Construction Documentation Report
Lockport City Landfill

Remedial Action Construction

Volume I of II

prepared for:

The City of Lockport
Lockport, New York

prepared by:

URS Consultants, Inc.
282 Delaware Avenue
Buffalo, New York 14202

November 1995
Revised January 1996

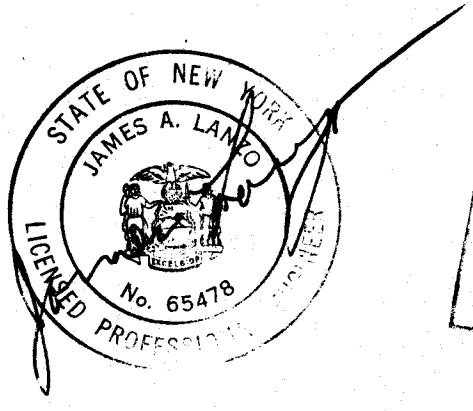
G2169

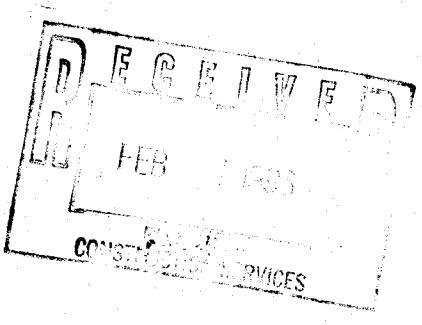
CERTIFICATION OF CONSTRUCTION QUALITY ASSURANCE

AT

LOCKPORT CITY LANDFILL REMEDIAL ACTION CONSTRUCTION LOCKPORT, NEW YORK

URS Consultants, Inc., personnel and its subcontractors have inspected the remedial construction at the Lockport City Landfill according to generally accepted practices. Based on the field inspections made by on-site personnel, field and laboratory test data, and data provided by the contractor and its subcontractors, the remedial action construction at the site was performed in substantial compliance with the NYSDEC-approved Contract Documents and as stated in this report. The work was inspected and documented by a competent person under my direct supervision.





NOVEMBER, 1995
REVISED JANUARY 1996

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1.0 INTRODUCTION

1.1 Background

The Lockport City Landfill site is located on Oakhurst Street in the City of Lockport, Niagara County, New York. Regional, vicinity, and site location maps illustrating the specific location are presented as Figures 1, 2 and 3 respectively. The landfill has been assigned the Site Registry Number 9-32-010 and is the subject of an Order of Consent entered into between the New York State Department of Environmental Conservation (NYSDEC) and the City of Lockport (the City), which requires the remediation of the site. The NYSDEC and the City have entered into a contract under which State assistance is provided to the City for meeting the remediation requirements.

URS Consultants, Inc. (URS) completed a Remedial Investigation/Feasibility Study (RI/FS) for the site and a Record of Decision (ROD) was issued in December 1993 setting forth the plan to be used in site remediation. In August 1993, URS submitted to the NYSDEC a Draft Final Remedial Action Design for the site which included a Design Analysis Report (DAR), specifications, and contract documents for competitively bidding the work. After addressing comments from the NYSDEC, the Final Remedial Action Design was approved by the NYSDEC in March 1994. The construction work was competitively bid and the lower bidder, Suburban Pipe Line Company, Inc. (SPLC), was selected as the prime contractor (they are hereafter referred to as the Contractor). A notice to proceed was issued in June 1994 and the construction work commenced shortly thereafter. The Contractor did not finish on the scheduled completion date of October 31, 1994 and the project was shut down in November 1994 due to inclement weather. The work resumed in May 1995 was completed in August 1995.

Subcontractors involved in this project included:

- King Consulting Engineers, P.C. - Survey control
- Wendel Engineers, P.C. - Survey control and record drawings
- Chenango Contracting Company - Geocomposite installation
- Buffalo Drilling Company - Well abandonment
- Walck Brothers Ag Service - Hauling Owner-furnished soils
- Haseley Trucking Company - Hauling Owner-furnished soils

