

**POST CLOSURE OPERATION, MAINTENANCE,
AND MONITORING MANUAL
GORICK C & D LANDFILL CLOSURE
TOWN OF KIRKWOOD
BROOME COUNTY, NEW YORK**

**January 8, 2001
Amended: April 25, 2001
Amended: November 15, 2001**

**Prepared For:
GORICK CONSTRUCTION COMPANY
27 TRACK DRIVE
BINGHAMTON, NEW YORK 13904
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Project No. 51.7196

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Figure 1 Site Location Map

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Water and Gas Monitoring Location Map

1.0 INTRODUCTION

The objective of the Post-Closure Monitoring and Maintenance Operations Manual is to provide the owner with specific instructions for efficient monitoring and maintenance during the post-closure period. Procedures for inspecting and maintaining and monitoring the landfill during the post-closure period are outlined below. Regulatory requirements are included in Appendix A- Regulations.

2.0 POST-CLOSURE OPERATION AND MAINTENANCE

2.1 Post-Closure Deed Restrictions

Deed restrictions have been placed on the property (see Appendix B – Proposed Post-Closure Use/Deed Restrictions). The status of the deed restrictions shall be reported in the Annual Report.

2.2 Post-Closure Maintenance

The post closure use of the site is proposed to be nine-hole, par three type golf course which will leave the cap intact and will be constructed above it while maintaining existing contours (see Appendix B – Proposed Post Closure Use/Deed Restrictions).

During the period of post-closure monitoring and maintenance, the following features must be preserved: landfill cover, slopes and vegetative cover. These features will be maintained in accordance with the maintenance requirements of Part 360-7.6(d) (November 26, 1996) (see Appendix A - Regulations). Due to the gradual slope of the final cover system and the existing natural drainageways, no drainage or stormwater control structures were installed.

Quarterly site inspections will examine fill areas to identify irregular settlement, cracking, erosion or other disturbances which may affect the integrity or line and grade of the final cap. Significant problems with the landfill cover or landfill slope will be corrected by regrading with addition of cap material as necessary. Routine maintenance activities are anticipated in order to maintain the integrity of the short-rooted vegetative cover. In the event that the vegetative cover is observed to have become inadequate, reseeding and mulching will be performed. In the event that vegetative cover, landfill cover or slopes are found to be damaged, repairs will be made using stockpiled earth material. The landfill will be inspected for burrowing animals, insects, birds or other vector communities. Burrows into the cap will be properly repaired and if the problem is recurring, an exterminator may be retained.

2.3 Slope Stability

Maximum slopes do not exceed 25 percent at a maximum length of 60 feet. These conditions are judged to provide a stable slope condition. The integrity of the slopes will however be monitored as part of the maintenance/inspection program.

2.4 Drainage Control

Drainage control has been provided to intercept and divert surface water runoff (i.e., precipitation) from the final cover to prevent ponding and erosion.

2.5 Vegetative Cover

A vegetative cover was established and will be maintained on all exposed final cover material to ensure the integrity of the final cover system for a period of thirty years. Reseeding will occur if the established vegetative cover becomes inadequate or damaged. The vegetative cover will be mowed at least once per year.

3.0 POST-CLOSURE ENVIRONMENTAL MONITORING

3.1 Post-Closure Monitoring Protocols

3.1.1 Groundwater and Surface Water Monitoring Protocol

A monitoring program will be undertaken which consists of the collection of groundwater samples from ten (10) monitoring wells and surface water from two locations in the Susquehanna River. A sample Groundwater Sampling Log Sheet is attached.

Groundwater samples will be collected from the ten existing monitoring wells: MW-2S, MW-3S, MW-5D, MW-6S, MW-6I, MW-6D, MW-11S, MW-35, MW-36, and MW-8RS. Groundwater from the ten wells will be sampled quarterly for the first and second years and semiannually for the next three years. The groundwater from the ten wells will be analyzed for Routine Parameters and Volatile Organic Parameters (EPA 8021). Surface water quality will be sampled and analyzed annually from one upstream and one downstream location (SW-1 and SW-2, respectively) for Routine Parameters and Volatile Organic Parameters (EPA 8021).

The annual sampling will be rotated to a different quarter each year for both groundwater and surface water monitoring in order to evaluate potential seasonal variations. A review/reevaluation of the monitoring program will be performed after five years of monitoring to determine whether the program should be modified. Routine Parameters will be as defined by 6 NYCRR Part 360-2.11(d)(6), (November 26, 1996). Volatile Organic Parameters will be according to EPA 8021. Samples will not be analyzed for Baseline Parameters as defined by 6 NYCRR Part 360-2.11(d)(6) (November 26, 1996) unless requested by NYSDEC. Appendix C – Water Monitoring Sampling and Testing contains a Groundwater Sampling Log Sheet, lists of routine and baseline parameters, and available monitoring well logs.

Four (4) existing monitoring wells have been abandoned by removal of the casing and grouting of the borehole. The wells that were abandoned are MW-7S, MW-8S, MW-9S and MW-10S. All remaining monitoring wells not designated for sampling or abandonment will be maintained for future monitoring proposes should the need arise.

3.1.2 Landfill Gas

An initial explosive gas survey must be conducted in accordance with Part 360-7.6(b)(4). The first annual report shall include a discussion of the results of the gas survey. Future monitoring requirements as determined by NYSDEC and the responsible party will be based on the results of the initial gas survey Appendix D – Gas Monitoring Surveys contains a Combustible Gas Investigation Report form. The gas monitoring locations are shown on the Water and Gas Monitoring Location Map in Appendix E – Drawings.

4.0 POST-CLOSURE INSPECTIONS AND REPORTS

Environmental and facility monitoring points will be inspected and maintained during the post closure period, in accordance with Part 360-7.6 (d) and (e) (November 26, 1996) (see attached).

The structures/facilities listed below will be inspected in accordance with the corresponding frequency.

<u>Structure/Facility</u>	<u>Inspection Frequency</u>
Access Road	Annually
Landfill Cap/Side Slopes	Quarterly
Monitoring Wells	Semi-Annually

Annual reports shall include the results of all inspections and monitoring activities and the status of the deed restrictions indicating that the deed restrictions are still in place and haven't been violated.

The annual reports shall be submitted to the following four addresses:

Regional Hazardous Waste Engineer
NYSDEC Region 7
615 Erie Boulevard West
Syracuse, New York 13204-2400

Chief, Operation and Maintenance Section
Bureau of Hazardous Site Control
New York State Department of Environmental Conservation
625 Broadway – 11th Floor
Albany, New York 12233-7010

Henriette Hamel, R.S.
NYSDOH
217 South Salina Street
Syracuse, New York 13202-7627

Broome County Health Department
225 Front Street
Binghamton, New York 13905

5.0 CONTINGENCY PLAN

5.1 Need for Remedial Action

Corrective or remedial action is necessary to minimize adverse environmental impacts in the event of:

- A. Surface water contamination
- B. Groundwater contamination
- C. Air contamination resulting in explosive gas concentrations
- D. Fire/explosions
- E. Hazardous waste spills
- F. Equipment breakdowns

This contingency plan provides a methodology for preparing a preliminary remedial action plan if one or more of the above events occur. Final remedial action plans will require a detailed analysis of the problem and an evaluation of available remedial action techniques.

5.2 Remedial Action Plan

The most appropriate remedial action should be selected after a thorough evaluation of the problem, site characteristics, and available remedial action options.

Appropriate key participants as indicated in Table 5-1, Remedial Action Plan Key Participants shall be notified in accordance with Table 5-2, Notification of Key Participants when an adverse environmental impact is associated with an event.

The remedial action selection and implementation process is outlined in Table 5-3, Flow Chart for Remedial Action Plan and the time frame for the process in relation to each event is given in Table 5-4, Time Frame for Remedial Action Process.

The steps involved in the remedial action selection and implementation process are:

STEP 1 Identify Problem

Disposal of waste materials in a sanitary landfill may lead to environmental contamination through various transport processes. These transport processes involve a transformation of the waste into a more mobile phase usually by solubilization, volatilization, or a chemical or biochemical reaction to form soluble or gaseous reaction products. The waste materials may migrate outside the horizontal and vertical limits of a waste disposal site and result in surface water contamination, groundwater contamination, air contamination, fire, and or explosions. Problems are identified by immediate observations and surface water and groundwater monitoring programs.

STEP 2 Evaluate Nature and Extent of Problem

Prior to the selection of any remedial action program, it is necessary to have a general indication of the extent of the problem. Surface water and groundwater monitoring programs should be in effect during the landfill operation and for a period of time after closure to delineate water quality and indicate the presence or absence of contamination. Fire, explosions, and spills require immediate attention and estimates of potential severity so that sufficient manpower are called into action to deal with the problem.

STEP 3 Collect Site Specific Data

Selection of appropriate remedial action techniques is highly site specific. Therefore, site data related to the identified problem should be collected and evaluated in relation to available remedial action options. In general, the site data will include characteristics of the quality and quantity of waste material, site cover, climate, subsurface geology, surface topography, water quality, and the effects of the problem on the public health and welfare.

STEP 4 Determine Remedial Action Options

For each environmental medium that is contaminated, there is a set of remedial actions that may be applicable to the site. These remedial action options are outlined in Table 6-5, Summary of Available Remedial Action Options for Contaminated Surface Water Control through Table 6-10, Summary of Available Remedial Action Options for Equipment Breakdowns. Each remedial action option may be exercised to control contamination of several different parts of the environment, and therefore several of the options appear in more than one table. Each table presents the available techniques applicable for control of the indicated problems, briefly describes their functions, and indicates associated site-specific applications and general costs.

STEP 5 Compare Remedial Action Options to Site Characteristics and Select Best Option or Options

Table 5-5, Summary of Available Remedial Action Options for Contaminated Surface Water Control through Table 5-10, Summary of Available Remedial Action Options for Equipment Breakdowns are used to compare the remedial action options listed under each medium as they apply to, or are restricted by, the site characteristics information collected in Step 3. Each option can be rated and ranked in relative order on the basis of technical feasibility, effectiveness, service life, costs, and impacts.

Generally, the most appropriate alternative or alternatives will be "the lowest cost alternative that is technologically feasible and reliable, and which effectively mitigates and minimizes damage to and provides adequate protection of public health, welfare, and the environment," (40CFR 300.68(i)).

