# POST-CLOSURE MONITORING AND MAINTENANCE PLAN
# for
# REPUBLIC STEEL/LTV
# MARILLA STREET LANDFILL
# SITE I.D. NO. 915047
# BUFFALO, NY

October 1999
Revised May 2001
Revised April 2003
Revised November 2010

Prepared for:

STEELFIELDS LTD

# POST-CLOSURE MONITORING AND MAINTENANCE PLAN
# FOR
# REPUBLIC STEEL/LTV
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# 1.0 INTRODUCTION

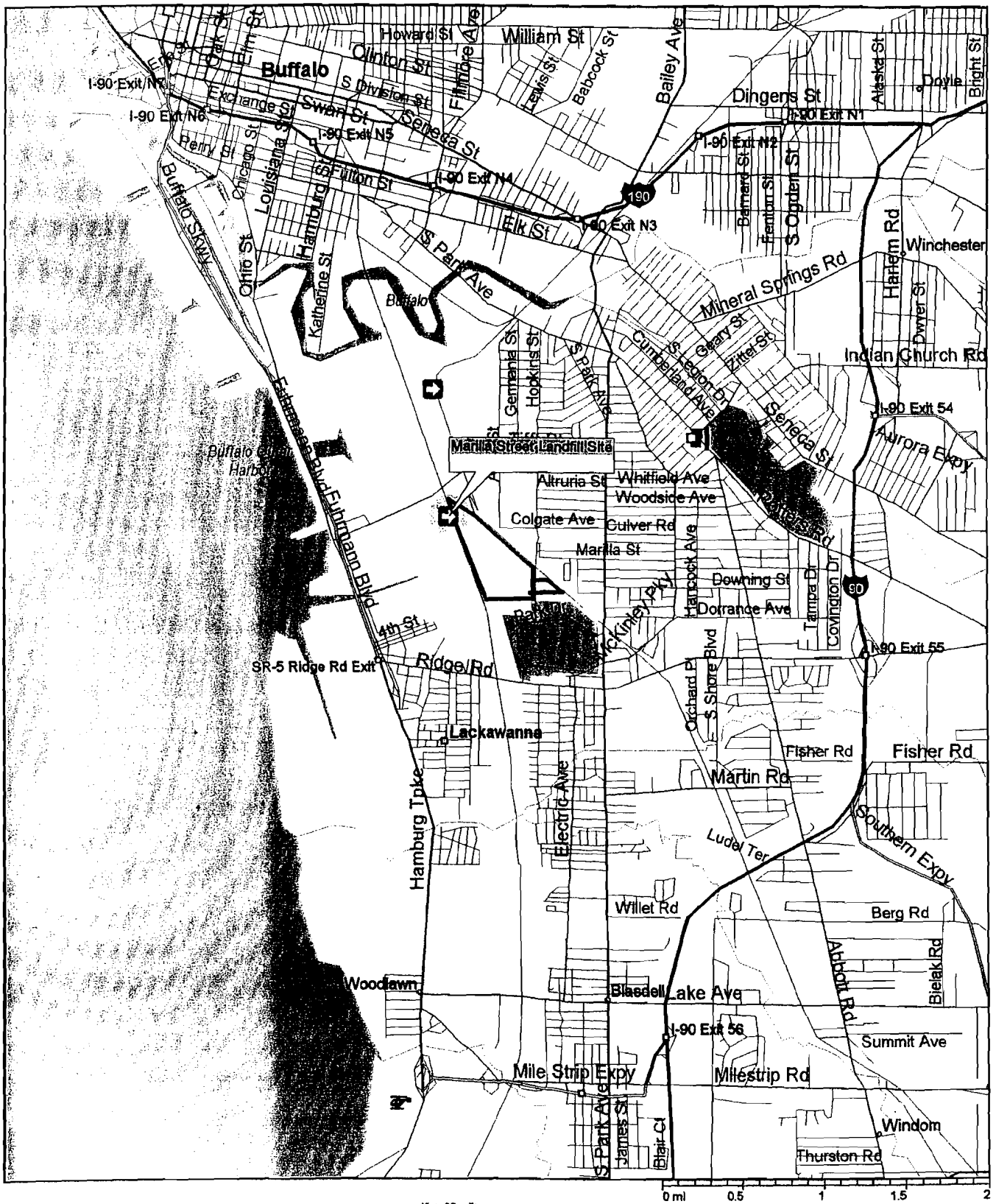
## 1.1 Background

The Marilla Street Landfill (the site) is approximately 80 acres in size and is situated along Marilla and Hopkins Streets in the City of Buffalo, New York (see Figure 1-1). Previously owned by the LTV Steel Company, the site was acquired by Steelfields Ltd, in October 2002.

The site is bordered on the south by the South Park Recreational Facility operated by Erie County, on the west by railroad tracks, and on the north and east by railroad tracks and Hopkins Street. Approximately 29 acres of NYSDEC-regulated wetlands, classified as BU-1, are located adjacent to the landfill. Wetland BU-1 is one of the three largest wetlands in the City of Buffalo. Of the 29 acres, approximately 16 acres of the wetlands were remediated as described in Section 1.2.2.

The Marilla Street Landfill is composed of construction and demolition (C&D) debris and solid wastes from steel manufacturing operations at the former Buffalo plant of the LTV Steel Company (previously Republic Steel Corporation). Wastes disposed at the site include blast furnace and basic oxygen furnace (BOF) slag and precipitator dust, clarifier sludge, bricks, tool scale, scrap wood, railroad ties, concrete and construction debris. The landfill was operated as an above-grade fill operation with minimal segregation of wastes prior to the effective date (viz., November 1980) of the Resource Conservation and Recovery Act (RCRA). In November 1980, some BOF precipitator dust generated at the Buffalo District Plant was analyzed and found to exceed the EP-toxicity level for lead leachability and, therefore, was placed in a segregated fill area until steel making operations were terminated at the Buffalo Plant in June/July 1981. The BOF Dust Area was subsequently closed under applicable state (Part 373) and federal (RCRA) hazardous waste regulations. However, in a September 1989 determination, the NYSDEC acknowledged that BOF dust was excluded from hazardous waste regulations, and the NYSDEC subsequently removed that portion of the site from the RCRA program.

# FIGURE 1-1
## SITE LOCATION MAP

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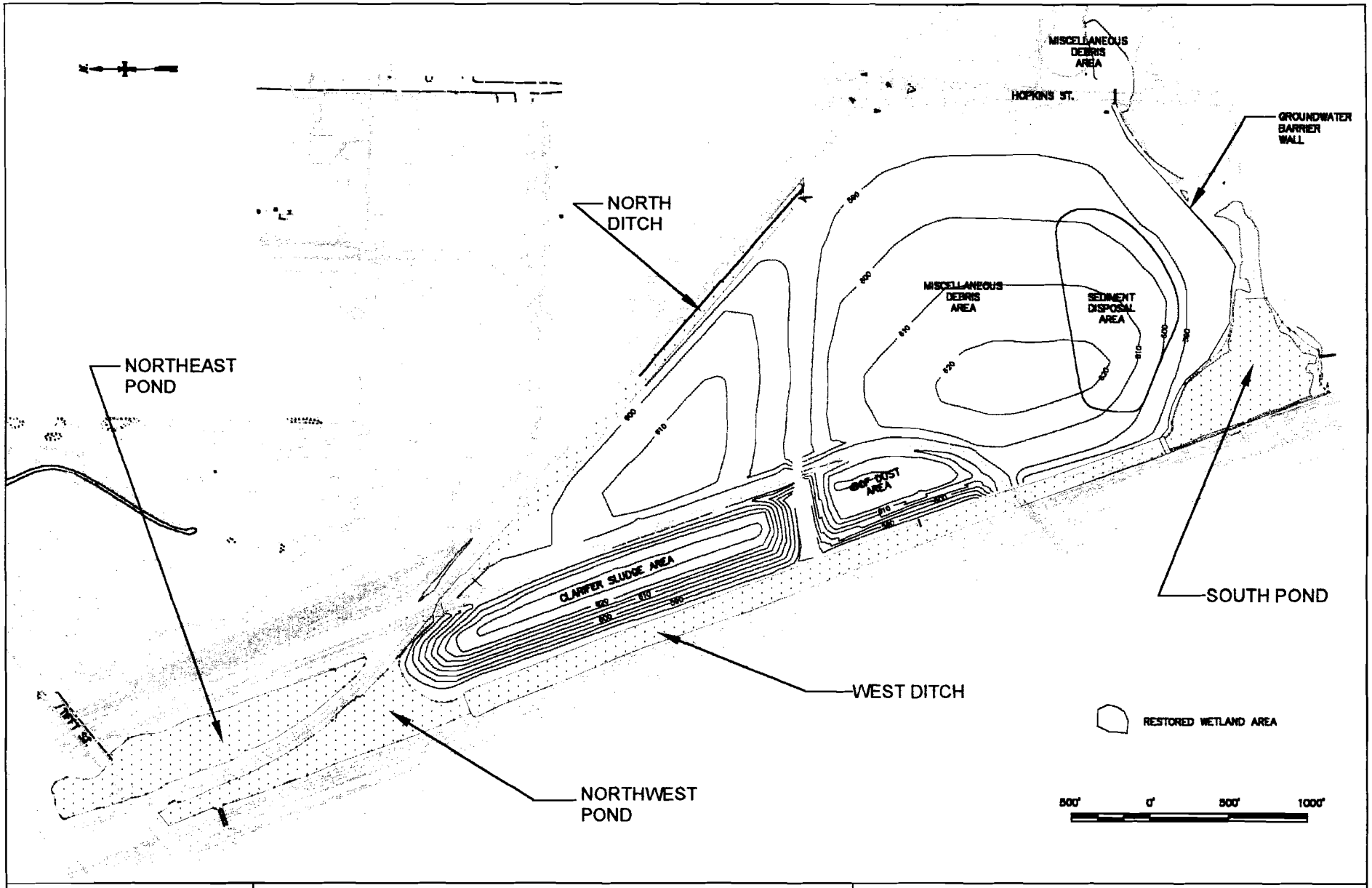


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POST CLOSURE MONITORING AND MAINTENANCE PLAN

MARILLA STREET LANDFILL

SITE MAP

FIGURE 1-2

LTV Steel Company entered into an Order on Consent (File No. 89-57 R9-2808-89-05) with the NYSDEC in October 1992 to perform closure and post-closure maintenance and monitoring of the site.

Steelfields entered into a voluntary cleanup agreement with the NYSDEC in October 2002 which incorporates provisions for post-remedial construction operation, maintenance and monitoring at the Marilla Street Landfill in accordance with the Post Closure Monitoring and Maintenance Plan for Republic Steel/LTV Marilla Street Landfill, Site No. 915047, Revised May 2001, with Department letter of July 3, 2002. This current version of the Plan (April 2003) incorporated the Department's revisions contained in the July 3, 2002 letter.

## 1.2 Closure Status

### 1.2.1 Capping Activities

The Marilla Street Landfill capping activities were completed on an area-specific basis based on the nature of fill/waste materials. The BOF Dust Area of the landfill (see Figure 1-2) was capped under RCRA corrective action requirements (6NYCRR Part 373). The remaining landfill areas, the Clarifier Sludge Area and Miscellaneous Debris Areas, were capped under the New York State solid waste program (6NYCRR Part 360). A description of the capping activities implemented in these areas is presented below.

#### 1.2.1.1 BOF Dust Area

The approximate 5-acre BOF Dust Area contains a mixture of BOF dust and BOF slag. The area was capped in 1990 with a cover system consisting of (from bottom to top):

- a 24-inch recompacted clay layer,
- a geotextile,
- a 30-mil PVC liner,
- a 12-inch sand drainage layer,

- a geotextile filter fabric,
- a 24-inch silty-sand barrier protection layer, and
- a 6-inch topsoil layer.

The 30-mil PVC liner and underlying geotextile was not placed on the steeper (1:3) side slopes of the landfill.

Passive gas vents were originally installed through the BOF Dust Area cover and the other landfill area cover systems at a rate of one vent per acre. However, all but two of the vents were later removed after verifying and receiving approval from NYSDEC that no gas was being generated. The two remaining vents are located in the BOF Dust Area.

#### 1.2.1.2 Clarifier Sludge and Miscellaneous Debris Areas

The approximate 15-acre Clarifier Sludge Area contains primarily a mixture of clarifier sludge, BOF slag and blast furnace slag. The sludge was generated by the steel plant's wastewater treatment system. The approximate 60-acre Miscellaneous Debris Area contains non-segregated plant construction/demolition debris, railroad ties, refractory bricks, various slag fines, BOF slag and blast furnace slag. The Clarifier Sludge and Miscellaneous Debris Areas were capped in 1992 and 1993, respectively, with a cover system consisting of an 18-inch recompacted clay layer and a 12-inch topsoil layer.

### 1.2.2 Wetlands Restoration

The remedial action within the wetlands adjacent to the Marilla Street Landfill occurred in five areas: the West Ditch, the Northeast Pond, the Northwest Pond, the South Pond and the North ditch.

#### 1.2.2.1 West Ditch

The West Ditch encompasses approximately 4.2 acres. The remedial action for this area involved the removal of all vegetation, excavation of 6400 cubic yards of sediment, and

regrading the ditch. The remaining sediments were covered by 12 inches of recompacted clay-type soil followed by a geotextile layer and six inches of topsoil. The West Ditch is an open channel that connects the South Pond and Northwest Pond. The ditch was revegetated with emergent vegetation (cattails) and the landfill sideslopes with facultative shrubs (Red Osier Dogwood, Elderberry, Steamco Willow and Arrowwood). The loss of approximately 0.40 acres of emergent wetland was mitigated by the creation of emergent islands in the South Pond.

#### 1.2.2.2 North Ponds

The North Ponds consist of two wetland areas: the Northeast Pond (4.27 acres) and the Northwest Pond (3.64 acres), which are separated by an active rail line owned and operated by the Buffalo and Pittsburgh Railroad. Sediments exceeding the NYSDEC established sediment clean up criteria were excavated from the ponds. Approximately 63,300 cubic yards of contaminated sediment were removed from the ponds and disposed of on the southern end of the Miscellaneous Debris Area adjacent to the South Pond. The ponds were restored by placement of 12 inches of clean off-site soils overlain by 3-inches of topsoil. The Pond shorelines were then revegetated with emergent vegetation (cattails) and the open water area planted randomly with spatterdock plants.

#### 1.2.2.3 South Pond

The South Pond is a 10.82 acre wetland complex located along the southern end of the property. This wetland consists of four community types: a forested community, scrub-shrub/forested community, an emergent community and an open water community. The open water community is approximately 4.53 acres. Sediments exceeding the NYSDEC-established sediment clean-up criteria were excavated from the pond. Approximately 18,000 cubic yards of contaminated sediment were removed from the pond and disposed in the sediment disposal area of the adjacent landfill. In areas where existing vegetation was removed along the shoreline, a one-time planting of cattails occurred. The open water area was planted with randomly spaced spatterdock upon completion of remediation activities.

To compensate for the loss of emergent wetland in the West Ditch and North Ditch, two 0.5-acre islands were constructed in the Southern Pond after sediment removal. The islands were constructed of clean off-site soil material to the approximate average water elevation in the ponds. The islands were revegetated with a mixture of cattail, soft-stem bulrush and giant burreed to a water depth of 12 inches. The portion of the pond not covered by an island was restored using 12 inches of clean off-site soils overlain by 3 inches of topsoil.

A geosynthetic clay liner/recompacted clay groundwater barrier wall was constructed along the southern border of the landfill to minimize the potential for shallow groundwater beneath the landfill to enter the South Pond. The barrier wall begins at Hopkins Street, extends along the southern end of the landfill adjacent to the South Pond and ends at the Norfolk Southern Railroad embankment.

#### 1.2.2.4 North Ditch

The North Ditch encompasses approximately 0.86 acres. Remedial actions for this area included the removal of all vegetation, excavation of 2000 cubic yards of sediment, and regrading the ditch. The sediments were covered by 12 inches of recompacted clay-type soil followed by a geotextile layer and six inches of top soil. The ditch was revegetated with emergent vegetation and the adjacent landfill slopes planted with facultative shrubs. Loss of 0.31 acres of emergent wetland was mitigated by the creation of the islands in the South Pond.

## 1.3 Purpose and Scope

This Post-Closure Monitoring and Maintenance Plan describes the maintenance and monitoring procedures to be employed by Steelfields, Ltd, their successors, assigns, or agents for the closed Marilla Street Landfill site. This plan delineates the procedures for routine monitoring of the quality of surface water and groundwater in the immediate vicinity of the site, including the sampling schedule, analytical requirements, sampling procedures, sampling

equipment and reporting requirements necessary to accomplish that goal. Procedures for routine inspection and maintenance activities are also delineated.

Sections 2.0, 3.0 and 4.0 present the sampling program for surface water, groundwater and sediment, respectively. Section 5.0 presents the analytical program, and Section 6.0 presents the QA/QC plan. Section 7.0 presents guidelines for post-closure maintenance. Health and Safety requirements are provided in Section 8.0. Record keeping and reporting requirements are presented in Section 9.0. Finally, estimated post-closure costs are presented in Section 10.0.

# 2.0 SURFACE WATER SAMPLING AND ANALYSIS PLAN

## 2.1 Scope of Work

### 2.1.1 Wetland Areas

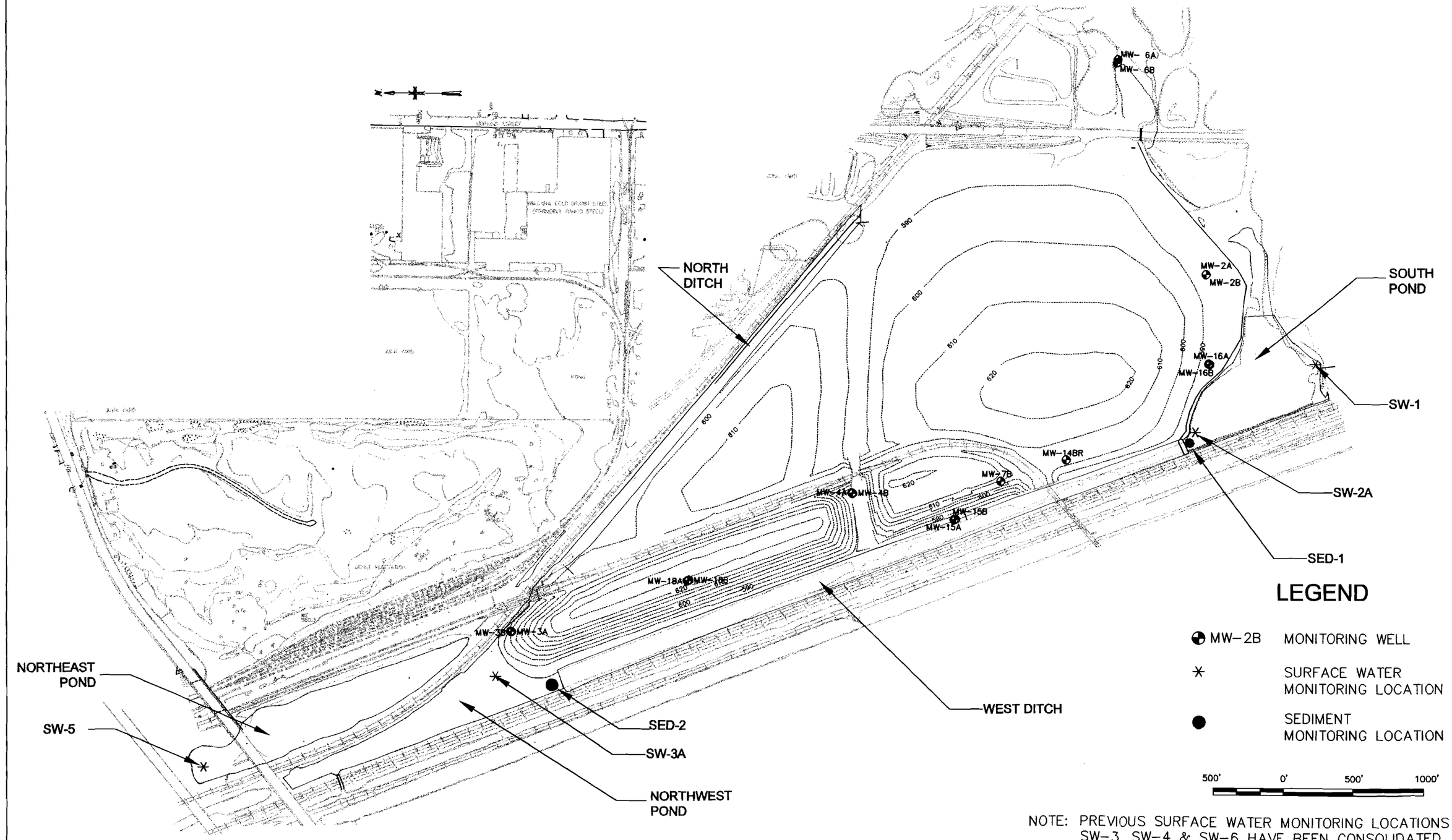
Surface water samples will also be collected at a number of strategic locations within the remediated wetlands, selected to provide both an indication of surface water quality as well as the source of contributions to elevated parameter concentrations if any. Surface water samples will be collected from the following locations (see Figure 2-1):

- SW-1 – South Pond Inlet, collected from pipe discharging from So. Park Ponds
- SW-2A – South Pond near cutoff wall location
- SW-3A – South end of Northwest Pond
- SW-5 – Northern end of NE Pond

The surface water samples will be analyzed for pH, temperature, turbidity, and conductivity, as well as 6 NYCRR Part 373 parameters including: total organic carbon; total dissolved solids; total recoverable phenolics; and total iron, lead, chromium, arsenic and manganese. Field filtering of samples will be performed if the turbidity of the surface water samples exceeds 50 NTU. If turbid samples are collected, both total and dissolved metals will be analyzed. Sampling will be performed annually.

### 2.1.2 Control Area

Surface water sample SW-1, collected at the discharge pipe into the South Pond, will serve to establish regional background levels. If the inlet pipe is not flowing or is partially submerged, the sample will be collected instead from the South Park Pond as close as possible to the mouth of the inlet pipe. The sample location will be recorded on the field sampling log. The control area will be sampled annually in conduction with other sediment




NOTE: PREVIOUS SURFACE WATER MONITORING LOCATIONS SW-3, SW-4 & SW-6 HAVE BEEN CONSOLIDATED TO SAMPLE LOCATION SW-3A

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STEELFIELDS, LTD.

POST CLOSURE MONITORING AND MAINTENANCE PLAN

MARILLA STREET LANDFILL

GROUNDWATER AND SURFACE WATER MONITORING SYSTEM

DATE JULY 2002

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sampling activities. The frequency and parameter list may be reduced after a total of 5 years of data have been collected.

### 2.1.3 Seeps

As discussed in Section 7.0, routine post-closure inspections will be performed at the Marilla Street Landfill to determine the presence of leachate breakouts/seeps, if any, through the landfill cover. If seeps are discovered, they will be sampled and analyzed for pH, temperature, turbidity and conductivity, as well as 6 NYCRR Part 373 parameters including: total organic carbon; total dissolved solids; total recoverable phenolics; and total iron, lead, chromium, arsenic and manganese. Field filtering of samples will be performed if the turbidity of the seep samples exceeds 50 NTU. If turbid samples are collected, both total and dissolved metals will be analyzed.