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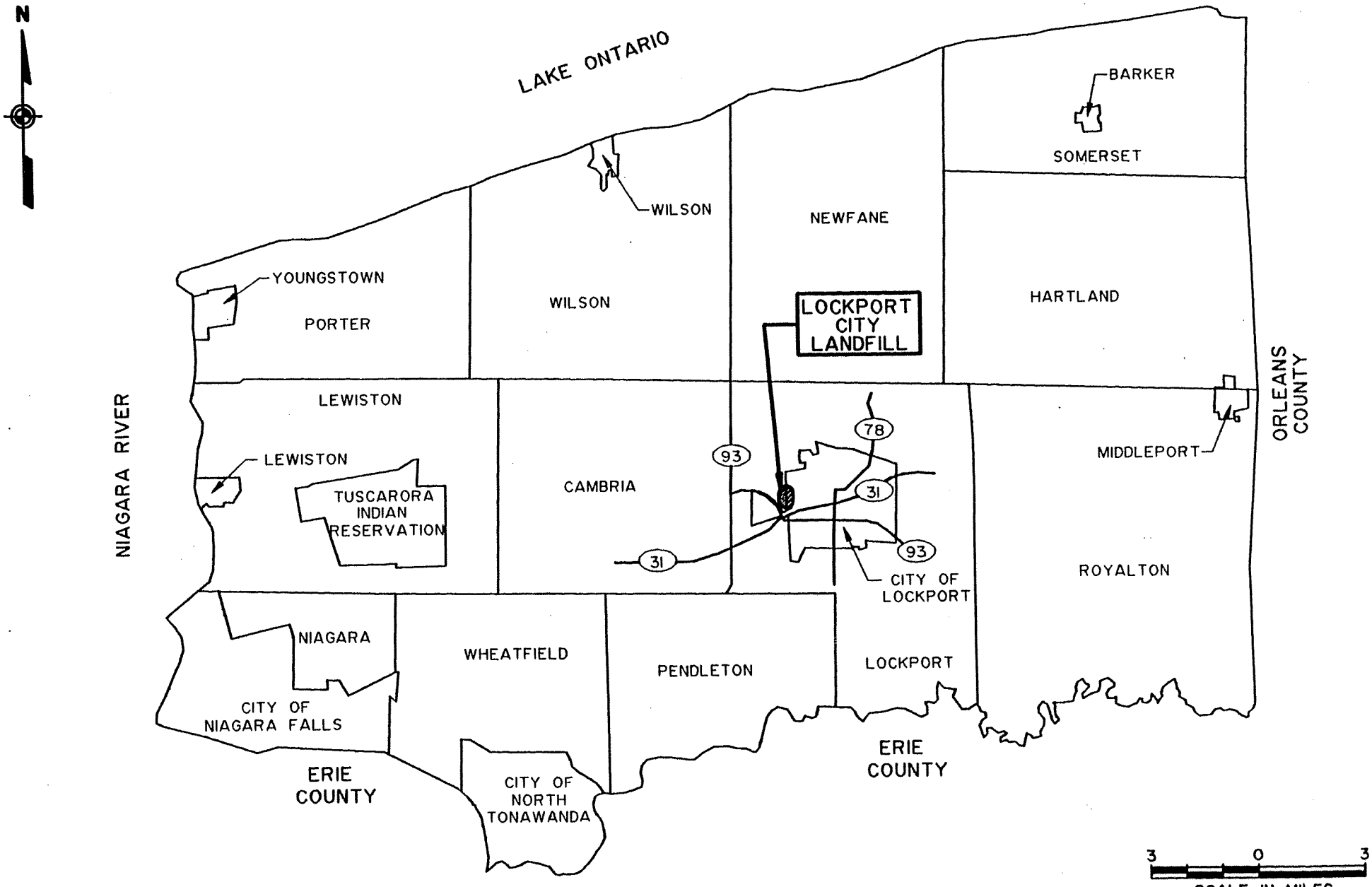
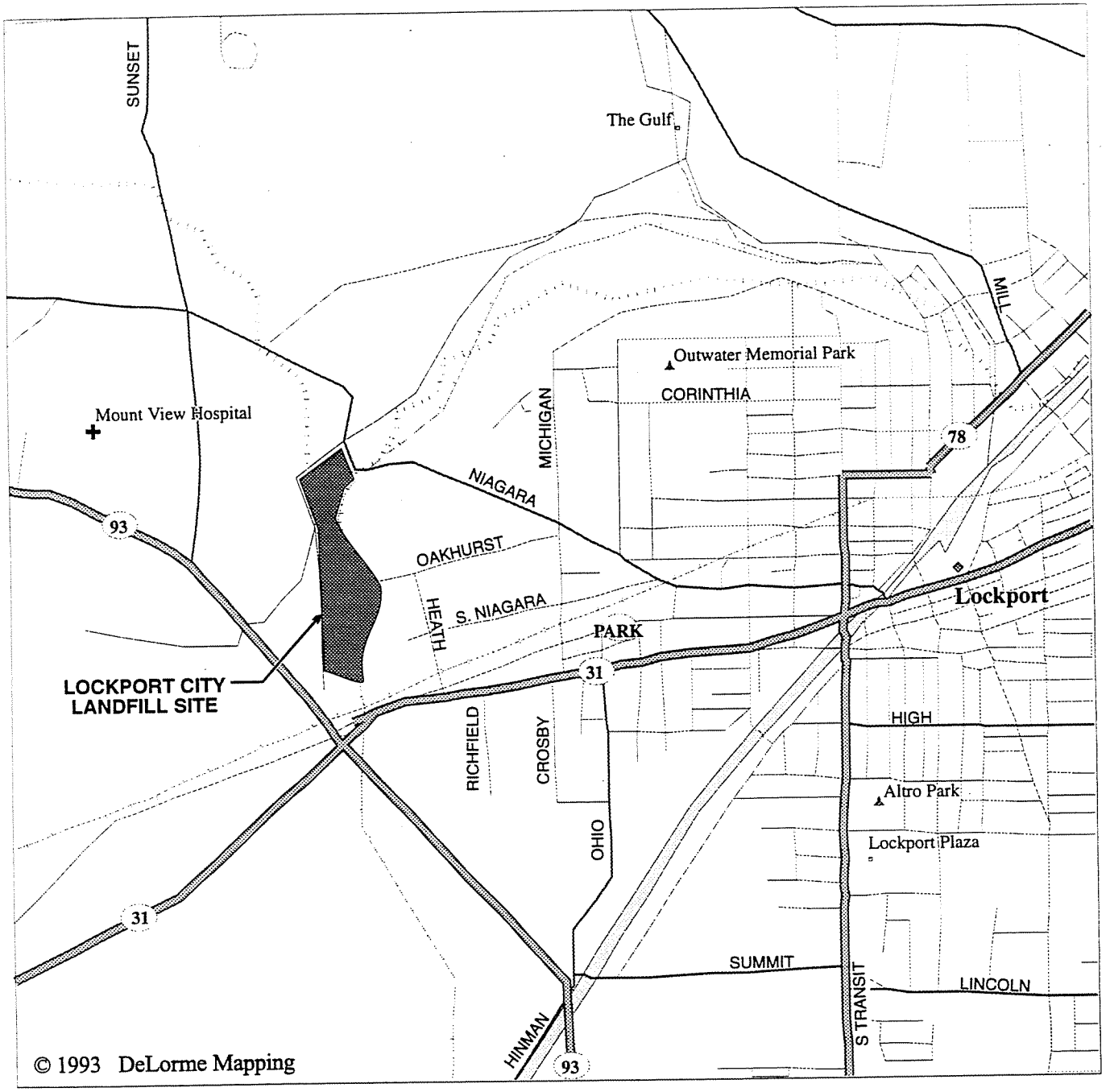


URS CONSULTANTS, INC.

