OPERATION, MAINTENANCE AND MONITORING MANUAL VOLUME 1 – GENERAL MANUAL

NIAGARA COUNTY REFUSE SITE WHEATFIELD, NEW YORK

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NIAGARA COUNTY REFUSE SITE WHEATFIELD, NEW YORK

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2.0 SITE DESCRIPTION

The NCR Site is located along the eastern border of the Town of Wheatfield, Niagara County, New York, and the western border of the City of North Tonawanda and comprises an area of approximately 65 acres. The southern edge of the Site lies approximately 500 feet north of the Tonawanda Channel of the Niagara River, which is on the north side of Grand Island. The Site location is shown on Figure 2.1 and the Site layout and existing topographic conditions are shown on Figure 2.2.

The Site is bordered by active farmland to the west and vacant land proposed for residential development to the northwest. Wooded wetlands, a Niagara Mohawk Power Corporation transmission line and a right-of-way owned by the New York State Department of Transportation (DOT) border the Site to the north. The Site is bordered by woodlands and residences on Witmer Road beyond the woodlands to the east, and River Road (which is parallel to the Niagara River) to the south.

Site access is restricted to authorized vehicular traffic by secured fence gates.

2.1 SITE HISTORY

The Site operated between 1969 and 1973 as a landfill receiving both municipal and industrial waste from the surrounding regions. Refuse reported to have been disposed at the Site includes solid household, yard, institutional, commercial, industrial and agricultural wastes, construction and demolition (C&D) debris, sewage treatment plant sludges, street sweepings, and tires.

3.0 IMPLEMENTED REMEDIAL ACTION

The RA for the Site approved by the EPA and implemented by the TSC is detailed in the Record of Decision (ROD), dated September 24, 1993. The ROD is presented in Appendix A of this manual.

The major components of the Site remedy covered by this OM&M Manual are:

i) final landfill cap;

ii) Perimeter Collection System (PCS) and discharge piping;

iii) east side storm sewer;

iv) groundwater monitoring;

v) surface water monitoring; and

vi) effluent monitoring.

3.1 FINAL LANDFILL CAP

The final landfill cap was placed over the Site to reduce infiltration of precipitation into the landfill, prevent erosion of landfill materials, and eliminate direct human contact with the landfill materials. The final landfill cap extends to the perimeter barrier system (PBS), as appropriate, to limit the introduction of surface runoff into the PCS. The final landfill cap consists of the following layers, in ascending order:

i) imported clean soil;

ii) 6-inch gas venting layer;

iii) low permeability layer [40-mil very flexible polyethylene (VFPE) – both smooth and textured surfaces];

iv) geocomposite drainage net [high density polyethylene (HDPE) geonet sandwiched between two layers of geotextile on the side slopes, but only a single layer of geotextile on top of the HDPE geonet for the top slopes];

v) 24-inch barrier protection layer;

vi) 6-inch topsoil layer; and

vii) vegetative cover.

3.1.1 GRADING FILL (IMPORTED CLEAN SOIL)

Imported clean soil was used to bring the existing ground surface of the Site up to the appropriate sub-base contours.

3.1.2 GAS VENTING MEDIUM

Gas venting medium (a granular material with particles less than 3/8 inches in diameter) was placed in a 6-inch layer over the imported clean soil to act as a gas venting layer. The gas venting layer was not compacted and contained less than 5 percent fines (particles passing through a No. 200 sieve) so that the gas venting medium could provide sufficient void space to allow migration of any generated landfill gases to the passive gas vents.

3.1.3 LOW PERMEABILITY LAYER

A low permeability layer consisting of a continuous 40-mil VFPE membrane liner was installed above the gas venting layer to reduce the infiltration of precipitation into the Site. The VFPE membrane consisted of Poly-Flex VFPE liner (smooth and textured finish). The textured finish VFPE was placed on the steeper side slopes while the smooth finish VFPE was placed on the top areas of the landfill.

3.1.4 GEOCOMPOSITE DRAINAGE NET

A high transmissivity layer consisting of a continuous HDPE geonet with polyester, non-woven, needle-punched geotextile fabric was installed directly on top of the low permeability layer to drain water away from the soil layers above the liner. The HDPE geonet was sandwiched between two layers of geotextile on the steeper side slopes, but only a single layer of geotextile was placed over the HDPE geonet for the top areas of the landfill. The geotextile fabric installed was FSI Fluid System Tex-Net.

3.1.5 BARRIER PROTECTION LAYER

A 24-inch barrier protection layer was placed over the geocomposite drainage net. The barrier protection layer was installed to provide physical protection (including protection from root growth and burrowing animals) and frost protection for the low permeability layer. Clean imported soil with a maximum aggregate diameter of 2 inches was used in the barrier layer.

3.1.6 TOPSOIL

A 6-inch thick topsoil layer was placed over the barrier protection layer to support a vegetative cover over the final landfill cap and to provide additional frost protection for the low permeability layer. The soil material consists of 6 inches of tilled, uncompacted soil containing organic matter. The topsoil was 6 to 25 percent organic matter with an in-place pH of 5.5 to 7.5.

3.1.7 VEGETATIVE LAYER

A vegetative layer, essential for maintaining the cap's long-term effectiveness, was planted on the surface of the cap. The vegetation serves to:

i) stabilize the soil against erosion due to runoff and wind;

ii) minimize percolation of precipitation;

iii) maximize evapotranspiration of soil moisture; and

iv) increase the aesthetic value of the cap.

Two different seed mixtures were used at the Site as shown on Plan L14. The turf seed mixture, seed mixture S1, was planted in the perimeter toe-of-slope areas/swales and consisted of Creeping Red Fescue Grass (50 lbs/acre), Kentucky Blue Grass (50 lbs/acre), and Perennial Ryegrass (60 lbs/acre). The legume seed mixture, seed mixture S2, was planted over the entire waste footprint area and consists of White Clover (5 lbs/acre), Timothy Grass (5 lbs/acre), Orchard Grass (5 lbs/acre), Smooth Bromegrass (5 lbs/acre), Perennial Ryegrass (10 lbs/acre), and Flat Pea (20 lbs/acre). Both seed mixtures had a minimum required germination rate of 75 percent and a minimum purity of 97 percent, with not more than 0.25 percent weed seed content and

no noxious weed seeds. Clover seeds were inoculated with inoculum as recommended by the manufacturer prior to plating.

The fertilizer used was FS O-F-241, Type II, Grade B. The fertilizer was granular form, free flowing, dry, and was a type recommended for grass.

The vegetative layer in the area covered with the low permeability cap will be maintained by appropriate mowing so that root penetration remains within the soil and common fill layers and will not penetrate to the depth of the liner.

3.1.8 GAS VENTING SYSTEM

The objective of the gas venting system is to prevent structural damage to the cap caused by the build-up of gas pressure beneath the liner. The gas generation rate in the landfill is very low, primarily due to the age and composition of the waste. Lateral subsurface off-Site gas migration is controlled by the PBS.

A series of passive gas vents that penetrate the low permeability layer of the landfill cap were installed at the Site. The vents convey generated gas from beneath the low permeability layer of the cap to the atmosphere. The gas percolates from the landfill through the gas venting layer materials to the gas vents.

The gas vents are constructed with 6-inch nominal diameter HDPE (SDR11) pipes for the above-ground riser pipe sections and 6-inch nominal diameter HDPE (SDR26) pipes for the below-ground sections. Pipe connections were thermally welded. Perforations in the pipe were 1/4-inch holes drilled in 4 rows, spaced at 4 inches and staggered along the pipe. Each gas vent was fitted with a VFPE boot that was heat seamed to the liner and banded to the riser pipe to form a continuous barrier to surface water infiltration.

The gas vents were set in a stone pack consisting of clean, hard, durable particles of natural aggregate conforming to the following grading requirements: 1 1/2-inch sieve, 100 percent passing by weight; 1-inch sieve, 90 to 100 percent passing by weight; and 1/2-inch sieve, 0 to 15 percent passing by weight.

The gas vents were installed at a spacing of approximately one for every 2 acres. The locations of the gas vents are shown on Plan L13. A typical detail of a gas vent is shown on Plan L15.

3.1.9 ACCESS ROADS

A gravel access road was constructed on the Site inside the fence to facilitate Site access by wheeled vehicles to the wet wells. The access road alignment is shown on Plan G3. In areas where the access road crosses a drainage ditch, culverts were installed.

3.1.10 PERIMETER FENCE

A 6-foot high chain link fence was installed along the Site perimeter as shown on Plan G4. The Site is accessed through two traffic gates and three man-gates. Fence posts are made of Schedule 40 galvanized steel pipe with welded construction and a minimum yield strength of 25 ksi. Fence fabric is 2-inch diamond mesh with interwoven 9-gage, zinc-coated wire. Posts were set in concrete.

3.2 PERIMETER COLLECTION SYSTEM

The PCS acts to hydraulically isolate the Site. The system consists of 9,900 feet of perimeter collection drain, 4 wet wells, 26 collection drain access manholes, a VFPE barrier wall, pumps, forcemain piping, electrical conduit, a control building, and a metering chamber. The PCS effluent is discharged to the City of North Tonawanda (Publicly Owned Treatment Works) POTW by forcemain. The current City of North Tonawanda Discharge Permit is presented in Appendix B.

3.2.1 UNDERGROUND COLLECTION DRAIN

The underground collection drain consisted of a corrugated 6-inch diameter perforated HDPE collection pipe (Series 601), manufactured by Advanced Drainage Systems, Inc., in an infiltration trench filled with coarse granular material. The perforated HDPE collection pipe conformed to the following specifications:

- pipe stiffness at 5 percent deflection: 24 psi (minimum);
- pipe stiffness at 10 percent deflection: 19 psi (minimum); and
- elongation: 10 percent (maximum).

The coarse granular material consisted of clean, hard, durable particles of natural aggregate with an in-place maximum hydraulic conductivity of 1×10^{-2} cm/s and conformed to the following particle size requirements:

Sieve Size	*Percent Passing by Weight*
1 1/2-inch	100
1-inch	90 - 100
1/2-inch	0 - 15
No. 200	0 - 5

The PCS alignment is shown on Plan P1 and plan and profile drawings are shown on Plans P2 through P8. The collection pipes were sloped toward the wet wells at a minimum slope of 0.3 percent. A typical cross-section of the PCS is shown on Plan P12.

3.2.2 WET WELLS AND MANHOLES

Wet wells were placed at low points in the PCS as shown on Plan P1. The wet wells were constructed of precast concrete with a nominal barrel diameter of 6 feet, except Wet Well A which was an 8-foot square chamber (doubling as the metering chamber). The wet wells were equipped with hinged manhole covers, polyethylene-coated ladder rungs, and safety cages and platforms for maintenance access. Each wet well has a sump that extends a minimum of 4 feet below the lowest collection pipe invert entering the wet well. Typical wet well details for Wet Wells B, C, and D are shown on Plan P10 and details for Wet Well A are shown on Plan P11.