## 2.2 Sampling Procedures

### 2.2.1 Wetlands

Surface water samples will be collected from the wetlands in accordance with the following procedure:

1. Identify sampling location.

2. Clamp a dedicated, laboratory-supplied glass sampling bottle (un-preserved) on a telescoping pole

3. From shore, slowly submerge the sampling bottle at the desired location with minimal surface disturbance. Collect and retrieve the sample with minimal disturbance. For samples collected at the South Pond inlet pipe (i.e, from the south Park Pond discharge), carefully introduce the sample bottle to the discharge flow to minimize turbulence.

4. Place grab samples directly into appropriate sample containers for all required analyses. It may be necessary to retrieve several volumes to perform the required analytical testing.

5. Field filtering of samples for metals analysis will be performed if turbidity values exceed 50 NTU (Note: The NYSDEC does not accept results of filtered samples. If samples are filtered, both filtered and unfiltered samples will be tested and the results submitted to the NYSDEC).

### 2.2.2 Seeps

Seeps, if detected, will be sampled by placing a dedicated, laboratory-supplied glass sampling bottle (un-preserved) in the seep path. Field filtering of the sample for metals analysis will be performed if turbidity values exceed 50 NTU. If evidence of seeps (viz., erosion or staining) is observed but flow is not evident during the sampling event, the location of the seep will be noted for repair as discussed in Section 7.0.

## 2.3 Sample Containers

Sediment and surface water samples will be collected in glass jars/vials provided by the analytical laboratory. Sample bottles will contain, if necessary a trace-analysis grade preservative supplied by the laboratory. For details on sample preservation requirements, see Section 5.2.3.

## 2.4 Decontamination Procedures

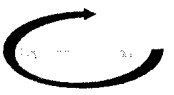
Prior to sampling and between each sampling event, the telescoping pole and any other non-dedicated sampling tools used will be decontaminated using the procedures identified in the Standard Operating Procedures provided in Appendix A.

## 2.5 Sample Shipment

Immediately following sample collection, each sample container will be marked with the following information:

- Sample Code





- Project Number
- Date/Time
- Sample Type
- Sampler's Initials

The sample code will indicate the site location, media samples and sample station. Each sample will be covered with waterproof clear plastic tape to preserve its integrity. Samples will be immediately transferred to coolers and packed with ice or ice packs to maintain a temperature of 4°C. All sediment and surface water samples for laboratory analysis will be shipped in protected containers to the selected laboratory. Each shipment will contain the original "Chain-of-custody" form. All samples will be shipped within 48 hours of sampling.

# 3.0 GROUNDWATER SAMPLING AND ANALYSIS PLAN

## 3.1 Scope of Work

LTV Steel has conducted quarterly groundwater monitoring at the Marilla Street Landfill since 1991. To date, wells 6B, 4B, 7B, 9B and 14B-R have been monitored in accordance with 6NYCRR Part 373 while wells 2A, 2B, 4A, 5A, 5B and 6A have been monitored in accordance with 6NYCRR Part 360. Subsequent to the landfill closure, the BOF Dust Area was removed from the 6NYCRR Part 373 program. Consequently, 6NYCRR Part 373 monitoring is no longer required at the site. A summary of the monitoring program performed from 1991 through 2000 is presented in Table 3-1.

Based on the Solid Waste Management Facility Program (SWMFIP), the Supplemented SWMFIP and the quarterly groundwater monitoring currently performed at the Marilla Street Landfill, the following groundwater monitoring plan will be performed at the site during the post-closure period. The monitoring will be conducted in accordance with the 6NYCRR Part 360 regulations, with site-specific changes as approved by NYSDEC. The objectives of the monitoring program are:

- To detect changes in shallow groundwater quality. Since the landfill is over thirty years old and has been partially or completely closed and covered since 1990, the groundwater chemistry is not expected to change significantly.
- To detect changes in deep overburden groundwater quality that may indicate downward leachate migration.

### 3.1.1 Groundwater Monitoring

A total of 31 monitoring wells were installed during both phases of the SWMFIP. MW-8B was destroyed during the closure of the landfill. Of the remaining 30 monitoring wells, sixteen wells will be monitored during the post-closure period. Monitoring locations were selected based on the shallow groundwater isopotential map for June 1993 presented in the October 1993 SWMFIP Report. Monitoring wells MW-6A/6B are background wells for each water-bearing zone. The remaining monitoring locations monitor the down gradient

perimeter of the landfill along the wetland/landfill boundary. Proposed monitoring locations are presented on Figure 2-1 and include:

- Shallow Overburden Wells: MW-3B, MW-4B, MW-6B, MW-7B, MW-16B, MW-14BR, MW-15B, and MW-18B will be sampled on an annual basis. Monitoring well MW-2B will be sampled on a bi-annual basis.

- Deep Overburden Wells: MW-6A and MW-18A will be sampled on an annual basis. Monitoring wells MW-2A, MW-3A, MW-4A, MW-15A, and MW-16A will be sampled on a bi-annual basis.

Based on a review of sampling results presented in the October 1993 SWMFIP Report, the shallow groundwater quality is characterized by trace concentrations of ketones, chlorinated volatile organics, and phenols; elevated concentrations of common elements (calcium, potassium, sodium, and iron) and an alkaline pH. Several trace metals were also detected above groundwater quality standards. Based on the results of the SWMFIP, groundwater samples will be analyzed for the parameters identified on Table 3-2.

Temperature, turbidity, pH and specific conductivity will be field measured at the time of sample collection. Metal samples will be field-filtered and analyzed for both total dissolved metals if turbidity values exceed 50 NTU. Water level measurements will also be collected during each sampling event.

Changes in groundwater quality, if any, would be expected to occur slowly. There fore, samples from shallow of shallow overburden wells shall be collected annually in the spring. Designated deep overburden wells MW-6A, and MW-18A shall also be collected annually. Deep overburden wells MW-2A, MW-3A, MW-4A, MW-15A and MW-16A are to be sampled on a frequency once every two years unless other wise directed by the Department".

### 3.1.2 Trend Analysis

Steelfields will conduct a trend analysis as described in this section and as updated in subsequent reports. However, NYSDEC is not bound by this analysis method in determining when or if remedial action is required at the site to prevent environmental degradation.

Steelfields will evaluate the groundwater quality data derived from post-remediation monitoring of the landfill by comparing concentrations for the parameters analyzed for in each monitoring well to background groundwater quality, as measured by concentrations in monitoring wells 6A and 6B, as appropriate. For purpose of establishing the initial background database, two years (1996 and 1997) of past quarterly monitoring data at MW-6A and MW-6B will be tabulated along with all post-remediation monitoring results to provide a representative background database. The 1996 and 1997 data will be used in lieu of more recent analyses due to the occurrence of some localized groundwater mounding in

TABLE 3-1
MARILLA STREET LANDFILL

1991 THROUGH 2000 MONITORING PARAMETERS

| PARAMETER | 6NYCRR Part 373 Monitoring for Wells 4B, 6B, 7B, 9B, 14B-R | 6NYCRR Part 360 Monitoring for Wells 2A,2B 4A, 5A, 5B, 6A |
|---|---|---|
| pH (1) | X (2) | X |
| Temperature (1) | X | X |
| Specific Conductivity (1) | X (2) | X |
| Total Organic Halogens | X (2) | |
| Total Organic Carbon | X (2) | X |
| Total Dissolved Solids | | X |
| Chloride | X | X |
| Flouride | X | |
| Total Rcoverable Phenolics | X | X |
| Sulfate | X | X |
| Tetrachloroethylene | X | |
| **Inorganic Parameters** | | |
| Total And Soluble Arsenic | X | |
| Total Soluble Cadmium | X | |
| Total And Soluble Chromium | X | |
| Total And Soluble Iron | X | X |
| Total And Soluble Lead | X | X |
| Total And Soluble Manganese | X | X |
| Total And Soluble Mercury | X | X |

NOTES: (1) Field measured at the time of sample collection.

(2) Four (4) replicate analysis per sampling event.

**TABLE 3-2**

**MARILLA STREET LANDFILL**
**GROUNDWATER SAMPLING PARAMETERS**

| |
|---|
| pH [(1)] |
| Temperature [(1)] |
| Specific Conductivity [(1)] |
| Total Organic Carbon |
| Total Dissolved Solids |
| Total Recoverable Phenolics |
| Cyanide |
| Total and Soluble Arsenic [(2)] |
| Total and Soluble Chromium [(2)] |
| Total and Soluble Iron [(2)] |
| Total and Soluble Lead [(2)] |
| Total and Soluble Manganese [(2)] |
| Volatile Organics EPA 8260 [(3)] |

NOTES:

(1) Field measured at the time of sample collection.

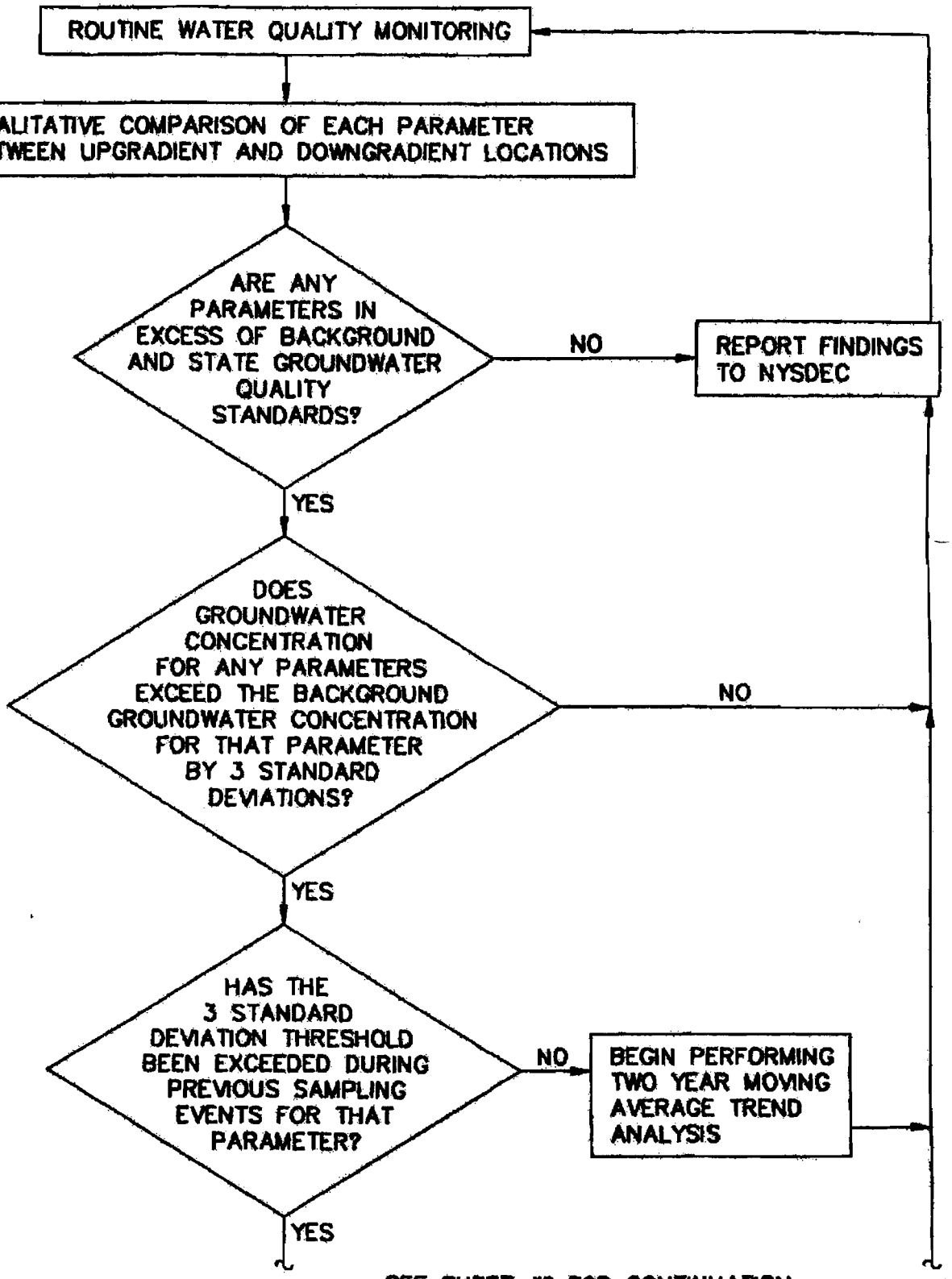
(2) Metal samples will be field-filtered & analyzed for soluble metals if turbidity values exceed 50 NTU.

(3) After analysis of samples collected in 2004, the VOC data will be evaluated with the NYSDEC to determine if continued analyses are warranted.

the landfill during the 1998-1999 wetland remediation project. As discussed in the quarterly monitoring reports submitted to NYSDEC, the mounding was attributable to deposition of sediment in an opened portion of the landfill behind the cut-off wall, and temporarily raised groundwater elevations in the landfill above the elevations at monitoring wells 6A and 6B. The mean and standard deviation will be determined for the background data, and will be continuously updated to include the most recent monitoring results.

Future groundwater quality data will be compared on a well-by-well basis to both the background water quality concentration and NYSDEC Class GA groundwater quality standards/guidance values for the individual parameters, with the results of the groundwater quality monitoring evaluated as outlined in Figure 3-1. As shown on Figure 3-1, additional data analysis will be performed if the groundwater concentration for any parameter at any monitoring well exceeds the background water concentration for that parameter by 3 standard deviations. For parameters where 1996-1997 background data does not exist (e.g., cyanide), the average and standard deviations for MW-6A and MW-6B will be calculated after two years of semi-annual sampling data have been obtained.

Analytical data for all detected parameters will be entered into a computer spreadsheet (i.e., Excel). The spreadsheet will be used to illustrate changes in concentration over time for each monitoring well and to compare down-gradient monitoring well concentrations to background (up-gradient) monitoring well concentrations. Analytical results which are reported as "Not Detected" will be recorded in the spreadsheet at the detection limit of the analytical method used with notation indicating that the compound was not detected at the specified detection limit. Concentrations of a compound detected below laboratory quantitation limits will be recorded at the quantified value and footnoted as such. Tables will be generated for each parameter summarizing concentrations detected during each sampling event, NYSDEC Class GA Groundwater Quality Standards/Guidance Values, and background concentrations.

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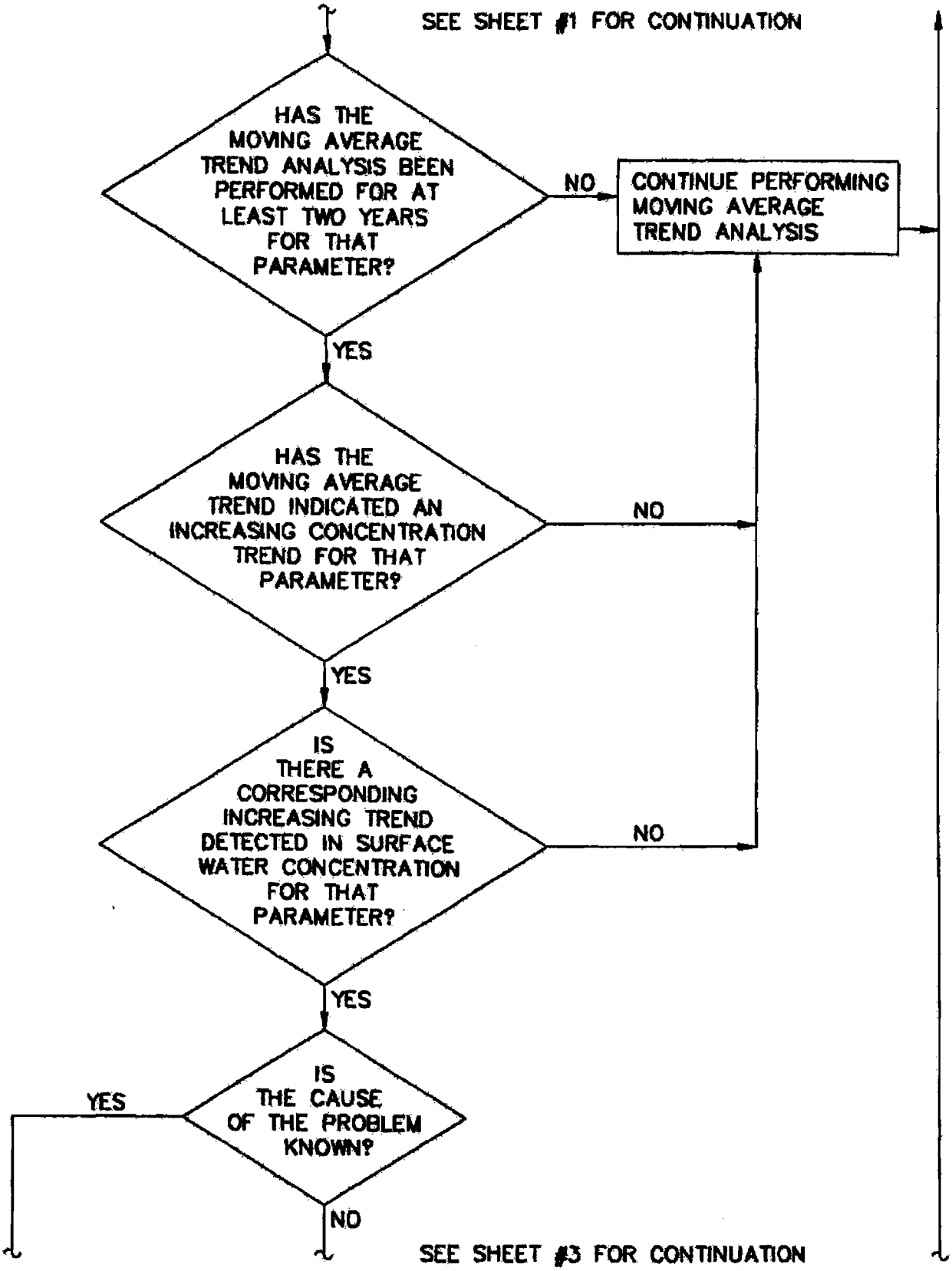
LTV STEEL COMPANY

# DECISION TREE FOR DETERMINING/ CORRECTING WATER QUALITY DEGRADATION

## MARILLA STREET LANDFILL

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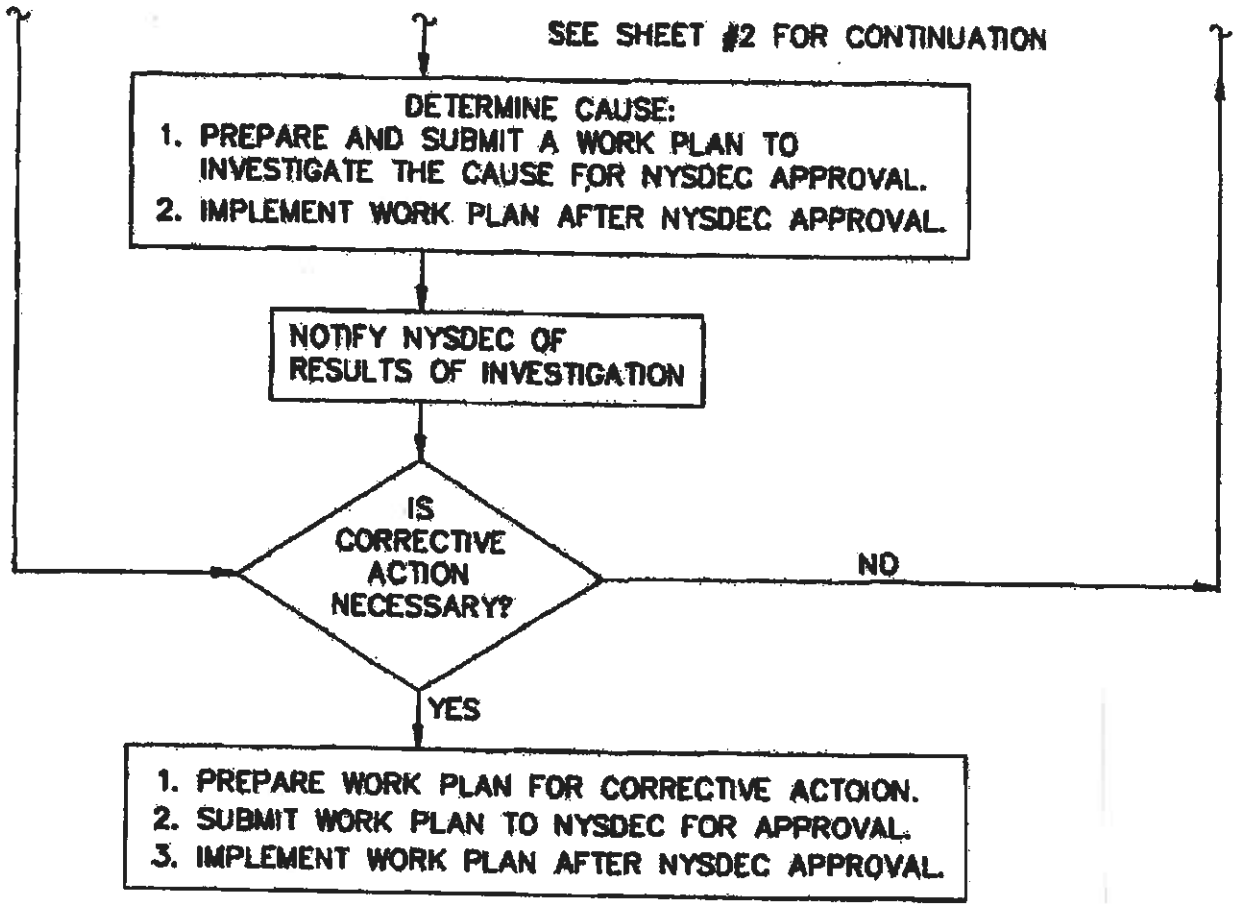
# DECISION TREE FOR DETERMINING/ CORRECTING WATER QUALITY DEGRADATION

## MARILLA STREET LANDFILL

FIGURE 3-1

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LTV STEEL COMPANY

# DECISION TREE FOR DETERMINING/ CORRECTING WATER QUALITY DEGRADATION

MARILLA STREET LANDFILL

For parameters that exceed the background water quality concentration value by 3 standard deviations, a moving average trend test will be performed. The moving average for any constituent will be calculated as the arithmetic average of the current monitoring data and the monitoring data from the three previous sampling events. Moving average trend tests are used with time dependent groundwater data to reduce the fluctuations in analyte concentrations due to seasonal variations in groundwater flow regimes. The use of moving average calculations with detected parameters will provide an indication of upward (or downward) trends over time.

The use of a moving average will provide information on long-term trend of constituent concentration levels while smoothing the normal seasonal fluctuations that occur. After the moving average has been plotted for several sampling events, a linear trend line will be fitted to the curve using a least squares analysis. If the trend analysis indicates an increasing concentration trend for two years, and this trend is contrary to upgradient groundwater quality trends, then the NYSDEC will be notified and additional statistical analysis may be performed to better evaluate the increasing trends.

## 3.2 Sampling Procedures

The procedures to be used in the collection of groundwater samples are summarized below. Detailed procedures for well evacuation, sample collection, sample containers, preservation, decontamination and sample shipment are presented in Appendix A.

### 3.2.1 Well Purging

Prior to well purging, a synoptic round of groundwater level measurements will be obtained from all wells. A minimum of 3 to 5 times the standing water volume in each well will be evacuated prior to groundwater sample collection. Well evacuation will be accomplished with a dedicated disposable polyethylene bailer or peristaltic pump with dedicated tubing. Purge water will be disposed of to the ground down gradient of the well.

### 3.2.2 Sample Collection

Groundwater samples will be collected using a disposable polyethylene bailer within 24 hours of well purging. Each sample will also be field tested for temperature, specific conductance and pH. If sample turbidity values exceed 50 NTU, then groundwater samples requiring metal analysis will be field filtered. The filtered set of groundwater samples for dissolved samples will be field filtered prior to the addition of preservatives. If turbid samples are collected, both total and dissolved metals will be analyzed.