REGIONAL MAP

FIGURE 1



Scale: 1" = 3000 feet

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URS
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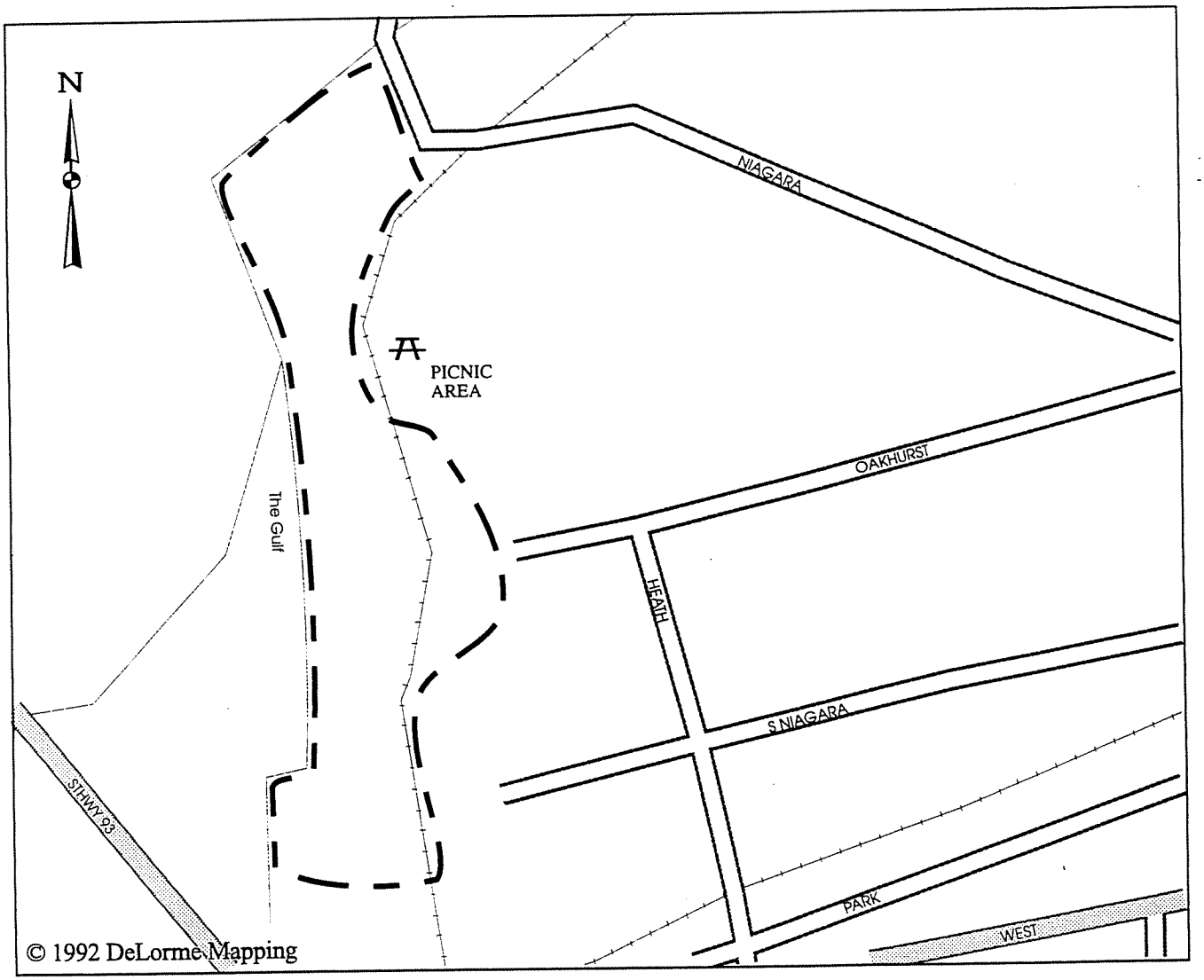
LOCKPORT CITY LANDFILL
VICINITY MAP

FIGURE 2



SCALE: 1" = 675 FT

APPROX. SITE LIMITS

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LOCKPORT CITY LANDFILL
SITE LOCATION MAP

FIGURE 3

- Sevenson Environmental - Hazardous waste drum services (change order)
- Butler Fence Company - Fence installation
- Action Topsoil - Permanent seeding

URS provided quality assurance/quality control (QA/QC) monitoring of construction activities. Daily onsite inspection of contractor activities was provided by URS, and a construction inspector obtained from Edward O. Watts, P.E. under direct URS supervision. In-place soil density testing was also performed by URS and Edward O. Watts personnel. URS retained the services of Glynn Geotechnical Engineering to perform all material and construction quality testing of soils.

1.2 Purpose

The purpose of this report is to present the inspections made and the data collected during construction of the remedial action at the landfill. This Construction Documentation Report (CDR) is submitted to the NYSDEC on behalf of the City of Lockport to fulfill the requirements of a construction documentation report for all associated construction activities.

This report includes a discussion of the methods and equipment used in construction, quality control requirements, and testing, procedures, and criteria used in accepting the work. It also includes documentation of all test results, a description of the procedures used for remediation of failed work, and any retesting performed. Specifically, this CDR includes:

- Construction and material requirements
- Construction methods and equipment
- QA/QC requirements and test results
- Copies of all laboratory and field testing reports
- Color photographs of major project features
- Record drawings
- Supplemental record drawings
- Construction QC test location drawings

2.0 DESCRIPTION OF REMEDIAL ACTION

The remedial action consists of the construction of a 6NYCRR Part 360 multi-layer final cover system (cap) covering a major portion of the site. The cover system includes the following components:

- Subgrade - constructed by relocating waste onto the cap area from the "steep slope" areas along the western edge of the site and from within the limits of waste, and placing grading fill obtained from a Contractor-furnished source (Section 8.0).

- Gas Venting System - a geocomposite layer (geonet sandwiched between two geotextiles) placed on top of the prepared subgrade. Also, 6-inch diameter passive gas vents are constructed a minimum of 3-feet into the waste and extend a minimum of 3 feet above the cap. The geocomposite portion of the system is connected to the vents to release any gases which may accumulate.

- Low Permeability Soil (LPS) Barrier Layer - an 18-inch thick layer having a maximum permeability of 1×10^{-7} cm/sec. Material to construct this layer was obtained from an Owner-furnished source (Section 10.0). This layer was placed over the geocomposite layer of the gas venting system.