Access manholes for inspection and maintenance purposes were installed at approximately 300-foot intervals along the PCS and at each significant change in direction of the PCS alignment. Access manhole locations are shown on Plan P1. Access manholes were constructed of precast concrete with a nominal barrel diameter of 4 feet. The manholes were equipped with covers and polyethylene-coated ladder rungs for maintenance access. A typical access manhole detail is shown on Plan P12.

3.2.3 BARRIER WALL

A perimeter barrier wall, which significantly reduces groundwater flow from off-Site areas to the perimeter collection drain, was installed along the perimeter of the Site beyond the PCS alignment. The PBS is an extension of the low permeability liner used for the cap. The liner was keyed 12 inches into the native clay/till confining unit. The low permeability layer of the cap and the barrier wall creates a continuous barrier to groundwater migration. The barrier wall alignment is shown on Plan P1 and a typical barrier wall cross-section is shown on Plan P13.

3.2.4 PUMPS, FORCEMAIN, AND MISCELLANEOUS PLUMBING

Wet Wells B, C, and D were each equipped with an electrical, submersible pump that pumps the collected groundwater by forcemain to Wet Well A. Wet Well A was equipped with a duplex electrical, submersible pump system that pumps the collected groundwater by forcemain to the City of North Tonawanda Sanitary Sewer System.

The pumps in Wet Wells B and D are Goulds Model 3885 WE1534H (1½ hp. 460 Volt, 3-phase), mounted on a PumpCon International guide rail system. The pumps in Wet Wells A and C are Goulds Model 3885 WE1534HH 1½ hp, 460 Volt, 3-phase), mounted on a Goulds Model A10-20 guide rail system.

The forcemain consists of 3-inch diameter HDPE (ASTM D1248 Type 3, Category 5, Grade P34, SDR-17) pipe installed at a minimum depth of 5 feet along much of the PCS alignment. Pipe joints were butt fused to provide a leak-tight system. The forcemain is accessible through the PCS access manholes and wet wells. The forcemain was installed within the PCS trench, except between Wet Wells B, and C where no forcemain was installed. Plans and profiles for the on-Site forcemain are shown on Plans P2 through P8. Plans and profiles for the off-Site forcemain between Wet Well A and the POTW are shown on Plan P9.

A typical wet well layout for Wet Wells B, C, and D showing a submersible pump and forcemain connection is presented on Plan P10. A layout showing the submersible pumps in Wet Well A is presented on Plan P11. A cross-section providing the forcemain location in the PCS trench and a cross-section of a manhole showing the forcemain with a section of pipe that is removable for maintenance access are shown on Plan P12.

Steel pipes used in the wet wells are ASTM A53 Grade A, Type S, Schedule 40 galvanized steel. Check valves are 2-inch diameter Pump Con BCV-2 constructed of cast iron. Ball valves are Apollo Model 76-100, stainless steel, threaded and fully ported. Two-inch diameter ball valves were installed in the wet wells and a 1/4-inch diameter ball valve was installed at the metering chamber (Wet Well A) sample port. A 1 1/2-inch diameter explosion-proof flow meter (Kent Meter T-3000 cold water turbine meter number T-3000-RUBU) was installed in Wet Well A. Each in-line device (i.e., pump, meter, valve) is fitted with unions and disconnects to simplify removal.

3.2.5 CONDUITS AND WIRING

The wet well pumps are connected to a control building by power, control, and instrumentation cables. Underground cables are contained in 2-inch diameter, polyvinyl chloride (PVC) coated steel conduits. The conduits were installed above the forcemain along the PCS alignment and are accessible through the PCS access manholes and wet wells. The conduit locations in the access manholes and in the PCS trench are shown on Plan P12.

Brightly colored, plastic, magnetic warning tape was installed above the electrical conduit, the collection drain piping, and the forcemain piping. The tape is detectable by a metal detector at a depth of 3 feet. Tape colors used at the Site are as follows:

- red - electrical conductivity;
- green - perimeter collection piping; and
- brown - groundwater forcemain piping.

3.2.6 CONTROL BUILDING

The wet well pumps are operated from a control building located beside the main Site entrance near the southeast corner of the Site. The structure is a Butler Manufacturing Company Product, PanL-Line 1 Building System erected on a concrete foundation and slab. The doors are PanL-Line 1 insulated metal doors.

3.2.7 METERING CHAMBER (WET WELL A)

An effluent monitoring port for sampling the forcemain effluent quality and monitoring the total and instantaneous flows through the forcemain is contained in Wet Well A located near the middle of the Site's southern boundary.

4.0 SAMPLING, ANALYSIS AND MONITORING PLAN (SAMP)

Monitoring at the Site, including sample collection, sample analyses, and reporting tasks must be completed to ensure the integrity and evaluate the performance of the RA system components and to meet monitoring requirements. Monitoring will be required for groundwater, surface water, and PCS effluent at the Site. Field procedures for monitoring groundwater quality and levels, monitoring surface water quality, monitoring PCS effluent quality, decontaminating equipment, and handling and shipping samples are detailed in FP-1 through FP-7 in Appendix C. The collection of representative samples and accurate data is important for the successful operation of the RA systems at the Site. If the data collected are inaccurate and the samples are not representative, incorrect decisions will be made regarding system operations and the RA systems will not work properly. The following sections describe methods that, when followed, will ensure the collection of representative samples and accurate data.

4.1 MONITORING

4.1.1 GROUNDWATER MONITORING PROGRAM

A groundwater monitoring program has been established to monitor the effectiveness of the PCS and PBS. The objective of this monitoring program is to provide data for demonstrating the effectiveness of the hydraulic containment, collection, and extraction of Site-related groundwater.

The groundwater monitoring program consists of hydraulic monitoring and groundwater quality monitoring. The data collected will be used to evaluate the performance of the PCS and PBS and to determine the necessity of implementing contingency measures. The data will also be used to determine when operation of the PCS may cease, subject to EPA approval.

The wells where samples will be collected and measurements will be made are shown on Figure 4.1. This well network will be evaluated annually to assess whether each location provides useful information and to revise the network, as required.

4.1.2 WATER LEVEL MONITORING

Water level monitoring consists of the measurement of water levels in monitoring wells to determine groundwater elevations. Water levels in four on-Site monitoring wells

(EAST "A" through EAST "D") will be measured to ensure the water levels inside the landfill are reduced by the operation of the PCS. Hydraulic monitoring locations are shown on Figure 4.1 and are listed in FP-3 (Appendix C). Groundwater levels will be determined concurrent with groundwater quality monitoring rounds at the following frequency:

- quarterly for the first two years after PCS startup;
- semi-annually for the next three years; and
- annually thereafter.

After the initial five-year period, the hydraulic monitoring program will be assessed to determine the suitability of the program and any need for modifications. If the results of groundwater quality monitoring (see Section 4.1.3) indicate that the groundwater quality monitoring frequency should be modified, the hydraulic monitoring frequency will also be modified so that groundwater level and groundwater quality monitoring continue to occur at the same frequency. The standard method for measuring water levels accurately is described in Section 4.2.3.

4.1.3 GROUNDWATER QUALITY MONITORING

Groundwater quality monitoring consists of the collection of water samples from four off-Site shallow overburden monitoring wells (NCR3S, NCR4S, NCR5S, and NCR13S), and the analysis of these samples to ensure that no off-Site chemical migration is occuring via the groundwater. These monitoring wells are shown on Figure 4.1. The initial round of groundwater samples will be collected immediately after startup of the PCS. Groundwater samples will be collected at the following frequencies:

- quarterly for the first two years after PCS startup;
- semi-annually for the next three years; and
- annually thereafter.

The program will be evaluated based on the results of the first two groundwater quality monitoring rounds to determine if the monitoring frequency can be decreased. At the end of the initial five-year period, the program will be assessed again to determine the suitability of the sampling locations, monitoring frequency, and monitoring parameters and to determine the suitability of the program. Recommendations for changes to the program including the installation or abandonment of wells may be made based on the

results of monitoring or other pertinent information. The program will be assessed every five years until groundwater quality monitoring is no longer required.

Groundwater quality monitoring will include field information measured by sampling personnel (pH, conductivity, temperature, and turbidity) and laboratory analysis of the collected samples. The standard method for collecting representative groundwater samples is described in Section 4.2.4.2. Wells must be purged in accordance with the method described in Section 4.2.4.1 before samples can be collected. Laboratory analysis will include the compounds and analytes identified in FP-5 (Appendix C).

Groundwater quality will also be monitored at the PCS effluent sampling location as shown on Figure 4.1. Effluent samples collected as described in Section 4.2.6 will be analyzed and evaluated to determine the groundwater quality.

4.1.4 GROUNDWATER MONITORING CONTINGENCY PLAN

The groundwater monitoring program will monitor the performance of the PCS with respect to its design criteria and requirements. If the system is not performing as designed after the time needed to substantially attain steady-state conditions, contingency actions will be required. Detailed plans outlining contingency actions will be submitted to the EPA for review and approval prior to implementation.

4.1.5 SURFACE WATER MONITORING PROGRAM

Surface water impacts by pre-RA activities have not occurred at the Site. Therefore, it is anticipated that impacts by post-RA activities will not occur. An annual surface water quality monitoring program will be implemented to verify that surface water quality has not been impacted by the RA activities. Surface water samples will be collected annually with at least one of these sampling events occurring during wet weather. This program will terminate after two years if surface water quality remains unimpacted. The surface water sampling locations are shown on Figure 4.1.

Surface water monitoring will include field information measured by sampling personnel (pH, temperature, conductivity, and turbidity) and laboratory analysis of the collected samples. The standard method for collecting representative surface water samples is described in Section 4.2.5. Laboratory analysis will include the compounds and analytes identified in FP-6 (Appendix C).

4.1.6 EFFLUENT MONITORING PROGRAM

Groundwater from the PCS will be discharged to the City of North Tonawanda POTW without pretreatment. The monitoring station, which is located within Wet Well A, will allow both the effluent water quality and the volume of effluent to be verified by the City of North Tonawanda. The City of North Tonawanda will be given Site access to perform this confirmatory monitoring. The effluent water sampling location is shown on Figure 4.1.

Effluent sampling will be performed semi-annually as specified in the City of North Tonawanda Industrial Wastewater Discharge Permit (see Appendix A - Wastewater Discharge Permit). The standard method for collecting representative effluent water samples is described in Section 4.2.6. Laboratory analysis will include the compounds and analytes identified in FP-7 (Appendix C).

4.1.7 SITE ACCESS REQUIREMENTS

Prior to commencing any monitoring activity at monitoring well NCR-5S, personnel must ensure that access to the land has been granted from Forest City Enterprises. Forest City Enterprises must be notified by telephone and in writing a minimum of 2 weeks in advance of the activities to obtain access permission unless a current access agreement states otherwise. Contact information for Forest City Enterprises is as follows (update as required):

Land Owner:	Forest City Land Group
Contact Name:	Sandra Smith
Address:	6269 Williams Road
	Niagara Falls, NY 14304
Phone:	(716) 297-5600

4.2 SAMPLING

The proper collection of water levels and samples requires that a consistent set of procedures be followed for every sample location every time water levels or water samples are obtained. Following these procedures will result in the collection of good quality data that are representative of conditions at the Site.