### 3.2.3 Sample Containers and Preservatives

Groundwater samples will be collected in either 40 ml glass vials, 500 ml polyethylene bottles, or 500 ml amber glass jars, depending on the analysis. The laboratory will provide all sample containers. The bottles will contain, if necessary, a trace-analysis grade preservative supplied by the analytical laboratory. For details on sample preservation requirements, see Section 5.2.3.

### 3.2.4 Sample Shipment

Immediately following sample collection, each sample container will be marked with the following information:

- Sample Code
- Project Number
- Date/Time
- Sample Type
- Sampler's Initials

The sample code will indicate the site location, media samples and sample station.



Each sample will be covered with waterproof clear plastic tape to preserve its integrity. Samples will be immediately transferred to coolers and packed with ice or ice packs to maintain a temperature of 4°C.

All groundwater samples for laboratory analysis will be shipped in protected containers to the selected laboratory. Each shipment will contain the original "Chain-of-Custody" form. All samples will be shipped within 48 hours of sampling.

# 4.0 SEDIMENT SAMPLING AND ANALYSIS PLAN

## 4.1 Scope of Work

### 4.1.1 Sample Collection and Frequency

Sediment samples will also be collected at a number of strategic locations within the remediated wetlands, selected to provide both an indication of sediment quality as well as the source of contributions to elevated parameter concentrations, if any. Sediment samples will be collected from the following locations (see Figure 2-1):

- SED-1 – South Pond near inlet to West Ditch.
- SED-2- Southern end of NW Pond (near outlet of West Ditch).

The sediment samples will be analyzed for pH, conductivity, total recoverable phenolics; and total arsenic, chromium, iron, lead and manganese.

Sampling will be performed annually, in the spring. After a total of 5 years of sampling, a review of the data will be conducted with the NYSDEC to determine if continued sampling is warranted.

## 4.2 Sampling Procedures

### 4.2.1 Pond Sediments

Sediment samples will be collected from the wetlands in accordance with following procedure:

1. Identify sampling location.

2. From shore, slowly lower and submerge the ponar sediment dredge or dedicated sediment sampling container at the desired location with minimal surface disturbance. Collect and retrieve the sample with minimal disturbance. Depth of sample should be a minimum of two inches into pond sediment bed.

3. Place discrete grab samples directly into appropriate sample containers for all required analyses. It may be necessary to retrieve two adjacent grabs to perform the required analytical testing.

## 4.3 Sample Containers

Sediment samples will be collected in glass jars provided by the analytical laboratory. Sample bottles will contain, if necessary, a trace-analysis grade preservative supplied by the laboratory. For details on sample preservation requirements, see Section 5.2.3.

## 4.4 Decontamination Procedures

Prior to sampling and between each sampling event, the ponar sediment sampling equipment and any other non-dedicated sampling tools used will be decontaminated using the procedures identified in the Standard Operating Procedures provided in Appendix A.

## 4.5 Sample Shipment

Immediately following sample collection, each sample container will be marked with the following information:

- Sample Code
- Project Number
- Date/Time
- Sample Type
- Sampler's Initials

The sample code will indicate the site location, media samples and sample station. Each sample will be covered with waterproof clear plastic tape to preserve its integrity. Samples will be immediately transferred to coolers and packed with ice or ice packs to maintain a temperature of 4°C. All sediment and surface water samples for laboratory analysis will be



shipped in protected containers to the selected laboratory. Each shipment will contain the original "Chain-of-Custody" form. All samples will be shipped within 48 hours of sampling.

# 5.0 ANALYTICAL PROGRAM

## 5.1 Laboratory Requirements

Analytical laboratories selected to perform analysis of the sediment, surface water and groundwater samples will be New York State Department of Health ELAP-certified. Laboratory analyses and QA/AC procedures will be in accordance with the most recent USEPA SW-846 or 40 CFR Part 136 methodology.

## 5.2 Analytical Methods/Protocols

### 5.2.1 Surface Water

Unfiltered surface water samples will be analyzed for total dissolved solids, total recoverable phenolics and total iron, lead, chromium, arsenic and manganese. Filtered samples will be analyzed for soluble metals only if sample turbidity exceeds 50 NTU. The sampling hold times, preservation and container requirements area presented in Table 5-1. Table 5-2 presents a summary of the analytical program for surface waters, including site-specific QC samples to be analyzed by the laboratory. In addition, pH, temperature and specific conductivity will be measured in the field.

### 5.2.2 Groundwater

Unfiltered groundwater samples will be analyzed for total dissolved solids, total recoverable phenolics, total organic carbon, cyanide, volatile organics, and a site-specific list of total and suspended metals. Filtered samples will be analyzed for metals only. The sampling holding times, preservation and container requirements are presented in Table 5-1. Table 5-3 presents a summary of the analytical program for groundwater, including site-specific QC samples to be analyzed by the laboratory. In addition, pH, turbidity temperature and conductivity will be measured in the field.

TABLE 5-1
MARILLA STREET LANDFILL

SAMPLE HANDLING PROCEDURES

| Parameter | Matrix | Holding Time | Preservative | Sample Container |
|---|---|---|---|---|
| Total Organic Carbon | Water | 28 Days | Cool to 4.C | 40 ml Amber glass vial |
| Total Dissloved Solids | Water | 7 Days | Cool to 4.C | 250 ml polyethylene bottle |
| Metals | Water | Mercury 26 days, remaining 6 months | Cool to 4.C HNO3 to pH <2 | 500 ml polyethylene bottle |
| Metals | Sediment | 6 Months | HNO3 to pH <2 | 4 oz. clear wide mouth glass |
| Total Recoverable Phenolics | Water | 28 Days | Cool to 4.C H2SO4 to pH <2 | 500 ml amber glass jar with Teflon-lined cap |
| Total Recoverable Phenolics | Sediment | 14 Days (Extraction) 28 Days (Analysis) | Cool to 4.C H2SO4 to pH <2 | 8 oz. clear wide mouth glass |
| Cyanide, Total | Water | 14 Days | Cool to 4.C NaOH to pH >12 | 500 ml polyethylene bottle |
| Volatile Organics | Water | 7 Days | Cool to 4.C | 2- 40 ml glass VOA vials with Teflon septums |

TABLE 5-2

MARILLA STREET LANDFILL

SUMMARY OF SURFACE WATER SAMPLING AND ANALYSIS FOR EACH SAMPLING EVENT

| Parameter | Method | No. Of Samples | Quality Control | |
|---|---|---|---|---|
| | | | Blind Duplicate | MS/DUP[3] |
| Specific Conductivity [2] | | 4 | | |
| pH [2] | | 4 | | |
| Temperature [2] | | 4 | | |
| Total Organic Carbon | 415.1 | 4 | 1 | 0 |
| Total Dissolved Solids | 160.1 | 4 | 1 | 0 |
| Total Recoverable Phenolics | 420.1 | 4 | 1 | 0 |
| Cyanide, Total | 335.2 | 4 | 1 | 0 |
| Volatile Organics | 8240 | 4 | 1 | 0 |
| Total and Soluble Iron [1] | 200.7 | 4 | 1 | 0 |
| Total and Soluble Lead [1] | 239.2 | 4 | 1 | 0 |
| Total and Soluble Chromium [1] | 200.7 | 4 | 1 | 0 |
| Total and Soluble Arsenic [1] | 206.2 | 4 | 1 | 0 |
| Total and Soluble Manganese [1] | 200.7 | 4 | 1 | 0 |

Notes:
(1) Soluble metals analyzed only if sample trubidity exceeds 50 NTU.
(2) Field measured at the time of sample collection.
(3) Site Specific Matrix Spike/Matrix Spike Duplicate incorporated with Groundwater quality control samples.

TABLE 5-3

MARILLA STREET LANDFILL

SUMMARY OF GROUNDWATER SAMPLING AND ANALYSIS FOR EACH SAMPLING EVENT

| Parameter | Method | No. Of Samples [3][4] | Quality Control | |
|---|---|---|---|---|
| | | | Blind Duplicate | MS/DUP |
| Specific Conductivity [2] | | 10/16 | | |
| pH [2] | | 10/16 | | |
| Temperature [2] | | 10/16 | | |
| Total Organic Carbon | 415.1 | 10/16 | 1 | 0 |
| Total Dissolved Solids | 160.1 | 10/16 | 1 | 0 |
| Total Recoverable Phenolics | 420.1 | 10/16 | 1 | 0 |
| Cyanide, Total | 335.2 | 10/16 | 1 | 1 |
| Volatile Organics | 8240 | 10/16 | 1 | 1 |
| Total and Soluble Iron [1] | 200.7 | 10/16 | 1 | 1 |
| Total and Soluble Lead [1] | 239.2 | 10/16 | 1 | 1 |
| Total and Soluble Chromium [1] | 200.7 | 10/16 | 1 | 1 |
| Total and Soluble Arsenic [1] | 206.2 | 10/16 | 1 | 1 |
| Total and Soluble Manganese [1] | 200.7 | 10/16 | 1 | 1 |

Notes:
(1) Soluble metals analyzed only if sample trubidity exceeds 50 NTU.
(2) Field measured at the time of sample collection.
(3) Shallow Overburden Wells MW-3B, MW-4B, MW-6B, MW-7B, MW-16B, MW-14BR, MW-15B, and MW-18B and Deep Overburden Well MW-6A and MW-18A will be sampled on an annual basis.
(4) Shallow Overburden Well MW-2B and Deep Overburden Wells MW-2A, MW-3A, MW-4A, MW-15A, and MW-16A will be sampled on a bi-annual (every other year) basis.

### 5.2.3 Sediment

Sediment samples will be analyzed for total recoverable phenolics and total iron, lead, chromium, arsenic and manganese. The sampling holding times, preservation and container requirements are presented in Table 5-1. Table 5-4 presents a summary of the analytical program for sediments, including site-specific QC samples to be analyzed by the laboratory. In addition, pH, temperature and conductivity will be measured in the field.

## 5.3 Field Quality Control Samples

### 5.3.1 Blind Duplicate Samples

To evaluate the reproducibility of sample collection and laboratory analysis procedures, blind duplicate samples of surface water, groundwater and sediment will be collected and analyzed during each sampling event. Blind duplicate samples will be collected by splitting the recovered sample. Duplicates will be obtained for both filtered and unfiltered samples. Enough sample volume will be collected to fill both the regular and blind duplicate sample containers. The location of the blind duplicate sample will not be disclosed to the analytical laboratory.

### 5.3.2 Equipment Blanks

Equipment blanks ensure that sampling equipment is clean and that the potential for cross contamination has been minimized by the equipment decontamination procedures. Equipment rinsate blanks will not be required for the site unless non-dedicated equipment (e.g., re-usable bailer) is used to retrieve samples. If non-dedicated equipment is used, one equipment rinsate blank will be collected from the sampling equipment during each sampling event. Equipment blanks will be collected following procedures provided in Appendix A.

TABLE 5-4

MARILLA STREET LANDFILL

SUMMARY OF SEDIMENT SAMPLING AND ANALYSIS FOR EACH SAMPLING EVENT

| Parameter | Method | No. Of Samples | Quality Control | |
|---|---|---|---|---|
| | | | Blind Duplicate | MS/DUP |
| Specific Conductivity (1) | | 2 | | |
| pH (1) | | 2 | | |
| Temperature (1) | | 2 | | |
| Total Recoverable Phenolics | 420.1 | 2 | 1 | 0 |
| Total Iron | 200.7 | 2 | 1 | 1 |
| Total Lead | 239.2 | 2 | 1 | 1 |
| Total Chromium | 200.7 | 2 | 1 | 1 |
| Total Arsenic | 206.2 | 2 | 1 | 1 |
| Total Manganese | 200.7 | 2 | 1 | 1 |

Notes:
(1) Field measured at the time of sample collection

## 5.4 Laboratory Quality Control/Reporting Requirements

### 5.4.1 Reporting and Deliverable Requirements

Analytical data generated by the laboratory will be reported in a format that will allow the review of samples analyzed and evaluation of the usability of the sample data. The analytical report generated by the laboratory will include, for each sample:

- Sample location/sample number.
- Date collected.
- Date extracted or digested.
- Date analyzed.
- Analytical methodology (including digestion method used for metal analysis).
- Method for sample cleanup (if used).
- Method detection limits.
- Sample dilution factor (if applicable).
- Analytical results.
- Chain-of-Custody forms.

### 5.4.2 Quality Control Analyses

The laboratory will perform one site-specific matrix spike/matrix spike duplicate analysis for each group of 20 organic samples of a similar matrix. In addition, the laboratory will perform one site-specific matrix spike/duplicate analysis for each group of 20 inorganic samples of a similar matrix. Matrix spike/matrix spike duplicate samples will be carried through the entire analytical process from initial sample preparation to final analysis. Other internal QC analyses to be performed by the laboratory are identified in Table 5-5.

TABLE 5-5
MARILLA STREET LANDFILL

QUALITY CONTROL ANALYSIS AND ACCEPTANCE CRITERIA FOR THE LABORATORY

1. **Initial Calibration** – A 3-point initial calibration will be conducted on the analytical system prior to project initiation. The instrument will be calibrated and the correlation coefficient ( r ) checked for each analyte. For all analytes detected the ( r ) value is required to be greater than 0.99 or recalibration will be performed.

2. **Internal Standards Performance** – An internal standard will be conducted at the beginning of each day. The internal standard area count will not vary by more than a factor of 2 (-50% to +100%) from the associated continuing calibration standard. The retention time of the internal standard will not vary more than +/-30 seconds from the associated continuing calibration standard. Any values outside the control limits will be noted on the QC forms.

3. **Calibration Check Standards** – At the beginning of each day, after every 10 samples and at the end of each day a mid-point calibration check standard will be analyzed to verify that the analytical sensitivity did not change from the initial calibration. After running this standard the analyst will calculate the % Recovery (%R) value for each analyte and compare it to the 75-125% criteria. Any %R value outside the control limits will be noted on the QC form. If significant variances are observed, the system will be recalibrated.

4. **Contract-Required Detection Limit (CRDL) Standards for ICP and AA** – An ICP standard will be analyzed at a concentration two (2) times the CRDL [or at the CRDL for AA] or two times the instrument detection limit, whichever is greater. The standard will be analyzed at the beginning and end of each sample analysis run, or a minimum of twice per eight (8) hour shift, whichever is more frequent.

5. **QC Standards** – A QC standard will be analyzed on a daily basis and used to verify the accuracy of the calibration standards. The QC standard will be a standard from a second source, other than the calibration standards. %R values will be calculated and compared to the 75-125% criteria.

6. **ICP Interference Check Sample (ICS)** – An ICS will be analyzed at the beginning and end of each analytical run (or a minimum of twice per eight-hour work shift). The ICS consists of two solutions, A and AB. Solution A contains the interferents and solution AB contains the analytes mixed with the interferents. The solutions will be analyzed consecutively.

7. **Method Blanks** – A sample of analyte-free water will be processed at the beginning of the day and after every 10 samples analyzed to verify that the analytical system is contaminant-free. Concentrations of detected analytes must be less than half the method detection limit. Low concentrations of contaminants that have been detected in the blank are labeled with a "B". Significant contaminant levels necessitate corrective action, i.e., cleaning of the instrument.

8. **Surrogate Standards** – Surrogate standards will be added to all samples, standards and blanks to measure the potential for matrix interferences. %R values will be calculated (appear in comments sections of the data pages) and compared to the 80 to 120% criteria. Small deviations are marked as outside control limits while large deviations will necessitate reanalysis.

9. **Duplicates** – Ten percent (10%) of all samples will be analyzed in duplicate on a daily basis to determine the precision of the analyses. Relative Percent Difference (RPD) values will be calculated and compared to the 30% acceptance limit. Values over this level require corrective action if significant, otherwise they are highlighted as outside QC limits.

10. **Matrix Spike Analyses** – Twenty percent (20%) of the samples analyzed on each day will be spiked with a standard and %R values calculated. The %R values are compared against the 75-125% criteria.

11. **Laboratory Control Sample (LCS) Analysis** – An aqueous LCS will be prepared and analyzed for every group of aqueous and soil samples in a sample delivery group, or for each batch of samples digested, whichever is more frequent. The % recovery must fall within the control limits established by the EPA. If the % recovery does not meet criteria, the laboratory will take corrective action such as analyzing another LCS.

12. **Furnace Atomic Absorption (AA) QC Analysis** – All furnace AA analyses (As, Se and Pb) will be duplicate injections. The duplicate injection results must agree within 20% RSD. If the results do not agree within 20% RSD, the sample will be rerun. In addition, a post-digestion spike will be run for each sample. The recovery of the analyte is outside of this criteria, the analyte will be quantitated using the Method of Standard Addition (MSA), depending on sample absorbance. If the sample absorbance is >50% of the post-digestion spike absorbance and the spike recovery is outside the 85-115% control limit, the sample result will be calculated using MSA.

Quality control sample analytical results will be reported on standard forms in conjunction with data acceptance criteria. The acceptance criteria applicable to this project are specified by the NYS ASP and in Table 5-5.

### 5.4.3 Data Usability

All analytical data will be evaluated for quality and usability by the analytical laboratory's Quality Assurance Officer prior to issuance of the final report. Any QA/QC problems identified by the laboratory will be identified in a case narrative, and the associated analytical results will be flagged accordingly. In addition, the engineer's Project Manager and/or the project Quality Assurance Officer will perform an independent data usability evaluation. The evaluation will involve review pertinent internal and external QC data as reported by the laboratory. The specific QC parameters that will be evaluated in reference to compliance with the analytical method protocols include all sample chain-of-custody forms, holding times, blanks (i.e., method blanks), spikes, surrogate recoveries, duplicates and sample data. Raw data (instrument data and chromatograms) will not be provided or reviewed unless results become suspect due to significant QC sample problems or extreme inconsistency with past observations.

The data usability evaluation will be presented in the monitoring report (see Section 9.0) in conjunction with the discussion of analytical results. Data deficiencies, analytical method protocol deviations and quality control problems will be described and their effect on the data presented. Recommendations for resampling/reanalysis will be made where deemed necessary. Data qualifications will be documented for each parameter following the NYSDEC Analytical Services Protocol 1991 Rev. guidelines.

# 6.0 QUALITY ASSURANCE/QUALITY CONTROL PLAN

This Quality Assurance/Quality Control (QA/QC) Plan presents in specific terms, the policies, organizations, objectives, functional activities, and specific QA and quality control (QC) activities designed to achieve the data quality goals of the Marilla Street Landfill post-closure monitoring program. This plan describes the elements that are considered to be an essential part the QA/QC plan as defined by the USEPA Office of Research and Development.

The QA/QC applicable to both the field sampling activities and the laboratory analysis of these samples is addressed. Laboratory analyses and QA/QC procedures are discussed in Section 5.0.

## 6.1 Quality Assurance Objectives

### 6.1.1 Accuracy and Precision

The QA objective for accuracy and precision of laboratory analytical data is in compliance with the specific requirements for these criteria defined in the CLP Statement of Work (SOW) and the analytical methods. Accuracy will be determined on the basis of blank sample analysis and surrogate recoveries from spiked samples. Precision will be determined in terms of the coefficient of variance based on duplicate sample analysis. The procedures for these determinations are specified in the CLP Statement of Work.

### 6.1.2 Completeness

The QA objective for completeness is to collect and analyze all environmental samples in a manner such that valid data is obtained from 100% of the samples. Achievement of this objective will rely on the use of strict sample identification and custody procedures, use of standard reference materials, proper instrument calibration and maintenance, analysis of quality control samples, performance audits and corrective action when QC acceptance criteria are exceeded.

### 6.1.3 Representativeness

An objective of the post-closure monitoring plan is the collection of samples that are representative of the matrix from which they were collected. Achievement of this objective will rely on the use of sampling procedures, as described in this report, that have been designed with the goal of obtaining representative samples.

### 6.1.4 Comparability

The QA objective for comparability is the generation of site characterization data that can be used to make valid comparisons with other data that may be generated in the future at this or other sites. The objective also involves the analysis of the environmental samples collected during the post-closure monitoring in a manner that produces results comparable to the results that would be obtained by another laboratory using the same analytical procedure. The objective is achieved by the use of standard materials traceable to the National Bureau of Standards; the use of accepted procedures for sample collection and analysis; and analysis of quality control samples to validate the analytical results.

## 6.2 Field Quality Assurance/Quality Control (QA/QC)

QA/QC procedures used during the field investigation will include the collection of QA/QC samples for laboratory analysis. The collection of QA/QC samples was previously discussed in Section 5.3.

## 6.3 Calibration Procedures and Frequency

The field instruments that will be used to make measurements in the field during the post-closure monitoring include:

- Field pH meter.

- Field conductivity meter.
- Turbidity meter.

The procedures that will be used to calibrate and maintain these instruments are presented in Appendix A.

Laboratory instrument calibration requirements for sample analyses are specifically defined in the specific SW-846 and 40 CFR Part 136 Methodology to be employed.

## 6.4 Field Records

The results of all field measurements and associated calculations will be recorded on standard forms. These forms are presented in the Standard Operating Procedures included as Appendix A. Separate field logs will also be maintained during the collection of environmental samples (i.e., groundwater and soil).

During all activities, the following general information will be recorded in each log book or field log:

- Date.
- Crew members.
- Meteorological conditions.
- Brief description of field activities conducted for date indicated.
- Location where work is performed.
- Problems encountered and corrective actions taken.
- Field measurements or descriptions made.

The following information will be recorded by the sampling team leader and/or field technicians doing the collection of samples:

- Sample locations and summary of samples collected.

- Completeness of sampling effort (e.g., were all the samples collected that were intended to be collected and if not, what were the reasons?).
- Chain-of-custody information.
- Results of field measurements.
- Results of field instrument calibrations.

## 6.5 Chain-of-Custody Records

Prior to shipping the samples to the analytical laboratory, a chain-of-custody record will be completed. The chain-of-custody form will be signed and dated by the person who collected the samples, the person the samples were relinquished to for transport to the laboratory, and the laboratory sample controller/custodian who receives the samples. Samples stored overnight will be kept in a lockable designated location. Chain-of-custody records will accompany the samples at all times. The original form will be sent with the samples to the laboratory. After receipt of the samples at the laboratory, the shipping container seal will be broken. The receiver will record the condition of the samples. The original copy of the chain-of-custody will be included with the sample results. The Standard Operating Procedures for Chain-Of-Custody Records are provided in Appendix A.

## 6.6 Sample Shipment

Samples collected for analysis will be shipped to the laboratory via an overnight delivery service, or picked up by the analytical laboratory's courier service. All samples will be shipped as environmental samples in accordance with the Department of Transportation (DOT) standard requirements for packages, as specified in 49 CFR 173.24 and 49 CFR 173.6. Individual sample containers will be packed to prevent breakage and/or thawing and transported in sealed ice chest or other suitable container. The chain-of-custody will be enclosed in a plastic bag and placed in the shipping container. The Standard Operating Procedure for sample shipment is provided in Appendix A.



## 6.7 Data Reduction, Validation and Reporting

The laboratory procedures for data reduction, validation and reporting for all chemical parameters analyzed during this project will be in accordance with the requirements of the specific method to be employed and the procedures presented in the laboratory's QA/QC Plan. The laboratory report will include a discussion of the validity of the data consistent with the level of Quality Control required for the project.

## 6.8 Internal Quality Control Checks and Frequency

Internal quality control sample analyses that will be performed during this project to document the acceptability of the data are described in Section 5.4.

Quality control sample analytical results will be reported on standard forms in conjunction with data acceptance criteria. The acceptance criteria applicable to this project will be those specified by the NYS ASP.