STEP 6 Formulate Remedial Action Plan

The best remedial action option or options selected in Step 5 should be analyzed in detail. The detailed analysis should be used as a basis for the remedial action plan design. Depending on the scope of the problem, the remedial action plan may include:

- a. acquisition of additional data;
- b. detailed analysis of adverse environmental impacts;
- c. refinement and specification of remedial action in detail;
- d. assessment of technical effectiveness and determination of engineering contractility of the plan;
- e. review requirements of regulatory agencies as they apply to the plan;
- f. preparation of engineering reports, construction plans and specifications, and detailed cost estimates;
- g. submittal of plan to appropriate regulatory agencies for review.

STEP 7 Implement Remedial Action Plan

The owner of the solid waste disposal facility will need to implement the remedial action plan by using in-house personnel and equipment or by contracting with outside firms.

At any step in this process, as new information or data appear, it may be necessary to go back to previous steps and consider new types of response and new alternatives for action. This process, however, provides an effective way of approaching problems to determine the appropriate method of remedial action.

TABLE 5-1
REMEDIAL ACTION PLAN KEY PARTICIPANTS

<u>PARTICIPANT</u>	<u>ADDRESS</u>	<u>CONTACT PERSON/PHONE NO.</u>
LEAD AGENCY:	New York State Department of Environmental Conservation Division of Environmental Remediation Bureau of Hazardous Site Control 625 Broadway – 11 th Floor Albany, New York 12233-7743	Gerald J. Rider, PE Chief O&M Section 518-402-9640 Fax: 518-402-9022
	New York State Department of Environmental Conservation Region 7 615 Erie Boulevard West Syracuse, New York 13204-2400	Regional Hazardous Waste Engineer 315-426-7551 Fax: 315-426-7499
OWNER/OPERATOR	Gorick Construction Company 27 Track Drive Binghamton, New York 13904	Al Gorick, President 607-776-1766 Fax: 607-776-1608
ENGINEER:	Keystone Associates, LLC Architects, Engineers, and Surveyors 229-231 State Street, Fourth Floor Binghamton, New York 13901	Kenneth D. Ellsworth, PE 607-722-1100 Fax: 607-722-2515
HYDROGEOLOGIST	To be determined if required	
WATER ANALYST:	Buck Laboratories, 3845 Rte. 11 South Cortland, New York 13045	John Buck, PE Director 607-753-3403 Fax: 607-
FIRE DEPARTMENT AMBULANCE, & POLICE	Broome County Emergency Services	911
HOSPITAL	Binghamton General Hospital 10-42 Mitchell Avenue Binghamton, New York 13903	607-762-2200

TABLE 5-2
NOTIFICATION OF KEY PARTICIPANTS

<u>EVENT</u>	<u>KEY PARTICIPANT TO BE NOTIFIED</u>	<u>TIME FRAME</u>
Surface Water Contamination	Owner/Operator Lead Agency Engineer	Immediately Within 2 Hours Within 7 days
Groundwater Contamination	Owner/Operator Lead Agency Engineer	Immediately Within 2 Hours Within 7 days
Air Contamination Resulting in Explosive Gas Concentrations	Owner/Operator Lead Agency Engineer	Immediately Within 2 days Immediately
Fire/Explosions	Fire Department Owner/Operator Lead Agency Engineer	Immediately Immediately Within 15 days Within 15 days
Hazardous Waste Spills	Fire Department Owner/Operator Lead Agency Engineer	Immediately Immediately Immediately Immediately
Equipment Breakdowns	Owner/Operator	Immediately
Injuries Requiring Hospitalization	Binghamton General Hospital	Immediately

TABLE 5-3
FLOW CHART FOR REMEDIAL ACTION PLAN

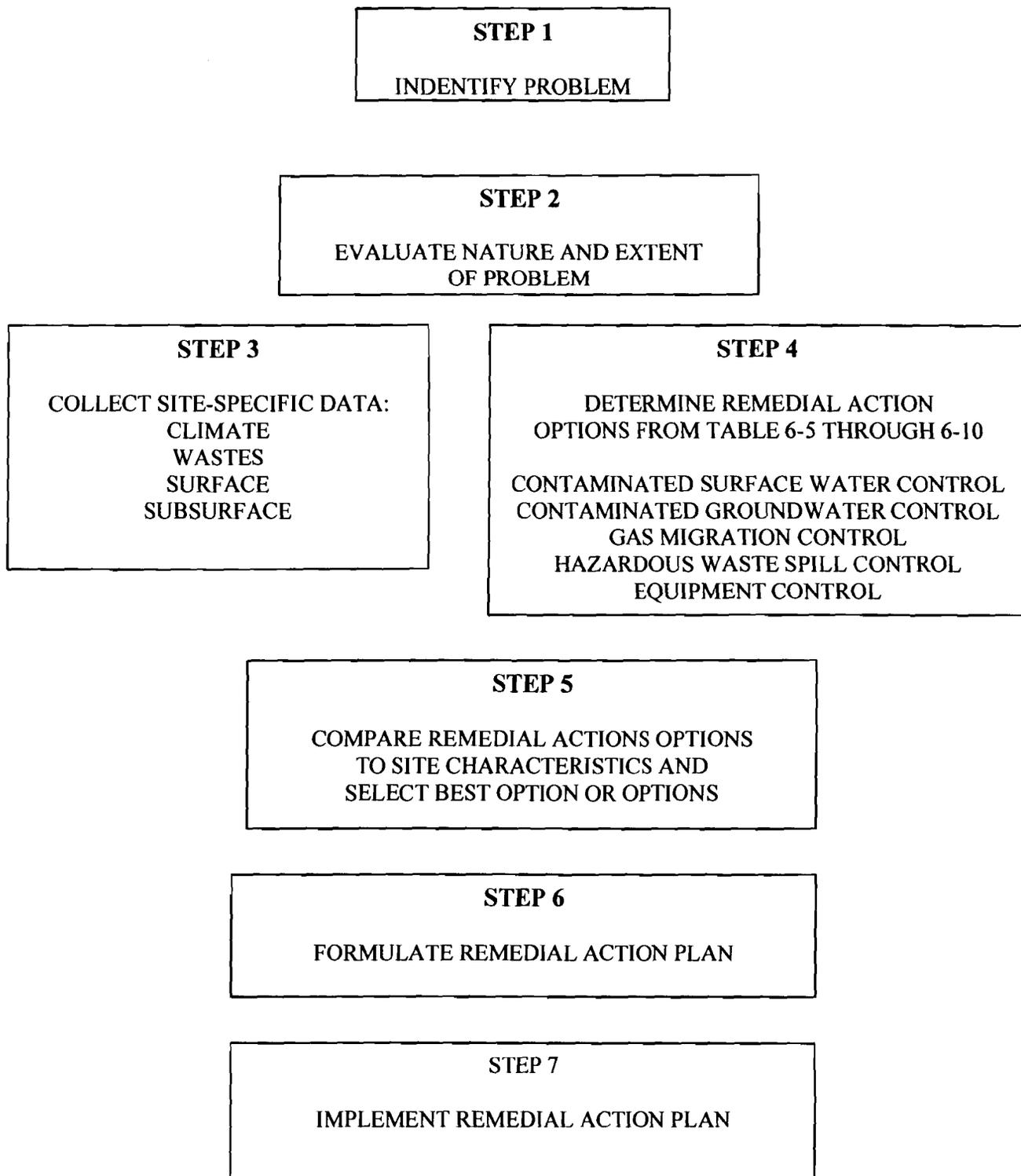


TABLE 5-4
TIME FRAME FOR REMEDIAL ACTION PROCESS

<u>PROCESS</u>	<u>EVENT</u>		
	<u>SURFACE WATER CONTAMINATION</u>	<u>GROUNDWATER CONTAMINATION</u>	<u>AIR CONTAMINATION</u>
STEP 1 - Identify Problem	When water quality exceeds standards	When water quality exceeds standards	Immediately
STEP 2 - Evaluate Nature and extent of Problem	15 days	15 days	3 days
STEP 3 - Collect Site Specific Data	15 days I	5 days	3 days
STEP 4 - Determine Remedial Action Options	29 days	29 days	3 days
STEP 5 - Compare Remedial Action Options to Site Characteristics and Select Best Option or Options	1 day	1 day	1 day
STEP 6 - Formulate Remedial Action Plan	60-90 days	60-90 days	5-15 days
STEP 7 - Implement Remedial Action Plan	60-90 days	60-90 days	5-15 days

TABLE 5-4 (Continued)
TIME FRAME FOR REMEDIAL ACTION PROCESS

<u>PROCESS</u>	<u>EVENT</u>		
	<u>FIRE/EXPLOSIONS</u>	<u>HAZARDOUS WASTE SPILLS</u>	<u>EQUIPMENT BREAKDOWNS</u>
STEP 1 - Identify Problem	Immediately	Immediately	Immediately
STEP 2 - Evaluate Nature and extent] of Problem	Immediately	Immediately	Immediately
STEP 3 - Collect Site Specific Data	Immediately	Immediately	Immediately
STEP 4 - Determine Remedial Action Options	Immediately	Immediately	Immediately
STEP 5 - Compare Remedial Action Options to Site Characteristics and Select Best Option or Options	Immediately	Immediately	Immediately
STEP 6 - Formulate Remedial Action Plan	Immediately	Immediately	Immediately
STEP 7 - Implement Remedial Action Plan	Immediately	Immediately	Immediately

NOTE: A range in time is given when the process time will depend on the severity of the problem outlined in Step I or when contracts for services must be arranged.