The following subsections describe the procedures for measuring water levels, sampling groundwater, sampling surface water, and sampling PCS effluent at the Site. Procedures and protocols outlined below will be performed in conjunction with those presented in the Quality Assurance Project Plan (QAPP), contained in Appendix D to this OM&M Manual, and the Health and Safety Plan (HASP), contained in Appendix E to this OM&M Manual. Read the QAPP and the HASP before performing any sampling activities at the Site.

4.2.1 GENERAL SAMPLING PROCEDURES

It is very important that the following rules are followed while sampling.

- Do not smoke.
- Do not use insect repellents.
- Do not use wasp/hornet spray near a sampling location.
- Do not use aftershaves, perfume, cologne, or astringents.
- Be aware of wind direction. Do not run vehicles or small engines (such as generators or air compressors) upwind of a well being sampled.
- Be aware of traffic fumes from nearby activities. Suspend sampling if traffic fumes are noted. Make a note of any nearby activities or traffic on the groundwater purge and sample record logs included as Forms FP-4C and FP-5A.
- Do not handle or pour gasoline or other fuels near a well being sampled.

4.2.2 GENERAL HEALTH AND SAFETY FOR SAMPLING

Apply the following health and safety rules during collection of water samples.

- Read the HASP before going to the Site;
- Industrial quality work boots, Tyvek coveralls, nitrile gloves, and safety glasses are the minimum required personal protective equipment (PPE) for sampling;
- Do not eat or drink;
- Be aware of potential slip, trip, and fall hazards and uneven terrain;
- Be aware of hazards of working with portable machinery, electrically operated equipment, gasoline powered equipment, and high-pressure air;

- Some heavy lifting is required – use proper lifting techniques;
- Some sampling takes place near open water. Always carry a flotation device and perform sampling at these locations with a partner; and
- Use caution when opening protective covers on wells – wasps, hornets, or bees may be present.

4.2.3 WATER LEVEL MEASUREMENT

Water level measurements are required at the wells shown on Figure 4.1. In addition to providing information for determining groundwater flow directions, measuring water levels provides the following:

- accurate data for area groundwater table maps;
- an opportunity for the sampling team to become more familiar with the Site;
- an opportunity to collect data about unusual circumstances such as wells that are damaged, dry, or have become inaccessible; and
- an opportunity to inventory well conditions and to perform minor maintenance such as lubricating locks and hinges, replacing lost or faded well tags, etc.

Complete a copy of all forms within FP-2 and FP-3 (Appendix C) every time water levels are measured. An electric water level tape will be used for water level measurements in the wells. Water level measurement procedures are detailed in FP-3 (Appendix C), with all water level measurements recorded on Form FP-3D (Appendix C).

Water levels in the wet wells and total flows from the wet well pumps will also be recorded when water levels are measured in the monitoring wells. Wet well water level meter and flow meter read-outs are housed in the control building. Record the wet well water levels and flow data on Form FP-3D (Appendix C).

4.2.4 GROUNDWATER SAMPLING

4.2.4.1 WELL PURGING PROCEDURES

Prior to sampling each well, the standing water in the well will be purged so that representative, sediment-free water may be sampled. Complete a copy of all forms

within FP-2, FP-3, and FP-4 (Appendix C) each time a well is purged. The standard purging method is described in detail in FP-4 (Appendix C).

The volume of water to be purged from each well depends on the depth of water in the well. The volume of water in the well (well volume) is calculated by subtracting the depth of water from the total depth of the well. This value (the water column length) is then multiplied by 0.163 (includes conversion from cubic feet to gallons) to calculate the well volume in gallons for a 2-inch diameter well.

Purging should be conducted with a dedicated bladder pump in each sampling well.

Two criteria will be used to determine if a sufficient volume of groundwater has been purged from the well to yield a representative sample. These criteria are:

- the removal of five well volumes; or
- if a well goes dry, purge to dryness on three consecutive days.

Five well volumes will be removed from each well prior to sampling unless a well goes dry during pumping. Field parameters (pH, conductivity, temperature, and turbidity) will be measured and recorded during purging. One set of readings will be taken after the removal of each well volume. Samples will be collected after purging is complete. The meters for measuring field parameters will be calibrated each morning prior to purging and the calibration will be checked at the end of each day according to the manufacturer's instructions. Recalibration of the meters will be performed more often if necessary.

If a well is pumped dry, the well will be allowed to recover for 24 hours and will be pumped dry again. This will be done for three consecutive days. Full recovery to pre-purging water levels is not required. Sampling can begin after purging on the third day if enough water is available.

4.2.4.2 GROUNDWATER SAMPLE COLLECTION PROCEDURES

Collect groundwater samples immediately after completion of well purging. Complete a copy of all forms within FP-1 and FP-5 (Appendix C), in addition to the forms required for purging, every time groundwater samples are collected. Analytical requirements and sample containers are discussed in the QAPP (Appendix D). Groundwater sample collection procedures are detailed in FP-5 (Appendix C).

Where a well will not yield the volume of water necessary to immediately fill all the required sample containers, as many of the containers as possible will be filled, with the remainder filled as water becomes available within the well. Collect samples for volatile organic compounds (VOCs) within 2 hours of completion of well purging.

Sampling in the rain should be avoided due to the potential for cross-contamination from airborne contaminants in the precipitation.

4.2.5 SURFACE WATER SAMPLING PROCEDURES

Complete a copy of all forms within FP-1 and FP-6 (Appendix C) every time surface water samples are collected. Analytical requirements and sample containers are discussed in the QAPP (Appendix D). Surface water sample collection procedures are detailed in FP-6 (Appendix C).

It is important to obtain surface water samples that are not impacted by the resuspension of sediment caused by sampling activities. Pre-plan the sampling sequence so that sampling commences at the farthest downstream sampling location and proceeds upstream.

Sampling in the rain should be avoided due to the potential for cross-contamination from airborne contaminants in the precipitation.

4.2.6 EFFLUENT SAMPLING PROCEDURES

Complete a copy of all forms within FP-1 and FP-7 (Appendix C) every time PCS effluent samples are collected. Analytical requirements and sample containers are discussed in the QAPP (Appendix D). Effluent sample collection procedures are detailed in FP-7 (Appendix C).

Sampling in the rain should be avoided due to the potential for cross-contamination from airborne contaminants in the precipitation.

4.2.7 SAMPLING DOCUMENTATION

Documentation is a critical part of sampling. The accuracy of samples collected in the field can only be proven through the exhaustive use of field records. Field conditions,

collection and handling of samples, and information about each sample collected will be recorded on the standard forms in Appendix C. These forms, along with the chain-of-custody documentation and shipping manifests provide a permanent record of all significant activities completed during a sample collection event. Complete all forms with a waterproof pen to prevent smudging if the form gets wet in the field. Once complete, sign and date the bottom of each form and keep a copy at the control building.

4.2.8 SAMPLE CONTAINERS, PRESERVATION, AND LABELS

Required sample containers, sample preservation methods, and maximum sample holding times are summarized in Appendix D.

4.2.9 PACKAGING AND SHIPPING PROCEDURES

Prepare the sample containers for shipment as described in FP-1 (Appendix C).

4.2.10 HANDLING OF MATERIALS GENERATED DURING OM&M ACTIVITIES

Containerize PPE and sampling refuse (i.e., paper towels, used tin foil, tape, etc.) generated during sampling activities in plastic garbage bags and temporarily store the bags at the control building pending final disposal in accordance with all applicable Federal and New York State Regulations.

Collect all groundwater extracted during monitoring activities and discharge it to an on-Site wet well for treatment at the POTW.

4.2.11 EQUIPMENT CLEANING PROCEDURES

Clean all equipment that comes into contact with Site groundwater, surface water, or PCS effluent including water level measuring tapes and meters in accordance with the procedures described in FP-2 (Appendix C). Cleaning of dedicated sampling equipment (i.e., equipment that remains in the well after sampling) is not required.

4.3 ANALYTICAL PROGRAM

The Analytical Program is detailed in the QAPP (Appendix D) and includes analytical schedules and methods, laboratory quality control (QC) samples, reporting and deliverables, special analytical protocols, laboratory audits, and data audits.

4.4 EVALUATION OF MONITORING RESULTS

Upon receipt of groundwater, surface water, and effluent quality data, all analytical results will be evaluated to determine if the data are acceptable for use in the respective monitoring programs. A data report of groundwater and surface water monitoring will be sent to EPA following quality assurance (QA) validation within 30 days of receipt (upon request). The data will be designated as approved or not approved for evaluating the various RA systems at the Site based on the validation report. All data deemed to be acceptable, including QA/QC results, will be entered into a computer database. Under no circumstances will data that has not undergone QA validation be sent to the EPA.

Raw data packages resulting from effluent monitoring will be sent to the City of North Tonawanda for QA review within 30 days of receipt (upon request). The data will be designated as approved or not approved for evaluating the performance of the PCS after review by the City of North Tonawanda.

The procedures for evaluating analytical data resulting from Site monitoring activities are detailed in the QAPP (Appendix D).

The computer database will provide the required listing and summary tables of analyses, including a separate listing of QA/QC results. The database will be used to determine the presence of Site-related chemicals in off-Site groundwater and surface water. As additional data are generated, graphic representations of concentrations versus time may be prepared to demonstrate changes in groundwater, surface water, and effluent chemical concentrations over time.

Measured water levels will be converted to elevations and entered into a computer database. The water level data will be listed in tabular form for each round of data collected.

The evaluation of the hydraulic and water quality data will be used to determine if corrective contingency measures are required and when the system operations can be terminated.

4.5 RECORDS AND REPORTS

All field notes, field books, and completed standard forms will be stored on Site in the control building. A copy of all chain-of-custody forms, shipping manifests for analytical samples, and analytical results will also be stored in the control building.

Data Summary Reports will be submitted to the TSC at the same frequency as sampling events, after QA validation is complete. These Data Summary Reports will include analytical results, appropriate QA/QC data, and water level data. The TSC will then forward the reports to EPA and New York State Department of Environmental Conservation (DEC) at the following offices:

Mr. Kevin Lynch, Chief
Western New York Remediation Section
EPA-Region 2
290 Broadway
New York, NY 10007-1866

Mr. Martin Doster
NYSDEC - Region 9
270 Michigan Avenue
Buffalo, NY 14203-2999

Mr. Gerald J. Rider, Jr.
Operation, Maintenance, and Support Section
NYSDEC
50 Wolf Road - Room 260
Albany, NY 12233-7010

Mr. Daniel King
NYSDEC, Regional Headquarters
Division of Environmental Remediation
270 Michigan Avenue
Buffalo, NY 14203-2999

5.0 OPERATION OF SITE REMEDIAL SYSTEMS

The following sections provide instructions for operating the Site remedial systems, including startup operation and system controls and instrumentation.