## 6.9 Performance and System Audits

Performance and system audits routinely conducted at the laboratory to ascertain the potential of all analytical measurements systems to generate data that are representative, valid, and meet completeness requirements are described in the laboratory's QA/QC Plan.

## 6.10 Preventative Maintenance Procedures and Schedules

### 6.10.1 Field Equipment

Maintenance procedures that will be employed to assure the proper operation of all field equipment are presented in Appendix A.

### 6.10.2 Laboratory Equipment

Preventative maintenance will be performed on critical laboratory instruments as described in the laboratory's QA/QC Plan.

## 6.11 Sample Handling

A number of general and specific sample handling measures will be employed to ensure that the analytical data produced during this project are generated within known and acceptable limits of accuracy and precision. General control measures will include the following:

- Proper cleaning of sample containers.
- Use of formal written sample labeling, logging and chain-of-custody.
- Use of USEPA-accepted methods for sample preservation.
- Use of laboratory reagents that meet or exceed American Chemical Society "Analytical Reagent Grade" quality standards.
- Use of laboratory water that meets or exceeds quality standards for Type I water.
- Proper cleaning of laboratory glassware.

These measures are addressed in the laboratory's QA/QC Plan.

## 6.12 Corrective Action

Whenever calibration checks of field or laboratory instruments fail to compare with initial calibrations and/or laboratory data precision and/or accuracy acceptance limits are exceeded, corrective actions will be implemented. These actions will include:

- Recalibration or standardization of instruments.
- Acquiring new standards.



- Repairing instrumentation.
- Replacing instruments that cannot be repaired.
- Reanalyzing samples for which unacceptable or suspect analytical results were obtained.

If problems are encountered which require corrective action, these problems will be addressed and resolved before additional samples are analyzed in order to minimize the quantity of re-analyses required. Specific corrective actions that will be implemented, if needed, and the individuals assigned the responsibility for initiating and approving such corrective actions are identified in the laboratory's QA/QC Plan.

## 6.13 Quality Assurance Reports to Management

Periodically during the performance of this investigation, field and laboratory personnel will be required to report the performance of measurement systems to management. Field personnel will report to the Monitoring Program Manager. Laboratory personnel reporting requirements are defined in the laboratory's QA/QC Plan.

The frequency of reporting will be as appropriate during the period of time that measurements are being made in the field and/or laboratory. Reporting of measurement system performance generally will be verbal. However, if a problem requiring corrective action is encountered, a formal written report will be prepared. If a QC problem arises in the laboratory, the laboratory operation manager will immediately contact the client or its representative to discuss an appropriate corrective action. Final approval of the corrective action to be implemented will be made by the laboratory operation manager.

# 7.0 LANDFILL POST-CLOSURE MONITORING

This information is submitted to comply with 40 CFR 270.14(b)(13) and 6 NYCRR 373-1.5(a)(2)(xiii) and related Subparts.

## 7.1 Inspection and Maintenance

### 7.1.1 Site Inspections

Site inspection and maintenance will be performed by an experienced firm approved by Steelfields Ltd. The site will be inspected on a annual basis throughout the entire post-closure period. The landfill site will be inspected for:

- Visible debris, litter and waste.
- Integrity of drainage ditches including:
  - Sediment buildup.
  - Pooling or ponding.
  - Slope integrity.
  - Overall adequacy of surface runoff
- Integrity of access roads, gates and fences.
- Integrity of groundwater monitoring system.
- Integrity of landfill cap including:
  - Erosion of settling cap material.
  - Leachate breakthroughs.
  - Maintenance of existing bench marks.
  - Slope integrity.
  - Signs of vegetation stress or lack of vegetation.
  - Signs of small animals burrowing into the cover system.

A sample post-closure site inspection report is included in Appendix B.

All records related to site inspections will be submitted to the NYSDEC Region 9 Office, Division of Environmental Remediation, on an annual basis.

### 7.1.2 Cover Maintenance

Cover maintenance will be performed as necessary over the entire post-closure care period. Any signs of erosion, settling, cracking or other site maintenance problems detected during routine site inspections will be corrected as soon as possible. All eroded areas will be brought back to original grade according to the procedures described for constructing the final cover. Settling which results in ponding of water will be regraded and revegetated as necessary to eliminate the ponding. All bare spots in the final cover will be reseeded and fertilized as necessary, but no less than once every year. Seed and fertilizer for the majority of the landfill will be of the same type and quality as specified in Table 7-1. For areas of the toe-of-slope immediately adjacent to the wetlands, the seed mixture specified in Table 7-2 will be utilized. Mowing will be done once a year in late fall after August 31. This mowing schedule will provide an open field habitat attractive to grassland bird species, small mammals and raptors, and control the establishment of woody vegetation. This mowing sequence is preferred as it will permit ground-nesting species to nest and raise their young in an undisturbed manner and will also allow grasses and forbs to form seeds to generate the next season's plants, which are an important food item for native and migratory birds and small mammals. The mowing schedule may be modified in the future if the ownership of the site is transferred to another party and/or the property is developed. Any undesirable plant species (i.e., large tree growth) will be removed if their presence is suspected to have the potential to deteriorate the integrity of the final cover.

The need for cover repairs due to subsidence and/or settling will be determined based on an evaluation of whether the functions of the final cover in the affected area has been impaired. Those areas will be repaired to ensure the integrity of the final cover is maintained. These repair actions may include, but will not be limited to:

- Strip and stockpile topsoil from the affected area.
- Regrade the affected area in accordance with the grading plan.

TABLE 7-1

MARILLA STREET LANDFILL

| Primary Seed Mixture[1] | |
|---|---|
| **Common Name** | **Application Rate** |
| Perennial Ryegrass | 10 lbs/acre |
| Kentucky Bluegrass | 20 lbs/acre |
| Strong Creeping Red Fescue | 20 lbs/acre |
| Chewing Fescue | 20 lbs/acre |
| Hard Fescue | 20 lbs/acre |
| White Cover | 10 lbs/acre |
| Notes: (1) Areas requiring vegetation will be reseeded with 100 lbs/acre of seed conforming to this mix. | |

TABLE 7-2

MARILLA STREET LANDFILL

| Wetland Grass Seed Mixture[1] | |
|---|---|
| **Common Name** | **Percent Mix by Weight** |
| Timothy | 21.2 |
| Alsike Clover | 12.5 |
| Orchard Grass | 7.8 |
| Bicolor Lespedeza | 1.9 |
| Swithchgrass | 1.7 |
| Broom-Sedge | 0.4 |
| Oats | 0.3 |
| Common Sunflower | 0.9 |
| Fox-tail Bristle Grass | 2.6 |
| PA Smartweed | 0.4 |
| Red Fescue | 12.2 |
| Annual Rye Grass | 4.2 |
| Queen Anne's Lace | 0.4 |
| Yarrow | 0.2 |
| Red Top | 25.0 |
| Bird's-foot Trefoil | 7.1 |
| New England Aster | 0.1 |
| Black-eyed Susan | 0.1 |
| Dame's Rocket | 0.1 |
| Notes: (1) To be utilized at the landfill toe-of-slope in areas immediately adjacent to wetlands. Apply at 30 lbs/acre.of seed conforming to this mix. | |

- Using clay or a bentonite-soil admixture, fill cracks and re-establish the recompacted low permeability soil layer to a depth of 18-inches at a maximum permeability of 1 x $10^{-7}$ cm/s.

- Replace topsoil and revegetate affected area in accordance with Table 6-1.

If animal burrows (viz., woodchucks) are observed in the landfill cover system during routine site inspections, it may become necessary to remove these vectors from the site as the burrows will be a detriment to the integrity of the landfill cover system. In such an event, the NYSDEC Division of Fish and Wildlife will be contacted for permission to remove the animals. A NY State licensed nuisance animal trapper will be employed, if required. After removal, the holes will be filled in and the cover system repaired. Access roads to the landfill site will be maintained in good condition so that routine inspections and required maintenance activities can be carried out. Gates will be kept in good repair to prevent unauthorized access onto the landfill site.

### 7.1.3 Contingency Plans

The objective of the contingency plan is to address events that occur outside the scope of the routine maintenance program. The contingency plan will be implemented following the discovery of a condition at the landfill that is not covered by the routine maintenance plan.

Natural occurrences such as storms, drought and subsidence should be considered as "expected occurrences" and are addressed in the maintenance program and therefore are not addressed in this contingency plan. Certain problems that cannot be reasonably expected to occur, such as war, are also not addressed in this contingency plan. The following problems, though not likely, may be discovered during a routine post-closure inspection and monitoring program.

- Leachate significantly impacting groundwater or surface water quality.

- Failure of the final cover integrity which may be a result of, or indicated by:

- Sloughing of the cover system down the slope of the landfill.
- Fill material protruding through the final cover.
- Soil erosion or other drainage problems.
- Uncontrolled burrowing pests.

- Vegetative cover missing despite repeated efforts at revegetation.

The following guidelines are offered to determine when the contingency plan should be implemented and to determine possible corrective actions when responding to a contingency. All corrective actions, where appropriate, will be executed in a timely fashion after notifying the appropriate regulatory agencies.

#### 7.1.3.1 Leachate Breakout Repair Procedure

Leachate breakouts through the landfill cover system are not expected at this site due to the nature of the fill material. However, site inspections will include investigation leachate breakouts. Should such a breakout occur, samples of the breakout will be collected and analyzed per Section 2.0, and the damage will be repaired as quickly as possible. Repairs will be made with materials and methods as specified in the closure plan. Areas where leachate breakouts have occurred will receive additional cover material that shall be compacted and overlaid with topsoil for vegetative growth.

If the approved consultant or the NYSDEC believes a substantial threat of water pollution exists as a result of leachate draining from the site, the approved consultant will prepare a work plan to determine appropriate response efforts including:

- Whether leachate should be contained and treated on-site.
- Whether leachate should be collected and transported to an off-site treatment facility.

- Actions to control, minimize or eliminate the conditions which are contributing to leachate production.

#### 7.1.3.2 Fire

A fire at the landfill will be immediately reported to the local fire department. Appropriate response measures, including personnel safety, will be the responsibility of the fire department. Aboveground fires will be quenched according to approved fire department protocol. Damage to the final cover will be repaired where these systems have been compromised.

#### 7.1.3.3 Vandalism

Vandalism will be reported to the local enforcement authorities. If vandals have gained entry to the landfill, appropriate measures will be taken to eliminate or restrict future access. Vandalism to monitoring wells will be repaired as appropriate. Damage caused by off-road vehicles will be repaired, where the damage is determined to have compromised the integrity of the final cover.

#### 7.1.3.4 Unauthorized Dumping or Disposal

Unauthorized dumping or waste disposal by other parties will be reported to the NYSDEC, and local enforcement officials. In the event that such disposal occurs, efforts will be taken to eliminate further dumping and to restrict subsequent entry to the site. Steelfields will assist the NYSDEC and/or USEPA in the prosecution of persons found in the act of illegal dumping and in seeking reimbursement from the responsible party for all costs incurred in the removal and disposal of the waste.

#### 7.1.3.5 Severe Weather Conditions

The landfill cap has been designed for adequate drainage and control of normal rain conditions. During severe weather conditions (heavy rainstorms), the integrity of the

constructed cap and surrounding terrain may deteriorate in localized areas due to erosion. After the occurrence of a severe storm, an inspection of the landfill area will be conducted to check for erosion of the cover and adjacent areas that could eventually affect the cover. In the event that excessive erosion has resulted, actions will be taken to repair and return the damaged area to its proper state.

#### 7.1.3.6 Seismic Events

Following any earthquake or seismic event, the landfill will be inspected for damage of problems. Any erosion, leachate breakouts, slope failures, damage to monitoring wells or similar problems will be identified and corrective actions implemented to restore the damaged area.

#### 7.1.3.7 Quality Assurance/Quality Control

To assure the performance of site inspection and maintenance, a reporting procedure has been established. A site inspection checklist and maintenance schedule is provided in Appendix B. The site inspection checklist was developed in accordance with the parameters identified in Section 7.1. The approved consultant will provide fully qualified personnel to perform the site inspections and supervise maintenance operations. The site inspection checklist and maintenance schedule will be signed by authorized personnel. Maintenance and repair work shall conform to the requirements set forth in this Plan.

## 7.2 Maintenance of Benchmarks

A benchmark is located on the Hopkins Street Bridge. This benchmark will be maintained throughout the post-closure period.



## 7.3 Site Security

Following remediation, the property will not be used for any purpose that may jeopardize the integrity of the cover or monitoring system. Site access will be restricted except for those vehicles and personnel necessary to provide routine inspection and maintenance.

# 8.0 HEALTH AND SAFETY PLAN

The Health and Safety Plan (HASP) for the Marilla Street Landfill is presented as Appendix C. It addresses those site-specific hazards which at the time of this post-closure monitoring plan development, may potentially be encountered while performing the post-closure maintenance and monitoring tasks described herein. Neither Steelfields Ltd nor TurnKey Environmental Restoration, LLC accept responsibility for the Health and Safety of any individuals other than their own employees. Site representatives, contractors, and any other persons performing work at the site shall be required to provide their own site-specific HASP covering their employees and subcontractors.

# 9.0 REPORTING

## 9.1 Sampling Reports

### 9.1.1 Annual Report

An annual report will be issued at the end of each calendar year that will include all of the sampling and monitoring activities performed during the year. The format of the report will be established at the end of the first year of monitoring and will be standardized for ease of comparison. In general, the format will include the following:

- Summary of field observations and occurrences.
- Sample location plans.
- Analytical results.
- Evaluation of data.
- Comparison to previous long term monitoring results and to background analytical results obtained from a correlated project database and pre-remediation data.
- Summary of routine site inspection results and maintenance activities performed.

## 9.2 Report Submission

Two copies of each report will be submitted to:

NYS Department of Environmental Conservation - Region 9
270 Michigan Avenue
Buffalo, New York 14203-2999
Attention: Mr. Martin L. Doster, P.E.

# 10.0 POST-CLOSURE COSTS AND DURATION

The estimated costs for continued maintenance and monitoring at the Marilla Street Landfill site in accordance with the work tasks identified in Sections 2 through 8 of this Monitoring and Maintenance Plan are presented in Table 10-1. These costs assume a 30-year post-closure period for each of the landfill and wetland areas, with the 30-year period beginning with the year that the closure was completed. Specifically, the BOF Dust Area, Clarifier Sludge Area and Miscellaneous Debris Area closure were completed in 1990, 1992 and 1993, respectively.

The Post-Closure Monitoring and Maintenance Plan (Plan) will not be limited to 30 years for any portion of the Marilla Street Site. The groundwater monitoring will continue until it is no longer required by the NYSDEC. Based on site conditions and monitoring data, the report may recommend changes in the Plan, including the frequency of groundwater monitoring and testing parameters, which may be reduced with the consent of the NYSDEC.

TABLE 10-1

MARILLA STREET LANDFILL SITE
POST-CLOSURE MONITORING AND MAINTENACE COST ESTIMATE [1]

| ITEM | Quantity | Units | Unit Cost | Total Cost |
|---|---|---|---|---|
| | | | | Low |
| **Sampling, Analysis & Reporting**[1] | | | | |
| Wetlands Areas | 27 | Years | $1,300 | $35,100 |
| BOF Dust Area | 18 | Years | $2,220 | $39,960 |
| Clarifier Sludge Area | 20 | Years | $4,030 | $80,600 |
| Miscellaneous Debris Area | 21 | Years | $4,430 | $93,030 |
| **Site Maintenance:** | | | | |
| Mowing - BOF Dust Area | 18 | Years | $235 | $4,230 |
| Mowing - Clarifier Sludge Area | 20 | Years | $700 | $14,000 |
| Mowing - Misc. Debris Area | 21 | Years | $2,000 | $42,000 |
| Site Maintenance Labor[2] | 420 | Hours | $30 | $18,000 |
| Site Maintenance Material | 21 | L. Sum | $1,000 | $21,000 |
| | | | **Total** | $347,920 |

**Notes:**

(1) All cost represent 2003 dollars.
(2) Site maintenace labor based on 20 hours per year until the end of the post-closure period.

# APPENDIX A
# STANDARD OPERATING PROCEDURES

A1 - Procedure for Field Filtration of Aqueous Metals Samples

A2 - Calibration and Maintenance of Portable Field pH/Eh Meter

A3 - Calibration and Maintenance of Portable Conductivity Meter

A4 - Calibration and Maintenance of Portable Field Turbidity Meter

A5 - Water Level Monitoring

A6 – Well Purging Prior to Sampling

A7 – Groundwater Sampling

A8 - Sample Shipping

A9 - Sample Equipment and Decontamination Protocols

A10 - Sample Labeling

STANDARD OPERATING PROCEDURE

# PROCEDURE FOR FIELD FILTRATION OF AQUEOUS METALS SAMPLES

Date: 3/03
Appendix: A
Procedure No.: 1

## 1.0 INTRODUCTION

This guideline presents the procedures for filtering aqueous samples in the field for dissolved metals analyses using a positive pressure filtering system.

## 2.0 PROCEDURE

1. Filter aqueous metal samples using a positive pressure sample transfer vessel (QED FF8500). Pre-clean the sample transfer vessel by rinsing with a ten (10) percent nitric acid ($HNO_3$) solution followed by a thorough rinsing of distilled water. Use this cleaning procedure prior to filtration of all samples.

2. Transfer unfiltered water sample to the vessel reservoir, screw on the vessel top; thread on a disposable 0.45 micron filter cartridge (QED FF8200) to vessel top; and pressurize the transfer vessel with hand pump. Sample will flow through the filter for collection into a preserved ($HNO_3$) sample container.

STANDARD OPERATING PROCEDURE

# CALIBRATION AND MAINTENANCE OF PORTABLE pH/Eh METER

Date: 3/03
Appendix: A
Procedure No.: 2

## 1.0 INTRODUCTION

This guideline presents a method for calibration of a portable pH/Eh meter. The pH/Eh meter measures and provides a log scale reading of the hydrogen ion concentration of a water sample (pH function) or of the oxidation/reduction potential of a water sample (Eh function). In order to ensure an accurate reading, the pH/Eh meter must be calibrated prior to use in the field.

## 2.0 ACCURACY

The calibrated accuracy of the pH/Eh meter will be:

pH ± 0.01pH unit/±0.5°C

Eh-0.01 millivolts over the range of -399.9 to 399.9

## 3.0 CALIBRATION

Calibrate all field test equipment at the beginning of each sampling day and check and recalibrate according to the manufacturer's specifications. Calibrate the pH/Eh meter by immersing the sensing probe in a container of certified pH buffer solution traceable to the National Bureau of Standards, and compare the meter reading to the known value of the buffer solution, which is stirred. Typically, pH 4.0, 7.0 and 10.0 buffers will be used for calibration purposes. Three-point calibrate the meter in the field at the beginning of each day. This procedure will apply to both the pH and Eh functions of the meter, since there is

no need to standardize the Eh function to any additional buffer or to compensate for solution temperature.

## 4.0 MAINTENANCE

1. When not in use or between measurements, keep the pH/Eh probe immersed in or moist with buffer solution.

2. Check the meter batteries at the end of each day and replace when needed.

3. Replace the pH/Eh probe any time that the meter response time becomes greater than two minutes or the metering system consistently fails to retain its calibrated accuracy for a minimum of ten sample measurements.

4. If a replacement of the pH/Eh probe fails to resolve instrument response time and stability problems, the equipment officer will send the instrument to its manufacturer for maintenance and repair.

5. Maintain a log for each monitoring instrument. Record all maintenance Performed on the instrument on this log with date and name of the personnel performing the maintenance.

## 5.0 CALIBRATION RECORDS

Document all instrument calibrations in the field notebook. Also document the pH buffers used to calibrate the meter. This is important, not only for data validation, but also to establish maintenance schedules and component replacement.

STANDARD OPERATING PROCEDURE

# CALIBRATION AND MAINTENANCE OF PORTABLE CONDUCTIVITY METER

Date: 3/03
Appendix: A
Procedure No.: 3

## 1.0 INTRODUCTION

This guideline presents a method for checking the calibration of a portable field conductivity meter. The conductivity meter is factory calibrated and measures and provides a direct reading of the conductivity of a water sample. In order to ensure an accurate reading, the calibration of the conductivity meter must be checked prior to use in the field..

## 2.0 ACCURACY

The calibrated accuracy of the specific-conductance meter is within one percent of full-scale over the temperature range of 0° to 71° C.

## 3.0 CALIBRATION

The instrument has been calibrated by the manufacturer according to factory specifications. All test equipment must be field checked at the beginning of each sampling day using a calibration solution having a known specific conductivity and salinity. Check the factory calibration by pouring manufacturer-prepared standard solution of known specific conductivity into the cell cup. Turn the meter on and allow approximately 10 seconds for response. Record reading of standard solution.

## 4.0 MAINTENANCE

1. Replace meter batteries every six (6) months.

2. Track the meter response time and stability to determine the need for instrument maintenance. When response time becomes greater than two minutes and the meter must be recalibrated more than once per day, send the instrument to the manufacturer for maintenance and repair..

3. Maintain a log for each specific-conductance meter. Record all maintenance performed on the instrument on this log with date and name of organization performing the maintenance.

## 5.0 RECORD

1. Maintain a record of all calibration readings.

## 6.0 DATA VALIDATION

Document all instrument calibration checks, indicating the meter readings before and after the meter has been adjusted. The standard solution used to calibrate the meter will also be documented.

STANDARD OPERATING PROCEDURE

# CALIBRATION AND MAINTENANCE OF PORTABLE FIELD TURBIDITY METER

Date: 3/03
Appendix: A
Procedure No.: 4

## 1.0 INTRODUCTION

This guideline presents a method for calibration of the HACH Model 2100P portable field turbidity meter. The turbidity meter is used to measure and provide a direct reading of the cloudiness or clarity of water samples. The turbidity meter is factory calibrated. In order to ensure an accurate reading, the factory calibration must be checked prior to using the meter in the field.

## 2.0 ACCURACY

The calibrated accuracy of the turbidity meter will be within one percent of full-scale on all scale ranges.

## 3.0 CALIBRATION

All factory calibrated field test equipment must be checked at the beginning of each sampling day and recalibrated (if necessary) according to the manufacturer's specifications (Ref. 1). Check the factory calibration of the turbidity meter as follows:

1. Turn the meter on and perform a battery check. Charge the battery pack if the meter indicates low battery charge.
2. Select the automatic range mode using the range key.
3. Thoroughly clean the outside of the 0-10 NTU Gelex Vial Standard and apply a thin coating of Silicone Oil.
4. Place the 0-10 NTU Gelex Standard in the cell compartment so the diamond on the vial aligns with the orientation mark on the instrument. Close the sample lid.
5. Press Read. Record the displayed value, remove the vial from the instrument. Repeat steps 3-5 for the other Gelex Vial Standards.

## 4.0 MAINTENANCE

1. Check the meter battery pack at the end of each day and replace when necessary.
2. When not in use, store the meter in a clean, dry area with the protective cover shut.
3. Clean the lens periodically with a dry cloth or tissue.
4. Maintain a log for each turbidity meter. All maintenance performed on the instrument will be recorded on this log with date and name of organization performing the maintenance.

## 5.0 DATA VALIDATION

Document all instrument calibrations, indicating the meter readings before and after adjustment. The calibration standard manufacturer and type will also be documented. Record any problems or malfunctions occurring during field use and present them with the instrument readings obtained.