TABLE 5-5
SUMMARY-OF AVAILABLE REMEDIAL ACTION OPTIONS
FOR CONTAMINATED SURFACE WATER CONTROL

<u>OPTION</u>	<u>FUNCTION</u>	<u>REMARKS</u>
Surface Sealing/ Capping	Isolates waste from surface water runoff and infiltration; stabilizes site surface; supports vegetation.	Most effective when combined with grading and revegetation; requires suitable cover materials; medium to high cost.
Grading	Shapes surface to provide runoff, minimize erosion, minimize infiltration, and support revegetation.	Most effective when combined with surface sealing and revegetation; low cost.
Revegetation	Stabilizes surface, controls wind/water erosion.	Most effective when combined with surface sealing and grading; requires maintenance; low cost.
Surface Water Diversion - Dikes & Berms - Drainage Swales - Drainage Pipes - Desilting Barriers - Terraces and Benches	Channels runoff around refuse areas, controls off-site transport of contaminated sediments.	Most effective when combined with grading and revegetation, low cost.
Leachate Control - Collection - Recirculation - Treatment	Controls off-site migration of surface leachate outbreaks.	Requires an operation and maintenance program; medium cost.
Treatment of Contaminated Surface Waters	Removes contaminants by physical, chemical, and/or biological treatment methods.	For contaminated surface runoff that requires treatment; low to high costs depending on type of treatment.

TABLE 5-6
SUMMARY OF AVAILABLE REMEDIAL ACTION OPTIONS
FOR CONTAMINATED GROUNDWATER CONTROL

<u>OPTION</u>	<u>FUNCTION</u>	<u>REMARKS</u>
Surface Sealing	Indirectly controls ground-water contamination by reducing surface water infiltration (provides impermeable barrier), thereby minimizing leachate generation.	Most effective when combined with grading and revegetation; requires suitable capping and cover materials; medium to high cost.
Grading	Indirectly controls ground-water contamination by promoting surface runoff and reducing surface water infiltration, thereby minimizing leachate generation.	Most effective when combined with surface sealing and revegetation; low cost.
Revegetation	Indirectly controls ground-water contamination by increasing evapotranspiration which reduces surface water infiltration; thereby reducing the volume of leachate generated.	Use site-tolerant species; low cost.
Surface Water - Diversion - Dikes & Berms - Drainage Swales - Drainage Pipes - Desilting Barriers - Terraces and Benches	Channels runoff around refuse areas, thereby reducing opportunity for runoff infiltration and minimizing leachate generation.	Most effective when combined with grading and revegetation; low cost.
Impermeable Barriers - Grout Curtain - Slurry Wall - Sheet Piling	Upgradient from or around site diverts uncontaminated ground-water flow away from wastes, downslope or around site contains/collects contaminated groundwater to limit horizontal migration.	Requires extensive pre-construction geotechnical evaluation; high cost.

TABLE 5-6 (CONTINUED)
SUMMARY OF AVAILABLE REMEDIAL ACTION OPTIONS
FOR CONTAMINATED GROUNDWATER CONTROL

<u>OPTION</u>	<u>FUNCTION</u>	<u>REMARKS</u>
Groundwater Pumping	Collects or contains contaminated groundwater for treatment.	Useful where impermeable barriers cannot contain migration; high cost.
Leachate Control - Collection - Recirculation - Treatment	Intercepts subsurface leachate before it migrates to groundwater; collects and transports leachate to treatment system or for recirculation.	May not intercept all leachate if installed after wastes have been placed; high on-site treatment cost, low off-site cost.
Bioreclamation	Bacterial degradation/removal of petrochemical contaminants.	Not effective for groundwater contaminated by heavy metals, certain chlorinated organics, or other non-biodegradables; short term treatment only; may be very costly.
Permeable Treatment Beds	Absorption, precipitation, or neutralization of certain groundwater contaminants downgradient of site.	Carbon absorption very costly-, not a proven technique.

TABLE 5-7
SUMMARY OF AVAILABLE REMEDIAL ACTION-OPTIONS
FOR GAS MIGRATION CONTROL

<u>OPTION</u>	<u>FUNCTION</u>	<u>REMARKS</u>
Surface Sealing	Provides impermeable barrier to upward migration/surface escape of decomposition gases.	Medium to high cost.
Gas Barriers	Prevents lateral movement	Layered system most effective for control of gas migration; medium to high cost.
Gas Ventilation Systems - Pipe Vents - Trench Vents	Prevents lateral subsurface migration of gases; safely vents hazardous gases to the atmosphere or to treatment structures.	Medium cost.
Gas Collection and Treatment	For control of volatile toxics and malodorous decomposition gases; removal or destruction of pollutants by thermal oxidation or absorption.	High cost.

TABLE 5-8
SUMMARY OF AVAILABLE REMEDIAL ACTION OPTIONS FOR
FIRE/EXPLOSION CONTROL

<u>OPTION</u>	<u>FUNCTION</u>	<u>REMARKS</u>
Notification of Local Fire Dept.	Provides orderly control by experienced personnel.	Immediate action required.
Burial of Refuse with Earth for Open Fires	Smothers fire.	Requires earth stockpiles to be located near burning areas and the working face of the landfill; low cost.
Excavation Around Perimeter of Sub-surface Fire	Isolates fire.	Requires proper equipment and safety procedures; low cost.

TABLE 5-9
 SUMMARY OF AVAILABLE REMEDIAL ACTION OPTIONS
 FOR HAZAROUS SPILL CONTROL

<u>OPTION</u>	<u>FUNCTION</u>	<u>REMARKS</u>
Construct Barriers	Limits lateral migration of spill.	Immediate action required; have stockpiles of earth/sand/gravel material on site; low cost.
Pump and/or Excavate Spilled Material and Contaminated Earth - collection - disposal	Removes contaminated material before it can reach groundwater.	Material can be disposed of in the general refuse area if a non-hazardous waste; must be taken to a secure landfill if a hazardous waste; low to high cost depending on type of waste.

TABLE 5-10
 SUMMARY OF REMEDIAL ACTION OPTIONS
 FOR EQUIPMENT BREAKDOWNS

<u>OPTION</u>	<u>FUNCTION</u>	<u>REMARKS</u>
Use the County or Other Local Highway Department as a Source of Back-up Equipment	Provides additional equipment in the event of landfill equipment breakdown.	Preliminary permission for equipment use should be in place at all times; low cost.

5.3 Reporting, and Implementation Responsibilities

The responsibility for remedial action ultimately lies with the owner of the waste disposal site. Table 5-11, Remedial Action Responsibilities, outlines the key participants involved in the remedial action selection and implementation process. All parties affected by the event requiring remedial action should be involved in the planning process or at least informed of decisions. The parties may include agencies, adjacent property owners, individuals, etc.

TABLE 5-11
REMEDIAL ACTION RESPONSIBILITIES

<u>PROCESS</u>	<u>KEY PARTICIPANTS</u>				
	<u>OWNER/ OPERATOR</u>	<u>LEAD AGENCY</u>	<u>ENGINEER</u>	<u>HYDRO- GEOLOGIST</u>	<u>WATER ANALYST</u>
Step 1 - Identify Problem	x	x	x	x	
Step 2 - Evaluate Nature and Extent of Problem	x	x	x	x	
Step 3 - Collect Site-Specific Data				x	x
Step 4 - Determine Remedial Action Options	x	x	x	x	
Step 5 - Compare Remedial Action Options to Site Character- istics and Select Best Option or Options	x	x	x	x	
Step 6 - Formulate Remedial Action Plan	x	x	x	x	
Step 7 - Implement Remedial Action Plan	x	x	x	x	

5.4 Additional Resources

The contingency plan outlined herein is a guide to be used to formulate a preliminary remedial action plan. Final remedial action options should be used after a detailed analysis of site specific data and appropriate remedial action techniques. Table 5-12, Reference Materials for Remedial Action Planning and Design includes references which can be used for remedial action planning, final design, and implementation.

TABLE 5-12
REFERENCE MATERIALS FOR REMEDIAL ACTION PLANNING AND DESIGN

Guswa, J.H., et. al. Groundwater Contamination and Emergency Response Guide. Noyes Publications, New Jersey. 1984.

New York State Department of Environmental Conservation. 6 NYCRR, Part 360, Solid Waste Management Facilities. (latest version)

New York State Department of Environmental Conservation. Upstate New York Groundwater Management Program. 1985.

New York State Department of Environmental Conservation. 6 NYCRR Part 371 Identification and Listing of Hazardous Wastes. (latest version).

New York State Department of Environmental Conservation, 6 NYCRR Part 621 Uniform Procedures. 1985 (with amendments).

Rogoshewski, P., at al., "Remedial Action Technology for Waste Disposal Sites. Noyes Publications, New Jersey. 1983

**APPENDIX A
REGULATIONS**



New York State
Department of Environmental Conservation

Division of Solid & Hazardous Materials

6 NYCRR Part 360
Solid Waste Management
Facilities

Title 6 of the
Official Compilation
of Codes, Rules and Regulations
Effective November 26, 1996

Reprinted January 1997



GEORGE E. PATAKI, *Governor*

JOHN P. CAHILL, *Acting Commissioner*

provisions required by the department. A perimeter gas collection system must consist of either:

(1) trenches keyed into a low permeability soil, a bedrock layer, or the seasonally low groundwater table, which can effectively cut off the lateral migration of gas; or

(2) gas wells screened in the unsaturated zone to the seasonally low water table or low permeability soil/bedrock layer that are spaced along the perimeter of the landfill to sufficiently prevent gas migration.

(g) Gas control using flares. All gas control systems which utilize flares must be designed in accordance with any applicable requirements of Parts 201 and 212 of this Title.

(h) Condensate from gas processing or control systems. Condensate generated and collected from gas processing or control systems must not be recirculated into the landfill unless it is demonstrated that the landfill has a department approved liner and leachate collection and removal system, and providing it is demonstrated that the landfill is operating in compliance with the provisions of section 360-2.17 of this Subpart, and prior written approval is obtained from the department. Otherwise, the condensate must be appropriately disposed of by other means.

(i) Leachate collection system. If required by the department, a leachate collection system must be constructed to control leachate outbreaks that could adversely affect the landfill cover or threaten surface waters. If the collection system includes the construction and operation of a leachate storage facility, such facility must be designed, constructed, and operated in accordance with the requirements of Subpart 360-6 of this Part.

(j) Vectors. If, through the site closure investigation report, vector problems are identified, an appropriate remediation program must be implemented. The vector remediation program must be implemented to mitigate vector problems before cessation of waste disposal occurs at the landfill.

(k) Post-closure operation and maintenance. For a landfill subject to closure, a provision must be included in the property deed indicating the period of time during which the property has been used as a landfill, describing the wastes contained within and noting that records of the facility have been filed with the department. The deed must also reference a map which shall be filed with the county clerk and which will clearly indicate the limits of the landfilled areas within the property boundary. The deed must also

indicate that the use of the site is restricted pursuant to the provisions of paragraph (9) of this subdivision.