5.1 SYSTEM OPERATION

The individual wet wells operate on automatic level control. Wet Well A contains two well pumps while each of the other three wet wells have only one pump. The second pump in Wet Well A is a hot spare. The pumps are not run simultaneously, as an A/off/B selector switch is provided on the central control panel to select which pump will run when the wet well is full. Two green lights on the central control panel indicate which of the two pumps is selected. Individual well pumps turn off automatically when the water level in the particular wet well is pumped down to the elevation of the low level probe. Power to the wet well pump is restored automatically when the water level in the wet well rises to the elevation of the high level probe. Wet Wells B, C and D discharge pumped water to Wet Well A, where the water collected in Wet Well A is metered as it is pumped to the municipal sewer via the off-Site forcemain. The flow total is displayed on the central control panel located in the control building.

High water level alarms are provided in each wet well, should the pump not turn on at the high level probe. When a high level is detected in any of these wet wells, an alarm light is illuminated on the central control panel located in the control building. There is one light for each wet well. In addition, the autodialer will be activated to let appropriate staff know an alarm has occurred.

A hand/off/auto switch is located on the front door of each pump motor starter. Under normal operating conditions the switch will be in the "auto" position. This will allow the pump to run under normal operating conditions via the level switches. For testing operations, the switch can be placed in the "hand" position, allowing the pump to bypass the level switches and start immediately. For maintenance, the switch can be placed in the "off" position. A red light located on the door of each motor starter will show when the pumps are on.

5.2 STARTUP OPERATION

To start the pumping system, the operator must insure the disconnect switch is "on" and the hand/off/auto switch is in "auto" for all pump motor starters. On the central control

13.0 CONFINED SPACE ENTRY PROCEDURE

A confined space is defined as follows:

i) large enough and so configured that an individual can bodily enter and perform assigned work;
ii) limited or restricted means for entry or exit; and
iii) not designed for continuous occupancy.

A confined space provides the potential for unusually high concentrations of contaminants, explosive atmospheres, oxygen deficient atmospheres, limited visibility, and restricted movement. This section establishes requirements for safe entry into, continued work in, and safe exit from confined spaces. Access to the internal platform for regular inspection activities is generally not considered as confined space entry (see memorandum in Attachment E3). Additional information regarding confined space entry can be found in 29 CFR 1926.21, 29 CFR 1910.146, and NIOSH-106. Entry into a confined space will only be undertaken after remote methods have been tried and found not to be successful. If confined space entry is required, such work will only be undertaken following the guidelines presented in the OM&M Contractor's SOP for this work, which shall include a written lock and tag procedure.

14.0 EMERGENCY RESPONSE AND CONTINGENCY PLAN

It is essential that Site personnel be prepared in the event of an emergency. Emergencies can take many forms; illnesses or injuries, chemical exposure, fires, explosions, spills, leaks, releases of harmful contaminants, or sudden changes in the weather. The following sections outline the general procedures for emergencies. Emergency information should be posted as appropriate.

14.1 EMERGENCY CONTACTS

Fire: 911

Police: 911

Ambulance: 911

Hospital: ..... DeGraff Memorial Hospital
445 Tremont Street
North Tonawanda, New York
Telephone: 716-690-2111

Directions to the Hospital: From the Site, travel south on River Road to Wheatfield Street. Turn left and proceed to the Twin City Memorial Highway, Route 425 South. Turn right and proceed four blocks to Tremont Street. Turn right. The hospital is on the left. A map with the route to the hospital is presented on Figure E.14.1.

14.2 ADDITIONAL EMERGENCY NUMBERS

National Response Center (NRC): 800-424-8802

Agency for Toxic Substances and Disease Registry: 404-488-4100

Chemtrec: 400-424-9300

Poison Control Center: 716-878-7654

Niagara County Health Department: 716-284-3124

EPA Project Manager (Mike Negrelli): 212-637-4278

City of North Tonawanda (Dale Marshall): 716-695-8565

Town of Wheatfield (Timothy Demler): 716-438-3471

- vegetated soil cover;
- ditches and culverts;
- perimeter fencing; and
- general surface conditions.

Perimeter Collection System

- manholes;
- wet wells;
- forcemains; and
- pumps.

Groundwater Monitoring System

- groundwater monitoring wells; and
- pumps and other equipment.

Surface Water Flow Controls

- swales/ditches; and
- erosion controls.

Wetlands (Area "F")

- vegetation;
- water budget; and
- general condition of the wetlands.

The inspections will include an overall Site inspection along all access roads and perimeter security fencing. In areas that are inaccessible by vehicle, perform inspections on foot.

The monthly inspection of the PCS will include visual observation of manholes and wet wells to ensure that they are secure. Inspect the surface of the landfill cap to ensure that the integrity of the cap is being maintained. Inspect the surface of the cap for signs of

damage due to loss of vegetation, settlement, erosion, and burrowing by animals. Inspect the wetlands north of the Site for signs of damage due to loss of vegetation and changes in water budget.

Record the monthly inspections on the Monthly Inspection Log (Form 1 in Appendix F). If maintenance is required in response to inspections record details on the Maintenance Report Log (Form 2 in Appendix F). Keep all original logs on file at the control building.

6.2 WETLAND MONITORING PLAN

Restored and existing wetlands will be monitored to evaluate the success of the wetland mitigation activities and to assess impacts to the long-term integrity of the wetlands.

The monitoring of restored wetlands will be conducted for a period of five full years after completion of their construction or until functional wetlands become established based on a set criteria.

The monitoring of the constructed and restored wetlands will provide a means to evaluate the success of the mitigation effort by comparing monitoring data with the performance goals of the endeavor and the baseline situation that the mitigation plan replaced. In the case of this program, one of these goals is clearly to enhance the quality of existing wetlands by the elimination of current stresses. Measurable goals are included for revegetation.

6.2.1 VEGETATION

The goal of this program is to restore 0.17 acres of wetlands and restore any wetland resources that may have been damaged by construction activities. This includes the restoration of emergent wetlands through the use of introduced plantings as well as natural succession.

Revegetation will be evaluated using permanent representative transects and by recording the vegetation in square meter plots located at regular 50-foot intervals along the transects. Percent cover, relative frequency, and wetland frequency indicator value of each species, water level, soil type, and pH will be recorded. Percent cover and the average wetland frequency indicator value for each plot will be compared to the measurable criteria for the goals established below. A minimum of two transects will be located within each of the proposed habitat types. Each plot will be photographed from

the same position during each year to provide a photographic record of the wetland development.

"Percent cover" refers to the portion of a defined square meter area along a transect in the study which is covered by growth of plants identified as hydrophytes when compared with the entire square meter which can include upland species of plants, bare ground and/or open water.

The total area of hydrophytes is determined by measurement and reported as a fraction of a square meter. This fraction is multiplied by 100 to produce a percentage value. Where more than one sample is involved from comparable plots in the same habitat area, the percentage figures can be averaged to obtain a value for the overall habitat.

Measurable Criteria	*Percent Cover (+ or - 10%)*
First Year Goal	40%
Second Year Goal	50%
Third Year Goal	60%
Fourth Year Goal	70%
Fifth Year Goal	80%

The term "wetland frequency indicator value" is a method of evaluating the frequency of hydrophyte species in a wetland area and reducing these observations to a numerical value which can serve as the basis for repeated measurements in successive years.

Plant Indicator Status Categories are as follows:

Indicator Category	*(#)*	*Indicator Symbol*	*Definition*
Obligate Wetlands	**1.0**	OBL	Plants that occur almost always (estimated probability >99%) in wetlands under natural conditions, but may also occur rarely (estimated probability <1%) in non-wetlands
Facultative Wetland Plants	**2.0**	FACW	Plants that occur usually (estimated probability >67% to 99%) in wetlands, but also occur (estimated probability 1% to 33%) in non-wetlands

Indicator Category	*(#)*	*Indicator Symbol*	*Definition*
Facultative Plants	**3.0**	FAC	Plants with a similar likelihood (estimated probability 33% to 67%) of occurring in both wetlands and non-wetlands

The bold numbers noted above are assigned to identify each classification uniquely. At least two transects will be established in each of the wetland habitats and plots of 1 square meter will be established at 50-foot intervals along these transects. Using the species listing identified earlier, the plants found in each of the plots will be identified and classified as to their status on the above table with the appropriate status number and entered in the log of that plot for each plant found within the plot. The average will be calculated for each lot and for each habitat based upon all of the plots present therein.

In the case of the establishment of emergent wetland habitats, a greater variety of plants may be present in the site and represented in the seed bank. Therefore, a figure of 3.0 is the initial value employed which provides equal weight to the entire range of groups. With the introduction of hydrophtye stocks and seeding as well as with appropriate management and water budget, selection pressures will allow a successional process to exert itself shifting the wetland frequency indicator value to lower numbers as the numbers of wetland species are enhanced while the number of upland species diminishes.

Evaluation of the communities within the plots along the transects over succeeding years will provide a means of generating numerical values which are capable of being compared from one season to the next to quantify the success of wetland community establishment. It is assumed that the location of transects and sample plots will be subject to EPA/DEC review in the field prior to approval of the monitoring effort.

The following provides an example of the expectations for the frequency indicator values during a five year period of wetland management.

Measurable Criteria Wetland Habitat	*Wetland Frequency Indicator (+ or - 0.3) Year*				
	1	*2*	*3*	*4*	*5*
Emergent Wetland	3.00	2.67	2.33	2.00	1.67

Specific management efforts for biological communities will not be brought into play unless there is evidence that invasive species of plants such as reed grass, narrow leaf

cattail, or purple loosestrife make this necessary. If these species become a problem, the area impacted will be identified and, with the consent of the EPA/DEC, methods will be applied to eliminate the problem. Methods used will include physical removal with replanting of more desirable species. Alternatively, limited and controlled burning methods may be used to eliminate these plants. The use of herbicides will not be recommended. Alternative monitoring methods may also be employed as deemed necessary to accomplish the evaluation of the biological community on Site or substituted for the above approach with EPA/DEC approval.

6.3 MAINTENANCE PLAN

Maintenance is required when inspections reveal a need to maintain one of the remedial systems or when system components malfunction. If inspections reveal that non-emergency maintenance or response is required, complete the work as soon as feasible in order to eliminate further damage and the need for emergency repairs. If a situation requires immediate action, initiate emergency remedial actions immediately. Notify DEC of all emergency actions.

All replacement equipment must be of equal or better quality than the original components and when possible should be the same make and model as the original. All replacement materials must meet or exceed the RA construction specifications. A summary of potential problems that will require maintenance and the appropriate corrective actions is summarized in Table 6.2.