- Barrier Protection Layer - a 24-inch thick layer of earth fill which acts as protection against root and frost penetration into the LPS layer. The majority of the material utilized to construct this layer was obtained from a Contractor- furnished source (Section 11.0). This layer was placed directly over the LPS layer.

- Topsoil Layer - a 6-inch topsoil layer placed over the barrier protection layer to support vegetative cover. The topsoil is permanently vegetated to prevent erosion of the cap. Material to construct this layer (Section 12.0) was utilized from both an Owner-furnished source (topsoil and compost) and a Contractor-furnished source (soil for blending with compost).

- Site Drainage - slopes of the cap range from a minimum of 4 percent to a maximum of 20 percent to promote surface water drainage. A network of swales and ditches located on and around the perimeter of the cap carries surface water away from the waste areas. Locations of all drainage features and final contours are shown on the attached Supplemental Records Drawings.

- Monitoring Wells - all existing monitoring wells located within the limits of final cover were abandoned in-place.

- Site Access Road - an access road was installed on top of the final cover where traffic will be concentrated.

- Fence Installation - a permanent chain-link fence was installed along a portion of the site perimeter to minimize unauthorized access into the site.

3.0 GENERAL CONSTRUCTION REQUIREMENTS

Topics discussed in this section include activities performed in conjunction with all major aspects of the project and they are provided here to avoid duplicating the discussion of these items under each report section.

3.1 Record Conditions

3.1.1 Record Drawings

The Contractor recorded information and modifications in red ink on full size blue-line drawings to show the record conditions of the completed work. URS modified the original contract drawings using CADD to incorporate the information shown on the red-line drawings provided by the Contractor. The record drawings, prepared by URS using information supplied by the Contractor, are attached.

3.1.2 Supplemental Record Drawings

The Contractor prepared supplemental record drawings (attached) to demonstrate conformance of the compacted clay cap construction with the plans and specifications. Specifically, they show before and after elevations of each layer, including layer thickness on a 50-foot x 50- foot grid. Supplemental record drawings, prepared by Wendel Engineers, P.C. (Contractor's survey subcontractor), are attached as follows:

- Waste Fill Layer (Drawing No. 1 and 2)
- Grading Fill Layer (Drawing No. 3 and 4)
- Low Permeability Soil Layer (Drawing No. 5 and 6)
- General Fill Layer (Drawing No. 7 and 8)
- Topsoil Layer (Drawing No. 9 and 10)

3.2 Onsite Inspection

Daily inspection of construction activities was provided by URS throughout the life of the contract. This included daily documentation of the work performed by the Contractor, the equipment and labor used, and verification that the requirements of the approved contract documents were satisfied. URS prepared daily inspection reports to document construction activities.

3.3 Construction Photographs

Color photographs were taken throughout the duration of construction. Regular photographic documentation of construction progress was provided by the Contractor as required by the contract documents and by URS. Color photographs of major project aspects are included in Appendix A.

3.4 Survey

The Contractor obtained the services of King Consulting Engineers, P.C. and Wendel Engineers, P.C. to perform all survey work required during the construction. All work was referenced to the existing horizontal and vertical control previously established at the site.

3.5 Grade Control

Throughout the course of construction a continuous 50-foot x 50-foot grid was staked over the entire work area and utilized to establish grades and location. Additional grade stakes were utilized to delineate changes in grade occurring between grid stakes. The grade stakes were referenced to a Northing and Easting as well as to elevation.

3.6 Sedimentation and Erosion Control

The Contractor was required to take all necessary measures to minimize the migration of sediments off-site and establish run-on/runoff control. These measures included:

- Installation and maintenance of a perimeter silt fence

- Construction of temporary ditches to divert overland flow
- Placing haybales and check dams in drainage ditches and swales

In addition, the Contractor was required to minimize the build-up of soil materials on offsite haul roads utilized during construction. The roads were machine swept and power washed as needed.

3.7 Construction Equipment

Construction methods and equipment used during the construction of the remedial action are discussed in the appropriate sections of this report. A summary of the equipment used is presented in Table 3-1.

3.8 Nuclear Densitometer Calibration

URS used Troxler Model 3430 and Humbolt Model 5001-P122 for in-place moisture-density measurements of the compacted lifts of soil for the final cover construction. The instruments were calibrated each day as recommended by the manufacturers. Testing was performed in accordance with manufacturers recommendations, ASTM D-2922, and ASTM D-3017.

TABLE 3-1

LIST OF CONSTRUCTION EQUIPMENT

BULLDOZERS

- John Deere 850B (2 in service)
- John Deere 750 B
- Catapillar D4 LGP
- Catapillar D5 LGP
- Komatsu D37P
- Komatsu D58P

EXCAVATORS

- John Deere 892 Track Hoe
- John Deere 992 Track Hoe
- Ford 655A Rubber Tire Hoe
- Case 580 Rubber Tire Hoe

COMPACTION EQUIPMENT

- Bomag 213 Smooth Drum Roller
- Bomag 213 Pad Foot Roller
- Case 1103 Pad Foot Roller
- Dynapac Pad Foot Roller
- Hamm Pad Foot Roller
- Ingersol Rand 100 Smooth Drum Roller
- Jumping Jack Tamper (Hand Held)

LOADERS

- Case 721B Rubber Tire Loader
- Catapillar 977 Track Loader

WATER TRUCKS

- Ford 1000 Gal. Tank Truck (2 in service)
- Catapillar 5000 Gal. Water Wagon
- Finn Hydro-seeder (300 Gal.)

MISCELLANEOUS EQUIPMENT

- Ford TW-30 Tractor and Disc
- Ford 8770 Tractor and Disc
- Case Tractor and Disc
- Ford 6x6 Winch Truck
- International Equipment Van
- JCB Forklift
- Rome Wood Mauler
- Terex 6x6 Off Road Truck (2 in service)

4.0 MODIFICATIONS TO THE APPROVED CONTRACT DOCUMENTS

The majority of the remedial action was constructed in accordance with the approved contract documents, however as discussed below, several revisions were made.