(1) For landfills that are without a department approved plan for closure where the maximum slope of 33 percent was exceeded before December 31, 1988, the landfill may be closed with slopes exceeding 33 percent if supported by a slope stability analysis, which must be submitted to the department, and providing the following are met:

(i) final grades must not exceed 50 percent for more than a 20 feet vertical rise; and

(ii) for longer slopes, run-off diversion terraces must be constructed at vertical intervals not exceeding 20 feet. The terraces must be designed to intercept run-off for diversion to appropriately spaced drainage ways leading off the landfill slopes. All terrace and drainage way slopes must be at least four percent.

(2) Drainage control structures must be designed, graded, and maintained to prevent ponding and erosion to the cover. The surface drainage system must be designed and constructed to protect the cover from, at a minimum, the peak discharge of a 24-hour, 25-year frequency storm.

(3) Soil cover integrity, slopes, cover vegetation, drainage structures, and gas venting structures must be maintained during the period of post-closure monitoring and maintenance, or as required by the department.

(4) Environmental and facility monitoring points including gas monitoring points must be maintained and sampled during the post-closure period for a minimum of 30 years. Post closure explosive gas monitoring must be performed at least quarterly to determine if the facility meets the requirements of 360-2.17(f) of this Subpart. If this monitoring shows explosive gas levels in excess of the lower explosive limit at the property boundary or in excess of the 25 percent of the lower explosive limit within any structures, appropriate actions must be taken and the department must be notified. Annual summary reports must be submitted to the department describing the results of the maintenance, monitoring and/or sampling for the environmental and facility monitoring points. Annual baseline and quarterly routine monitoring must be performed on groundwater, surface water, and leachate samples for a minimum period of five years. After this five-year period, the permittee may request that the department modify the sampling and analysis requirements.

(2) all LGRF's that use combustion of any type must be designed and operated in accordance with all applicable requirements of Parts 201, 212, 225 and 227 of this Title;

(3) During the first year of operation, condensate sampling must occur quarterly and annually thereafter. The analysis must include at least those parameters in the Water Quality Analysis Tables, in paragraph 360-2.11(d)(6) of this Subpart;

(4) the owner or operator of the facility must report all condensate quality monitoring results within 60 days after sampling;

(5) the landfill gas recovery piping and extraction wells must not interfere with the integrity of the proposed or existing landfill cover system; and

(6) an annual report on the operation of the LGRF must be submitted to the department no later than 60 days after the first day of January of each year of operation. This report must contain the following information compiled on a monthly basis:

(i) quantity of landfill gas recovered;

(ii) quantity of condensate generated;

(iii) quantity of steam generated (if applicable);

(iv) quantity of electricity generated (if applicable);

(v) quantity of low Btu or pipeline quality gas produced (if applicable);

(vi) summary of sampling data;

(vii) hours of operation; and

(viii) list of all full and part time employees and their titles.

Section 360-2.17 Landfill operation requirements.

In addition to the operational requirements in section 360-1.14 of this Part, all landfills regulated under this Subpart must conform to the operation requirements in this section.

(a) Water quality monitoring program. A water quality monitoring program must be implemented that satisfies the appropriate requirements of section 360-2.11 of this Part and special permit conditions

pertaining to such a program.

(b) Waste placement requirements.

(1) Solid waste must be spread in layers not exceeding two feet in thickness and must be compacted upon deposition at the working face by appropriately sized compaction equipment making a minimum of three passes. The working face must be restricted to the smallest area practicable, based on peak usage traffic conditions at the landfill.

(2) Lift height must not exceed ten feet and shall not have a final slope greater than 33 percent. Wastes must be placed and graded in accordance with the provisions of the fill progression plan set forth in subdivision 360-2.9(e) of this subpart, and shall not be placed at a grade of less than 4 percent to accommodate facility closure.

(3) The first layer of refuse placed above the leachate collection layer must be a minimum of five feet in compacted thickness, and be of a select nature containing no large rigid objects, such as bed springs or posts, placed in a manner to damage the liner system.

(c) Daily cover. A minimum of six inches of compacted cover material must be applied on all exposed surfaces of solid waste at the close of each operating day to control vectors, fires, odors, blowing litter and scavenging. The department may approve the use of alternative daily cover materials of an alternative thickness, upon a demonstration that the alternative daily cover material will adequately control vectors, fires, odors, blowing litter and scavenging without presenting a threat to human health and the environment. Such demonstrations are not subject to variance procedures of this Part.

(d) Intermediate cover. A minimum of 12 inches of compacted cover material, must be applied and maintained on all landfill surfaces where no additional solid waste has been or will be deposited within 30 calendar days. The facility owner or operator may request department approval to remove all or a portion of the intermediate cover before placing an additional lift of solid waste, if odors and blowing litter are effectively controlled on-site.

(e) Final cover system. The final cover system must be designed, constructed and maintained in accordance with the requirements of section 360-2.15 of this Part.

(f) Decomposition gases. Decomposition gases generated within a landfill must be controlled to avoid

hazards to health, safety, or property. Measures to control decomposition gases must be undertaken in accordance with the following requirements:

(1) the concentration of methane and other explosive gases generated by the facility must not exceed:

(i) twenty-five percent of the lower explosive limit for gases in structures on or off-site, excluding gas control or recovery system components; and

(ii) the lower explosive limit for the gases at or beyond the property boundary.

(2) An ongoing gas monitoring program must be initiated upon initial operation of the landfill to ensure that the standards of paragraph (1) of this subdivision are met. The type and frequency of monitoring must be approved by the department and based on the following factors: soil conditions; the hydrogeologic conditions surrounding the disposal area; the hydraulic conditions surrounding the disposal site; and the location of any man-made structures and property boundaries. The minimum frequency of monitoring shall be quarterly.

(3) Upon detection of methane or other explosive gas levels exceeding the limits specified in paragraph (1) of this subdivision, the landfill operator and the appropriate officials identified in the department approved contingency plan must immediately take all steps necessary to ensure safety and protection of human health and must immediately notify the department;

(i) within seven days of detection submit to the department the methane gas levels detected and provide a description of the steps taken to protect human health; and

(ii) within 45 days of detection, submit a plan to implement a remediation plan for the methane gas releases and schedule for the implementation of this plan within 60 days beyond the date of the detection. This plan must describe the nature and extent of the problem and the proposed remedy.

(g) Leachate generation and migration. All landfills must be constructed, operated, and closed to minimize the generation of leachate and to prevent the migration of leachate into surface and groundwater.

(h) Maintenance schedule for primary leachate collection and removal system. The primary leachate collection and removal system must be maintained in

accordance with the provisions of subdivision 360-2.9(j) of this Subpart to prevent clogging of the system.

(i) Monitoring schedule for secondary leachate collection and removal system. Daily monitoring of the secondary leachate collection and removal system must be accomplished to determine the presence, quantity, nature, and significance of any liquid detected in accordance with the appropriate provisions of subdivision 360-2.9(j) of this Subpart.

(j) Leachate recirculation. Leachate recirculation is prohibited unless the landfill meets the following requirements:

(1) For existing landfills operating under Part 360 permit and that have received department approval to recirculate leachate, may continue for the duration of the permit or subsequent permit renewals as long as the landfill meets all of the operating requirements of this Part and providing that groundwater monitoring data verifies no landfill induced contamination pursuant to the provisions of Part 703 of this Title.

(2) For all new landfills, or an existing landfill that does not have department approval to recirculate leachate, a double liner system acceptable to the department is required, along with demonstration of a minimum of six months of acceptable primary liner performance being submitted for department approval.

(3) In all cases, leachate recirculation is prohibited on areas where any soil cover has been applied, unless provisions for run-off collection and containment are provided. In no double lined landfill shall the volume of leachate to be recirculated increase the primary liner systems leakage rate beyond the 20 gallons per acre per day operational threshold based on a 30-day average and/or increase the potential for groundwater contamination.

(4) All leachate recirculation proposals must have in support an operations manual prepared in accordance with the provisions of subdivisions 360-2.9(a) and (j) of this Subpart.

(k) Bulk liquids. Disposal of bulk liquids in any landfill is prohibited. For the purpose of this Part, liquid containers from households 5 gallons or less in size are not considered bulk liquids.

(l) Industrial/commercial wastes. Disposal of solid waste in a landfill resulting from industrial or commercial operation is prohibited except pursuant to specific department authorization.

used or operated at the time hazardous waste was or may have been disposed of;

(iv) identification of the source of the hazardous waste that was, or is suspected to have been, deposited at the site; and

(v) any additional information the department may request, including but not limited to geochemical or soil-gas investigations, geophysical survey using electronic and electromagnetic equipment and remote sensing analysis to study the geology of the site and to identify possible areas with buried drums or tanks or possible paths of contaminated plumes, and a sampling and analysis of samples from groundwater, surface water, sediments, lagoons and remaining wastes.

(3) If, after evaluating the information submitted pursuant to paragraph (2) of this subdivision, the department classifies the site described in that paragraph as Class 1, 2, 3 or 4 in the department's Registry of Inactive Hazardous Waste Disposal Sites, the commissioner shall not issue a decision on whether the permit shall be issued unless the applicant submits sufficient information to allow the department to determine whether the proposed activity would interfere significantly with any potential, ongoing or completed inactive hazardous waste disposal site remedial program at the classified site or would expose the environment or public health to a significantly increased threat of harm. This information must be submitted in the form of the report described in paragraph (1) of this subdivision.

(4) The requirements of paragraphs (1)-(3) of this subdivision do not apply if the classified site is delisted from the department's Registry of Inactive Hazardous Waste Disposal Sites or reclassified as Class 5 on that Registry.

(5) If the facility is or is proposed to be located at a site subject to corrective action under title 9 of ECL, article 27 or if it is or is proposed to be located next to such a corrective action site and less than 150 feet separate the boundary of the facility and the border of the corrective action site that abuts the facility boundary, the applicant must submit as part of a complete application sufficient information to allow the department to determine whether the proposed activity would interfere significantly with any potential, ongoing or completed corrective action or would expose the environment or public health to a significantly increased threat of harm. This information must be submitted in the form of the

report described in paragraph (1) of this subdivision.

