT HEALTH AND SAFETY PLAN

INSTRUCTIONS: This form is to be completed by each person working on the subject work-site. Upon completion, this form is to be given to the HSO.

JOB NUMBER: _____

CLIENT/PROJECT:

DATE: _____

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

_____
Signature

_____
Name Printed

_____
Company/Office

_____
Date Signed

APPENDIX E

SAFETY MEETING

DATE HELD _____ Time _____

1. The safety meeting was held this date for the following personnel:

   (CONTRACTOR) _____

   (SUB-CONTRACTOR) _____

   (HSO) _____

   (OTHER) _____

2. Subjects discussed (note, delete, or add):

   Accident trends/new hazards -
   Individual protective equipment -
   Back injury, safe lifting techniques -
   Fire prevention -
   Sanitation, first aid, waste disposal -
   Tripping hazards -
   Staging -
   Equipment inspection & maintenance (zero defects) -
   Hoisting equipment -
   Ropes, hooks, chains, and slings -
   Trucks, tractors, front-end loaders, scrapers, graders, grade-all -
   Electrical grounding, temporary wiring, GFCI -
   Lockouts for safe clearance procedures: electrical, pressure, moving parts -
   Steep slopes -
   Toxic materials: hazards, MSDS, respiratory, ventilation -
   Other -

3. Forwarded _____

   Prepared by _____

   Signature _____

APPENDIX E

SAFETY INSPECTION LIST

Project Name/Number:_____ Date:_____

Name:_____ Title:_____

This safety inspection list is to be completed by the HSO turned into the Project Manager. Any deficiencies found are to be corrected immediately.

1. Is the OSHA Safety and Health protection poster on the job? _____

2. Are emergency telephone numbers conspicuously posted? _____

3. Are first-aid kits and supplies on the job? _____

4. Are there first-aid trained personnel on the job? _____

5. Are warning signs and posters adequate? _____

6. Is there an adequate supply of personal protective gear available?

   a. Hard Hats _____
   b. Hearing Protection _____
   c. Eye and Face Protection _____
   d. Respiratory Protection _____

7. Are all personnel wearing the appropriate personal protective gear? _____

8. Is there an adequate slope or support provided for all trenches and excavations? _____

9. Is temporary electrical service grounded and is all other electrical equipment grounded? _____

10. Is the housekeeping adequate-are all aisles, passageways, and stairways clear of obstructions? _____

11. Are there any fire hazards on the job that could be eliminated? _____

APPENDIX E (continued)

12. Have heavy equipment been thoroughly inspected and is there a record of the inspections on file? _____

13. Is the job site fire protection adequate?

    a. Fire Extinguishers - have they been checked? _____

    b. Available Water Hoses? _____

    c. Barrels of Water with Buckets? _____

14. Is there adequate clearance between equipment or machinery and energized power lines? _____

15. Is the record of injuries and illnesses properly maintained and on file? _____

16. Are there job site safety meetings being held at least once a week? _____

17. Are all new employees indoctrinated with respect to their individual safety responsibilities? _____

18. Do my personal safety practices set a good example for all employees? _____

19. Misc.:_____

_____

_____

_____

_____ _____

Signature Date

APPENDIX F

SITE WORKER TRAINING AND MEDICAL EXAMINATION RECORD
(To be used for workers entering any established Exclusion Zone)

SITE: Sonia Road Landfill
EXCLUSION ZONE:_____

Name	Date Training Completed Initial	Refresher*	Date of Last Physical Examination

*Refresher training on-site is documented on the following page.

APPENDIX F (continued)

REFRESHER TRAINING DOCUMENTATION
(To be used for workers entering any established Exclusion Zone)

EMPLOYEE/VISITOR NAME	REPRESENTING
1. _____	_____
2. _____	_____
3. _____	_____
4. _____	_____
5. _____	_____
6. _____	_____

TOTAL TIME ALLOCATED TO REFRESHER TRAINING:_____

DATE OF TRAINING: _____

LOCATION: _____

TOPICS COVERED (describe clearly):

_____

_____

_____

MATERIALS USED (if any):

_____

_____

_____ _____ _____

Trainer Signature Trainer Name Printed Date

APPENDIX G

CARE AND CLEANING OF RESPIRATORS

General Requirements

Any organization using respirators on a routine basis should have a program for their care and cleaning. The purpose of a program is to assure that all respirators are maintained at their original effectiveness. If they are modified in any way, their Protection Factors may be voided. Usually one person in an organization is trained to inspect, clean, repair, and store respirators.