URS expedited modifications to the contract documents by generating field clarification memos (FCMs) and bulletins. FCMs were issued to the Contractor to clarify the scope of work without a change in the contract price, while bulletins were issued to the Contractor when an out-of-scope work item was encountered requiring a change in the contract price. These bulletins outlined the out-of-scope work and requested a cost proposal for the additional work from the Contractor so that a change order could be implemented. Copies of FCMs and bulletins related to modifications are presented in Appendix B. Areas affected by the FCMs and bulletins are shown on the attached record drawings.

Prior to implementing modifications to the contract documents, the NYSDEC was contacted and informed of the proposed modifications. Upon inclusion of their comments, the NYSDEC gave either verbal or written approval. Copies of NYSDEC correspondence are included in Appendix C.

4.1 Revised Limit of Final Cover/Waste Excavation Near the Gulf (FCM L-1)

Field Clarification Memo (FCM) L-1 was issued to revise the limit of final cover at the northwest end of the site next to the Gulf. After generation of the contract documents, the Gulf migrated into this area which was originally designated for waste excavation and removal. Therefore, to minimize disturbance of the Gulf, the area was excluded from waste excavation. However, surficial and protruding waste was removed and placed beneath the final cover.

In the contract documents, the area of waste excavation near the Gulf served as a transition area for the final cover to terminate to existing grade. Since the transition area was reduced, the limit of the final cover had to be relocated upslope to allow adequate space for transition to existing grade.

4.2 Revised Limit of Final Cover on the North End of the Eastern Landfill (FCM L-2)

FCM L-2 was issued to revise the limit of final cover and omit the northern-most end of the eastern portion of the landfill from receiving the final cover system. Initial excavations in this area by the Contractor revealed no visible waste and appeared to be clean virgin soils. Based on these inspections, several test pits were excavated in the vicinity. The test pits, as witnessed by URS and the NYSDEC, were consistent with the initial excavations and, therefore, the limit of final cover was revised.

4.3 Revised Final Cover Details for Perimeter Ditch C (FCM L-3)

FCM L-3 was issued to revise the final cover system underlying Perimeter Ditch C in order to minimize the disturbance of the Somerset Railroad. The detail in the contract documents would have resulted in the excavation of the toe of the railroad bed possibly causing instability to the tracks. In addition, the detail for the final cover underlying Perimeter Ditch C was revised for an approximate 75-foot length due to bedrock outcropping. Since Perimeter Ditch C was located on top of bedrock, the final cover system terminated immediately before it.

4.4 Gas Vent Perforation Size and Frequency (FCM L-4)

FCM L-4 was issued to specify the size and frequency of the perforations on the gas vent pipes. The contract documents gave no indication of these specifications.

4.5 Deletion of the Geotextile Wrapping at the Perimeter of the Geocomposite (FCM L-5)

FCM L-5 was issued to delete the 5 feet of geotextile wrapping along the perimeter of the geocomposite. The geotextile wrapping was originally included as a factor of safety against soil intrusion into the geocomposite. Upon further consideration it was deleted, since soil intrusion into the geocomposite was not considered a significant risk to warrant its cost. Deletion of the geotextile wrapping resulted in a significant reduction in the cost of the project.

4.6 Revised Grading Plan for the "Very Steep" Slopes (FCM L-6)

FCM L-6 was issued to revise the excavation of the "very steep" slope area. The original design called for test pits to be excavated in this area to verify the depth to bedrock. The waste then was to be excavated and removed down to bedrock, which was believed to be less than 10 feet deep.

Three test pits were excavated in this area to an average depth of 25 feet, though bedrock was not encountered. Removal of waste down to bedrock was not longer feasible, therefore, URS proposed an alternate remedial approach to the City of Lockport and the NYSDEC. The waste would be excavated and removed in the "very steep" slope area to achieve a 1V on 2H slope. Six inches of topsoil, permanent seeding, and erosion control fabric would be installed to control erosion in this area. After discussions with the NYSDEC, this approach was found to be acceptable and the work was performed by the Contractor per FCM L-6. However, the NYSDEC subsequently required soil sampling and analysis of the waste that would remain after the 1V on 2H slope was graded.

Upon completion of the 1V on 2H slope, URS performed the soil sampling and analysis per the NYSDEC-approved work plan. The results indicated no significant levels of hazardous contaminants in the soils. URS presented the results to the NYSDEC and proposed no further remediation of this area. After review, the NYSDEC gave their verbal approval for no further remediation.

4.7 Revised Limit of Final Cover in the Northeast Corner of the Western Landfill (FCM L-7)

FCM L-7 was issued to revise the limit of final cover and omit an area at the northeast corner of western portion of the landfill from receiving the final cover system. From visual inspections of the surface, the area appeared to be free of waste and composed of virgin soils. Based on these inspections, several test pits were excavated to delineate the clean area. As witnessed by URS and the NYSDEC, the test pits clearly defined the limit of waste and resulted in a significant reduction in the area to receive the final cover system. Therefore, the limit of final cover was revised.

4.8 Revised Locations of Gas Vents (FCM L-8)

FCM L-8 was issued to relocate several of the proposed gas vents. The gas vents were relocated to the high points of the landfill, with the approval of the NYSDEC, where gases would most likely accumulate.

4.9 Use of Owner-Furnished Construction and Demolition Debris for Grading Fill (FCM L-9)

FCM L-9 was issued to incorporate approximately 1,000 cubic yards of construction and demolition (C&D) debris, stockpiled adjacent to the site prior to the start of construction, for use as grading fill. URS recommended to the City of Lockport and the NYSDEC that the C&D debris be accepted for grading fill as it is exempt from being classified as waste under 6NYCRR Part 360. In addition, it would reduce the quantity of Contractor-furnished grading fill, hence, reducing the cost of the project.

4.10 Revise Permanent Seed Mixture for 1V on 2H Slope (FCM L-10)

FCM L-10 was issued to revise the permanent seed mixture for the 1V on 2H slope. The permanent seed mixture listed in the specifications was not intended for a 50 percent slope, but rather for the design of 4 percent to 20 percent slope. In order to account for the slope increase, the seed mixture was revised accordingly. The revision was approved by the NYSDEC prior to issuance of FCM L-10.