(h) Contingency plan. Every application for a permit identified in this Part must include a contingency plan.

(1) This contingency plan must include, but is not limited to:

(i) a description of arrangements between the applicant and local police departments, fire departments, hospitals, contractors, equipment suppliers, and State and local emergency response teams to coordinate emergency services and familiarize them with the layout of the facility, properties of the solid waste handled at the facility and associated hazards, places where facility personnel normally would be working, entrances to and roads inside the facility, and possible evacuation routes, as appropriate;

(ii) a list of names, addresses and telephone numbers (office and home) of all individuals qualified to act as an emergency coordinator. Where more than one individual is listed, the primary coordinator must be listed first and the others listed in the order in which they will assume responsibility as alternates;

(iii) a list of all relevant emergency equipment maintained at the facility (such as, but not limited to, fire extinguishing systems, spill control equipment, and internal and external communications and alarm systems) and the location and a physical description of each item of emergency equipment with a brief outline of its capabilities; and

(iv) an evacuation plan for facility personnel, including a description of signals to be used to begin evacuation and of the primary and alternate evacuation routes.

(2) Additional requirements for such a plan for specific types of solid waste management facilities are found in the Subpart pertaining to the type of facility in question.

(i) Signature and verification of applications.

(1) All applications for permits must be accompanied by evidence of authority to sign the application and must be signed by the applicant as follows:

(i) in the case of corporations, by a duly authorized principal executive officer of at least the

(iii) a description of the landfill's personnel requirements including a discussion of their responsibilities and duties at the landfill;

(iv) a description of the machinery and equipment to be used at the landfill, their authorized uses and safety features;

(v) a description of the landfill's operational controls, including, but not limited to signs, hours and days of operation, landfill usage rules and regulations and traffic flow controls;

(vi) a description of the landfill's waste receiving process for all C&D debris, including procedures for identification of wastes to be excluded, wastes to receive special handling and procedures to be implemented if waste other than C&D debris is delivered to, or found at, the landfill;

(vii) a description of the landfill's cover material placement and management plan, stating the type of cover, the frequency that cover will be placed to control odors (specifically odors resulting from hydrogen sulfide gas), fire hazards, vectors, blowing litter and scavenging, the quantities available, and quantities required for each type on a time-phase basis, including the method of cover material placement and compaction;

(viii) a description of the landfill's leachate management plan which includes the information required under subdivision 360-2.9(j) of this Part.

(ix) a contingency plan which includes the information required by subdivision 360-1.9(h) of this Part and a detailed description of actions to be taken in response to contingency events which may occur during the operation and closure/post-closure periods of the landfill. This plan must address the following contingencies: fires, odors (including odors from hydrogen sulfide gas), dust, groundwater and surface water contamination and equipment breakdown;

(x) a description of the landfill's water quality monitoring program consistent with the applicable requirements of paragraphs 360-7.3(a)(4) and 360-7.4(a)(4) of this Subpart; and

(xi) a post-closure monitoring and maintenance manual, which must provide personnel with detailed instructions for assuring efficient monitoring (including, as applicable, leachate management, environmental sampling and analysis, and proper maintenance of all facility components, in

order to maintain the facility in accordance with the provisions of the manual for a minimum period of 30 years after landfill closure).

(7) Leachate treatment plan. A leachate treatment plan must be prepared and include the information required under subdivision 360-2.3(k) of this Part.

(8) Financial assurance. The most recent closure and post-closure care cost estimate for the facility prepared in accordance with section 360-2.19 of this Part and a copy of the documentation required to demonstrate financial assurance under section 360-2.19 of this Part.

(b) Construction requirements. All landfills subject to regulation under this section must conform to the following:

(1) Construction certification report. A construction certification report must be submitted to the department within 45 days after the completion of landfill construction. This report must certify that construction was completed in accordance with the approved plans and specifications and include the resulting information prepared in accordance with the requirements of paragraph 360-7.4(a)(3) of this section and the information required in paragraphs 360-7.4(b)(7) and (8) of this section. The construction certification report must also contain as-built drawings noting any deviation from the approved engineering plans and a comprehensive narrative including, but not limited to, daily reports from the project engineer and a series of color photographs of major project aspects. A permittee may not operate a landfill under this Subpart until the department approves in writing the construction certification report.

(2) Horizontal separation requirements.

(i) The minimum horizontal separation between a landfill and the property line or a public right-of-way must be 50 feet as measured from the toe of the proposed final cover slope.

(ii) The required horizontal separation between deposited solid waste and any surface waters must be adequate to preclude contravention of State surface water standards in the surface water body or flooding of the landfill from the surface water body. In no case can solid waste be deposited closer than 100 feet from the mean high water elevation of any surface waters. The department may require greater horizontal separation between solid waste and surface

requirements of paragraphs 360-7.3(b)(9) and 360-7.4(b)(8), and subdivision 360-7.5(e) of this Subpart.

(b) Landfills without an approved closure plan. For landfills that do not have an approved plan for closure, the final cover plan must meet the requirements of subdivision (a) of this section. To determine if remedial work in addition to final cover is necessary, a closure investigation must be conducted and a closure plan which reflects the results of the investigation must be submitted for department approval. The investigation must define the nature and extent of current, as well as the potential for release and migration of contaminants from the landfill and must include the following:

(1) A hydrogeologic investigation must be performed in accordance with the applicable requirements of paragraphs 360-7.3(a)(4) and 360-7.4(a)(4) of this Subpart.

(2) A surface leachate investigation must be performed. The objectives of this investigation are to identify the presence of uncontrolled leachate at or near the landfill; to document any instances where fugitive leachate from the landfill is impacting local surface waters, and to characterize the chemical constituents of surface leachate.

(3) A vector investigation must be performed to identify the presence of any vectors that inhabit the landfill including, but not limited to rodents, insects, and birds.

(4) An explosive gas survey.

(c) Landfills where maximum slope exceeds 33 percent. For existing landfills without a department-approved plan for closure where the maximum slope of 33 percent was exceeded before December 31, 1988, the landfill may be closed with slopes exceeding 33 percent if supported by a slope stability analysis, which must be submitted to the department, and providing the following criteria are met:

(1) Final grades must not exceed 50 percent for more than a 20 feet vertical rise.

(2) For longer slopes, run-off diversion terraces must be constructed at vertical intervals not exceeding 20 feet. The terraces must be designed to intercept run-off for diversion to appropriately spaced drainage ways leading off the landfill slopes. All terrace and drainage way slopes must be at least four percent.

(3) Surface water drainage systems must be designed and constructed to protect the final cover system from the peak discharge based on a rainfall intensity of a 24-hour, 25-year storm event.

(d) Maintenance.

(1) Soil cover integrity, slopes, cover vegetation and drainage structures must be maintained during the post-closure monitoring and maintenance period as required by the department.

(2) Environmental and facility monitoring points will be maintained and sampled during the post-closure period for a minimum of 30 years or longer as required by the department. Annual summary reports shall be submitted to the department. Annual baseline and quarterly routine monitoring shall be performed on groundwater, surface water and leachate samples for a minimum period of five years. The requirements for subsequent analysis will be determined at the end of each five-year period.

(3) Maintenance of any leachate removal system is required to ensure the system remains operational over the 30-year monitoring and maintenance period. The method of treatment and disposal of the leachate must be addressed for as long as leachate is capable of contaminating the environment.

(e) Post-closure monitoring and maintenance manual. A post-closure monitoring and maintenance manual as described in subparagraph 360-7.4(a)(6)(xi) of this Subpart must be submitted as part of the operation and maintenance manual described in paragraph 360-7.4(a)(6) of this Subpart. This document must provide personnel with detailed instructions for assuring efficient monitoring, including, as applicable, leachate management, environmental sampling and analysis, reporting and proper maintenance of all facility components in order to maintain the facility in accordance with the provisions of the manual as approved by the department for a minimum period of 30 years after landfill closure.

(f) Transfer of ownership. Upon transfer of ownership of a C&D debris landfill site that is required to operate under permit or registration pursuant to this Part, a provision must be included in the property deed indicating the period of time during which the property has been used as a landfill, a description of the wastes contained within and the fact that the records for the facility have been filed with

APPENDIX B
PROPOSED POST CLOSURE USE/DEED RESTRICTIONS

GORICK CONSTRUCTION CO., INC.

27 TRACK DRIVE
BINGHAMTON, NEW YORK 13904

March 1, 2001

NYSDEC
50 Wolf Road
Albany, NY 12233-3505

Attn: James Drum

Re: Gorick C&D Landfill

Dear Mr. Drum:

Per our conversation today, we are requesting a change in our operation and maintenance plan. We are proposing a nine hole, Par 3 Type Golf Course on the landfill site. This has already been presented to the Kirkwood Town Board and they are behind the project 100%.

This proposed use will have no adverse effect on the cap as all construction will leave the cap intact and be built above it using existing contours.

We believe the golf course improves the property as well as the cap as it will be constantly maintained. As previously discussed, some gas vent risers may have to be relocated or removed to allow for construction. During past site conversations this did not appear to be a problem as the explosive gas survey showed no gas present.

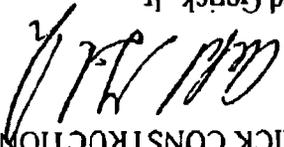
We will be happy to supply you with the course design for review when it is completed.

Please review and let us know your position so we may proceed with the project.

Thank you for your expeditious handling of this matter. If you would like to meet to discuss our proposal we would be happy to do so.

Very truly yours,

GORICK CONSTRUCTION CO., INC.



Alfred Gonck, Jr.
President

DECLARATION OF COVENANTS AND RESTRICTIONS

This Declaration of Covenants and Restrictions shall serve as notice to any party who may acquire an interest in the real property situated in the Town of _____, County of _____, State of New York, which property is commonly known as _____ and is Tax Parcel No. _____, that a portion of the property has been listed by the New York State Department of Environmental Conservation on the NYS Registry of Inactive Hazardous Waste Sites as Site No. _____.