Unique or complex maintenance activities including maintenance of the PBS, soil and landfill materials beneath the membrane layer of the cap, well installation or abandonment, electrical or control system repair, and any other maintenance activity not specifically covered by this OM&M Manual will require an activity specific work plan and health and safety plan. Activity specific work plans and health and safety plans will be based on the RA procedures and RA HASP and will be modified to address the specific activities. Typical maintenance activities not requiring an activity specific work plan include the following:

Final Landfill Cap

- fertilizing and restoring the Site vegetative cover, and removing/cutting weeds or bushes;
- repairing Site access roads;

- repairing surficial erosion and sloughing along the perimeter slopes;
- mowing vegetative cover;
- repairing damage caused by burrowing wildlife, presence of deep-rooted weeds, or other vegetation;
- repairing or replacing fencing, signs, and locks;
- repairing leachate seeps;
- cleaning ditches and culverts; and
- repairing swale outlets.

Perimeter Collection System

- cleaning manholes/wet wells and forcemains; and
- securing and repairing access covers.

Wetlands (Area "F")

- restoring vegetation and control and removal of undesirable vegetation; and
- repair of surficial erosion, washouts, and sediment buildup.

6.3.1 LANDFILL CAP

The purpose of the landfill cap is to reduce infiltration of precipitation into the landfill, prevent erosion of landfill materials, and eliminate direct human contact with the landfill materials. The layers of the cap work together to achieve these goals, therefore each one of the layers is necessary for the landfill cap system to function effectively. When a situation that may require maintenance is detected with the cap, correct it as soon as possible.

6.3.1.1 VEGETATIVE COVER

Visible indications of situations requiring maintenance that may occur with the vegetative cover include bare areas, dead or dying vegetation, and growth of weeds or bushes. When inspection reveals bare areas or dead or dying vegetation, perform the following actions as soon as feasible to correct the situation:

- check for cracks in the soil from which water or gas may be escaping (if identified, a subsurface investigation of the geomembrane liner is necessary – see Section 6.3.1.3);
- till the topsoil;
- re-seed and mulch; and
- cover slopes with a temporary erosion control (jute) mat.

Cut the vegetative cover annually (in the spring) to remove all bushes, woody growth, and tall weeds to prevent their roots from penetrating the cap and damaging the geonet and geomembrane liner. Each year, only portions of the cover should be mowed (preferably in wide strips) to ensure suitable areas for the native habitat at all times.

6.3.1.2 BARRIER PROTECTION AND TOPSOIL LAYERS

Visible indications of situations that require maintenance of the barrier protection and topsoil layers include washout and erosion, settlement, standing water, and animal holes or burrows..

If the cap has been damaged by erosion or a washout has occurred, perform the following actions to correct the problem:

- recover the washed out soil;
- backfill with recovered soil and additional soil to the original barrier protection layer design thickness;
- place a 6-inch thick layer of topsoil over the barrier protection layer;
- check the final elevation to ensure adequate drainage; and
- seed/mulch and cover slopes with an erosion control (jute) mat.

Settlement and standing water can be corrected by either regrading or by placing additional topsoil in the low areas.

Correct animal holes or burrows by performing the following actions:

- capture and remove the rodents;
- carefully excavate the area around the burrow and inspect the VFPE liner (if the liner requires repairs follow the steps discussed in Section 6.3.1.3);
- replace the barrier protection and topsoil layers to the original design thickness; and

- seed/mulch and cover slopes with an erosion control (jute) mat.

6.3.1.3 LOW PERMEABILITY LAYER

If the 40-mil VFPE liner is punctured, take the following steps to repair it:

- carefully excavate the soil above the liner (do not use a mechanical excavator or backhoe);
- cover the puncture with a 40-mil VFPE patch that extends a minimum of 6 inches beyond the edges of the puncture;
- seal the patch in place by extrusion welding it to the liner;
- vacuum test the seam to ensure a complete seal;
- record the results of the test, and location and size of the patch;
- replace the barrier protection and topsoil layers to the original design thickness; and
- seed/mulch and cover slopes with an erosion control mat.

6.3.1.4 GROUNDWATER SEEPS

Groundwater seeps may occur where the groundwater path to the PCS is blocked or restricted. Seeps may also occur if one of the collection pipes is blocked and the PCS is flooded. A groundwater seep will appear as a groundwater discharge from the landfill slope. Corrective actions for leachate seeps require excavation below the geomembrane liner and will require an activity specific work plan and health and safety plan.

6.3.1.5 ACCESS ROADS

Visible indications of problems which may occur with Site access roads include depressed areas, loss of stone cover, washed out surface soils from adjacent areas, potholes, puddles, and obstructions.

If the road surface is washed out, take the following actions as soon as feasible:

- recover washed out soil and remove stone (as practical);
- use recovered soil to backfill the eroded areas to the original grade; and
- add new store as necessary.

When a puddle or pothole is detected, take the following actions as soon as feasible:

- backfill with new stone to original grade.

If the access road is obstructed by an object, take the following actions as soon as possible:

- remove the obstruction; and
- place the obstruction in a secure area pending off-Site disposal.

6.3.2 PERIMETER SYSTEMS AND FORCEMAIN

The purpose of the PCS is to eliminate groundwater flow from on-Site to off-Site areas, to reduce groundwater flow from overburden to bedrock beneath the Site, and to reduce the concentration of chemicals in on-Site groundwater. All of the PCS components work together to achieve these goals, therefore each component is necessary for the system to function effectively. When a problem is detected with the PCS, correct it as soon as possible.

6.3.2.1 PERIMETER COLLECTION PIPE

A visible indication of problems which may occur with the perimeter collection drain is an increase in water level in some parts of the PCS and a decrease in discharge flow. This indicates that the pipe is blocked and groundwater flow is restricted. Take the following actions as soon as possible:

- pressure flush the pipe sections that are plugged; and
- vacuum sediments and debris from manholes and wet wells.

Use pressures in the range of 500 to 1,000 psi to avoid damaging the collection pipe and/or bedding. Dispose of the material removed from downstream manholes at an approved off-Site location.

6.3.2.2 PERIMETER BARRIER WALL

Visible indications of problems which may occur with the PBS include excessive flow in the adjacent collection pipe and the dewatering of adjacent wetlands. Take the following actions as soon as possible:

- determine the section of barrier wall requiring repair;
- excavate the barrier wall;
- reconstruct the barrier wall to the original construction specifications; and
- reconstruct the excavated cap to the original lines and grades.

6.3.2.3 MANHOLES AND WET WELLS

Visible indications of problems which may occur with manholes and wet wells include cracks which allow water to infiltrate, damaged or missing covers, and loose ladder rungs or safety platforms.

If water is leaking through cracks on the inside of a manhole or wet well, repair the cracks with cement mortar. If a cover is damaged or missing, replace it. If a ladder rung or safety platform is loose, use cement mortar to re-affix the loose rung or safety platform support to the inside of the manhole or wet well.

6.3.2.4 FORCEMAIN

A visible indication of problems which may occur with the forcemain is a decrease in discharge flow. This indicates that the forcemain may be blocked or leaking.

If the forcemain is blocked, take the following actions as soon as possible:

- shut down the PCS;
- drain the section of forcemain that is blocked;
- pressure flush the forcemain section;
- vacuum sediments and debris from manholes or wet wells; and
- restart the PCS.

If the forcemain is leaking, take the following actions as soon as possible:

- shut down the PCS;
- drain the section of forcemain that is leaking;
- excavate the forcemain and repair leak;
- reconstruct the forcemain to the original construction specifications; and
- reconstruct the excavated PCS and cap to the original lines and grades.

6.3.2.5 ELECTRICAL AND CONTROL SYSTEMS

6.3.2.5.1 CONTROL PANEL

Periodically test the autodialer by forcing an alarm and verifying the first person on the dial out list is called.

There is no other preventative maintenance to be done on the control panel. If a malfunction should occur a qualified technician should do troubleshooting.

6.3.2.5.2 FIELD INSTRUMENTS

The following preventative maintenance should be performed on a periodic basis:

- Inspect all level float switches in each wet well for build-up of deposits and clean if required;
- Manually raise the high level float switches in each well and insure the alarm light in the control panel is illuminated;
- Inspect and clean the strainer in Wet Well A;
- Verify flow accumulation is indicated when a Wet Well A pump is run; and
- Have a qualified contractor test the fire/intrusion system.

If improper operation is encountered, a qualified technician should do troubleshooting.

6.3.2.5.3 ELECTRICAL EQUIPMENT

6.3.2.5.3.1 SURGE PROTECTION DEVICE

If red indicating light (LED) is "on", protection against surges, spikes and transients is reduced. Take the following actions as soon as practical:

- Open door. Observe additional red lights (LED's) "on" which indicate modules and fuses needing to be replaced.
- Ascertain that appropriate replacement parts are available.
- Electrician services will be required to replace defective components.

Free replacement modules and fuses are available from MCG Surge Protection Co. call 1-800-851-1508 or e-mail to mcginfo@mcgsurge.com

6.3.2.5.4 EXHAUST FAN

If exhaust fan does not operate when louvers have opened, check motor control center (MCC) circuit breaker is at "on" position. If "tripped," and resetting to "on" position does not restore normal operation:

- Check operation with selector switch at "hand" position. If fan motor does not operate call an electrician.
- Check operation with selector switch at "automatic" position. If temperature in room is above thermostat set point and system does not operate, call an electrician.

6.3.2.5.5 MOTOR CONTROL CENTER (MCC)

In the event any load serviced from the MCC fails to operate:

- Check circuit breakers handle position.
- If "tripped", reset to "off", lockout, tag and check connected equipment for visible damage, obstruction or other factors that would prevent proper operation.
- Repair damages and/or remove obstructing material.

- Remove tag and lock, turn circuit breaker handle to "on". If equipment does not operate and/or circuit breaker handle again trips, turn handle to "off". Electrician services will be required to further analyze and locate the malfunction.

6.3.2.5.5.1 UNIT HEATER

If unit heater and fan do not operate, check that circuit breaker at MCC is at the "on" position:

- If circuit breaker is at "tripped" position, reset to "on".
- If circuit breaker trips, call an electrician.
- If unit is still not operating, check if thermostat setting calls for heat. If unit does not operate, call an electrician.

6.3.2.6 PUMPS

If a wet well pump stops responding to the pump controls, take the following actions as soon as feasible:

- attempt to operate the pump in manual mode;
- if it does not respond, shut down lockout and tag the pumping system;
- inspect the pump for blockage;
- disconnect the pump and drain it into the wet well;
- wrap the pump in plastic sheeting;
- install spare pump;
- remove the lockout and tag and restart the pumping system; and
- clean and repair the damaged pump according to the manufacturer's instructions and store it for future use. If the pump cannot be repaired, replace the pump with a new one.

If the pump is restarting too frequently, reduce the pumping rate or increase the distance between the start and stop level probes, if possible.