The program should be based on the number and types of respirators, working conditions, and hazards involved. In general, the program should include:

- Inspection (including a leak check)
- Cleaning and Disinfection
- Repair
- Storage

Inspection

Inspect respirators after each use. Inspect a respirator that is kept ready for emergency use monthly to assure it will perform satisfactorily.

On air-purifying respirators, thoroughly check all connections for gaskets and "O" rings and for proper tightness. Check the condition of the facepiece and all its parts, connecting air tubes, and headbands. Inspect rubber or elastomer parts for pliability and signs of deterioration.

Maintain a record for each respirator inspection, including date, inspector, and any unusual conditions for findings.

Cleaning and Disinfection

Collect respirators at a central location. Brief employees required to wear respirators on the respirator program and assure them that they will always receive a clean and sanitized respirator. Such assurances will boost morale. Clean and disinfect respirators as follows:

- Remove all cartridges, canisters, and filters, plus gaskets or seals not affixed to their seats.
- Remove elastic headbands.
- Remove exhalation cover.
- Remove speaking diaphragm.
- Remove inhalation valves.
- Wash face-piece and breathing tube in cleaner/sanitizer powder mixed with warm water, preferably at 120^0 to 140^0 F.
  Wash components separately from the facemask, as necessary. Remove heavy soil from surfaces with a hand brush.

- Remove all parts from the wash water and rinse twice in clean, warm water.
- Air dry parts in a designated clean area.
- Wipe face-pieces, valves, and seats with a damp lint-free cloth to remove any remaining soap or other foreign material.

NOTE: Most respirator manufacturers market their own cleaners/sanitizers as dry mixtures of a bactericidal agent and a mild detergent. One-ounce packets for individual use and bulk packages for quantity use are usually available.

Repairs

Only a trained person with proper tools and replacement parts should work on respirators. No one should ever attempt to replace components or to make adjustments or repairs beyond the manufacturers' recommendations. It may be necessary to send high pressure side components of SCBA's to an authorized facility for repairs.

Make repairs as follows:

- Disassemble and hand clean the pressure-demand and exhalation valve assembly (SCBA's only). Exercise care to avoid damage to the rubber diaphragm.
- Replace all faulty or questionable parts or assemblies. Use parts only specifically designed for the particular respirator.
- Reassemble the entire respirator and visually inspect the completed assembly.
- Insert new filters, cartridges, or canisters, as required. Make sure that gaskets or seals are in place and tightly sealed.

Storage

Follow manufacturers' storage instructions, which are always furnished with new respirators or affixed to the lid of the carrying case. In addition, these general instructions may be helpful:

- After respirators have been inspected, cleaned, and repaired, store them so to protect against dust, excessive moisture, damaging chemicals, extreme temperatures, and direct sunlight.
- Do not store respirators in clothes lockers, bench drawers, or tool boxes. Place them in wall compartments at work stations or in a work area designated for emergency equipment. Store them in the original carton or carrying case.
- Draw clean respirators from storage for each use. Each unit can be sealed in a plastic bag, placed in a separate box, and tagged for immediate use.

APPENDIX H

MEDICAL DATA SHEET

This Medical Data Sheet will be completed by all on-site personnel who may enter an Exclusion Zone if established and will be kept in the Support Zone during site operations.