Further notice is hereby served that this listed portion of the property is restricted. This restricted portion is depicted and more fully described in Exhibit A, which is attached hereto and made a part hereof ("Restricted Property"). The Restricted Property must be held, sold and conveyed in accordance with the following conditions:

- 1. The installation of drinking water wells is prohibited unless the extracted water is treated to meet drinking water standards before use;

Condition 1 above may be revised or terminated upon demonstration by _____ Incorporated or by the Owner to the New York State Department of Environmental Conservation and the New York State Department of Health that groundwater meets drinking water standards, but in no event shall this condition be terminated prior to delisting from the NYS Registry of Inactive Hazardous Waste Sites.

OWNER:

By: _____

STATE OF NEW YORK)
COUNTY OF) ss.:

On this ____ day of _____, 1999; before me personally came _____ to me know, who being duly sworn, did depose and say that s/he resides in _____; that s/he is the _____ of _____ Incorporated, the corporation described in and which executed the foregoing instrument; and that s/he is duly authorized to execute the foregoing instrument on behalf of the said corporation.

Notary Public

Exhibit A: Map and Legal Description of Restricted Property

APPENDIX C
WATER MONITORING SAMPLING AND TESTING

DATE
 STARTED: 5-13-97
 FINISHED: 5-13-97

MAXIM

TECHNOLOGIES INC

SUBSURFACE LOG

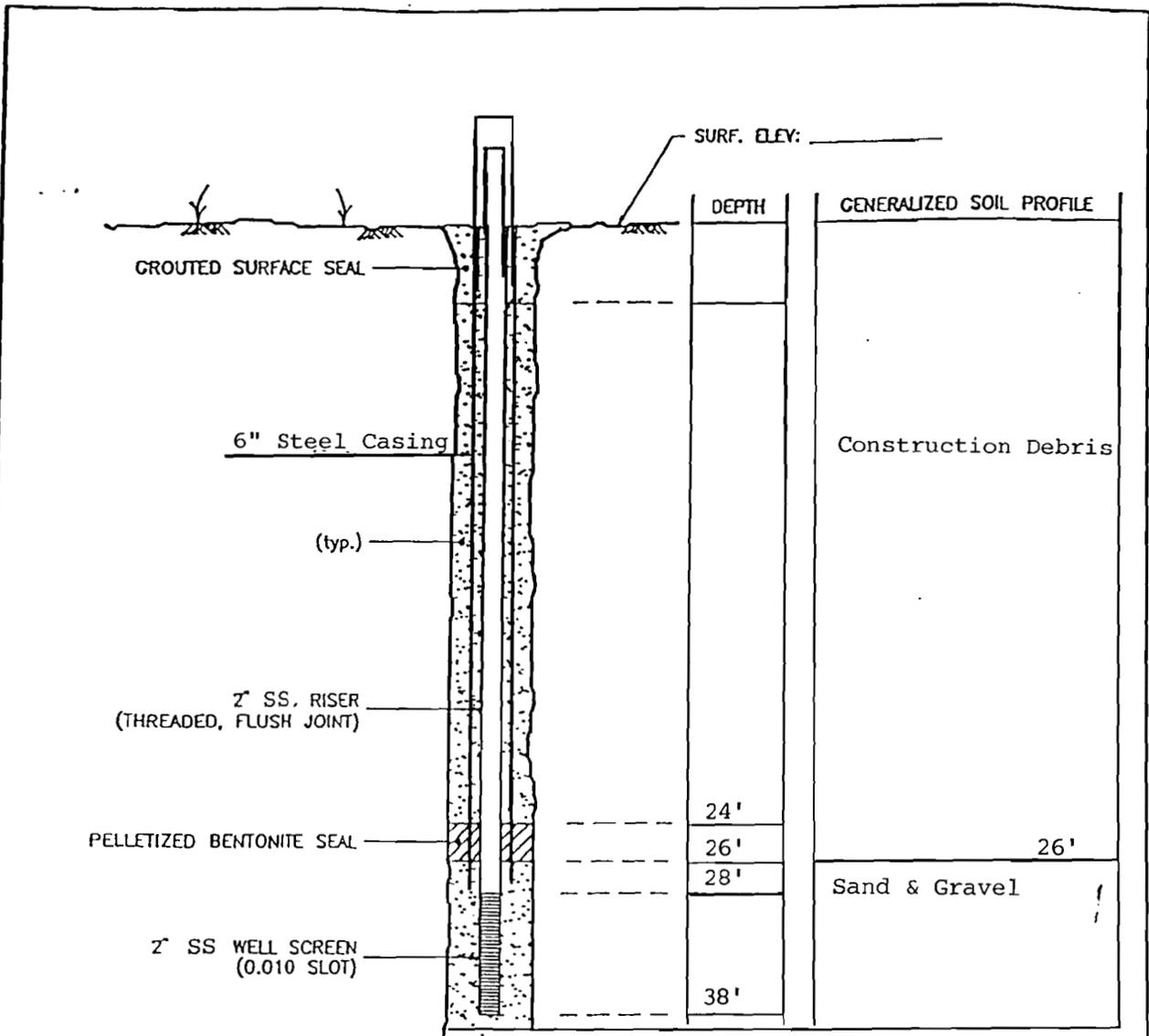
6101700612

BORING NO.: MW-8RS
 SURF. ELEV.: NA
 SHEET 1 OF 1

PROJECT: Gorick C & D Landfill LOCATION: Kirkwood, New York
 CLIENT: Gorick Construction

DEPTH-FT.	SAMPLES	SAMPLE NO	BLOWS ON SAMPLER					REC	SYMBOL	SOIL OR ROCK CLASSIFICATION	NOTES
			0	6	12	18	N				
			6	12	18	24					
0		1	8	8	6	5	14	1.4		Gray SILTY CLAY w/fine-coarse SAND, little fine gravel (Firm-Moist)	
		2	3	5	3	5	8	1.6			
		3	7	5	3	3	8	1.0			Similar w/WOOD possible FILL to 10.0'
5		4	5	10	10	5	20	0.7			
		5	1	1	1	3	2	0.6			
10		6	9	24	20	11	44	0		No Recovery	
		7	9	16	1	2	17	0.1		WOOD	
		8	3	10	25	21	35	1.2		Organics, Gray SILT, fine SAND, trace fill	
15		9	5	8	5	7	13	0.3		Brown/Gray SILT, trace cinders	
		10	20	34	10	5	44	0.1		Brown WOOD, Spoon Bouncing	
20		11	1	3	12	7	15	1.0		Gray/Brown CEMENT WOOD, COAL & Cinders	
		12	8	8	5	7	13	0.8		Brown WOOD & CINDERS (Loose-Moist)	
25		13	8	3	2	2	5	0			
		14	8	8	8	12	16	0.7		Gray fine-coarse SAND & fine GRAVEL (Loose-Wet)	
		15	9	13	15	11	28	0.5			
30		16	11	10	10	11	20	1.2			
		17	18	15	12	11	27	0.9		Brown fine-coarse SAND & fine GRAVEL, Some Silt	
35		18	40	20	16	14	36	1.2		(Firm-Wet)	
		19	18	14	16	16	30	0.7			
40										Boring Terminated @ 38.0'	

DRILLER: J. Warner DRILL RIG: _____
 METHOD OF INVESTIGATION: 4 1/2" I.D. Hollow Stem Auger (ASTM D-1586)
 WEATHER: _____ CLASSIFIED BY: Driller



PIEZOMETER No.
MW-8RS

MAXIM TECHNOLOGIES INC Empire Soils Investigations, Inc., Division	SCALE:
	DATE: 6-17-97
PIEZOMETER DETAILS	DRAWN BY:
	REV'D BY:
GORICK C&D LANDFILL KIRKWOOD, NEW YORK	DWG. FILE:
	PROJ. No.: 6101700612
	DRAWING No.:

WATER QUALITY ANALYSIS TABLES

ROUTINE PARAMETERS¹

Common Name ²	CAS RN ³	Suggested Methods	PQL ⁴ (µg/l)
Field Parameters:			
Static water level..... (in wells and sumps)		9050	
Specific Conductance.....			
Temperature.....			
Floater or Sinkers ⁵			
pH.....		9040 9041	
Eh.....			
Dissolved Oxygen ⁶			
Field Observations ⁷			
Turbidity.....		180.1	
Leachate Indicators:			
Total Kjeldahl Nitrogen...		351.1 351.2 351.3 351.4	60
Ammonia.....	7664-41-7	350.1 350.2 350.3	200 60 100
Nitrate.....		9200	
Chemical Oxygen Demand....		410.1 410.2 410.3 410.4 405.1	50000 50000 50000 80000 2000
Biochemical Oxygen Demand (BOD ₅).....		9060	
Total Organic Carbon.....		160.1	40000
Total Dissolved Solids....		9035 9036 9038	
Sulfate.....		310.1 310.2	20000 6000
Alkalinity.....		8040 9250 9251 9252	
Phenols.....	108-95-2	320.1	2000
Chloride.....		130.1 130.2	20000 30000
Bromide.....			
Total hardness as CaCO ₃ ...			

ROUTINE PARAMETERS¹

Common Name ²	CAS RN ³	Suggested Methods	PQL ⁴ (µg/l)
Inorganic Parameters:			
Cadmium.....	6010 (Total)		40
Calcium.....	7140 (Total)		50
Iron.....	7380 (Total)		1
Lead.....	7381 (Total)		40
	6010 (Total)		100
	7420 (Total)		400
	7421 (Total)		1000
Magnesium.....	7421 (Total)		10
	7450 (Total)		4
Manganese.....	7460 (Total)		40
	7461 (Total)		0.8
Potassium.....	7610 (Total)		40
Sodium.....	7770 (Total)		8

The department may modify this list as necessary.

Notes

¹This list contains parameters for which possible analytical procedures are provided in EPA Report SM-846 Test Methods for Evaluating Solid Waste, third edition, November 1986, as revised December 1987, and Methods for Chemical Analysis of Water and Wastes, USEPA-600/4-79-020, March, 1979. The regulatory requirements pertain only to the list of parameters; the right hand columns (Methods and PQL) are given for informational purposes only. See also footnote 4.

²Common names are those widely used in government regulations, scientific publications, and commerce; synonyms exist for many chemicals.

³Chemical Abstracts Service Registry Number. Where "Total" is entered, all species in the groundwater that contain this element are included.