6.3.3 WETLANDS

When a problem is detected with the restored wetlands to the north of the Site, correct it as soon as practical.

Visible indications of problems which may occur with the wetlands vegetation include dead or dying vegetation and growth of invasive plant species. When inspection reveals dead or dying vegetation or the presence of invasive plant species, perform the following actions as soon as feasible to correct the problem:

- remove all invasive plant species by hand or by controlled burning (with EPA/DEC approval); or
- replant with desirable species.

If the wetlands have become damaged by erosion or washout, perform the following actions to correct the problem:

- recover the washed out soil;
- backfill with recovered soil and additional soil to the original ground elevation (this may be below the water surface); and
- replant with desirable species.

If the wetlands become clogged with sediment, perform the following actions to correct the problem:

- excavate the sediment to the original ground elevation (this may be below the water surface); and
- replant with desirable species.

6.3.4 OTHER SITE SYSTEMS

Other Site systems include perimeter fences, signage, and drainage ditches. When a problem is detected with these systems, correct it as soon as practical.

6.3.4.1 PERIMETER FENCE AND SIGNS

Visible indications of problems which may occur with the perimeter fence and signs include broken locks or gates, gaps in the fence, and missing or damaged signs.

If locks or gates are missing or damaged, replace them as soon as possible. If there are gaps in the fence repair or replace the damaged section as soon as practical. If warning signs are damaged or missing, replace them as soon as practical.

6.3.4.2 DRAINAGE DITCHES AND SWALES OUTLETS

Visible indications of problems which may occur with the Site drainage ditches include bare areas, dead or dying vegetation, displaced rip rap, and the accumulation of obstructions or debris. When inspection reveals bare areas or dead or dying vegetation, perform the following actions to correct the problem:

- till the topsoil;
- re-seed and mulch; and
- cover drainage ditch with erosion control mat.

If rip rap become displaced at the swale outlets, recover the stones and replace them in their original position. Remove any obstructions or debris accumulated in the drainage ditches.

6.4 DISPOSAL OF USED MATERIAL AND WASTE

Containerize material and waste containing Site-related chemicals and temporarily stage the containers on Site. Clearly label each container. When a sufficient quantity of containers have been accumulated at the Site, ship them to a licensed off-Site disposal facility in accordance with all applicable Federal and New York State Regulations.

6.5 MAINTENANCE RECORDS

A record of all maintenance performed at the Site will be kept at the on-Site control building. The record will include a description of the work performed, who it was performed by, and comments which may arise. Form 2 (Appendix F) provides a maintenance record log for this purpose.

6.6 REMEDIAL WORKS

Should inspections reveal that non-emergency maintenance or response is required, it will be completed as soon as practical in order to preclude further damage and the need for emergency repairs. Should a situation exist requiring immediate action, on-Site personnel must initiate emergency or remedial response actions. Notify EPA and DEC of any emergency actions.

Should remedial action, both emergency or non-emergency, require excavation into the landfill cap or PBS, notify EPA prior to commencing the work.

7.0 REPORTS

Data Summary Reports, Monitoring Reports, and Inspection and Maintenance Reports will be submitted to EPA and DEC. Data Summary Reports will be submitted at the same frequency as sampling events, after QA review, as detailed in Section 4.5.

Monitoring Reports will be submitted annually and will include the results of all environmental monitoring performed at the Site during the previous year. The Monitoring Reports will include:

- analytical results and appropriate QA/QC data;
- hydraulic monitoring data;
- an evaluation of the effectiveness of the PCS, including tables and figures generated; and
- recommendations for program revisions or system revisions, if appropriate.

Inspection and Maintenance Reports will be submitted annually and will include a description of all inspection and maintenance activities performed at the Site during the previous year, including recommendations for system improvements which would reduce the need for future unscheduled maintenance activities.

Copies of all Monitoring Reports and Inspection and Maintenance Reports will be submitted to EPA and DEC at the following offices:

Mr. Kevin Lynch, Chief
Western New York Remediation Section
EPA-Region 2
290 Broadway
New York, NY 10007-1866

Mr. Martin Doster
NYSDEC - Region 9
270 Michigan Avenue
Buffalo, NY 14203-2999

Mr. Gerald J. Rider, Jr.
Operation, Maintenance, and Support Section
NYSDEC
50 Wolf Road - Room 260
Albany, NY 12233-7010

Mr. Daniel King
NYSDEC, Regional Headquarters
Division of Environmental Remediation
270 Michigan Avenue
Buffalo, NY 14203-2999

8.0 COMMUNITY RELATIONS PLAN

8.1 CITIZEN PARTICIPATION PLAN

A Community Relations Plan will be developed by EPA and support will be provided by the TSC as requested.

8.2 CONTACT LIST

For press release information contact the Region 9 Citizen Participation Specialists at:

Michael Podd
Region 9 Citizen Participation Specialist
270 Michigan Avenue
Buffalo, NY 14203
(716) 851-7220

Patty Nelson
Region 9 Citizen Participation Specialist
270 Michigan Avenue
Buffalo, NY 14203
(716) 851-7010

8.3 FREEDOM OF INFORMATION LAW

Under the Freedom of Information Law, many records are available to the public for review. To obtain information, send a written request to the address below.

Records Access Officer
New York State Department of Environmental Conservation
50 Wolf Road
Albany, NY 12233-1016

9.0 PERSONNEL

This section describes the required minimum experience for key project personnel, responsibilities of the personnel, the organizational structure, and lines of communication and authority for the performance of the OM&M Manual at the Site.

9.1 ORGANIZATION

The OM&M Manual will be carried out by an OM&M Contractor(s) selected by the TSC. The evaluation of monitoring results, preparation of monitoring reports, design of significant contingency measures, and Site oversight/construction management will be coordinated by an OM&M Project Manager retained by the TSC. The organization chart including chains of command for the performance of the OM&M Manual is presented on Figure 9.1.

9.2 PERSONNEL REQUIREMENTS

Personnel requirements for the various OM&M activities are presented in Table 9.1.

9.3 RESPONSIBILITIES AND DUTIES

The RD/RA Participation Agreement among the Potentially Responsible Parties (PRPs) provides for OM&M as follows:

- Treat leachate discharged via off-Site forcemain - City of North Tonawanda;
- Collect groundwater, surface water, and effluent samples - City of Niagara Falls;
- Perform hydraulic monitoring - City of Niagara Falls;
- Lab analysis of all collected water samples - City of North Tonawanda;
- Prepare Data Summary Reports - TSC;
- Assemble information and prepare reports to EPA - TSC (or OM&M Project Manger/Contractor); and
- All other OM&M costs including inspection, operation, maintenance - TSC.

A description of the required duties and qualifications of the key personnel is presented below.

The TSC will have responsibility for overseeing/ensuring performance of administrative functions in accordance with the OM&M Manual. The TSC will assign an OM&M Project Manager and will retain the services of an OM&M Contractor(s) to perform the OM&M tasks. The OM&M Project Manager and the OM&M Contractor may be the same entity.

OM&M Project Manager

The TSC will assign an OM&M Project Manager who will have overall responsibility for the evaluation of monitoring results, preparation of monitoring reports, design of significant contingency measures, and Site oversight/management. The OM&M Project Manager will coordinate communications between the EPA, TSC, and OM&M Contractor(s). The OM&M Project Manager will ensure that adequate resources are committed by the OM&M Contractor(s) to properly manage monitoring and construction activities and will have 10 years or more of related experience.

OM&M Contractor's Project Manager

The OM&M Contractor will assign a Project Manager, subject to the approval of the OM&M Project Manager. The OM&M Contractor's Project Manager will have overall responsibility for the performance of all OM&M activities involving the OM&M Contractor. The OM&M Contractor's Project Manager will ensure adequate resources are committed by the OM&M Contractor to perform required activities and will have 10 years or more of related experience.

9.4 WORKER HEALTH AND SAFETY TRAINING

Prior to performing any Site activities, all personnel who will be or are expected to be involved with Site activities will attend a Health and Safety/Site Indoctrination Session.

The training program will stress the importance that each attendee understands the basic principles of personnel protection and safety, be able to perform their assigned job tasks in a safe and environmentally responsible manner, and be prepared to respond in an appropriate manner to any emergency which may arise. A description of the Site will be included and the various components of the HASP will be presented followed by an opportunity to ask questions to ensure that each attendee understands the HASP. Personnel not successfully completing this training program will not be permitted to enter or work at the Site. Personnel successfully completing this training program shall

sign an acknowledgment form, a copy of which is presented as Attachment E1 in Appendix E (HASP).

Personnel involved in water sampling and/or handling, confined space entry, PCS and/or forcemain system cleaning or repair, cap repair (beneath the liner), and liner repair will require Occupational Safety and Health Administration (OSHA) training as defined by 29 CFR 1910.120. The Site Health and Safety training will be given in addition to the basic training required under OSHA and is not intended to meet the requirements of 29 CFR 1910.120. Prior to working in or entering an exclusion zone environment (as defined in the HASP), all personnel will be required to provide documentation to the OM&M Project Manager indicating successful completion of the training requirements of 29 CFR 1910.120. This includes a certificate for the initial 40 hours of training, a current eight-hour refresher certificate, and additional eight-hour certificates for managers or supervisors.

10.0 HEALTH AND SAFETY PLAN

The Health and Safety Plan (HASP) is detailed in Appendix E.

11.0 RECORDS

All records resulting from OM&M activities will be stored on Site in the control building and will be available for inspection by EPA personnel after a written request has been received by the TSC.

12.0 EMERGENCY CONTINGENCY PLAN

The Emergency Contingency Plan, including contingency actions for emergency spill response, fire/explosion, personal injury and toxic exposures, public notification, and emergency telephone numbers is detailed in the HASP (Appendix E).

13.0 RECORD DRAWINGS

Record drawings are provided in Volume 3.