4.11 Extension of Ultraviolet Exposure Time for Geotextiles (FCM L-11)

FCM L-11was issued per the request of the Contractor to extend the allowable ultraviolet exposure time for geotextiles from 14 days to 30 days. The Contractor submitted a letter of recommendation from the geotextile manufacturer, attached to FCM L-11, confirming that a 30-day exposure time would cause no significant ultraviolet damage.

4.12 Use of Mixed Stockpile Material at the Town of Amherst for Second Lift Barrier Protection (FCM L-12)

FCM L-12 was issued per the request of the Contractor to allow the mixed stockpile (clay and decaying vegetation) material, provided by the Owner, to be used for the second lift (upper 12- inches) of the barrier protection layer.

4.13 Hazardous Waste Drums

During the course of construction, 45 hazardous waste drums were uncovered. Five drums were found on the surface of the "steep slope" area during waste removal operations and 40 drums were uncovered during excavation operations at the north end of Perimeter Ditch C. The uncovering of drums was not anticipated or provided for in the contract documents; so, URS prepared bulletins and subsequent change orders for their removal, sampling, and disposal.

In September 1994, the Contractor subcontracted Sevenson Environmental Services to remove, overpack, and stage the 45 drums as requested in Bulletin L-1. In addition, Sevenson sampled the first 5 drums (surface drums) for Resource Conservation and Recovery Act (RCRA) characteristic hazardous waste parameters which includes Toxicity Characteristic Leaching Procedure (TCLP) extraction followed by analysis for volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), pesticides, herbicides and metals. RCRA ignitability, corrosivity and reactivity were also performed on the samples. Additionally, the samples were analyzed for PCBs. Analytical concentrations were compared to their respective hazardous waste regulatory levels to determine if the drums contained RCRA characteristic hazardous waste. The results of the samples, presented in Appendix C, indicated that the contents were RCRA hazardous. Therefore, the drums were required to be transported by a licensed hazardous waste hauler to a permitted hazardous waste landfill. The following is a summary of the hazardous characteristics of the first 5 drums and their hazardous waste regulatory levels.

- Drum No. 1 - Lead (≥ 5 mg/l) and 81° F flashpoint (< 140°F)
- Drum No. 2 - Chloroform (≥ 6mg/l)
- Drum No. 3 - Lead (≥ 5 mg/l) and 81° F flashpoint (< 140°F)
- Drum No. 4 - Lead (≥ 5mg/l) and 81° F flashpoint (< 140°F)
- Drum No. 5 - 108° F flashpoint (< 140°F)

In July 1995, the Contractor subcontracted Sevenson to dispose of the 5 drums as requested in Bulletin L-8. The 5 drums were hauled to a Chemical Waste Management disposal facility in Georgia. At the same time, Sevenson sampled the remaining 40 drums, as requested in Bulletin L-6, to determine whether their contents were hazardous or non-hazardous. Currently, the sampling results are being reviewed by URS. The drums will be disposed of shortly after the review of the sampling results in the same manner as the first 5 drums. URS will solicit price quotes from 5 disposal contractors. The lowest responsive and responsible bidder will be selected to perform the work associated with drum disposal. Upon completion of the drum disposal work, URS will submit an addendum to this report detailing the work performed.

4.14 Revise Wood Chip Size

During the clearing and grubbing operation, the Contractor requested that the wood chips generated from this operation be allowed to be placed in a 4-inch thick layer having a maximum chip size of 4-inches thick and 12-inches in length. Upon approval of the City of Lockport and the NYSDEC, URS gave the Contractor permission to place the wood chips in this manner. However, since this method required less effort on the part of the Contractor, URS issued Bulletin L-3 which requested a credit to the Contract. The subsequent change order resulted in a significant savings to the project.

5.0 WELL ABANDONMENT

Existing monitoring wells MW-4S, MW-5S, MW-5I, and piezometers P-1 thru P-8 were abandoned in-place by Buffalo Drilling Company, Inc., under subcontract to the Contractor. Well abandonment was performed in accordance with the contract documents. The contract specification called for the removal of the screened interval of the well, though the casing and screen of the deeper wells (P-4, P-6, P-7, P-8, and MW-5S) could not be removed completely due to ground friction. Therefore, in order to ensure that the screens of these wells had been completely sealed with grout, the top of the grout-filled wells were filled with water (approximately 1 foot) and left for 24 hours. If, after the 24-hour period, the water level did not decrease, the bentonite grout seal was deemed acceptable. This commonly used method was approved by the NYSDEC prior to its implementation.

6.0 WASTE REMOVAL

6.1 Type I - "Very Steep" Slopes

As discussed in Section 4.6, the original excavation plan for the "very steep" slope area changed due to existing field conditions. The "very steep" slope was excavated back to a 1V on 2H slope. Prior to excavation activities, a silt fence was installed around the perimeter of the excavation to prevent sediments from escaping off site. Also, at the end of each working day, a silt fence was installed at the top and midway down the slope to minimize erosion.

The slope was achieved by excavating a bench halfway down the slope utilizing a John Deere 892 excavator. The excavator worked from both the top of the slope and the bench to remove the majority of the waste. After a majority of the waste was removed, a Caterpillar D5 LGP dozer was utilized to fine grade the slope to a maximum of IV on 2H. As the waste was excavated, it was loaded immediately into off-road trucks and hauled onto the landfill for placement. During the entire excavation operation, the Contractor's health and safety officer continuously monitored the air for contaminants. Field conditions never warranted personnel protection equipment (PPE) level greater than Level D.

6.2 Type II - Surficial and Protruding Waste

Surficial and protruding waste was removed from the "steep" slope area per the contract documents. The majority of the waste was removed by hand labor with minimal equipment usage. Due to the heavy vegetative growth in this area, several crews of laborers were required so that work could be performed effectively. For the most part, vegetation was minimally disturbed in this area, however, the Contractor did cause some damage that required restoration in the central portion of the area. The area was restored by applying permanent seed to re-established vegetative cover.

The Contractor utilized temporary paths (approximately every 200 feet) along and perpendicular to the slope for manpower and equipment to reach the waste. The Contractor's laborers collected waste on and above grade and stockpiled it on these paths where either a Caterpillar 977 track loader or a John Deere 892 excavator removed it. Once off the slope, the waste was loaded onto off-road trucks and hauled onto the landfill for placement.