Project:_____

Name:_____

Address:_____

Home Telephone: Area Code ( )_____

Date of Birth:_____ Height:_____ Weight:_____

In case of Emergency, contact:_____
(name and relationship)

Address:_____

Telephone: Area Code ( )_____

Do you wear contact lenses? ( ) Yes ( ) No

Allergies:_____

List medication taken regularly:_____

Particular sensitivities:_____

Previous/recent illnesses or exposures to hazardous chemicals:_____

_____

Name of Personal Physician:_____

Telephone: Area Code ( )_____

APPENDIX I

AIR MONITORING RESULTS REPORT

Date: _____ Duration of Monitoring: _____

Work Location and Task: _____

_____

Instrument Reading _____ (Time)	Instrument Reading _____ (Time)	Instrument Reading _____ (Time)
_____	_____	_____
_____	_____	_____
_____	_____	_____

(Note: If instruments have recorders, just attach tape to report. Also note any action levels when exceeded.)

Instrument Calibration: _____

Perimeter Samples Collected: _____

_____

Personnel Samples Collected: _____

_____

Perimeter and Personnel Sample Results From Previous Day (attach data once received):

_____

Comments: _____

_____

_____ _____

Name Title (Site Safety Officer)

Signature _____

APPENDIX J

Regulation 1 - Use of Personal Protective Equipment

WHO This regulation applies to all site workers, supervisors, and visitors, *without exception.*

WHEN Prior to entering the Contaminant Reduction Zone (CRZ) or Exclusion Zone (EZ) provisions of this regulation will be followed.

WHAT This regulation outlines the initial forms of PPE required to be worn while working in the CRZ and EZ. Particular types or forms of PPE may be altered based on the authority of the HSO. Specific guidelines are provided in Section 7.0 of this SHSP. Disposable PPE will not be worn more than one workshift of workday. In some instances disposable PPE may have to be replaced more than once during a workday. The HSO shall determine the frequency of replacing disposable PPE. Reusable PPE will be properly decontaminated, cleaned, sterilized (if appropriate), and stored. Doubts regarding what to wear shall be directed to the HSO for resolution.

WHY The levels of protection specified in the SSHP were chosen to protect individuals from potentially harmful exposures to chemicals or physical hazards. No changes to PPE specifications are authorized without the permission of the HSO.

APPENDIX K

Regulation 2 - Personal Hygiene

WHO This regulation applies to all site workers, supervisors, and visitors, but is intended primarily for site workers.

WHEN Before beginning work, during scheduled breaks, and at the end of a workday.

WHAT This regulation summarizes the policy on personal hygiene that applies to all site personnel. Personal hygiene includes those activities such as washing hands, showering, shaving, etc., that are conducive to keeping one's body clean and mind refreshed. For the individual's sake, and his/her coworkers, each worker will be responsible for maintaining a high level of personal hygiene. This is especially critical prior to breaks where food, beverages, or smoking will occur. If proper personal hygiene is not followed, potential ingestion, absorption, or inhalation of toxic materials may occur. Particular attention must be paid to close shaving whenever respirators are worn. Facial hair and long hair will interfere with respirator fit and will allow excessive contaminant penetration.

WHY To avoid accidental ingestion, absorption, or inhalation of hazardous materials. To maintain an elevated state of awareness, thus reducing potential mental errors and accidents.

APPENDIX L

Regulation 3 - Provisions for Smoking, Eating, Chewing, and Drinking

WHO This regulation applies to all site workers, supervisors, and visitors, *without exception.*

WHEN At all times personnel are on-site. This regulation will specifically apply during breaks and rest periods.

WHAT Site personnel are forbidden to smoke, eat, chew, or drink in an Exclusion Zone or Contaminant Reduction Zone. Only those areas specified as break areas or common areas in the Support Zone may be used for smoking, eating, chewing, or drinking. The rest/break facility and office trailers in the Support Zone may be used. Individuals found to be repeatedly disregarding these provisions will be released.

The only exception to this regulation involves access to electrolytic fluids in the Contaminant Reduction Zone when the HSO has determined heat stress warrants regular replenishing of lost body fluids.

WHY To protect personnel from accidental exposures to hazardous materials, smoking, eating, chewing, and drinking is prohibited everywhere except designated break areas. To avoid potential fires and explosions, smoking is prohibited everywhere except designated break areas and office trailers.