## 6.0 REFERENCES

1. New York State Code of Rules and Regulations, 6NYCRR Part 360, Section 2.11 (a)(12)(v)(a).

# STANDARD OPERATING PROCEDURE

# WATER LEVEL MONITORING

Date: 3/03
Appendix: A
Procedure No.: 5

## 1.0 INTRODUCTION

This guideline presents a method for obtaining water level elevations from monitoring wells/piezometers. The groundwater levels measured in the monitoring wells can be used to determine horizontal and vertical flow gradients and when combined with hydraulic conductivity data, flow rates.

Water levels in monitoring wells should be measured using an electronic water level indicator which has been checked to ensure it is operational, prior to mobilizing to the field.

## 2.0 METHODOLOGY

1. Pre-clean water level probe and lower portion of cable following appropriate decontamination procedures.

2. Lower probe slowly into the monitoring well until the audible alarm, which indicates water, sounds.

3. Read depth from the graduated cable to the nearest $100^{th}$ (0.01) of a foot using either the v-notched reference point on the well riser or the highest point on the well riser as a reference. Repeat the measurement for confirmation and record the water level in the Project field Book or on a "Groundwater Levels" form (attached).

4. Remove the probe from the well slowly, drying the cable and probe with a clean paper towel.

5. Replace well cap and lock protective cap in place. Repeat decontamination procedures if additional measurements are to be taken.

## 3.0 EQUIPMENT REQUIREMENTS

- personal protective equipment (if applicable)
- water level indicator
- paper towel
- Project Field Book

## 4.0 REFERENCES

USEPA, September 1986, RCRA Groundwater Monitoring Technical Enforcement Guidance Document, 9950.1

# GROUND WATER LEVEL MONITORING LOG

| WELL/ BOREHOLE No. | DATE | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | REFERENCE POINT (RP) | RP ELEV (ft.AMSL) | DEPTH BRP (ft) | ELEV (ft. AMSL) | DEPTH BRP (ft) | ELEV (ft. AMSL) | DEPTH BRP (ft) | ELEV (ft. AMSL) | DEPTH BRP (ft) | ELEV (ft. AMSL) | DEPTH BRP (ft) | ELEV (ft. AMSL) |
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BRP- BELOW REFERENCE POINT
TOC- TOP OF CASING
TOR- TOP OF RISER
GS- GROUND SURFACE
AMSL-ABOVE MEAN SEA LEVEL

STANDARD OPERATING PROCEDURE

WELL PURGING PRIOR TO SAMPLING

Date: 3/03
Appendix: A
Procedure No.: 6

## 1.0 INTRODUCTION

This guideline presents methods for well purging prior to ground water sample collection in order to obtain representative ground water samples. Purging involves the removal of at least three to five volumes of water in wells with moderate yields and at least one volume from wells with low yields (slow water level recovery). Sampling should begin as soon as the well has adequately recharged.

## 2.0 WELL PURGING METHODOLOGY

1. Unlock and carefully remove the well cover to avoid introducing foreign material into the well. Monitor the well for organic vapors using a photoionization detector (photo vac), if applicable. If a reading of greater than 5 ppm is recorded, the well should be allowed to vent until levels drop below 5 ppm before proceeding with purging.

2. Calculate the volume of water in the well based on the water level below top of casing and the total depth of well using the following equation:

$$V = 0.0408\ I^2\ (D-W)$$

V = one well volume (gallon)
I = inside diameter of well casing (feet)
D = Well Depth (feet)
W = Depth to Water from Top of casing (feet)

3. For shallow monitoring wells in which the calculated well volume is less than 5gal/vol,a bottom-filling bailer attached to dedicated hollow braid polypropylene rope may be used for purging.

4. For wells in which the calculated well volume is greater than 5 gal/vol and the water level is 20 feet or less below the top of casing, a suction lift pump may be used to purge the well. Measure the purged volume using a calibrated container and record measurements in a field notebook. Use dedicated new low density polyethylene tubing for each well. During this evacuation of shallow wells, the intake opening of the pump tubing should be positioned just below the surface of the water. As the water level drops, lower the tubing as needed to maintain flow. The intake level should not be lowered past the top of the screen. Pumping from the top of the water column will ensure proper flushing of the well. Continue pumping until the required volumes are removed. Adjust the purging rate to maintain the water level above the screen. For wells where the screen straddles the water table, maintain purging at a rate which matches the rate of recovery of the well (well yield). If the well purges to dryness and is slow to recharge (greater than 15 minutes), terminate evacuation.

5. For wells where the water level is initially below about 20 feet, and well volumes are greater than 5 gal/vol, conduct purging using one of three (3) devices.

   - Bladder Pumps – This is a pneumatic pump that uses compressed air to inflate a flexible bladder which allows water to be displaced out of the pump. Groundwater is not in contact with the compressed air, therefore the pump can be used as a dedicated sampling device. (Low Flow Sampling)

   - Air-Driven Purge Pump – This is a pneumatic pump that uses compressed air to push water to the surface. Ground water is in contact with the drive air during the pumping process, therefore the pump is not used for sampling. Drive air is fully contained within the pump apparatus.

   - Waterra™ pump – This is a manually-operated pump which uses dedicated polyethylene tubing and a check valve, and can be used as an optional method for purging deeper wells or wells with a small inside diameter (viz. 1" piezometers). The pump and tubing can be dedicated to a well, but should be removed prior to sampling.

Prior to use in a well, the exterior pump bodies, and pump tubing should be cleaned using decontamination protocols specified for the program.

6. Purging will continue until a predetermined volume of water has been removed. Measurements for pH, temperature, conductivity and turbidity should be recorded during purging. The stability of these measurements with time can be used to guide the decision to discontinue purging.

7. Well purging data should be recorded in the Project Field Book or on the attached "Well Development/Purging Log" form.

STANDARD OPERATING PROCEDURE

GROUND WATER SAMPLING

Date: 3/03
Appendix: A
Procedure No. : 7

## 1.0 OBJECTIVE

This procedure provides a method for collecting a ground water sample after the monitoring well has been purged and has sufficiently recovered. Sampling should be performed according to the following guidelines:

## 2.0 GUIDELINES

1. Perform sampling as soon as practical after purging at any time the well has recovered sufficiently to sample, or within 24 hours of well evacuation if the well exhibits poor recharge. If the well does not yield sufficient volume for all the required analytical parameters, samples should be collected and containerized in the order of the parameters volatilization sensitivity.

2. Following purging, collect samples into appropriate containers using a disposable polyethylene bailer. The bailer should be attached to dedicated hollow braid polypropylene rope. Lower the bailer in the well at a rate that will minimize surging of the well and reduce turbidity. Collect a separate sample of approximately 100 ml into an appropriate container to measure pH, conductivity, temperature and turbidity.

3. Prelabel all sample containers using a waterproof permanent marker. The labels should include the following information:

   - Site name
   - Project number
   - Date/time of sample collection
   - Samplers initials
   - Preservation added (if any)
   - Analysis to be performed

4. Collected samples into pre-cleaned bottles provided by the analytical laboratory with the appropriate preservative(s) added, and place samples in coolers for shipment to the designated laboratory.

5. Collect an additional sample for pH, conductivity, temperature and turbidity as a check on the stability of the water sampled over time.

6. Record well sampling data on the attached "Water Sampling Field Data Sheet". Prepare Chain of custody form prior to sample shipment/delivery.

## 3.0 REFERENCES

(a) USEPA, September 1986, RCRA Groundwater Monitoring Technical Enforcement Guidance Document.

STANDARD OPERATING PROCEDURE

SAMPLE SHIPPING

Date: 3/03
Appendix: A
Procedure No.: 8

## 1.0 INTRODUCTION

This guideline presents a method for chain-of-custody procedures to track sample shipments, to minimize loss or misidentification of samples, and to ensure that unauthorized persons do not tamper with collected samples.

## 2.0 METHODOLOGY

1. Fill out the chain-of-custody form completely (see attached example) with all relevant information (the white original goes with the samples and should be placed in a "ziploc" plastic bag and taped inside the sample cooler lid; the yellow copy should be retained by the sampler).

2. Place about 3 inches of inert cushioning material such as styrofoam peanuts or bubble pack in bottom of cooler. Place bottles in cooler with VOA vials (in a "ziploc" bag) in the center of the cooler.

3. Cover pack bottles, especially VOA vials, with ice in plastic bags. Pack cooler with blue ice in "ziploc" plastic bags and additional cushioning material.

4. Tape drain shut and wrap cooler completely with strapping tape to secure lid.

5. Place lab address on top of cooler. To protect the shipping coolers against tampering during shipment, the cooler lid will be taped to the cooler body. A chain-of-custody seal will be placed over the tape. A broken seal will indicate that the contents may have been tampered with.

6. For out-of-town laboratory shipments, specify that the contents are "Fragile" and place "This Side Up" labels on all four sides of the cooler. "This Side Up"

labels are yellow labels with a black arrow with the arrow head pointing toward the cooler lid. "This Side Up" labels should not be affixed to the cooler lid or the cooler bottom.

STANDARD OPERATING PROCEDURE

# SAMPLING EQUIPMENT DECONTAMINATION

Date: 3/03
Appendix: A
Procedure No.: 9

## 1.0 INTRODUCTION

This guideline presents a method for the decontamination of sampling equipment used in the collection of environmental samples.

## 2.0 METHODOLOGY

1. All equipment used in sampling must be clean and free from residue of any previous samples. To accomplish this, the following procedures are to be followed:

    a. wash equipment thoroughly with non-phosphate detergent and tap water [1] using a brush to remove any particulate matter or surface film;

    b. rinse with tap water[1];

    c. rinse with distilled water;

    d. air dry; and

    e. wrap in aluminum foil (shiny side out)

2. Well purging equipment, such as submersible pumps and bailers, must be decontaminated following the procedures listed above. All evacuation tubing must be dedicated to individual wells, (i.e., tubing cannot be reused).

3. All unused sampling equipment must be maintained in such a manner that there is no possibility of cross contamination.

## 3.0 EQUIPMENT REQUIREMENTS

- personal protective equipment
- brush, buckets, and wash basins
- squirt bottles
- supply of water
- aluminum foil

NOTES

(1) Tap water may be used from any municipal water treatment system. The use of an untreated potable water supply is not an acceptable substitute.

STANDARD OPERATING PROCEDURE

SAMPLE LABELING

Date: 3/03
Appendix: A
Procedure No.: 10

## 1.0 INTRODUCTION

This guideline presents a method for sample labeling in order to properly identify environmental samples collected during the field investigation.

## 2.0 METHODOLOGY

1. Assign each sample of each matrix a unique identification alpha-numeric code. An example of this code and a description of its components is presented on the following page.

2. Affix a non-removable (when wet) label to each sample container. The following information should be written on the label with permanent marker::

   - Site name
   - Sample identification
   - Project number
   - Date/time of sample collection (month, day, year)
   - Sampler's initials
   - Sample preservation
   - Analysis required

3. Wrap the label with 2-inch cellophane tape such that the label is completely covered and the tape wraps around the entire perimeter of the bottle.

Example of Sample ID: XX-MW1D

| | |
|---|---|
| XX<br>(Site Code) | MW1<br>(Sample Location) |
| D<br>(Monitor/Sample type) | MW = Ground Water Installation<br>(Well Location No. 1) |
| (S) Shallow | SP = Sampling Point |

(I) Intermediate

(D) Deep

SW = Surface Water

SB = Soil Boring (depth designation follows alpha code)

SS = Stream Sediment (water depth designation follows alpha code)

TB = Trip Blank

RB = Field (Rinse) Blank

BD = Blind Duplicate

# APPENDIX B

# POST-CLOSURE MONITORING FORMS

# MARILLA STREET LANDFILL
# POST -CLOSURE INSPECTION REPORT

DATE: _____
WEATHER: _____
PERSONNEL: _____

*Instructions: Complete the checklist of visual evaluation items then complete specific data items. Field measurements should be made with a cloth tape, provided instrumentation on equipment or other suitable means. Estimated measurements shall be noted. Attach hand sketches or photographs to further define conditions or problems.*

| I. VISUAL EVALUATION ITEMS | Acceptable | Not Acceptable | Not Present | Present | Remarks |
|---|---|---|---|---|---|
| 1. Vegetative Cover | | | | | |
| a. Within Landfill Disposal Area | | | | | |
| b. Around Landfill Perimeter | | | | | |
| 2. Integrity of Drainage Ditches | | | | | |
| a. Sediment Build-up | | | | | |
| b. Pooling or Ponding | | | | | |
| c. Slope Integrity | | | | | |
| d. Overall Adequacy | | | | | |
| 3. General Conditions of Site | | | | | |
| a. Road Construction | | | | | |
| b. Gates/Fences/Locks | | | | | |
| c. Grass Height | | | | | |
| d. Illegal Dumping | | | | | |
| e. Wetland Shrub Plantings (1) | | | | | |
| 4. Integrity of Groundwater | | | | | |
| 5. Integrity of Landfill Cap | | | | | |
| a. Erosion Damage | | | | | |
| b. Leachate Breakthrough | | | | | |
| c. Settlement | | | | | |
| d. Cracking | | | | | |
| e. Slope | | | | | |
| f. Undesirable plants | | | | | |
| g. Benchmark | | | | | |
| h. Animal Burrowing | | | | | |

Notes: (1) Until Year 2002

## II. SPECIFIC DATA ITEMS (Write N.A. if not applicable)

A. Erosion and Settlement:

1. Approximate size in feet of cap ended area(s). (List separately)
   a. _____ feet _____ feet
   b. _____ feet _____ feet
   c. _____ feet _____ feet

2. How deep is the most extreme point of erosion when measured from the adjacent surface. (List separately)
   a. _____ feet
   b. _____ feet
   c. _____ feet

3. Approximate size in feet of eroded areas outside the soil cap area such as drainage ditches, roads or slopes.

4. Attach a hand sketch or photograph showing the location of the eroded area(s). Identify each area by using the letter a, b, c, etc. from Question 1.

5. Approximate size in feet of leachate breakouts. (List separately)
   a. _____ feet _____ feet
   b. _____ feet _____ feet
   c. _____ feet _____ feet

6. Approximate size in feet of any settlement areas within the soil cap area. (List separately)
   a. _____ feet _____ feet
   b. _____ feet _____ feet
   c. _____ feet _____ feet

7. Approximate depth of each settlement area when measured from adjacent surface. (List separately)
   a. _____ feet _____ feet
   b. _____ feet _____ feet
   c. _____ feet _____ feet

8. Attach a hand sketch or photograph showing the location of the settlement area(s). Identify each area by using the letter a, b, c, etc. from Question 6.

B. Corrective Actions:

1. Describe corrective actions taken (write N.A. if not applicable).

2. Date of corrective action:

# APPENDIX C
# HEALTH AND SAFETY PLAN

# MARILLA STREET LANDFILL HEALTH AND SAFETY PLAN FOR POST-CLOSURE MONITORING ACTIVITES

October 1999
Revised April 2003

0062-004-100

Prepared for:

Steelfields LTD.

Prepared by:

TURN KEY ENVIRONMENTAL RESTORATION, LLC

50 FOUNTAIN PLAZA, SUITE 1350 • BUFFALO, NEW YORK 14202

## Marilla Street Landfill:

## Health and Safety Plan for Maintenance and Monitoring Activities

**Plan Reviewed by (initial):**

Corporate Health and Safety Director: Thomas H. Forbes

Project Manager: Thomas H. Forbes

Designated Site Safety and Health Officer: Richard L. Dubisz

**Acknowledgement:**

I acknowledge that I have reviewed the information contained in this site-specific Health and Safety Plan, and understand the hazards associated with performance of the field activities described herein. I agree to comply with the requirements of this plan.

| NAME (PRINT) | SIGNATURE | DATE |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

# MARILLA STREET LANDFILL: HEALTH AND SAFETY PLAN FOR MAINTENANCE AND MONITORING ACTIVITIES

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## APPENDICES:

# 1.0 INTRODUCTION

## 1.1 General

In accordance with OSHA requirements contained in 29 CFR 1910.120, this Health and Safety Plan (HASP) describes the specific health and safety practices and procedures to be employed by TurnKey Environmental Restoration, LLC and Benchmark Environmental Engineering & Science, PLLC employees (referred to jointly hereafter as "TurnKey-Benchmark") during post-remediation maintenance and monitoring activities at the Marilla Street Landfill in the City of Buffalo, New York. This HASP presents procedures for TurnKey-Benchmark employees who will be involved with field activities; it does not cover the activities of contractors, subcontractors or others that may perform work or enter the site. These firms will be required to develop and enforce their own HASPs as discussed in Section 2.0 TurnKey-Benchmark accepts no responsibility for the health and safety of contractor, subcontractor or other personnel.

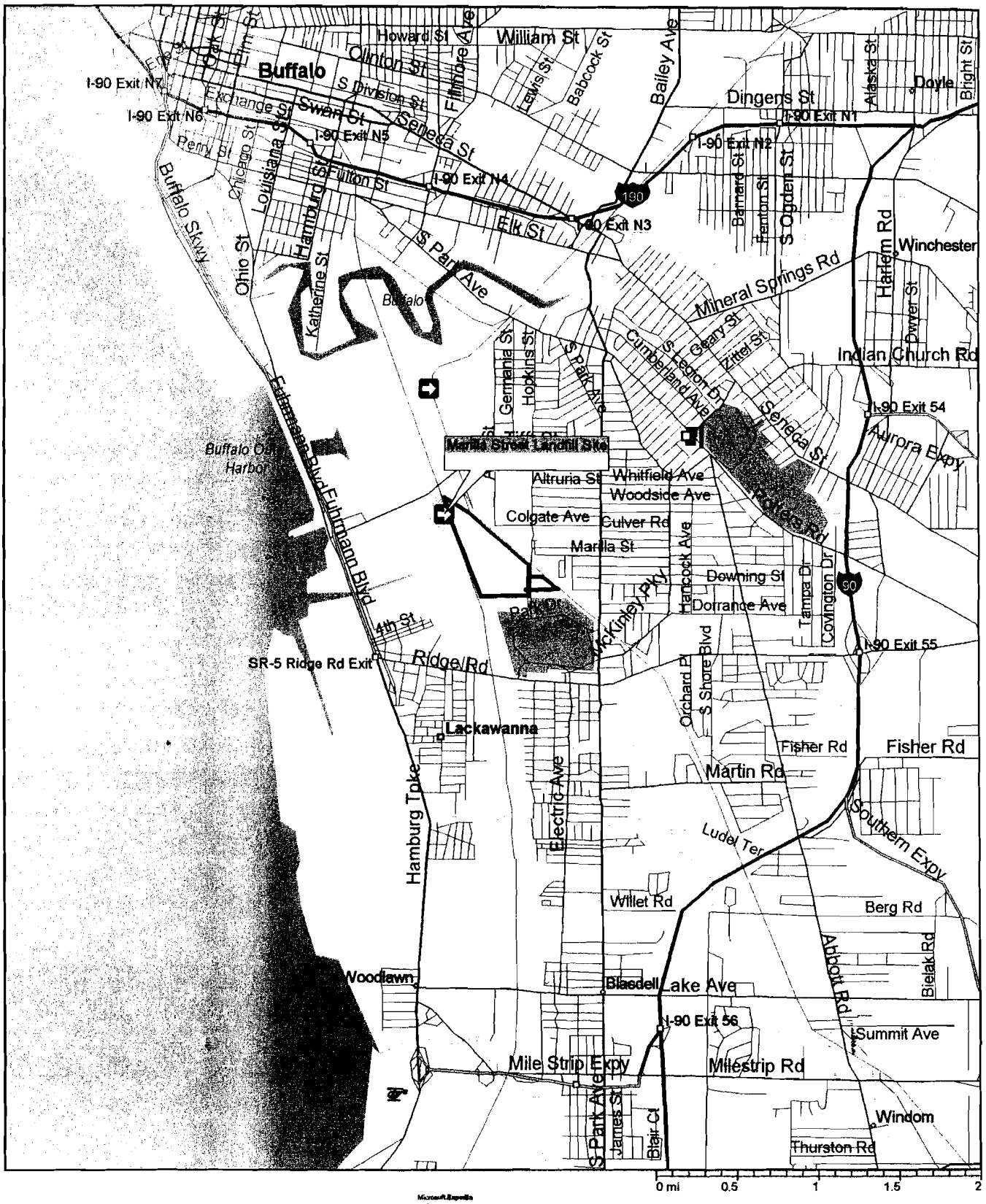
This HASP presents information on known site health and safety hazards using available historical information, and identifies the equipment, materials and procedures that will be used to eliminate or control these hazards. Environmental monitoring will be performed during the course of field activities to provide real-time data for on-going assessment of potential hazards.

All TurnKey-Benchmark personnel involved with field activities associated with the maintenance and monitoring procedures will be required to comply with this HASP and any field modifications as directed by the Site Safety and Health Officer.

## 1.2 Site History

The Marilla Street Landfill, previously owned by LTV Steel Company, was operated between 1930 and 1981. The site is currently owned by Steelfields Ltd. A site location map illustrating the location of the approximately 80 acre landfill is presented as Figure 1-1. The site is bordered on the south by the South Park Recreational Facilities on the west by the Conrail Railroad and on the north and east by the Buffalo and Pittsburgh Railroad. Hopkins Street, Marilla Street and the South Buffalo Railroad segregate the site into several fill areas.

# FIGURE 1-1
## SITE LOCATION MAP

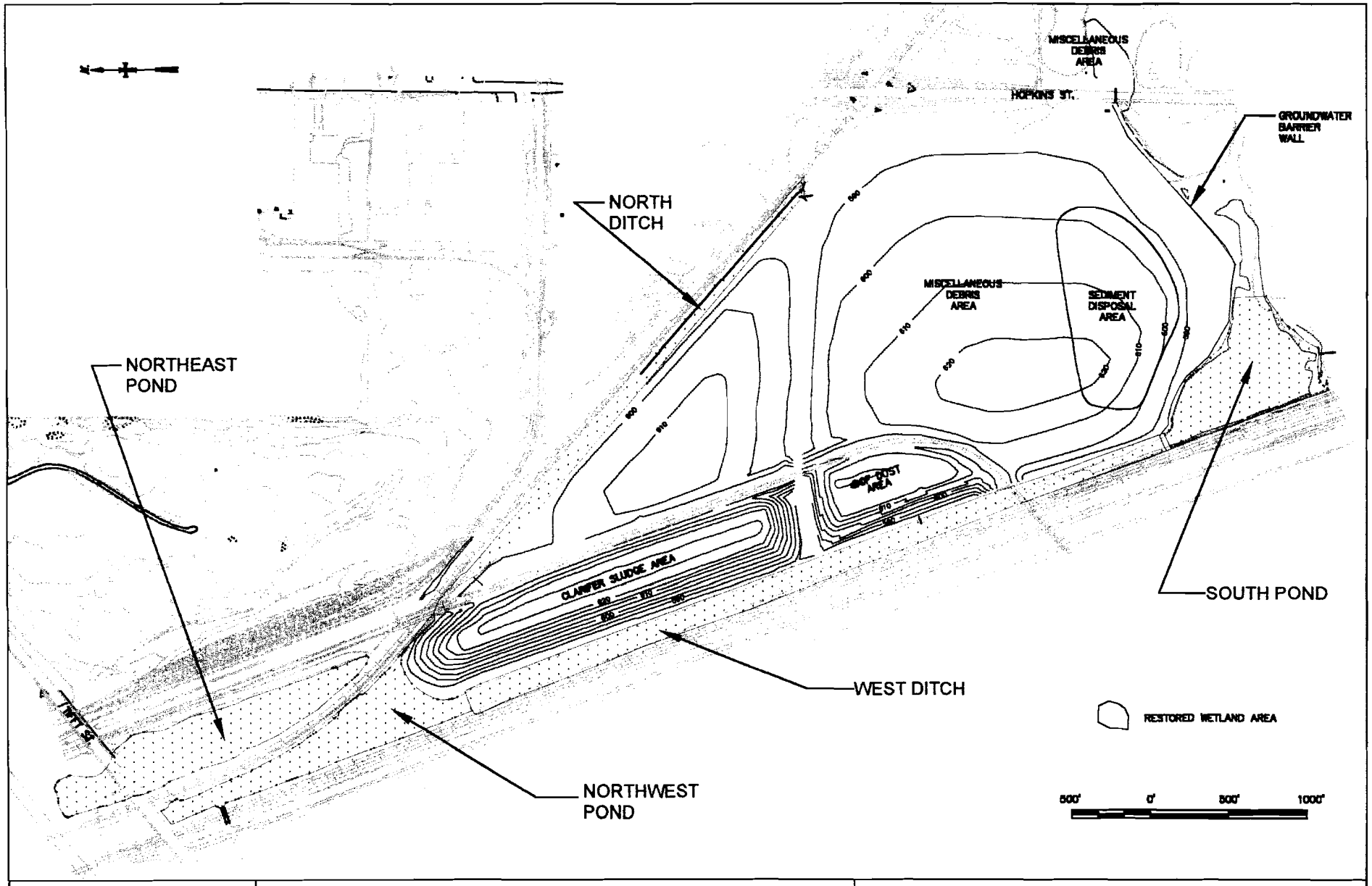



Streets98

A variety of wastes have been disposed of at the site including: slag, precipitator dust, clarifier sludge, railroad ties, checker bricks, scrap wood, tool scale, blast furnace dust, BOF brick and construction debris. The landfill was operated as an above-grade fill operation with minimal segregation of wastes prior to the effective date (viz., November 1980) of the Resource Conservation and Recovery Act (RCRA). In November 1980, Basic Oxygen Furnace (BOF) precipitator dust generated at the Buffalo District Plant was classified as an "EP toxic" hazardous waste due to lead leachability, and therefore, was placed in a segregated fill area (i.e., the BOF Dust Area – see Figure 1-2 for location), from November 1980 through June/July 1981.