During the entire waste removal operation, the Contractor's health and safety officer monitored the areas to ascertain the level of PPE required for entry into the area. Although occasionally in Level C PPE, the majority of the work was performed in Level D PPE. The Contractor located 5 hazardous waste drums in this area, as discussed in Section 4.13

6.3 Type III - Excavation Within Limits of Waste

The majority of the landfill surface received fill (relocated waste and grading fill) to achieve final cover subgrade. However, a minor portion of the landfill surface was excavated using both excavators and bulldozers. The majority of the waste was placed in a thin layer (less than 6 inches) around the immediate vicinity of the excavation. Occasionally, the waste was hauled away from the excavation and placed in areas requiring grading fill.

In the area near the wetlands at the northwest side of the site, waste was excavated approximately 2 to 3 feet deep (down to virgin soil) and removed by excavators and bulldozers. The waste was hauled to areas inside the limit of final cover which required grading fill. The area was then backfilled with compacted grading fill to re-establish existing grades.

During the entire excavation operation, the Contractor's health and safety officer continuously monitored the air for contaminants. The majority of this work was performed in Level D PPE; however, the excavation of the 40 hazardous waste drums on the north end of Perimeter Ditch C as discussed in Section 4.13 required Level B PPE.

7.0 BORROW SOIL MATERIAL QUALITY ASSURANCE TESTING

7.1 Earth Fill

Earth fill material utilized for the project was obtained from both Contractor-furnished and Owner-furnished sources, as described in the following sections. Earth fill was utilized for grading fill and general fill in several project features including subgrade preparation, barrier protection layer, and site drainage features.

Earth fill was supplied by the Contractor from two separate sources. The first source was located on Ridge Road, approximately 8 miles north of the site. The second source (MKB Pit) was located on Sand Pit Road, approximately 10 miles east of the site. The majority (85 percent) of the earth fill came from the Ridge Road source. The following soil types were obtained from the two sources.

- Brown silty sand (Ridge Road)
- Red, red-brown silty sand (Ridge Road)
- Shale (Ridge Road)
- Sandy silt (MKB Pit)

Earth fill from both sources was excavated directly out of the ground and hauled directly to the site. Therefore, test pits had to be excavated into the borrow material to obtain samples for material quality testing. Earth fill was supplied by the Owner from a stockpile located at the Town of Amherst Compost Facility. The stockpile, as discussed in Section 4.12, was composed of clay and decaying vegetation.

Glynn Geotechnical Engineering (GGE), under the direction of URS, obtained samples from random locations in the borrow pit areas designated for excavation. Individual samples were tested for grain size analysis, moisture content, and Standard Proctor (ASTM D-689) moisture-density testing. The test results are presented in Appendix D.1.

The Standard Proctor values of optimum moisture content and maximum dry density used for construction quality testing of the in-place soils were calculated by grouping the values for each different

soil type and computing the average. The average is reasonable to use for in-place moisture-density testing, since the maximum dry density and optimum moisture content for each common material type did not vary significantly. Each soil type was classified by grain size analysis using the United Soil Classification System to ensure conformance with the specification. The quantity of material quality tests performed versus the frequency required is presented in Table 7-1. The range of the material quality test results for each type of earth fill is presented in Tables 7-2A through 7-2E.

7.2 Low Permeability Soil

Low Permeability Soil (LPS) material was obtained from Owner-furnished stockpiles located at the Town of Amherst Compost Facility. Four individual stockpiles of varying size were sampled. GGE, under the direction of URS, obtained individual samples at random locations and depths from the stockpiles for material quality testing. The samples were tested for grain size analysis, moisture content, Atterberg limits, Remolded Permeability, and Standard Proctor moisture-density testing. The test results are presented in Appendix D.2.

The Standard Proctor values used for in-place construction quality testing were calculated by averaging the Proctor values for each individual stockpile. Remolded permeability tests were performed at a dry density value of 95 percent of the Standard Proctor maximum dry density at optimum, and at two percentage points below optimum moisture content. The remolded permeability established minimum values for acceptable in-place LPS (i.e., maximum permeability of 1×10^{-7} cm/sec). Remolded permeability tests also were run at four percentage points below optimum moisture, however, these tests were discontinued since a sample failed the permeability requirement (exceeded 1×10^{-7} cm/sec). All of the remolded permeability samples tested at 95 percent of the Standard Proctor maximum dry density at two percentage points below optimum moisture content satisfied the permeability requirement. Therefore, 95 percent of the Standard Proctor maximum dry density at two percentage points below optimum moisture content was used as the acceptability criteria for field testing of the in-place soils.

The number of material quality tests performed versus the frequency required is presented in Table 7-3. The range of material quality test results are provided in Table 7-4.

TABLE 7-1

REQUIRED QA TESTING FREQUENCIES VS. PERFORMED FOR EARTH FILL

Test Description	Min. Frequency Required	Total Tests Required (1)	Total Tests Performed
Grain Size w/ Hydrometer ASTM D-422	1/5,000 cy	19	21
Standard Proctor ASTM D-698	1/5,000 cy and when a change in material occurs.	19	21
As Received Moisture Content (2) ASTM D-2216	1/5,000 cy	19	18

NOTES:

1) Total number of tests required is based on 91,000 cubic yards of earth fill in place.

2) 3 as received moisture content tests were inadvertently not performed. However, the omission of these results does not affect the acceptability of the material for use as earth fill.