⁴Practical quantitation limits (PQLs) are the lowest concentrations of analytes in groundwaters that can be reliably determined within specified limits of precision and accuracy by the indicated methods under routine laboratory operating conditions. The PQLs listed are generally stated to one significant figure. PQLs are based on 5 ml samples for volatile organics and 1 l samples for semi-volatile organics. CAUTION: The PQL values in many cases are based only on a general estimate for the method and not on a determination for individual compounds; PQLs are not a part of the regulation.

⁵Any floaters or sinkers found must be analyzed separately for baseline parameters.

⁶Surface water only.

⁷Any unusual conditions (colors, odors, surface sheens, etc.) noticed during well development, purging, or sampling must be reported.

BASELINE PARAMETERS¹

Common Name ²	CAS RN ³	Suggested Methods	PQL ⁴ (µg/l)
Field Parameters:			
Static water level..... (in wells and sumps)			
Specific Conductance.....		9050	
Temperature.....			
Floaters or Sinkers ⁵			
pH.....		9040	
Eh.....		9041	
Dissolved Oxygen ⁶			
Field Observations ⁷			
Turbidity.....		180.1	
Leachate Indicators:			
Total Kjeldahl Nitrogen...		351.1	60
		351.2	
		351.3	
		351.4	200
Ammonia.....	7664-41-7	350.1	60
		350.2	
		350.3	100
Nitrate.....		9200	
Chemical Oxygen Demand....		410.1	50000
		410.2	50000
		410.3	50000
		410.4	80000
Biochemical Oxygen Demand		405.1	2000
(BOD ₅).....			
Total Organic Carbon.....		9060	
Total Dissolved Solids....		160.1	40000
Sulfate.....		9035	
		9036	
		9038	
Alkalinity.....		310.1	20000
		310.2	6000
Phenols.....	108-95-2	8040	
Chloride.....		9250	
		9251	
		9252	
Bromide.....	24959-67-9	320.1	2000
Total hardness as CaCO ₃ ...		130.1	20000
		130.2	30000
Color.....		110.1	
		110.2	
		110.3	80

BASELINE PARAMETERS¹

Common Name ²	CAS RN ³	Suggested Methods	PQL ⁴ (µg/l)
Boron.....	7440-42-8		
Inorganic Parameters:			
Aluminum.....	(Total)	7020	10
Antimony.....	(Total)	6010	300
		7040	2000
		7041	30
Arsenic.....	(Total)	6010	500
		7060	10
		7061	20
Barium.....	(Total)	6010	20
		7080	1000
Beryllium.....	(Total)	6010	3
		7090	50
		7091	2
Cadmium.....	(Total)	6010	40
		7130	50
		7131	1
Calcium.....	(Total)	7140	40
Chromium.....	(Total)	6010	70
		7190	500
		7191	10
Chromium (Hexavalent)*....	18540-29-9	7195	
		7196	600
		7197	30
		7198	
Cobalt.....	(Total)	6010	70
		7200	500
		7201	10
Copper.....	(Total)	6010	60
		7210	200
		7211	10
Cyanide.....	(Total)	9010	200
Iron.....	(Total)	7380	100
		7381	4
Lead.....	(Total)	6010	400
		7420	1000
		7421	10
Magnesium.....	(Total)	7450	4
Manganese.....	(Total)	7460	40
		7461	0.8
Mercury.....	(Total)	7470	2
Nickel.....	(Total)	6010	150
		7520	400
Potassium.....	(Total)	7610	40

BASELINE PARAMETERS¹

Common Name ²	CAS RN ³	Suggested Methods	PQL ⁴ (µg/l)
Selenium.....	(Total)	6010	750
		7740	20
		7741	20
Silver.....	(Total)	6010	70
		7760	100
		7761	10
Sodium.....	(Total)	7770	8
Thallium.....	(Total)	6010	400
		7840	1000
		7841	10
Vanadium.....	(Total)	6010	80
		7910	2000
		7911	40
Zinc.....	(Total)	6010	20
		7950	50
		7951	0.5
Organic Parameters:			
Acetone.....	67-64-1	8260	100
Acrylonitrile.....	107-13-1	8030	5
		8260	200
Benzene.....	71-43-2	8020	2
		8021	0.1
		8260	5
Bromochloromethane.....	74-97-5	8021	0.1
		8260	5
Bromodichloromethane.....	75-27-4	8010	1
		8021	0.2
		8260	5
Bromoform; Tribromomethane	75-25-2	8010	2
		8021	15
		8260	5
Carbon disulfide.....	75-15-0	8260	100
Carbon tetrachloride.....	56-23-5	8010	1
		8021	0.1
		8260	10
Chlorobenzene.....	108-90-7	8010	2
		8020	2
		8021	0.1
		8260	5
Chloroethane; Ethyl chloride.....	75-00-3	8010	5
		8021	1

BASELINE PARAMETERS¹

Common Name ²	CAS RN ³	Suggested Methods	PQL ⁴ (µg/l)
Chloroform; Trichloromethane.....	67-66-3	8010	0.5
		8021	0.2
		8260	5
Dibromochloromethane; Chlorodibromomethane....	124-48-1	8010	1
		8021	0.3
		8260	5
1,2-Dibromo-3-chloropropane; DBCP.....	96-12-8	8011	0.1
		8021	30
		8260	25
1,2-Dibromoethane; Ethylene dibromide; EDB.....	106-93-4	8011	0.1
		8021	10
		8260	5
o-Dichlorobenzene; 1,2-Dichlorobenzene.....	95-50-1	8010	2
		8020	5
		8021	0.5
		8120	10
		8260	5
		8270	10
p-Dichlorobenzene; 1,4-Dichlorobenzene.....	106-46-7	8010	2
		8020	5
		8021	0.1
		8120	15
		8260	5
		8270	10
trans-1,4-Dichloro-2-butene.....	110-57-6	8260	100
1,1-Dichloroethane; Ethylidene chloride.....	75-34-3	8010	1
		8021	0.5
		8260	5
1,2-Dichloroethane; Ethylene dichloride.....	107-06-2	8010	0.5
		8021	0.3
		8260	5
1,1-Dichloroethylene; 1,1-Dichloroethene; Vinylidene chloride.....	75-35-4	8010	1
		8021	0.5
		8260	5
cis-1,2-Dichloroethylene; cis-1,2-Dichloroethene..	156-59-2	8021	0.2
		8260	5
trans-1,2-Dichloroethylene; trans-1,2-Dichloroethene.....	156-60-5	8010	1
		8021	0.5
		8260	5
1,2-Dichloropropane; Propylene dichloride.....	78-87-5	8010	0.5
		8021	0.05
		8260	5
cis-1,3-Dichloropropene...	10061-01-5	8010	20
		8260	10
trans-1,3-Dichloropropene.	10061-02-6	8010	5
		8260	10

BASELINE PARAMETERS¹

Common Name ²	CAS RN ³	Suggested Methods	PQL ⁴ (µg/l)
Ethylbenzene.....	100-41-4	8020	2
		8221	0.05
		8260	5
2-Hexanone; Methyl butyl ketone.....	591-78-6	8260	50
		8010	20
Methyl bromide; Bromo-methane.....	74-83-9	8021	10
		8010	1
Methyl chloride; Chloro-methane.....	74-87-3	8021	0.3
		8010	15
Methylene bromide; Dibromomethane.....	74-95-3	8021	20
		8260	10
		8010	5
Methylene chloride; Dichloromethane.....	75-09-2	8021	0.2
		8260	10
		8015	10
Methyl ethyl ketone; MEK; 2-Butanone.....	78-93-3	8260	100
		8010	40
Methyl iodide; Iodomethane	74-88-4	8260	10
		8015	5
4-Methyl-2-pentanone; Methyl isobutyl ketone..	108-10-1	8260	100
		8020	1
Styrene.....	100-42-5	8021	0.1
		8260	10
		8010	5
1,1,1,2-Tetrachloroethane.	630-20-6	8021	0.05
		8260	5
		8010	0.5
1,1,2,2-Tetrachloroethane.	79-34-5	8021	0.1
		8260	5
		8010	0.5
Tetrachloroethylene; Tet-rachloroethene; Per-chloroethylene.....	127-18-4	8021	0.5
		8260	5
		8010	0.5
Toluene.....	108-88-3	8020	2
		8021	0.1
		8260	5
1,1,1-Trichloroethane; Methylchloroform.....	71-55-6	8010	0.3
		8021	0.3
		8260	5
1,1,2-Trichloroethane.....	79-00-5	8010	0.2
		8260	5
Trichloroethylene; Tri-chloroethene.....	79-01-6	8010	1
		8021	0.2
		8260	5
Trichlorofluoromethane; CFC-11.....	75-69-4	8010	10
		8021	0.3
		8260	5

BASELINE PARAMETERS¹

Common Name ²	CAS RN ³	Suggested Methods	PQL ⁴ ($\mu\text{g/l}$)
1,2,3-Trichloropropane....	96-18-4	8010	10
		8021	5
		8260	15
Vinyl acetate.....	108-05-4	8260	50
		8010	2
Vinyl chloride; Chloro-ethene.....	75-01-4	8021	0.4
		8260	10
		8020	5
Xylenes.....	1330-20-7	8021	0.2
		8260	5

The department may modify this list as necessary.

Notes

¹This list contains 47 volatile organics for which possible analytical procedures provided in EPA Report SW-846 Test Methods for Evaluating Solid Waste, third edition, November 1986, as revised December 1987, includes Method 8260; 25 metals for which SW-846 provides either Method 6010 or a method from the 7000 series of methods; and additional parameters for which possible procedures are provided in Methods for Chemical Analysis of Water and Wastes, USEPA-600/4-79-020, March, 1979. The regulatory requirements pertain only to the list of parameters; the right hand columns (Methods and PQL) are given for informational purposes only. See also footnote 4.

²Common names are those widely used in government regulations, scientific publications, and commerce; synonyms exist for many chemicals.

³Chemical Abstracts Service Registry Number. Where "Total" is entered, all species in the groundwater that contain this element are included.

⁴Practical Quantitation Limits (PQLs) are the lowest concentrations of analytes in groundwaters that can be reliably determined within specified limits of precision and accuracy by the indicated methods under routine laboratory operating conditions. The PQLs listed are generally stated to one significant figure. PQLs are based on 5 ml samples for volatile organics and 1 L samples for semivolatile organics. CAUTION: The PQL values in many cases are based only on a general estimate for the method and not on a determination for individual compounds; PQLs are not a part of the regulation.