The BOF Dust Area consists of a mixture of BOF dust and BOF slag. The slag was used to prevent the dust particles from being dispersed by the wind. LTV personnel have estimated that approximately 6,000 tons of BOF dust were disposed of in the BOF Dust Area from November 1980 until June/July 1981. The total volume of wastes (slag and dust) in the BOF dust Area has been estimated to be 136,600 cubic yards. The area also contains approximately 33,300 cubic yards of rubble/slag used in the construction of the railroad berm and the western containing berm. Between 1989 and 1990, closure activities were completed at the BOF Dust Area in accordance with the requirements of 6NYCRR Part 373. The remaining landfill areas, the Clarifier Sludge Area and Miscellaneous Debris Area, were capped in 1992 and 1993, respectively under the New York State solid waste program (6NYCRR Part 360).

In spring 1998 through summer 1999, remedial actions were also undertaken within five wetland areas of the Marilla Street landfill site: the West Ditch, Northeast Pond, Northwest Pond, South Pond and North ditch. The remedial action for the wetland involved the excavation of contaminated sediment, placement of 12 inches of recompacted clay-type soil and six inches of topsoil. The remediated wetlands were revegetated with facultative shrubs and emergent vegetation. Contaminated sediment removed from the ponds and ditches were disposed of in the adjacent landfill.




STEELFIELDS LTD

POST CLOSURE MONITORING AND MAINTENANCE PLAN

MARILLA STREET LANDFILL

SITE MAP

FIGURE 1-2

## 1.3 Parameters of Interest

Significant environmental sampling has been performed at the Marilla Street Landfill site, including quarterly groundwater monitoring during the 1980s and 1990s, and investigations performed as part of the 1993 Solid Waste Management Facility Investigation Program (SWMFIP). Sampling results indicate that during the post-remediation maintenance and monitoring period, potential exposure routes will be primarily limited to heavy metals and cyanide in the groundwater and subsurface fill. Section 3.1 provides a specific listing of parameters of interest and concentration ranges in these media.

## 1.4 Maintenance and Monitoring Requirements

Post-closure maintenance and monitoring requirements are more-fully described in the October 1999 Post-Closure Maintenance and Monitoring Plan for the Marilla Street Landfill (Ref.1). Field tasks to be performed by TurnKey-Benchmark personnel will include:

- Collection of groundwater samples from site monitoring wells.
- Collection of surface water and sediment samples from remediated wetlands.
- Inspection of cover soils and related remedial measures for integrity..
- Observation of construction maintenance (e.g., cap repair) if required.

# 2.0 ORGANIZATIONAL STRUCTURE

This chapter of the HASP describes the lines of authority, responsibility and communication as they pertain to health and safety functions at the site. The purpose of this chapter is to identify the personnel who impact the development and implementation of the HASP and to describe their roles and responsibilities. This chapter also identifies other contractors and subcontractors involved in work operations and establishes the lines of communications among them for health and safety matters. The organizational structure described in this chapter is consistent with the requirements of 29 CFR 1910.120(b)(2). This section will be reviewed by the Project Manager and updated as necessary to reflect the current organizational structure at this site.

## 2.1 Roles and Responsibilities

All Turnkey-Benchmark personnel on the site must comply with the minimum requirements of this HASP. The specific responsibilities and authority of management, safety and health, and other personnel on this site are detailed in the following paragraphs.

### 2.1.1 Corporate Health and Safety Director

The TurnKey-Benchmark Corporate Health and Safety Director is ***Mr. Thomas H. Forbes***. The Corporate Health and Safety Director responsible for developing and implementing the Health and Safety program and policies for Benchmark Environmental Engineering & Science, PLLC and TurnKey Environmental Restoration, LLC, and consulting with corporate management to ensure adequate resources are available to properly implement these programs and policies. The Corporate Health and Safety Director coordinates TurnKey-Benchmark's Health and Safety training and medical monitoring programs, and assists project management and field staff in developing site-specific health and safety plans.

### 2.1.2 Project Manager

The Project Manager for this site is ***Mr. Thomas H Forbes***. The Project Manager

has the responsibility and authority to direct all TurnKey-Benchmark work operations at the site. The Project Manager coordinates safety and health functions with the Site Safety and Health Officer, and bears ultimate responsibility for proper implementation of this HASP. He may delegate authority to expedite and facilitate any application of the program, including modifications to the overall project approach as necessary to circumvent unsafe work conditions. Specific duties of the Project Manager include:

- Preparing and coordinating the site work plan.
- Providing TurnKey-Benchmark workers with work assignments and overseeing their performance.
- Coordinating health and safety efforts with the Site Safety and Health Officer (SSHO).
- Reviewing the emergency response coordination plan to assure its effectiveness.
- Serving as the primary liason with site contractors and the property owner.

### 2.1.3 Site Safety and Health Officer

The Site Safety and Health Officer (SSHO) for this site is ***Mr. Richard L. Dubisz.*** The SSHO reports to the Project Manager. The SSHO is on-site or readily accessible to the site during all work operations and has the authority to halt site work if unsafe conditions are detected. The specific responsibilities of the SSHO are:

- Managing the safety and health functions for TurnKey-Benchmark personnel on the site.
- Serving as the point of contact for safety and health matters.
- Ensuring that TurnKey-Benchmark field personnel working on the site have received proper training (per 29 CFR Part 1910.120(e)), that they have obtained medical clearance to wear respiratory protection (per 29 CFR Part 1910.134), and that they are properly trained in the selection, use and maintenance of personal protective equipment, including qualitative respirator fit testing.
- Performing or overseeing site monitoring as required by the HASP.

- Assisting in the preparation and review of the HASP
- Maintaining site-specific safety and health records as described in this HASP
- Coordinating with the Project Manager, Site Workers and Contractor's SSHO (if outside contractor assistance id required) as necessary for safety and health efforts.

### 2.1.4 Site Workers

Site workers are responsible for: complying with this HASP or a more stringent HASP, if appropriate (e.g., Contractor and Subcontractor's HASP); using proper PPE; reporting unsafe acts and conditions to the SSHO; and following the safety and health instructions of the Project Manager and SSHO.

### 2.1.5 Other Site Personnel

Other individuals who may have responsibilities in the work zone include contractors, subcontractors and governmental agencies performing site inspection work (e.g., the New York State Department of Environmental Conservation). If outside contractors, subcontractors or agencies are required to perform maintenance or inspection work at the site, these individuals shall prepare and implement their own HASPs that are equal to or more stringent than this HASP. TurnKey-Benchmark assumes no responsibility for the health or safety of anyone outside its direct employ.

# 3.0 HAZARD EVALUATION

Due to the presence of certain contaminants at the site, the possibility exists that workers will be exposed to hazardous substances during field activities. The principal points of exposure would be through direct contact with groundwater, direct contact with and incidental ingestion of fill soils (if exposed due to cover system damage), and through the inhalation of contaminated particles or vapors from these media. Other points of exposure may include direct contact with contaminated surface water, although prior remedial efforts are anticipated to prevent significant exposure from this pathway. In addition, uneven terrain will also present conditions for potential physical injury to workers. Further, since work will be performed outdoors, the potential exists for heat/cold stress to impact workers, especially those wearing protective equipment and clothing. Adherence to the medical evaluations, worker training relative to chemical hazards, safe work practices, proper personal protection, environmental monitoring, establishment work zones and site control, appropriate decontamination procedures and contingency planning outlined herein will reduce the potential for chemical exposures and physical injuries.

## 3.1 Chemical Hazards

As discussed in Section 1.2, disposal activities conducted during the history of the Marilla Street Landfill site have primarily resulted in elevated concentrations of inorganics and cyanide in site fill soils, and to a lesser extent in site groundwater. While sediment and surface water have exhibited elevated inorganic concentrations in the past, these media have been addressed through the remediation measures at the site, and are not expected to pose a significant risk to site workers in the future. Table 3-1 identifies the specific parameters-of-interest and concentration ranges for these parameters in various media as detected during previous field investigations at the site. Table 3-2 lists exposure limits for airborne concentrations of these parameters of interest. Brief descriptions of the toxicology of these materials and related health and safety guidance and criteria are provided below.

- **Arsenic** is a naturally occurring element and is usually found combined with one

## TABLE 3-1

## MARILLA STREET LANDFILL SITE MAINTENANCE & MONITORING PREVIOUSLY-DETECTED CONCENTRATIONS OF PARAMETERS-OF-INTEREST

| Parameter | Groundwater Conc. Range ($\mu$g/L)[1] | Soil/Fill Conc. Range (mg/kg)[2] |
|---|---|---|
| Arsenic | ND (<0.05) | 1.7 - 101 |
| Cadmium | ND (<0.01) | ND - 1.3 |
| Chromium | ND - 0.14 | 4.1 - 1170 |
| Iron | 0.4 - 13.5 | 5,730 - 24.6% |
| Lead | ND - 0.06 | 3.5 - 2170 |
| Manganese | ND - 1.52 | 306 - 4.7% |
| Mercury | ND (<0.0001) | ND - 1.7 |
| Cyanide (total) | N/A | ND - 1.5 |

Notes: (1) Based on June 1999 groundwater sampling results

(2)Based on October 1993 SWMFIP

NA- Not Analyzed
ND- Not Detected

## TABLE 3-2

## MARILLA STREET LANDFILL MAINTENANCE AND MONITORING INHALATION TOXICITY DATA FOR PARAMETERS-OF-INTEREST

| Parameter | Concentration Limits ($mg/m^3$) | | |
|---|---|---|---|
| | PEL | TLV | IDLH |
| Arsenic | 0.01 | 0.01 | 5 |
| Cadmium | 0.005 | 0.01 | 9 |
| Chromium | 0.5 | 0.05 | 250 |
| Iron | N/A | 5 | N/A |
| Lead | 0.05 | 0.05 | 100 |
| Manganese | 1 | 0.2 | 500 |
| Mercury | 0.1 | 0.001 | 10 |
| Cyanide (total) | N/A | N/A | N/A |

Notes:

PEL- Permissible Exposure Limit, established by OSHA, equals the maximium exposure conc. allowable for 8 hours per day @ 40 hours per week.

TLV- Threshold Limit Value, established by ACGIH, equals the maximum exposure concentration allowable for 8 hours per day @ 40 hours per week.

IDLH- Immediately Dangerous to Life or Health

N/A - Not Available. Exposure should be minimized to the extent feasible through appropriate engineering controls & PPE.

or more elements, such as oxygen or sulfur. Inhalation is a more important exposure route than ingestion. First phase exposure symptoms include nausea, vomiting, diarrhea and pain in the stomach. Prolonged contact is corrosive to the skin and mucus membranes. Arsenic is considered a Group A human carcinogen by the USEPA. Exposure via inhalation is associated with an increased risk of lung cancer. Exposure via the oral route is associated with an increased risk of skin cancer.

- **Cadmium** is a natural element and is usually combined with one or more elements, such as oxygen, chloride or sulfur. Breathing high levels of cadmium severely damages the lungs and can cause death. Ingestion of high levels of cadmium severely irritates the stomach, leading to vomiting and diarrhea. Long term exposure to lower levels of cadmium leads to a buildup of this substance in the kidneys and possible kidney disease. Other potential long term effects are lung damage and fragile bones. Cadmium is suspected to be a human carcinogen.

- **Chromium** is used in the production of stainless steel, chrome plated metals and batteries. Two forms of chromium, hexavalent (CR+6) and trivalent (CR+3) are toxic. Hexavalent chromium is an irritant and corrosive to the skin and mucus membranes. Certain chromium compounds and hexavalent chromium oxides are potential occupational carcinogens. Acute exposures to dust may cause coughing, wheezing, headaches, pain and fever.

- **Cyanides,** when present in free form, are generally incompatible with strong oxidizers such as chlorides, acids and acid salts. Routes of entry include inhalation, skin absorption, ingestion and eye contact. Harmful effects and symptoms of cyanide exposure include weakness, headache, confusion, nausea, vomiting, eye/skin irritation, and slow, gasping respiration.

- **Lead** can affect almost every organ and system in our bodies. The most sensitive is the central nervous system, particularly in children. Lead also damages kidneys and the immune system. The effects are the same whether it is breathed or swallowed. Lead may decrease reaction time, cause weakness in fingers, wrists or ankles and possibly affect memory. Lead may cause anemia.

- **Iron** in dust form may cause conjunctivitis, choroiditis, and retinitis if iron remains in these these tissues. Prolonged exposure to iron ore dust can cause pulmonary fibrosis and is associated with increased occurrence of lung cancer.

- **Manganese** in large doses can cause asthma, insomnia, mental confusion and metal fume fever. Acute exposure to lower concentrations may cause dry throat, cough and tightness of the chest.

- **Mercury** is used in industrial applications for the production of caustic and

chlorine, and in electrical control equipment and apparatus. Over-exposure to mercury may cause couhing, chest pains, bronchitis, pneumonia, indecision, headaches, fatigue and salivation. Mercury is a skin and eye irritant.

With respect to the post-closure maintenance and monitoring activities discussed in Section 1.4, possible routes of exposure to the above-mentioned parameters are presented in Table 3-3. The use of proper respiratory equipment, as outlined in Section 7, will minimize the potential for exposure to airborne contamination. Exposure to contaminants through dermal and other routes will also be minimized through the use of protective clothing (Section 7), safe work practices (Section 6), and proper decontamination procedures (Section 12).

## 3.2 Physical Hazards

Maintenance and monitoring activities at the Marilla Street Landfill site may present the following physical hazards:

- The potential for physical injury if heavy construction equipment (backhoes, excavators and bulldozers) is required for cover system repairs or other maintenance.
- The potential for heat/cold stress to employees during the summer/winter months (see Section 10).
- The potential for slip and fall injuries due to uneven terrain and/or open excavations.

These hazards represent only some of the possible means of injury that may arise during maintenance and monitoring activities at the Marilla Street Landfill site. Since it is impossible to list all potential sources of injury, it shall be the responsibility of each individual to exercise proper care and caution during all phases of the work.

TABLE 3-3

MARILLA STREET LANDFILL MAINTENANCE AND MONITORING
POTENTIAL ROUTES OF EXPOSURE TO PARAMETERS-OF-CONCERN

| Activity | Direct Contact with Soil/Fill | Inhalation of Vapors or Dust | Direct Contact with Groundwater |
|---|---|---|---|
| Groundwater Sampling | | | X |
| Surface Water Sampling | | | |
| Cover Soil/Post-Remediation Inspection | X | X | |
| Observe Construction Repair/Maintenance Work[1] | X | X | X |

# 4.0 TRAINING

## 4.1 Site Workers

All personnel performing field activities at the site (such as, but not limited to, sampling personnel, equipment operators and general laborers) and who may be exposed to hazardous substances, health hazards, or safety hazards shall receive training in accordance with 29 CFR 1910.120(e) before they are permitted to engage in hazardous waste operations. This training includes an initial 40-hour Hazardous Waste Site Worker Protection Course, an 8-hour Annual Refresher Course subsequent to the initial 40-hour training, and 3 days of actual field experience under the direct supervision of a trained, experienced supervisor. Additional site-specific training shall also be provided by the SSHO prior to the start of field activities. A description of topics to be covered by this training is provided below.

### 4.1.1 Initial and Refresher Training

Initial and refresher training is conducted by a qualified instructor as specified under OSHA 29 CFR 1910.120(e)(5), and is specifically designed to meet the requirements of OSHA 29 CFR 1910.120(e)(3) and 1910.120(e)(8). The training covers, as a minimum, the following topics:

- OSHA HAZWOPER regulations.
- Site safety and hazard recognition, including chemical and physical hazards.
- Medical monitoring requirements.
- Air monitoring, permissible exposure limits, and respiratory protection level classifications.
- Appropriate use of personal protective equipment (PPE), including chemical compatibility and respiratory equipment selection and use.
- Work practices to minimize risk.
- Work zones and site control.

- Safe use of engineering controls and equipment.
- Decontamination procedures.
- Emergency response and escape.
- Confined space entry procedures.
- Heat and cold stress monitoring.
- Elements of a Health and Safety Plan.
- Spill containment.

Initial training also incorporates workshops for PPE and respiratory equipment use (Levels A,B and C), and respirator fit testing. Records and certification received from the course instructor documenting each employee's successful completion of the training identified above are maintained on file at Benchmark Environmental Engineering and Science, PLLC's Buffalo, NY office. Contractors and Subcontractors are required to provide similar documentation of training for all their personnel who will be involved in on-site work activities.

Any employee who has not been certified as having received health and safety training in conformance with 29 CFR 1910.120(e) is prohibited from working in the exclusion and contamination reduction zones, or to engage in any on-site work activities that may involve exposure to hazardous substances or wastes.

### 4.1.2 Site Training

Site workers are given a copy of the HASP and provided a site-specific briefing prior to the commencement of work to ensure that employees are familiar with the HASP and the information and requirements it contains. The site briefing shall be provided by the SSHO prior to initiating field activities and shall include:

- Names of personnel and alternates responsible for site safety and health

- Safety, health and other hazards present on the site
- The site lay-out including work zones and places of refuge
- The emergency communications system and emergency evacuation procedures.
- Use of PPE.
- Work practices by which the employee can minimize risks from hazards.
- Safe use of engineering controls and equipment on the site.
- Medical surveillance, including recognition of symptoms and signs of over-exposure as described in Chapter 5 of this HASP.
- Decontamination procedures as detailed in Chapter 12 of this HASP.
- The emergency response plan as detailed in Chapter 15 of this HASP.
- Confined space entry procedures, if required, as detailed in Chapter 13 of this HASP.
- The spill containment program as detailed in Chapter 9 of this HASP.
- Site control as detailed in Chapter 11 of this HASP

Supplemental health and safety briefings will also be conducted by the SSHO on an as-needed basis during the course of the work. Supplemental briefings are provided as necessary to notify employees of any changes to this HASP as a result of information gathered during ongoing site characterization and analysis. Conditions for which the SSHO may schedule additional briefings include, but are not limited to: a change in site conditions (viz., based on monitoring results); changes in the work schedule/plan; newly discovered hazards; and safety incidents occurring during site work.

## 4.2 Supervisor Training

On-site safety and health personnel who are directly responsible for or who supervise the safety and health of workers engaged in hazardous waste operations (viz., SSHO) shall

receive, in addition to the appropriate level of worker training described in Section 4.1, above, 8 additional hours of specialized supervisory training, in compliance with 29 CFR 1910.120(e)(4).

## 4.3 Emergency Response Training

Emergency response training is addressed in Appendix B of this HASP, Emergency Response Plan.

## 4.4 Site Visitors

The Contractor's SSHO will provide a site-specific briefing to all site visitors and other non-TurnKey/Benchmark personnel who enter the site beyond the site entry point. The site-specific briefing will provide information about site hazards, the site lay-out including work zones and places of refuge, the emergency communications system and emergency evacuation procedures, and other pertinent safety and health requirements as appropriate.

Site visitors will not be permitted to enter the exclusion zone or contaminant reduction zones unless they have received the level of training required for site workers as described in Section 4.1.

# 5.0 MEDICAL MONITORING

Medical monitoring examinations are provided to TurnKey-Benchmark employees as stipulated under 29 CFR Part 1910.120(f). These exams include initial employment, annual and employment termination physicals for all TurnKey-Benchmark employees involved in hazardous waste site field operations. Post-exposure examinations are also provided for employees who may have been injured, received a health impairment, or developed signs or symptoms of over-exposure to hazardous substances or were accidentally exposed to substances at concentrations above the permissible exposure limits without necessary personal protective equipment. Such exams are performed as soon as possible following development of symptoms or the known exposure event.

Medical evaluations are performed by Continuum Healthcare, an occupational health care provider under contract with TurnKey-Benchmark. Continuum's local facility is Healthworks: 55 Melroy Avenue, Lackawanna, NY 14219. The facility can be reached at (716) 823-5050 to schedule routine appointments or post-exposure examinations.

Medical evaluations are conducted according to the TurnKey-Benchmark Medical Monitoring Program and include an evaluation of the workers' ability to use respiratory protective equipment. The examinations include:

- Occupational/medical history review.
- Physical exam, including vital sign measurement.
- Spirometry testing.
- Eyesight testing.
- Audio testing (minimum baseline and exit, annual for employees routinely exposed to greater than 85db).
- EKG (for employees >40 yrs age or as medical conditions dictate).
- Chest X-ray (baseline and exit, and every 5 years).
- Blood biochemistry (including blood count, white cell differential count, serum

multiplastic screening).

- Medical certification of physical requirements (viz., sight, musculoskeletal, cardiovascular) for safe job performance and to wear respiratory protection equipment.

The purpose of the medical evaluation is to determine an employee's fitness for duty on hazardous waste sites; and to establish baseline medical data.

In conformance with OSHA regulations, TurnKey-Benchmark will maintain and preserve medical records for a period of 30 years following termination of employment. Employees are provided a copy of the physician's post-exam report, and have access to their medical records and analyses.