TABLE 6.1

MONTHLY INSPECTION AND PREVENTATIVE MAINTENANCE
OPERATION AND MAINTENANCE MANUAL
NCR SITE, WHEATFIELD, NEW YORK

Item	*Inspect For*
1. Perimeter Collection System	
Manholes	- cover on securely - condition of cover - condition of inside of manhole - flow unrestricted, manhole free of obstructions
Wet Wells	- cover on securely - condition of cover - condition of inside of wet well
2. Landfill Cap	
Vegetated Soil Cover	- erosion, bare areas, washouts, leachate seeps, length of vegetation, dead/dying vegetation
Access Roads	- erosion, obstructions, potholes, puddles, debris
Perimeter Fence	- integrity of fence, gates, locks, placement and condition of signs
Vegetation	- bare areas, length of vegetation, dead/dying vegetation
Drainage Ditches	- sediment build-up, erosion, condition of erosion protection, obstructions, dead/dying vegetation
Culverts	- sediment build-up, erosion, condition of erosion protection, obstructions, debris
3. Wetlands	
Vegetation	- dead or dying vegetation, presence of invasive species such as reed grass, narrow leaf cattail, or purple loosestrife
General Condition	- erosion, washouts, sediment build-up

TABLE 6.2

POTENTIAL PROBLEMS AND APPROPRIATE CORRECTIVE ACTIONS
OPERATION AND MAINTENANCE MANUAL
NCR SITE, WHEATFIELD, NEW YORK

Areas of Concern	*Potential Problem*	*Action*
Perimeter Collection System/Forcemain		
Perimeter Collection Pipe/Forcemain	Blockage in pipe. Will restrict groundwater flow. Water level may not be maintained at desired elevations.	Pressure flush pipe sections that are plugged. Vacuum sediments and debris from manholes and wet wells.
Barrier Wall	Leakage through barrier wall. Dewatering of adjacent wetlands. Excessive flow in collection pipe.	Determine section of barrier wall requiring repair. Excavate and reconstruct barrier wall to original construction specifications.
Final Landfill Cap		
Vegetated Soil Cover	Washout and erosion of vegetation, topsoil, clay, or sand. Typically on steep slopes.	Take immediate action to prevent further erosion and to protect exposed refuse. Recover washed out soil. This material may be used to restore the eroded area. Backfill with additional soil to original cover design thickness. Re-seed. If seeding slopes, erosion control mat is recommended.
	Bare areas.	Loosen and till topsoil. Re-seed and mulch as necessary. Perform restoration as soon as feasible.
	Settlement of original cover. Standing water. Dry bare areas.	Assess size of settlement and potential impact to drainage or low permeability layers. Till topsoil and grade. Add additional topsoil if necessary. Check final elevation to ensure adequate drainage. Re-seed and mulch. Regrading of topsoil should be sufficient to correct minor ponding. Additional soil may be required for significant ponding.
	Dead/dying vegetation (potential for erosion).	Till topsoil and re-seed. Cover with erosion control mat or mulch.
	Weeds/bushes. Deterioration of desired vegetation. Potential penetration through cover if left unattended.	Remove all bushes and tall weeds. Re-seed as required. Perform annually as a minimum.
	Animal holes/burrows. Safety hazard. Potential for soil cover erosion.	Capture and remove rodents. Excavate area carefully and inspect VFPE liner. Seal any holes in liner. Replace topsoil as required in specifications. Seed and mulch.

TABLE 6.2

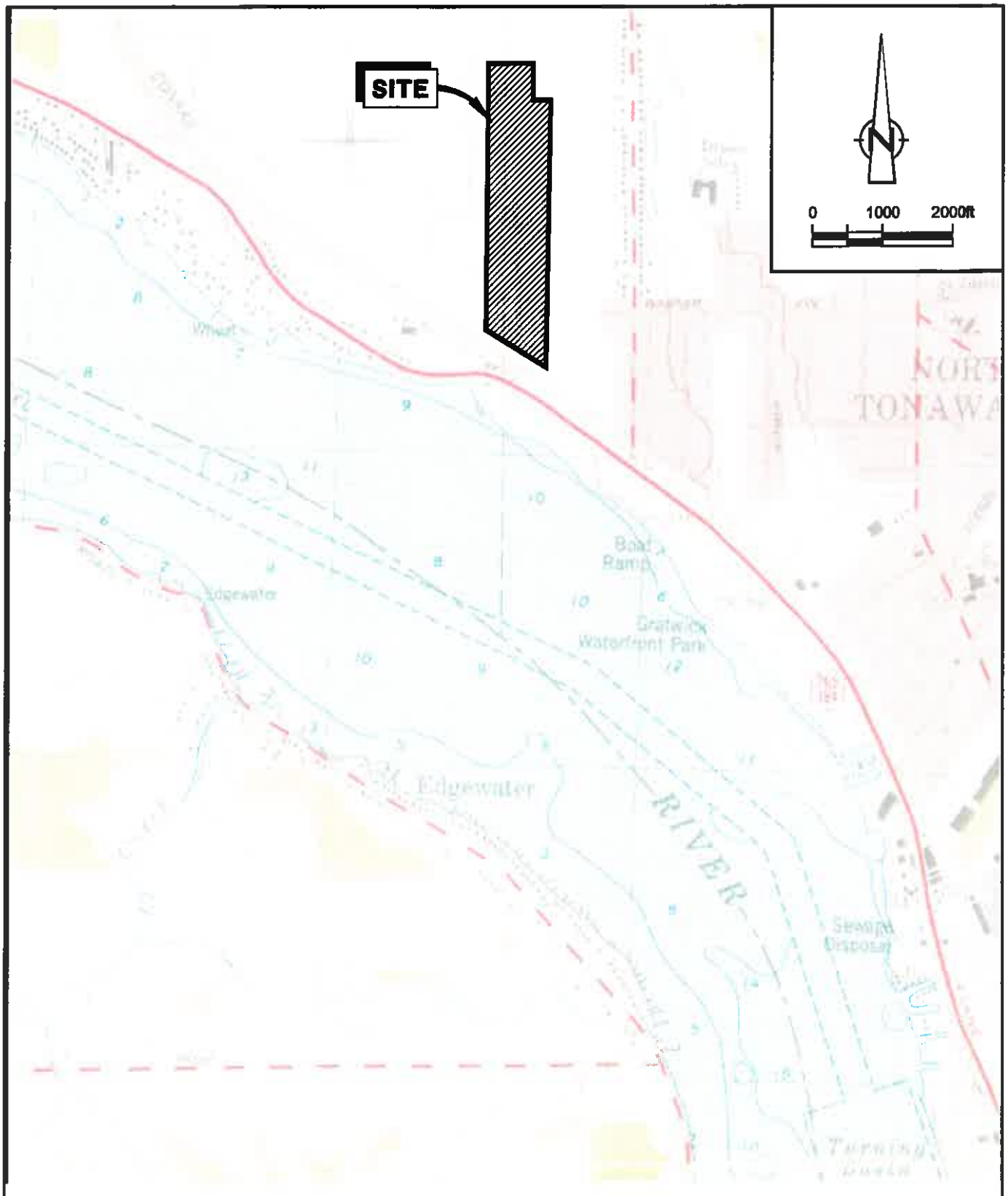
POTENTIAL PROBLEMS AND APPROPRIATE CORRECTIVE ACTIONS
OPERATION AND MAINTENANCE MANUAL
NCR SITE, WHEATFIELD, NEW YORK

Areas of Concern	*Potential Problem*	*Action*
Landfill Cap (continued)		
Sideslopes	Groundwater seeps.	Strip topsoil and remove cap material. Excavate through material/layer restricting leachate flow to collection system. Replace and compact material to required specifications. Replace topsoil and apply seed and mulch. Pressure flush leachate collection system.
	Bare areas, dead or dying vegetation	Till topsoil, re-seed and mulch as necessary. Perform restoration as soon as feasible.
	Washed out surface soils.	Recover washed out soils. Use this material to restore the eroded area. Backfill to original grade. Seed and mulch. Cover edge slopes with erosion control mat.
Access Roads	Potholes or puddles (potential safety hazard).	Backfill to original grade. Seed and mulch.
	Obstructions (safety hazard).	Remove obstruction as soon as possible. Place in secure area pending off-Site disposal.
Other Site Systems		
Gates and Locks	Vandalism. Site security.	Replace and secure locks as necessary. Make sure locks are operational.
Perimeter Fence	Forced entry or seasonal damage.	Repair or replace as needed.
Signs	Tampering or theft.	Repair or replace signs.
Ditches/Swale Outlets	Sediment or obstruction in ditch, swale, or culvert.	Remove sediment and stockpile as topsoil for future repairs.
	Smothering of vegetation and interruption of normal surface water flow.	Replace vegetation or re-seed and mulch if damaged.
	Rip rap displaced.	Replace rip rap as necessary.
Other Unforeseen Problems		Record problem on Inspection Log. Notify Project Manager for appropriate action.

TABLE 9.1

PERSONNEL REQUIREMENTS
OPERATION AND MAINTENANCE MANUAL
NCR SITE, WHEATFIELD, NEW YORK

Monitoring and Testing Activities	
• groundwater monitoring	one or two person monitoring/sampling crew
• surface water monitoring	one or two person monitoring/sampling crew
• effluent monitoring	one person monitoring/sampling crew
Inspection Activities	
• all inspection activities except those requiring confined space entry	one Inspector
• all inspection activities requiring confined space entry	one Inspector and two Support Persons
Maintenance Activities	
• all maintenance activities	OM&M Contractor's crew
Operation Activities	
• all operation activities	as appropriate