⁵Any floaters or sinkers found must be analyzed separately for baseline parameters.

⁶Surface water only.

⁷Any unusual conditions (colors, odors, surface sheens, etc.) noticed during well development, purging, or sampling must be reported.

⁸The department may waive the requirement to analyze Hexavalent Chromium provided that Total and Hexavalent and Trivalent Chromium values do not exceed 0.05 mg/l.

APPENDIX D
GAS MONITORING SURVEY

COMBUSTIBLE GAS INVESTIGATION REPORT

**GORICK C & D LANDFILL
TOWN OF KIRKWOOD
BROOME COUNTY, NEW YORK**

F:51.07196/Gasrepform.xls

DATE OF INVESTIGATION: _____
 INVESTIGATOR: _____
 INSTRUMENT USED: _____

Location	% LEL	Time	Remarks	Location	% LEL	Time	Remarks	
GV 1				P 1				
GV 2				P 2				
GV 3				P 3				
GV 4				P 4				
GV 5				P 5				
GV 6				P 6				
GV 7				P 7				
GV 8				P 8				
GV 9				P 9				
GV 10				P 10				
GV 11				P 11				
GV 12				P 12				
GV 13				P 13				
GV 14				P 14				
GV 15				P 15				
GV 16				P 16				
GV 17				P 17				
GV 18				P 18				
GV 19				P 19				
GV 20				P 20				
GV 21								
GV 22								
GV 23								
GV 24								
GV 25								
GV 26								
GV 27								
GV 28								
GV 29								
				MONITORING WELL LOCATIONS:				
				MW 3S				
				MW 4S				
				MW 5S				
				MW 8S				
OFFSITE LOCATIONS:								
STP			In Office					
WT			At Foundation					
TCR			At Foundation					

Legend: GV = Gas Vent STP = Sewage Treatment Plant
 LEL = Lower Explosive Limit WT = Water Treatment Building
 MW = Monitoring Well TCR = Triple Cities Rubber
 P = Perimeter

Weather: _____

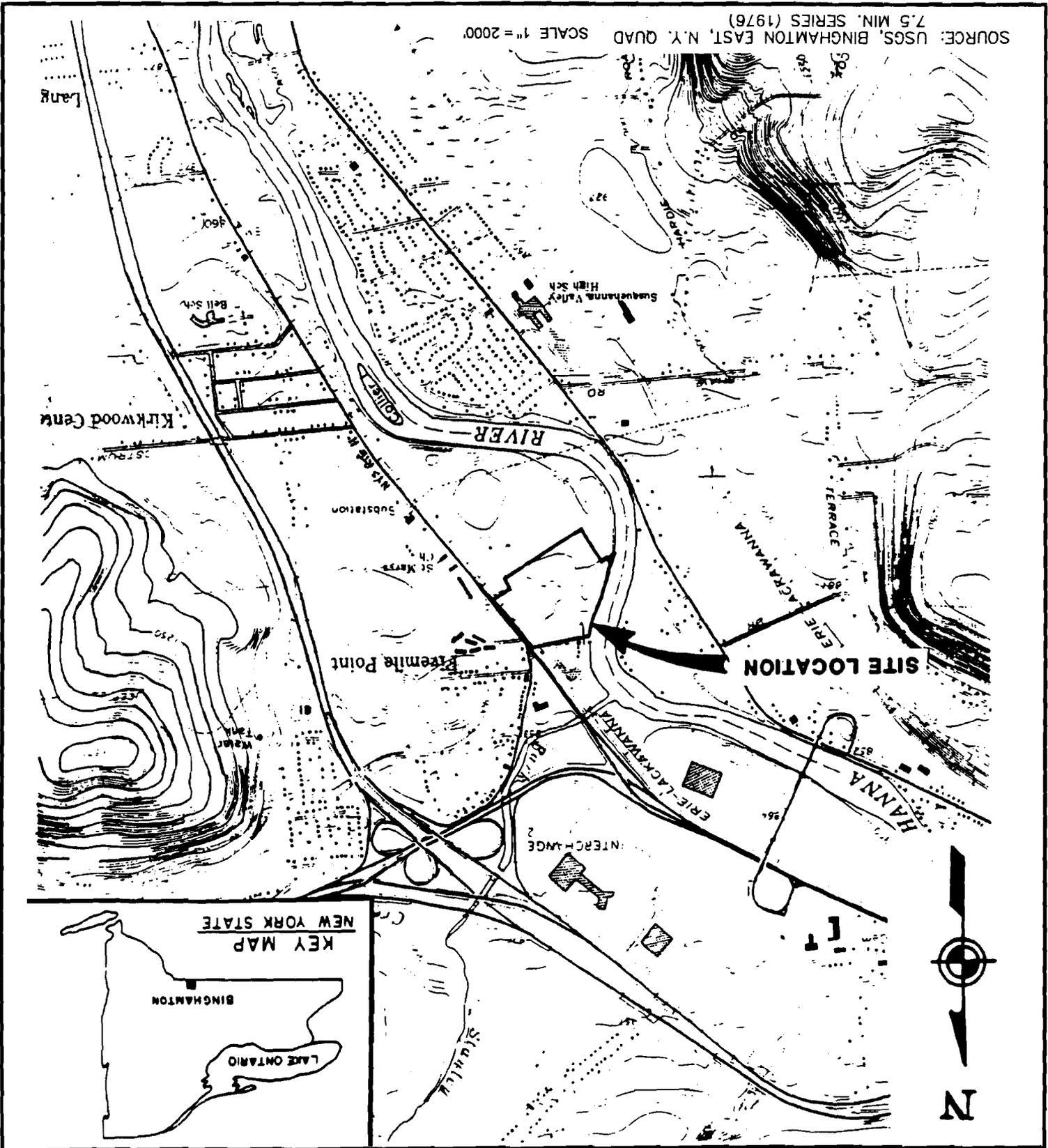
Conclusions: _____

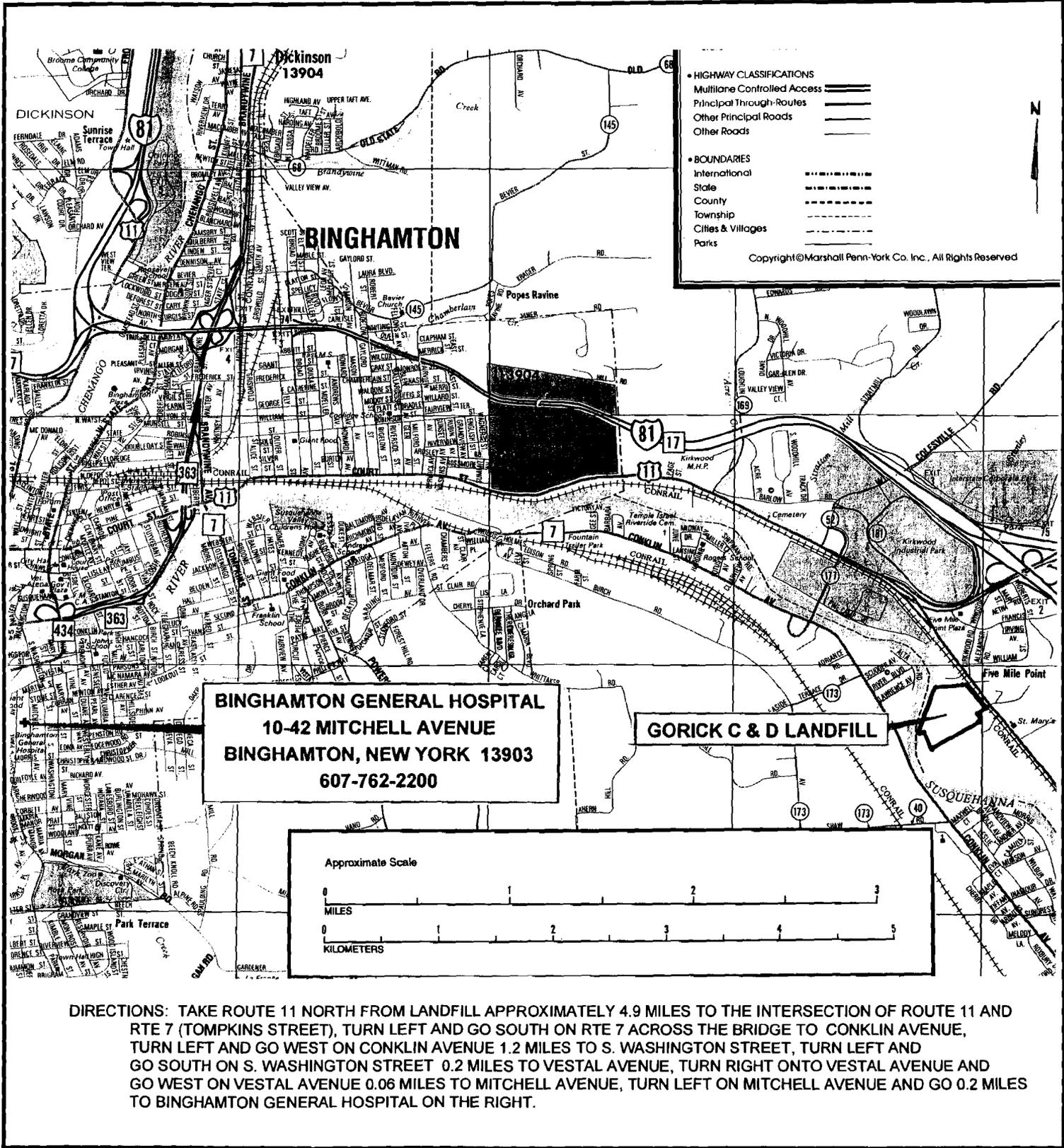
**APPENDIX E
DRAWINGS**



GORICK C&D LANDFILL
TOWN OF KIRKWOOD
BROOME COUNTY NEW YORK STATE

FIGURE 1
SITE LOCATION MAP





GORICK C&D LANDFILL
TOWN OF KIRKWOOD
BROOME COUNTY NEW YORK STATE

BINGHAMTON GENERAL HOSPITAL LOCATION MAP
FIGURE 2