# 6.0 SAFE WORK PRACTICES

All TurnKey-Benchmark employees shall conform to the following safe work practices during all on-site work activities conducted within the exclusion and contamination reduction zones:

- Eating, drinking, chewing gum or tobacco, smoking, or any practice that increases the probability of hand-to-mouth contact is prohibited.
- The hands and face must be thoroughly washed upon leaving the work area and prior to engaging in any activity indicated above.
- Respiratory protective equipment and clothing must be worn by all personnel entering the site as required by the HASP or as modified by the site safety officer. Excessive facial hair (i.e., beards, long mustaches or sideburns) that interferes with the satisfactory respirator-to-face seal is prohibited.
- Contact with surfaces/materials either suspected or known to be contaminated will be avoided to minimize the potential for transfer to personnel, cross contamination and need for decontamination.
- Medicine and alcohol can synergize the effects of exposure to toxic chemicals. Due to possible contraindications, use of prescribed drugs should be reviewed with the TurnKey-Benchmark occupational physician. Alcoholic beverage and illegal drug intake are strictly forbidden during the work day.
- All personnel shall be familiar with standard operating safety procedures and additional instructions contained in this Health and Safety Plan.
- On-site personnel shall use the "buddy" system. No one may work alone, i.e., out of earshot or visual contact with other workers in the exclusion zone.
- Personnel and equipment in the exclusion zone shall be minimized, consistent with effective site operations.
- All employees have the obligation to immediately report and, if possible, correct unsafe work conditions.
- Use of contact lenses on-site will not be permitted. Spectacle kits for insertion into full-face respirators will be provided for TurnKey-Benchmark employees, as requested and as required.

The recommended specific safety practices for working around heavy equipment (e.g., backhoes, bulldozers, excavators, etc.) are as follows:

- Although Contractors and subcontractors are responsible for their equipment and safe operation, TurnKey-Benchmark personnel are also responsible for their own safety.
- Subsurface work will not be initiated without first clearing underground utility services.
- Heavy equipment should not be operated within 20 feet of overhead wires. This distance may be increased if windy conditions are anticipated or if lines carry high voltage. The site should also be clear to ensure the project staff can move around the heavy machinery safely.
- Care should be taken to avoid overhead wires when moving heavy-equipment from location to location.
- Hard hats and safety boots must be worn at all times in the vicinity of heavy equipment. Hearing protection is also recommended. Safety glasses are necessary.
- The work site should be kept neat. This will prevent personnel from tripping and will allow for fast emergency exit from the site.
- Proper lighting must be provided when working at night.
- Field activities should be discontinued during an electrical storm or severe weather conditions.
- The presence of combustible gases should be checked before igniting any open flame.
- Personnel shall stand upwind of any construction operation when not immediately involved in sampling/logging/observing activities.
- Personnel will not approach the edge of an unsecured trench/excavation closer than 2 feet.

# 7.0 PERSONAL PROTECTIVE EQUIPMENT

## 7.1 Equipment Selection

Personal protective equipment (PPE) will be donned when work activities may result in exposure to physical or chemical hazards beyond acceptable limits, and when such exposure can be mitigated through appropriate PPE. The selection of PPE will be based on an evaluation of the performance characteristics of the PPE relative to the requirements and limitations of the site, the task-specific conditions and duration, and the hazards and potential hazards identified at the site.

Equipment designed to protect the body against contact with known or suspect chemical hazards are grouped into four categories according to the degree of protection afforded. These categories, designated A through D consistent with United States Environmental Protection Agency (USEPA) Level of Protection designation, are:

- **Level A:** Should be selected when the highest level of respiratory, skin and eye protection is needed.
- **Level B:** Should be selected when the highest level of respiratory protection is needed, but a lesser level of skin protection is required. Level B protection is the minimum level recommended on initial site entries until the hazards have been further defined by on-site studies. Level B (or Level A) is also necessary for oxygen-deficient atmospheres.
- **Level C:** Should be selected when the types of airborne substances are known, the concentrations have been measured and the criteria for using air-purifying respirators are met. In atmospheres where no airborne contaminants are present, Level C provides dermal protection only.
- **Level D:** Should not be worn on any site with elevated respiratory or skin hazards. This is generally a work uniform providing minimal protection.

OSHA requires the use of certain PPE under conditions where an immediate danger to life and health (IDLH) may be present. Specifically, OSHA 29 CFR 1910.120(g)(3)(iii) requires use of a positive pressure self-contained breathing apparatus, or positive pressure air-line respirator equipped with an escape air supply when chemical exposure levels present a substantial possibility of immediate serious injury, illness or death, or impair the ability to

escape. Similarly, OSHA 29 CFR 1910.120(g)(3)(iv) requires donning totally-encapsulating chemical protective suits (with a protection level equivalent to Level A protection) in conditions where skin absorption of a hazardous substance may result in a substantial possibility of immediate serious illness, injury or death, or impair the ability to escape.

In situations where the types of chemicals, concentrations, and possibilities of contact are unknown, the appropriate level of protection must be selected based on professional experience and judgment until the hazards can be further characterized. The individual components of clothing and equipment must be assembled into a full protective ensemble to protect the worker from site-specific hazards, while at the same time minimizing hazards and drawbacks of the personal protective gear itself. Ensemble components are detailed below for levels A/B, C, and D protection.

## 7.2 Protection Ensembles

### 7.2.1 Level A/B Protection Ensemble

Level A/B ensembles include similar respiratory protection, however Level A provides a higher degree of dermal protection than Level B. Use of Level A over Level B is determined by: comparing the concentrations of identified substances in the air with skin toxicity data, and assessing the effect of the substance (by its measured air concentrations or splash potential) on the small area of the head and neck unprotected by Level B clothing.

The recommended PPE for level A/B is:

- Pressure-demand, full-face piece self-contained breathing apparatus (MSHA/-NIOSH approved) or pressure-demand supplied-air respirator with escape self-contained breathing apparatus (SCBA).
- Chemical-resistant clothing. For Level A, clothing consists of totally-encapsulating chemical resistant suit. Level B incorporates hooded one-or two-piece chemical splash suit.
- Inner and outer chemical resistant gloves.
- Chemical-resistant safety boots/shoes.

- Hardhat.

### 7.2.2 Level C Protection Ensemble

Level C protection is distinguished from Level B by the equipment used to protect the respiratory system, assuming the same type of chemical-resistant clothing is used. The main selection criterion for Level C is that conditions permit wearing an air-purifying device. The device (when required) must be an air purifying respirator (MSHA/NIOSH approved) equipped with filter cartridges. Cartridges must be able to remove the substances encountered. Respiratory protection will be used only with proper fitting, training and the approval of a qualified individual. In addition, an air-purifying respirator can be used only if: oxygen content of the atmosphere is at least 19.5% in volume; substances are identified and concentrations measured; substances have adequate warning properties; the individual passes a qualitative fit-test for the mask; and an appropriate cartridge/canister is used, and its service limit concentration is not exceeded.

Recommended PPE for Level C conditions includes:

- Full-face piece, air-purifying respirator equipped with MSHA and NIOSH approved organic vapor/acid gas/dust/mist combination cartridges or as designated by the SSHO.
- Chemical-resistant clothing (hooded, one or two-piece chemical splash suit or disposable chemical-resistant one-piece suit).
- Inner and outer chemical-resistant gloves.
- Chemical-resistant safety boots/shoes.
- Hardhat.

An air monitoring program is part of all response operations when atmospheric contamination is known or suspected. It is particularly important that the air be monitored thoroughly when personnel are wearing air-purifying respirators. Continual surveillance using direct-reading instruments is needed to detect any changes in air quality necessitating a higher level of respiratory protection.

### 7.2.3 Level D Protection Ensemble

As indicated above, Level D protection is primarily a work uniform. It can be worn in areas where only boots can be contaminated, where there are no inhalable toxic substances and where the atmospheric contains at least 19.5% oxygen.

Recommended PPE for Level D includes:

- Coveralls.
- Safety boots/shoes.
- Safety glasses or chemical splash goggles.
- Hardhat.
- Optional gloves; escape mask; face shield.

### 7.2.4 Recommended Level of Protection for Site Tasks

Based upon current information regarding both the contaminants suspected to be present at the Marilla Street Landfill Site and the various tasks that are included in the remedial activities, the minimum required Levels of Protection for these tasks shall be as identified in Table 7-1.

TABLE 7-1

MARILLA STREET LANDFILL SITE MAINTENANCE AND MONITORING

REQUIRED PERSONAL PROTECTIVE EQUIPMENT (PPE) LEVELS[1]

| Activity | Respiratory Protection[4] | Clothing | Gloves | Boots[2] | Other Required PPE/Modifications[3] |
|---|---|---|---|---|---|
| Groundwater Sampling | Level D | Work Uniform or Tyvec | L/N | Steel-toed safety boot | Safety glasses |
| Surface Water /Sediment Sampling | Level D | Work Uniform or Tyvec | L/N | Steel-toed safety boot | Safety glasses |
| Cover Soil/Post-Remediation Inspection. | Level D | Work Uniform or Tyvec | L/N | Steel-toed safety boot | Safety glasses |
| Observe Construction Maintenance Activities | Level D w/ Dusk Mask | Work Uniform or Tyvec | L/N | L outer, steel-toed safety boot inner | Hardhat, Safety glasses w/sideshields |

Notes:

1. T = Tyvek; L= Latex; N = Nitrile;, S = Saranex;, L/N = Latex inner, Nitrile outer
2. Latex outer boot required for fill excavation and whenever contact with contaminated materials may occur. SSHO may downgrade to steel-toed safety shoes if contact will be limited to cover/replacement soils.
3. Dust masks shall be donned as directed by the site health and safety officer or site safety technician whenever potentially contaminated airborne particulates (i.e., dust) are present in significant amounts in the breathing zone. Goggles may be substituted with safety glasses w/side-shields whenever contact with contaminated liquids is not anticipated.

# 8.0 EXPOSURE MONITORING

## 8.1 General

Based on the results of historic sample analysis and the nature of the proposed work activities at the site, the possibility exists that particulates may be released to the air during certain intrusive maintenance and monitoring activities. Ambient breathing zone concentrations may at times, exceed the permissible exposure limits (PELs) established by OSHA for the individual compounds (see Table 3-2), in which case respiratory protection will be required. Respiratory and dermal protection may be modified (upgraded or downgraded) by the SSHO based upon real-time field monitoring data.

### 8.1.1 Construction Monitoring

If maintenance activities necessitate contractor participation, the contractor's SSHO shall be responsible for performing real-time air monitoring. TurnKey-Benchmark personnel may perform additional air monitoring to verify field conditions during such construction activities. Monitoring will be performed during intrusive construction activities such as excavation, backfilling and regrading of fill soils. Monitoring will be performed with a particulate (dust) meter. Additional monitoring instruments may be added if site conditions change. Readings will be recorded and maintained as part of the permanent field record.

Monitoring instruments will be calibrated in accordance with manufacturer's instructions before use.

### 8.1.2 Off-Site Community Monitoring

In addition to on-site monitoring within the breathing zone, monitoring at the down-wind portion of the work area perimeter will be conducted if intrusive work into fill soils is performed. This will provide a real-time method for determining the potential for substantial particulate releases to the surrounding community as a result of intrusive construction work.

The monitoring will be performed at the downwind work area perimeter at regular intervals and at a minimum of once per half hour during times when particulate levels

exceed the work zone thresholds identified in Section 8.2.1 for five minutes or longer.

## 8.2 Monitoring Action Levels

### 8.2.1 Work Zone Levels

The particulate monitor will be used to monitor respirable dust concentrations in the worker breathing zone during intrusive activities into fill soils. Action levels based on the instrument readings shall be as follows:

- Less than 3 mg/m$^3$ above background - continue field operations.
- Greater than 3 mg/m$^3$ - Don dust/particulate mask or equivalent. Initiate engineering controls to reduce respirable dust concentration (viz., wetting of excavated soils or tools at discretion of SSHO).

Readings with the particulate meter will be recorded in the Health and Safety Logbook. All instruments will be calibrated before use and the procedure will be documented in the Health and Safety Logbook.

In addition to the qualitative, real-time monitoring provided by the particulate meter, a quantitative, personal air monitoring program for lead, cadmium and arsenic will also be employed in accordance with 29 CFR Parts 1910.1018, 1910.1025 and 1910.1027 whenever intrusive maintenance activities are expected to result in potential employee exposure to contaminated fill soils for greater than 2 weeks. The quantitative monitoring will involve sample collection with a personal sampling pump with analysis via NIOSH method 7900. The maintenance activity-specific monitoring frequency and action levels will be determined in concert with development of the maintenance activity Work Plan, and will be incorporated in this HASP by addendum

### 8.2.2 Community Monitoring Levels

In addition to the action levels prescribed in Section 8.2.1 for TurnKey-Benchmark personnel on-site, the following criteria shall also be adhered to for the protection of the

nearby community (for the purpose of particulate monitoring, the perimeter of the work area will be established as 50 feet from the outside edge of the excavation or boring site):

- Sustained atmospheric concentrations at the downwind work area perimeter greater than 150 $mg/m^3$ above the upwind particulate level - employ dust suppression techniques.

All readings will be recorded and available for NYSDEC and NYSDOH review, upon request.

# 9.0 SPILL RELEASE/RESPONSE

This chapter of the HASP describes the potential for and procedures related to spills or releases of known or suspected petroleum and/or hazardous substances on this site. The purpose of this Section is to plan appropriate response, control, countermeasures and reporting, consistent with OSHA requirements in 29 CFR 1910.120(b)(4)(ii)(J) and (j)(1)(viii). The spill containment program addresses the following elements:

- Potential spills/releases and available controls.
- Initial notification and evaluation.
- Spill release/response.
- Post-spill evaluation.

## 9.1 Potential Spills/Releases and Available Controls

An evaluation was conducted to determine the potential for hazardous substances and petroleum spills at this site. For the purpose of this evaluation, hazardous substances posing a significant spill potential are considered to be:

- CERCLA Hazardous Substances as identified in 40 CFR Part 302, where such materials pose the potential for release in excess of their corresponding Reportable Quantity (RQ).
- Extremely Hazardous Substances as identified in 40 CFR Part 355, Appendix A, where such materials pose the potential for release in excess of their corresponding Reportable Quantity (RQ).
- Hazardous Chemicals as defined under Section 311(e) of the Emergency Planning and Community Right-To-Know Act of 1986, where such chemicals are present or will be stored in excess of 10,000 lbs.
- Toxic Chemicals as defined in 40 CFR Part 372, where such chemicals are present or will be stored in excess of 10,000 lbs.
- Chemicals regulated under 6NYCRR Part 597, where such materials pose the

potential for release in excess of their corresponding Reportable Quantity (RQ).

Petroleum products are considered to pose a significant spill potential whenever the following situations occur:

- the potential for a "harmful quantity" of oil (including petroleum and non-petroleum-based fuels and lubricants) to reach navigable waters of the U.S. exists (40 CFR Part 112.4). Harmful quantities are considered by USEPA to be volumes of 1,000 gallons or more, or lesser quantities that either form a visible sheen on the water or violate applicable water quality standards.

- the potential for any amount of petroleum to reach any waters of NY State, including groundwater, exists. Petroleum, as defined by NY State in 6NYCRR Part 612, is a petroleum-based heat source, energy source, or engine lubricant/maintenance fluid.

- the potential for any release, to soil or water, of petroleum from a bulk storage facility regulated under 6NYCRR Part 612. A regulated petroleum storage facility is defined by NY State as a site having stationary tank(s) and intra-facility piping, fixtures and related equipment with an aggregate storage volume of 1100 gallons or greater.

The evaluation indicates that, based on site history and remediation records, a reportable spill or release of a hazardous substance or petroleum is not likely to occur during routine maintenance and monitoring efforts.

## 9.2 Initial Spill Notification and Evaluation

Any worker who discovers a hazardous substance or petroleum spill will immediately notify the Project Manager and SSHO. The worker will, to the best of his/her ability, report the material involved, the location of the spill, the estimated quantity of material spilled, the direction/flow of the spill material, related fire/explosion incidents, if any, and any associated injuries. The Emergency Response Plan presented in Appendix B of this HASP will immediately be implemented if an emergency release has occurred.

Following initial report of a spill, the Project Manager will make an evaluation as to whether the release exceeds RQ levels. If an RQ level is exceeded, the Project Manager will

notify site owner and NYSDEC at 1-800-457-7362 within 2 hours of spill discovery. The Project Manager will also determine what additional agencies (viz., USEPA) are to be contacted regarding the release, and will follow-up with written reports as required by the applicable regulations.

## 9.3 Spill /Response

For all spill/release situations, the following general response guidelines will apply:

- Only those personnel involved in overseeing or performing containment operations will be allowed within the spill area. If necessary, the area will be roped, ribboned or otherwise blocked off to prevent unauthorized access.
- Appropriate PPE, as specified by the SSHO, will be donned before entering the spill area.
- Ignition points will be extinguished/removed if fire or explosion hazards exist.
- Surrounding reactive materials will be removed.
- Drains or drainage in the spill area will be blocked to prevent inflow of spilled materials or applied materials.

Minor spills will be absorbed using clay-based or comparable absorbant and shoveled into a 55-gallon drum for proper disposal. Impacted soils will be hand-excavated to the point that no visible signs of contamination remains, and will be drummed with the absorbent.

In the event of a major release or a release that threatens surface water, a spill response contractor will be mobilized to the site. The response contractor will use heavy equipment (viz., excavator, backhoe, etc.) to berm the soils surrounding the spill site or create diversion trenching to mitigate overland migration or release to navigable waters. Where feasible, pumps will be used to transfer free liquid to storage containers.

Spill control/cleanup contractors in the western NY area that may be contacted for assistance include:

- The Environmental Service Group of NY, Inc.: (716) 695-6720
- Environmental Products and Services, Inc.: (716) 447-4700

## 9.4 Post-Spill Evaluation

If a reportable quantity of hazardous material or petroleum is spilled as determined by the Project Manager, a written report will be prepared as indicated in Section 9.2. The report will identify the root cause of the spill, type and amount of material released, date/time of release, response actions, agencies notified and/or involved in cleanup, and procedures to be implemented to avoid repeat incidents.

# 10.0 HEAT/COLD STRESS MONITORING

Since some of the work activities at the Marilla Street Landfill site will be scheduled for both the summer and winter months, measures will be taken to minimize heat/cold stress to TurnKey-Benchmark employees. The Site Safety and Health Officer and/or his or her designee will be responsible for monitoring TurnKey-Benchmark field personnel for symptoms of heat/cold stress.

## 10.1 Heat Stress Monitoring

Personal protective equipment may place an employee at risk of developing heat stress, a common and potentially serious illness often encountered at construction, landfill, waste disposal, industrial and other unsheltered sites. The potential for heat stress is dependent on a number of factors, including environmental conditions, clothing, workload, physical conditioning and age. Personal protective equipment may severely reduce the body's normal ability to maintain temperature equilibrium (via evaporation and convection), and require increased energy expenditure due to its bulk and weight.

Proper training and preventive measures will mitigate the potential for serious illness. Heat stress prevention is particularly important because once a person suffers from heat stroke or heat exhaustion, that person may be predisposed to additional heat related illness. To avoid heat stress, the following steps should be taken:

- Adjust work schedules.
- Modify work/rest schedules according to monitoring requirements.
- Mandate work slowdowns as needed.
- Perform work during cooler hours of the day if possible or at night if adequate lighting can be provided.
- Provide shelter (air-conditioned, if possible) or shaded areas to protect personnel during rest periods.
- Maintain worker's body fluids at normal levels. This is necessary to ensure that the cardiovascular system functions adequately. Daily fluid intake must

approximately equal the amount of water lost in sweat (i.e., eight fluid ounces must be ingested for approximately every 1 lb of weight lost). The normal thirst mechanism is not sensitive enough to ensure that enough water will be consumed to replace lost perspiration. When heavy sweating occurs, workers should be encouraged to drink more.

- Train workers to recognize the symptoms of heat related illness.

**Heat-Related Illness - Symptoms:**

- Heat rash may result from continuous exposure to heat or humid air.

- Heat cramps are caused by heavy sweating with inadequate electrolyte replacement. Signs and symptoms include: muscle spasms; pain in the hands, feet and abdomen.

- Heat exhaustion occurs from increased stress on various body organs including inadequate blood circulation due to cardiovascular insufficiency or dehydration. Signs and symptoms include: pale, cool, moist skin; heavy sweating; dizziness; nausea; fainting.

- Heat stroke is the most serious form of heat stress. Temperature regulation fails and the body temperature rises to critical levels. Immediate action must be taken to cool the body before serious injury and death occur. Competent medical help must be obtained. Signs and symptoms are: red, hot, usually dry skin; lack of or reduced perspiration; nausea; dizziness and confusion; strong, rapid pulse; coma.

The monitoring of personnel wearing protective clothing should commence when the ambient temperature is 70 degrees Fahrenheit or above. For monitoring the body's recuperative ability to excess heat, one or more of the following techniques should be used as a screening mechanism.

- Heart rate may be measured by the radial pulse for 30 seconds as early as possible in the resting period. The rate at the beginning of the rest period should not exceed 100 beats per minute. If the rate is higher, the next work period should be shortened by 10 minutes (or 33%), while the length of the rest periods stay the same, If the pulse rate is 100 beats per minute at the beginning of the nest rest period, the following work cycle should be further shortened by 33%.

- Body temperature may be measured orally with a clinical thermometer as early as

possible in the resting period. Oral temperature at the beginning of the rest period should not exceed 99.6 degrees Fahrenheit. If it does, the next work period should be shortened by 10 minutes (or 33%), while the length of the rest period remains the same. However, if the oral temperature exceeds 99.6 degrees Fahrenheit at the beginning of the next period, the work cycle may be further shortened by 33%. Oral temperature should be measured at the end of the rest period to make sure that it has dropped below 99.6 degrees Fahrenheit. No TurnKey-Benchmark employee will be permitted to continue wearing semipermeable or impermeable garments when his/her oral temperature exceeds 100.6 degrees Fahrenheit.

## 10.2 Cold Stress Monitoring

Exposure to cold conditions may result in frostbite or hypothermia, each of which progresses in stages as shown below.

- **Frostbite** occurs when body tissue (usually on the extremities) begins to freeze. The three states of frostbite are:

    1) **Frostnip** - This is the first stage of the freezing process. It is characterized by a whitened area of skin, along with a slight burning or painful sensation. Treatment consists of removing the victim from the cold conditions, removal of boots and gloves, soaking the injured part in warm water (102 to 108 degrees Fahrenheit) and drinking a warm beverage. Do not rub skin to generate friction/ heat.

    2) **Superficial Frostbite** - This is the second stage of the freezing process. It is characterized by a whitish gray area of tissue which will be firm to the touch but will yield little pain. The treatment is identical to that for frostnip.

    3) **Deep Frostbite** - In this final stage of the freezing process the affected tissue will be cold, numb and hard and will yield little to no pain. Treatment is identical to that for frostnip.

- **Hypothermia** is a serious cold stress condition occurring when the body loses heat at a rate faster than it is produced. If untreated, hypothermia may be fatal. The stages of hypothermia may not be clearly defined or visible at first, but generally include:

    1) Shivering

    2) Apathy (i.e., a change to an indifferent or uncaring mood)

3) Unconsciousness

4) Bodily freezing

Employees exhibiting signs of hypothermia should be treated by medical professionals. Steps that can be taken while awaiting help include:

1) Remove the victim from the cold environment and remove wet or frozen clothing. (Do this carefully as frostbite may have started.)

2) Perform active re-warming with hot liquids for drinking (Note: do not give the victim any liquid containing alcohol or caffeine) and a warm water bath (102 to 108 degrees Fahrenheit).

3) Perform passive re-warming with a blanket or jacket wrapped around the victim.

In any potential cold stress situation, it is the responsibility of the Site Health and Safety Officer to encourage the following:

- Education of workers to recognize the symptoms of frostbite and hypothermia.
- Workers should dress warmly, with more layers of thin clothing as opposed to one thick layer.
- Personnel should remain active and keep moving.
- Personnel should be allowed to take shelter in a heated areas, as necessary.
- Personnel should drink warm liquids (no caffeine or alcohol)
- For monitoring the body's recuperation from excess cold, oral temperature recordings should occur:
  - At the Site Safety Technicians discretion when suspicion is based on changes in a worker's performance or mental status.
  - At a workers request.
  - As a screening measure, two times per shift, under unusually hazardous conditions (e.g., wind chill less than 20 degrees Fahrenheit

or wind chill less than 30 degrees Fahrenheit with precipitation).