SOURCE: U.S.G.S., SW/4 TONAWANDA 15' QUADRANGLE, OHIO

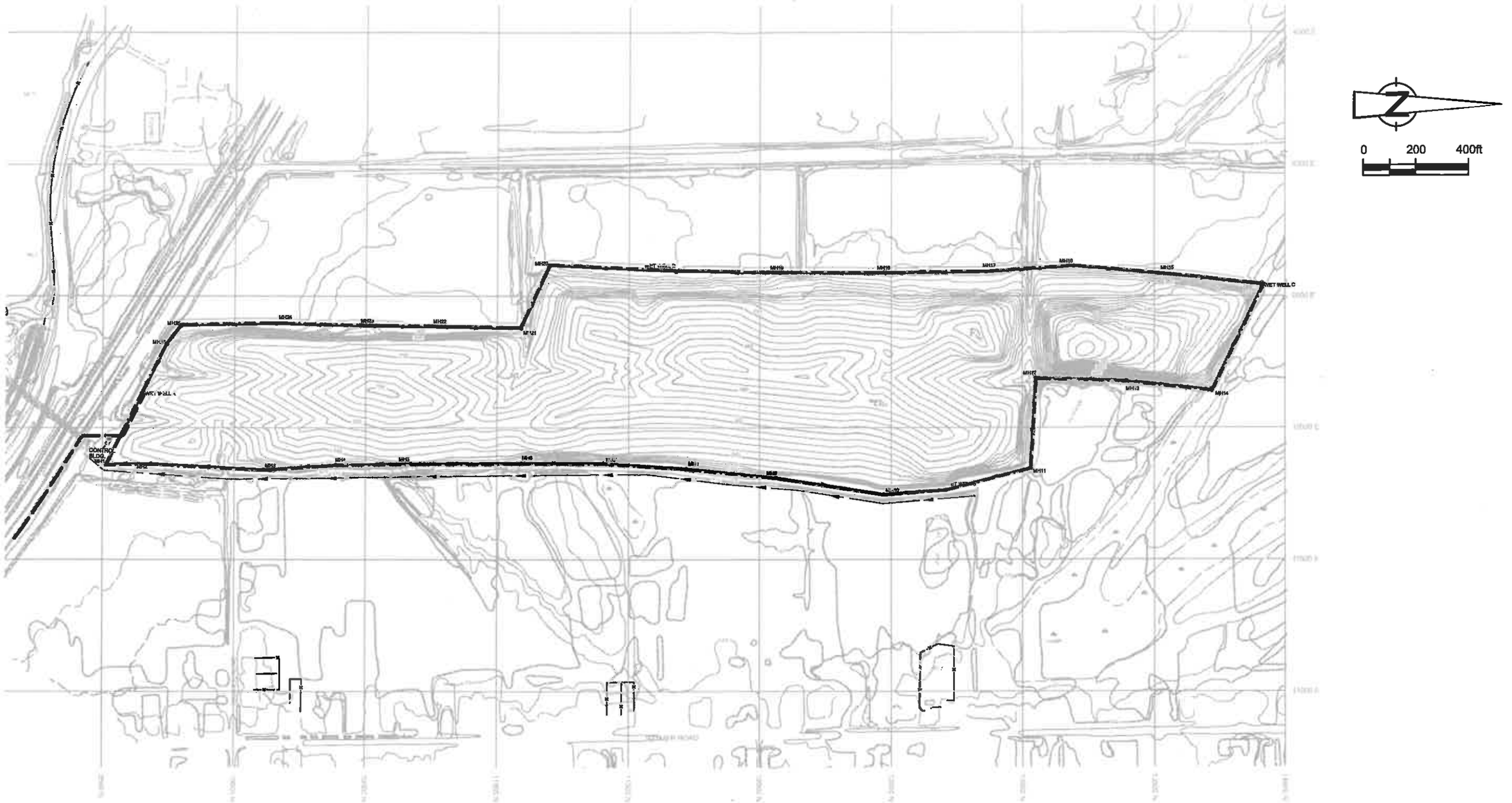
NEW YORK

figure 2.1

SITE LOCATION
OPERATION, MAINTENANCE AND MONITORING MANUAL
NIAGARA COUNTY REFUSE SITE
Wheatfield, New York

CRA

05723-00(017)GN-WA001 AUG 18/2000



LEGEND

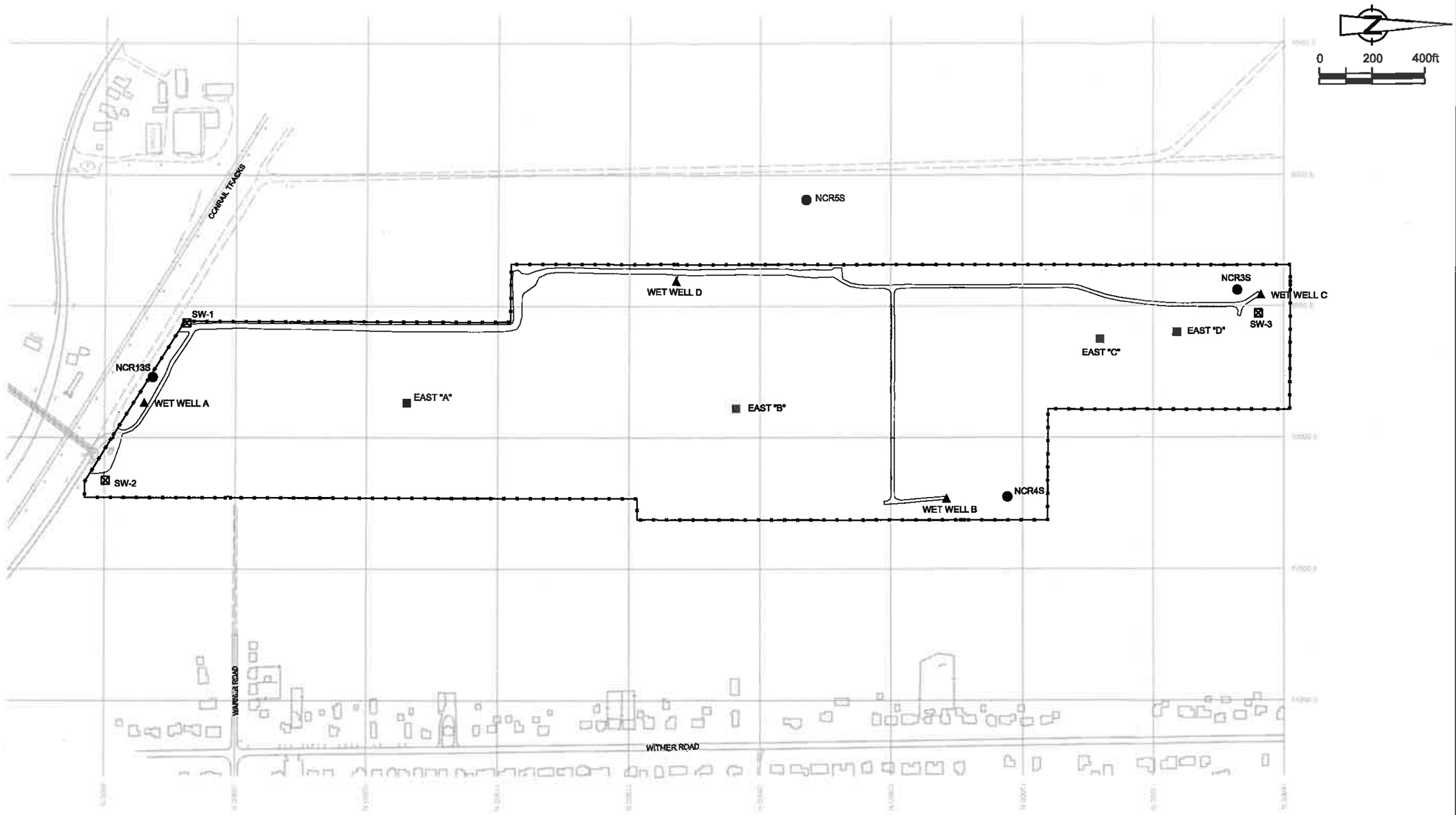
585	FINAL GROUND CONTOUR
	PERIMETER COLLECTION SYSTEM
	PERIMETER BARRIER TRENCH
MH1 ●	PERIMETER COLLECTION SYSTEM MANHOLE
WET WELL A ■	PERIMETER COLLECTION SYSTEM WET WELL
	OFF- SITE DISCHARGE FORCEMAIN
	EAST SIDE STORM SEWER
	FENCE LINE
	TREE LINE
	RAILWAY TRACKS
575	GROUND CONTOUR
	SWAMP\WETLANDS

CRA

05723-00(017)GN-WA007 AUG 18/2000

figure 2.2

SITE LAYOUT
NIAGARA COUNTY REFUSE SITE
Wheatfield, New York



LEGEND

EAST "A"	HYDRAULIC MONITORING LOCATION
SW-2	SURFACE WATER MONITORING LOCATION
WET WELL A	EFFLUENT MONITORING LOCATION
NCR13S	GROUNDWATER QUALITY MONITORING LOCATION

figure 4.1

MONITORING NETWORK
OPERATION, MAINTENANCE AND MONITORING MANUAL
NIAGARA COUNTY REFUSE SITE
Wheatfield, New York

CRA

05723-00(017)GN-WA002 AUG 18/2000

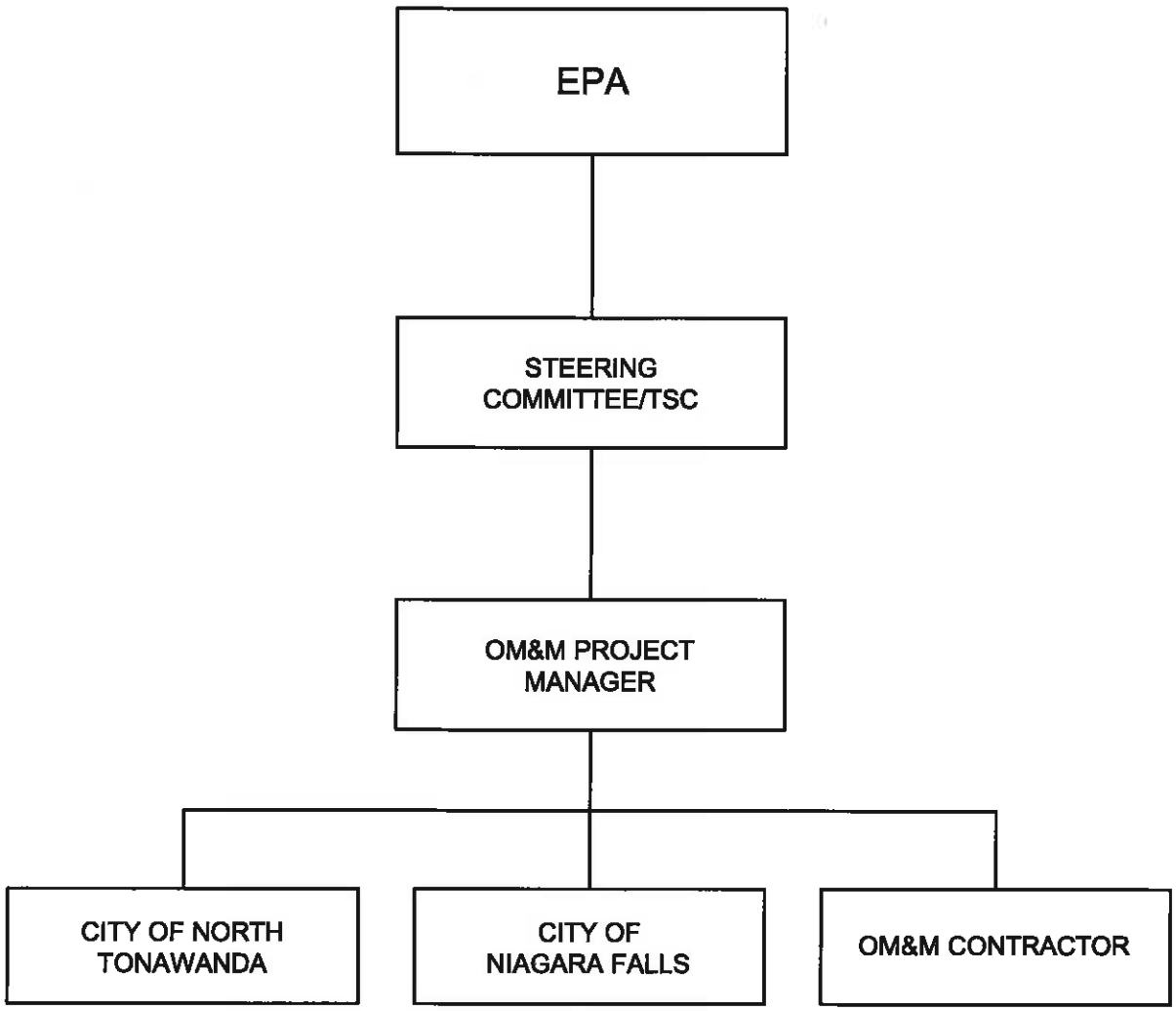


figure 9.1

ORGANIZATIONAL CHART
OPERATION, MAINTENANCE AND MONITORING MANUAL
NIAGARA COUNTY REFUSE SITE
Wheatfield, New York

CRA