- As a screening measure whenever anyone worker on site develops hypothermia.

Any person developing moderate hypothermia (a core body temperature of 92 degrees Fahrenheit) should not return to work for 48 hours without the recommendation of a qualified medical doctor.

# 11.0 WORK ZONES AND SITE CONTROL

Work zones around the areas designated for maintenance and monitoring activities will be established by the SSHO on a daily basis and communicated to all employees. If a contractor is employed to provide construction assistance, it shall be the Contractor's Site Safety and Health Officer's responsibility to establish work zones, ensure that all site workers are aware of the work zone boundaries, and to enforce proper procedures in each area. The zones will include:

- Exclusion Zone ("Hot Zone") - The area where contaminated materials may be exposed, excavated or handled and all areas where contaminated equipment or personnel may travel. The zone will be delineated by flagging tape. All personnel entering the Exclusion Zone must wear the prescribed level of personal protective equipment identified in Section 7.

- Contamination Reduction Zone - The zone where decontamination of personnel and equipment takes place. Any potentially contaminated clothing, equipment and samples must remain in the Contamination Reduction Zone until decontaminated.

- Support Zone - The part of the site that is considered non-contaminated or "clean". Support equipment will be located in this zone, and personnel may wear normal work clothes within this zone.

In the absence of other task-specific work zone boundaries established by the SSHO, the following boundaries will apply to all environmental sampling and minor maintenance activities involving limited or no disruption of fill materials:

- Exclusion Zone: 20 foot radius from the sample/maintenance location.

- Contaminant Reduction Zone: 50 foot radius from sample/maintenance location.

- Support Zone: Areas outside the Contaminant Reduction Zone.

Access of non-essential personnel to the Exclusion and Contamination Reduction Zones will be strictly controlled by the construction contractor. Only personnel who are

essential to the completion of the task will be allowed access to these areas and only if they are wearing the prescribed level of protection. Entrance of all personnel must be approved by the construction contractor's SSHO.

The Contractor will maintain a Health and Safety Logbook containing the names of workers and their level of protection. The zone boundaries may be changed by the SSHO as environmental conditions warrant, and to respond to the necessary changes in work locations on-site.

# 12.0 DECONTAMINATION

## 12.1 Decontamination For TurnKey-Benchmark Employees

The degree of decontamination required is a function of a particular task and the environment within which it occurs. The following decontamination procedure will remain flexible, thereby allowing the decontamination crew to respond appropriately to the changing environmental conditions which may arise at the site. To the extent that the PPE identified below is used on-site, all TurnKey-Benchmark personnel on-site shall follow the procedure below, or the Contractor's procedure (if applicable), whichever is more stringent.

**Station 1 - Equipment Drop:** Deposit re-useable equipment used in the contamination reduction and exclusion zones (tools, containers, monitoring instruments, radios, clipboards, etc.) on plastic sheeting if required, to facilitate removal of visible contamination before loading/transporting.

**Station 2 - Boots and Gloves Wash and Rinse:** Scrub outer boots and outer gloves. Deposit tape and gloves in waste disposal container.

**Station 3 - Tape, Outer Boot and Glove Removal:** Remove tape, outer boots and gloves. Deposit tape and gloves in waste disposal container.

**Station 4 - Canister or Mask Change:** If worker leaves exclusive zone to change canister (or mask), this is the last step in the decontamination procedure. Worker's canister is exchanged, new outer gloves and boot cover donned, and worker returns to duty.

**Station 5 - Outer Garment/Face Piece Removal**: Protective suit removed and deposited in separate container provided by Contractor. Face piece or goggles are removed if used. Avoid touching face with fingers. Face piece and/or goggles deposited on plastic sheet. Hard hat removed and placed on plastic sheet.

**Station 6 - Inner Glove Removal:** Inner gloves are the last personal protective equipment to be removed. Avoid touching the outside of the gloves with bare fingers. Dispose of these gloves in waste disposal container.

Following PPE removal, personnel shall wash hands and face. If field activities proceed for a duration of 6 consecutive months or longer, the Contractor shall provide shower facilities for worker use in accordance with OSHA 29 CFR 1910.120(n).

## 12.2 Decontamination For Medical Emergencies

In the event of a minor, non-life threatening injury, personnel should follow the decontamination procedures as defined, and then administer first-aid.

In the event of a major injury or other serious medical concern (e.g., heat stroke), immediate first-aid is to be administered and the victim transported to the hospital in lieu of further decontamination efforts unless exposure to a site contaminant would be considered "Immediately Dangerous to Life or Health."

## 12.3 Decontamination Of Field Equipment

Decontamination of heavy equipment, if used, will be conducted by the Contractor in accordance with his approved Health and Safety Plan in the Contamination Reduction Zone. As a minimum, this will include manually removing heavy soil contamination, followed by steam cleaning on an impermeable pad.

Decontamination of all tools used for sample collection purposes will be conducted by TurnKey-Benchmark personnel. It is expected that all tools will be constructed of nonporous, nonabsorbent materials (i.e., metal) which will aid in the decontamination effort. Any tool or part of a tool made of porous, absorbent material (i.e., wood) will be placed into suitable containers and prepared for disposal.

Decontamination of bailers, trowels, and any other tools used for environmental sampling and examination shall be as follows:

- Disassemble the equipment
- Water wash to remove all visible foreign matter.
- Wash with detergent.
- Rinse all parts with distilled-deionized water.
- Allow to air dry.
- Wrap all parts in aluminum foil or polyethylene.

# 13.0 CONFINED SPACE ENTRY

OSHA 29 CFR 1910.146 identifies a confined space as a space which is large enough and so configured that an employee can physically enter and do assigned work, has limited or restricted means for entry and exit, and is not intended for continuous employee occupancy. Confined spaces include, but are not limited to, trenches, storage tanks, process vessels, pits, sewers, tunnels, underground utility vaults, pipelines, sumps, wells, and excavations.

Confined space entry by TurnKey-Benchmark employees is not anticipated to be necessary to complete the maintenance and monitoring activities identified in Section 2.0. In the event that the scope of work changes or confined space entry appears necessary, the Project Manager will be consulted to determine if feasible engineering alternatives to confined space entry can be implemented. If confined space entry by TurnKey-Benchmark employees cannot be avoided through reasonable engineering measures, task-specific confined space entry procedures will be developed and a confined-space entry permit will be issued through TurnKey-Benchmark's corporate Health and Safety Director. TurnKey-Benchmark employees shall not enter a confined space without these procedures and permits in place.

# 14.0 FIRE PREVENTION AND PROTECTION

## 14.1 General Approach

Recommended practices and standards of the National Fire Protection Association (NFPA) and other applicable regulations will be followed in the development and application of Project Fire Protection Programs. When required by regulatory authorities, the project management will prepare and submit a Fire Protection Plan for the approval of the contracting officers, authorized representative or other designated official. Essential considerations for the Fire Protection Plan will include:

- Proper site preparation and safe storage of combustible and flammable materials.
- Availability of coordination with private and public fire authorities.
- Adequate job-site fire protection and inspections for fire prevention.
- Adequate indoctrination and training of employees.

## 14.2 Equipment And Requirements

A fire extinguisher will be on hand by the field crew during routine maintenance and monitoring activities. For major maintenance and/or repair work, fire extinguishers will be required on all heavy equipment and in each field trailer. Fire extinguishers will be inspected, serviced, and maintained in accordance with the manufacturer's instructions. As a minimum, all extinguishers shall be checked monthly and weighed semi-annually, and recharged if necessary. Recharge or replacement shall be mandatory immediately after each use.

## 14.3 Flammable And Combustible Substances

All storage, handling or use of flammable and combustible substances will be under the supervision of qualified persons. All tanks, containers and pumping equipment, whether portable or stationary, which are used for the storage and handling of flammable and combustible liquids, will meet the recommendations of the National Fire Protection Association.

## 14.4 Hot Work

If the scope of work necessitates welding or blow torch operation, the hot work permit presented in Appendix A will be completed by the SSHO and reviewed/issued by the Project Manager.

# 15.0 EMERGENCY INFORMATION

In accordance with OSHA 29 CFR Part 1910, an Emergency Response Plan is attached to this HASP as Appendix B.

# 16.0 REFERENCES

1. Marilla Street Landfill Post Closure Maintenance and Monitoring Plan, TurnKey Environmental Restoration, LLC, Revised April 2003.

# APPENDIX A
# HOT WORK PERMIT FORM

# HOT WORK PERMIT
## (MUST BE CONSPICUOUSLY POSTED WHERE HOT WORK IS BEING PERFORMED)

**Part 1-Information**

Issue Date:

Date Work to be Performed: Start: Finish (permit terminated):

Performed by:

Work Area:

Object to be Worked On:

**Part 2-Approval (for 1, 2, and 3, mark Yes, No, or NA) ***

Will working be on or in:

1-Metal partition, wall, ceiling covered by combustible material?

2-Pipes, in contact with combustible material?

3-Explosive area?

*If any of these conditions exist (marked "yes") a permit will not be issued without being reviewed and approved by .(Required signature below)

**Part 3-Required Conditions** (Circle all conditions that must be met)**

| PROTECTIVE ACTION | PROTECTIVE EQUIPMENT |
|---|---|
| Specific Risk Assessment Required | Goggles / visor / welding screen |
| Fire or spark barrier | Apron / fireproof clothing |
| Cover hot surfaces | Welding gloves / gauntlets / other: |
| Move movable fire hazards, specifically | Wellingtons/Knee pads |
| Erect screen on barrier | Ear protection: Ear muffs / Ear plugs |
| Restrict Access | B.A.: SCBA / Long Breather |
| Wet the ground | Respirator: Type: |
| Ensure adequate ventilation | Cartridge: |
| Provide adequate supports | Local Exhaust Ventilation |
| Cover exposed drain/floor or wall cracks | Extinguisher / Fire blanket |
| Fire watch (must remain on duty during duration of permit) | Personal flammable gas monitor |
| Issue additional permit(s): | |

Other precautions:

**Permit will not be issued until these conditions are met.

Signatures:

Originating Employee: Date:

Project Manager: Date:

Part 2 Approval: Date:

# APPENDIX B

# EMERGENCY RESPONSE PLAN

# APPENDIX B

# EMERGENCY RESPONSE PLAN

## 1.0 GENERAL

This is the site-specific Emergency Response Plan. This chapter of the Health and Safety Plan describes potential emergencies at the Marilla Street Landfill, procedures for responding to those emergencies, roles and responsibilities during emergency response, and training that workers must receive in order to follow emergency procedures. This plan also describes the provisions this site has made to coordinate its emergency response planning with other contractors on-site and with off-site emergency response organizations.

This emergency response plan is consistent with the requirements of 29 CFR 1910.120(l) and provides the following site-specific information:

- Pre-emergency planning.
- Personnel roles, lines of authority, and communication.
- Emergency recognition and prevention.
- Safe distances and places of refuge.
- Evacuation routes and procedures.
- Decontamination procedures.
- Emergency medical treatment and first aid.
- Emergency alerting and response procedures.
- Critique of response and follow-up.
- Emergency PPE and equipment.

## 2.0 PRE-EMERGENCY PLANNING

This site has been evaluated for potential emergency occurrences, based on site

hazards, the required work tasks, the site topography, and prevailing weather conditions. The results of that evaluation indicate the potential for the following site emergencies to occur at the locations indicated.

| Type of Emergency: | Source of Emergency: | Location of Source: |
|---|---|---|
| Medical, due to physical injury | Slip/trip/fall | Non-specific |

## 3.0 ON-SITE EMERGENCY RESPONSE EQUIPMENT

Emergency procedures may require specialized equipment to facilitate worker rescue, contamination control and reduction, or post-emergency clean-up. Emergency response equipment stocked on this site is listed below. The equipment inventory and storage locations are based on the potential emergencies described above. This equipment inventory is designed to meet on-site emergency response needs and any specialized equipment needs that off-site responders might require because of the hazards at this site but not ordinarily stocked.

Any additional PPE required and stocked for emergency response is also listed in below. During an emergency, the Emergency Response Coordinator is responsible for specifying the level of PPE required for emergency response. At a minimum, personal protective equipment used by emergency responders will comply with Chapter 7, Personal Protective Equipment, of this HASP. Emergency response equipment is inspected at regular intervals and maintained in good working order. The equipment inventory is replenished as necessary to maintain response capabilities.

| Emergency Equipment | Quantity | Location |
|---|---|---|
| 1. First Aid Kit | 1 | Field Vehicle |
| 2. Fire Extinguisher | 1 (minimum) | Field Vehicle |

## 4.0 EMERGENCY PLANNING MAPS

Due to the vast size of the site and likely performance of the work on an area-specific basis, area-specific maps of the site will be developed prior to initiation of major cover system repair activities. The maps will be clearly marked with critical on-site emergency planning information. Emergency evacuation route(s), places of refuge, assembly point(s), and the locations of key site emergency equipment will be identified. Site zone boundaries will be shown to alert responders to known areas of contamination. Major topographical features and the direction of prevailing winds/weather conditions that could affect emergency response planning will also be marked on the map(s). The map is to be posted at site entry points and at strategic locations throughout the work site.

## 5.0 ON-SITE AND OFF-SITE SAFETY PERSONNEL AND EMERGENCY CONTACTS

Emergency Telephone Numbers

**Project Manager:** ***Thomas Forbes***
Work: (716) 856-0599
Home: (716) 685-0062

**Corporate Health and Safety Director:** ***Thomas Forbes***
Work: (716) 856-0599
Home: (716) 685-0062

**TurnKey-Benchmark Site Safety and Health Officer:** ***Richard Dubisz***
Work: (716) 856-0635
Home: (716) 655-7406

**TurnKey-Benchmark Alternate Site Safety and Health Officer:** ***Bryan Hann***

Work: (716) 856-0635
Home: (716) 823-8005

| | |
|---|---|
| MERCY HOSPITAL (ER) | (716) 828-2790 |
| FIRE | 911 |
| AMBULANCE | 911 |
| BUFFALO POLICE | 911 |

| | |
|---|---|
| STATE EMERGENCY RESPONSE HOTLINE | (800) 457-7362 |
| NATIONAL RESPONSE HOTLINE | (800) 424-8802 |
| NEW YORK STATE DEPARTMENT OF HEALTH: | (716) 847-4502 |

The site location is:

Marilla St. Landfill
Hopkins St.
Buffalo, New York

SITE PHONE: (Insert Cell Phone or Field Trailer) _____

## 6.0 EMERGENCY ALERTING AND EVACUATION

Internal emergency communication systems are used to alert workers to danger, convey safety information, and maintain site control. Any effective system can be employed. Two-way radio headsets or field telephones are often used when work teams are far from the command post. Hand signals and air-horn blasts are also commonly used. Every system must have a backup. It shall be the responsibility of the construction contractor's Site Health and Safety Officer to ensure that an adequate method of internal communication is understood by all personnel entering the site. Unless all personnel are otherwise informed, the following signals shall be used.

1) Emergency signals by portable air horn, siren, or whistle: two short blasts, personal injury; continuous blast, emergency requiring site excavation.

2) Visual signals: hand gripping throat, out of air/cannot breathe; hands on top of head, need assistance; thumbs up, affirmative/ everything is OK; thumbs down, no/negative; grip partner's wrist or waist, leave area immediately.

If evacuation notice is given, site workers leave the worksite with their respective buddies, if possible, by way of the nearest exit. Emergency decontamination procedures detailed in Chapter 12 of this HASP are followed to the extent practical without compromising the safety and health of site personnel. Appropriate primary and alternate evacuation routes and assembly areas have been identified and are shown on the Emergency Response Map. The routes and assembly area will be determined by conditions at the time

of the evacuation based on wind direction, the location of the hazard source, and other factors as determined by rehearsals and inputs from emergency response organizations. Wind direction indicators are located so that workers can determine a safe up wind or cross wind evacuation route and assembly area if not informed by the emergency response coordinator at the time the evacuation alarm sounds. Since work conditions and work zones within the site may be changing on daily basis, it shall be the responsibility of the construction contractor's Site Health and Safety Officer to review evacuation routes and procedures as necessary and to inform all site workers of any changes.

Personnel exiting the site gather at a designated assembly point. To determine that everyone has successfully exited the site, personnel will be accounted for at the assembly site. If any worker cannot be accounted for, notification is given to the SSHO (i.e., ***Richard Dubisz***) so that appropriate action can be initiated. Contractors and subcontractors on this site have coordinated their emergency response plans to ensure that these plans are compatible and that source(s) of potential emergencies are recognized, alarm systems are clearly understood, and evacuation routes are accessible to all personnel relying upon them.

## 7.0 EXTREME WEATHER CONDITIONS

In the event of severe weather conditions, the Site Safety and Health Officer will determine if engineering and/or field operations can continue without sacrificing the health and safety of TurnKey-Benchmark personnel. Items to be considered prior to determining if work should continue include but are not limited to:

- Potential for heat/cold stress.
- Weather-related construction hazards (viz., flooding or wet conditions producing undermining of structures or sheeting, high wind threats, etc).
- Limited visibility.
- Potential for electrical storms.
- Limited site access/egress (e.g., due to heavy snow)

## 8.0 EMERGENCY MEDICAL TREATMENT AND FIRST AID

### Personnel Exposure:

The following general guidelines will be employed in instances where health impacts threaten to occur acute exposure is realized:

- Skin Contact: Use copious amounts of soap and water. Wash/rinse affected area for at least 15 minutes. Decontaminate and provide medical attention. Eyewash stations will be provided on site. If necessary, transport to Mercy Hospital.
- Inhalation: Move to fresh air and, if necessary, transport to Mercy Hospital.
- Ingestion: Decontaminate and transport to Mercy Hospital.

### Personal Injury:

Minor first-aid will be applied on-site as deemed necessary. In the event of a life threatening injury, the individual should be transported to Mercy Hospital via ambulance. The construction contractor's Site Health and Safety Officer will supply available chemical specific information to appropriate medical personnel as requested.

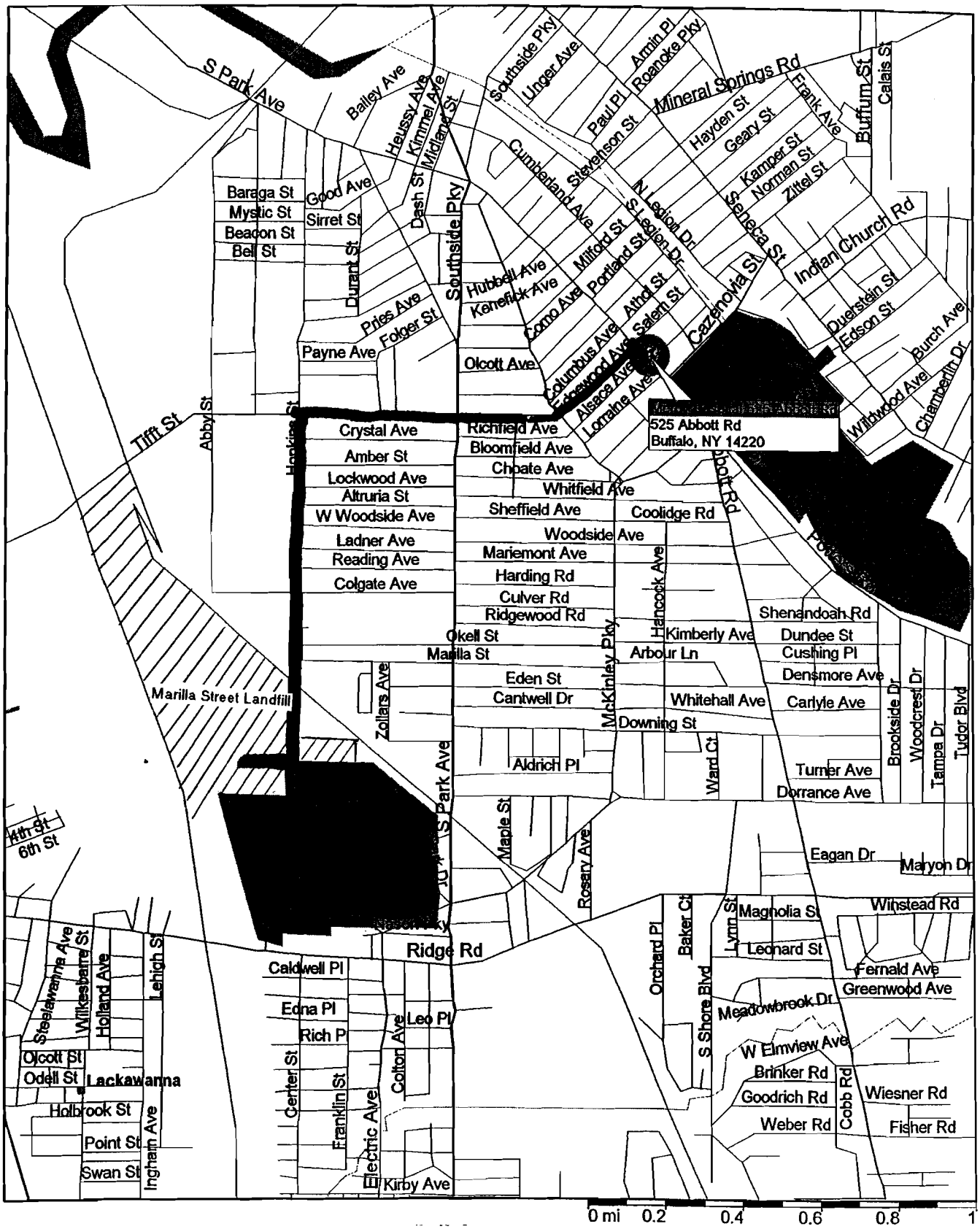
First aid kits will conform to Red Cross and other applicable good health standards, and shall consist of a weatherproof container with individually sealed packages for each type of item. First aid kits will be fully equipped before being sent out on each job and will be checked weekly by the SSHO to ensure that the expended items are replaced.

### Directions to Hospital (see Figure B-1):

The following directions describe the best route to Mercy Hospital:

- From the site access drive turn left onto Hopkins St.
- Proceed North on Hopkins St approximately 0.5 miles, turn right on to Tifft St. Continue East on Tifft St, approximately 0.7 miles. Tifft St. ends at Mckinley Parkway. Continue straight crossing over Mckinley Parkway onto Edgewood Ave.
- Continue on Edgewood Ave approximately 0.3 miles turn right onto Abbott Rd to Mercy Hospital (on right hand side). Follow signs to emergency room (ER).

# Marilla St Landfill



## 9.0 EMERGENCY RESPONSE CRITIQUE AND RECORD KEEPING

Following and emergency, the SSHO and Project Manager shall review the effectiveness of this Emergency Response Plan in addressing notification, control and evacuation requirements. Updates and modifications to the Emergency Response Plan shall be made accordingly. It shall be the responsibility of each employer to establish and assure adequate records of all:

- Occupational injuries and illnesses.
- Accident investigations.
- Reports to insurance carrier or State compensation agencies.
- Reports required by the client.
- Records and reports required by local, state, federal and/or international agencies.
- Property or equipment damage.
- Third party injury or damage claims.
- Environmental testing logs.
- Explosive and hazardous substances inventories and records.
- Records of inspections and citations.
- Safety training.

## 10.0 EMERGENCY RESPONSE TRAINING

All persons who enter this worksite, including visitors, receive a site-specific briefing about anticipated emergency situations and the emergency procedures by the Contractor's SSHO. Where this site relies on off-site organizations for emergency response, the training of personnel in those off-site organizations has been evaluated and is deemed adequate for response to this site.