TABLE 7-2A

RANGE OF QA TEST RESULTS FOR CONTRACTOR-FURNISHED EARTH FILL RIDGE ROAD SOURCE - BROWN SILTY SAND

Test Description	Range of Test Results	Requirement
Grain Size w/Hydrometer		
% finer than 3 inches	98-100	None
% finer than #4 sieve	82-100	None
% finer than #200 sieve	38-79	None
% finer than 0.002 mm	0-6	None
Standard Proctor		
Maximum Dry Density	105.7-122.2	None
Optimum Moisture Content	11.6-15.3	None
As Received Moisture Content	17.9-29.8	None

TABLE 7-2B

RANGE OF QA TEST RESULTS FOR CONTRACTOR-FURNISHED EARTH FILL RIDGE ROAD SOURCE - RED, RED-BROWN SILTY SAND

Test Description	Range of Test Results	Requirement
Grain Size w/Hydrometer		
% finer than 3 inches	100	None
% finer than #4 sieve	75-100	None
% finer than #200 sieve	54-91	None
% finer than 0.002 mm	0-15	None
Standard Proctor		
Maximum Dry Density	118.8-126.4	None
Optimum Moisture Content	7.9-14.0	None
As Received Moisture Content	9.4-16.4	None

TABLE 7-2C

RANGE OF QA TEST RESULTS FOR CONTRACTOR-FURNISHED EARTH FILL RIDGE ROAD SOURCE - SHALE

Test Description	Range of Test Results	Requirement
Grain Size w/Hydrometer		
% finer than 3 inches	100	None
% finer than #4 sieve	38-45	None
% finer than #200 sieve	7-16	None
% finer than 0.002 mm	0	None
Standard Proctor		
Maximum Dry Density	135.0-135.5	None
Optimum Moisture Content	8.3-9.2	None
As Received Moisture Content	7.6	None

TABLE 7-2D

RANGE OF QA TEST RESULTS FOR CONTRACTOR-FURNISHED EARTH FILL MKB PIT SOURCE - SANDY SILT

Test Description	Range of Test Results	Requirement
Grain Size w/Hydrometer		
% finer than 3 inches	100	None
% finer than #4 sieve	99	None
% finer than #200 sieve	9-10	None
% finer than 0.002 mm	4-6	None
Standard Proctor		
Maximum Dry Density	107.0-111.0	None
Optimum Moisture Content	10.0-14.5	None
As Received Moisture Content	---	None

TABLE 7-2E

RANGE OF QA TEST RESULTS FOR CONTRACTOR-FURNISHED EARTH FILL AMHERST SOURCE - CLAY WITH DECAYING VEGETATION

Test Description	Range of Test Results	Requirement
Grain Size w/Hydrometer		
% finer than 3 inches	100	None
% finer than #4 sieve	87	None
% finer than #200 sieve	61-66	None
% finer than 0.002 mm	0	None
Standard Proctor		
Maximum Dry Density	108.7-110.0	None
Optimum Moisture Content	16.7	None
As Received Moisture Content	17.1-20.6	None

TABLE 7-3

REQUIRED QA TESTING FREQUENCIES VS. PERFORMED FOR LOW PERMEABILITY SOILS

Test Description	Min. Frequency Required	Total Tests Required	Total Tests Performed
Grain Size w/Hydrometer ASTM D-422	1/2,500 cy	17	18
As Received Moisture Content ASTM D-2216	1/1,000 cy	41	44
Atterberg Limits ASTM D-4318	1/1,000 cy	41	44
Remolded Permeability ASTM D-5084	1/5,000 cy and when a change a material occurs	9	16
Standard Proctor ASTM D-698	1/5,000 cy and when a change in material occurs	9	9

NOTES:

Total number of tests presented above are based on 40,898 cy of in-place soils (16.9 Acres, 18 inches thick)

TABLE 7-4

RANGE OF QA TEST RESULTS FOR LOW PERMEABILITY SOILS

Test Description	Range of Test Results	Requirements
Grain Size W/Hydrometer		
% finer than 3 inches	100	100%
% finer than #4 sieve	99-100	None
% finer than #2 sieve	93-64	None
% finer than 0.002 mm	55-64	None
As Received Moisture Content	16.6-28.1	None
Atterberg Limits		
Liquid Limit	43-55	None
Plastic Limit	20-28	None
Plasticity Index	20-31	None
Remodeled Permeability (1)	1.2 - 6.7 x 10^{-8} cm/sec	$\leq$ 1 x 10^{-7} cm/sec
Standard Proctor		
Maximum Dry Density	96.1-105.5	None
Optimum Moisture Content	19.4-25.8	None

NOTES:

(1) Range of results shown at 95 percent of the Standard Proctor maximum dry density at 2 percentage points below optimum moisture content.

8.0 GRADING AND SUBGRADE PREPARATION

8.1 Construction and Material Requirements

Final cover subgrade for most of the landfill surface was achieved by placing relocated waste and grading fill (earth fill). The Contractor was required to closely follow the subgrade grading plan contained in the contract drawings. In order to minimize the quantity of grading fill used, the subgrade was constructed with slopes ranging from a minimum of 4 percent to a maximum of 20 percent while closely adhering to the contract grading plan.

Materials utilized to achieve final cover subgrade were relocated waste (as discussed in Section 7.0) and grading fill. The relocated waste was placed in areas that required a minimum of 3 feet of grading fill in a maximum 2 feet thickness. The majority of the relocated waste received a minimum of 1 foot of grading fill. Although the Contractor was not required to compact the relocated waste layer, it was generally compacted using several passes of a vibratory padfoot roller. The grading fill was required to be compacted in a maximum 1-foot lift at a minimum of 90 percent of the Standard Proctor maximum dry density at a minimum of 3 percentage points below and a maximum of 3 percentage points above optimum moisture content.

8.2 Grading and Subgrade Preparation

After the existing landfill surface was cleared and grubbed, final cover subgrade was constructed to receive the final cover system. Wood chips from the clearing and grubbing operation were placed in a maximum 4-inch layer in areas requiring a minimum of 2 feet of grading fill. The top of wood chip elevations were recorded along with areas of placement and are presented on attached Supplemental Recording Drawings Nos. 1 and 2.

Relocated waste typically was placed in a maximum 2 feet thick layer on top of the wood chip layer and on other areas requiring a minimum of 3 feet of grading fill. The relocated waste was obtained from waste excavations and removal operations discussed in Section 6.0. Several items existed in the relocated waste that were crushed to remove void space (i.e., empty drums and tanks) prior to their placement. The waste layer was generally compacted with several passes of a vibratory padfoot roller

to minimize future settlement of this material. The top of relocated waste elevations and areas of placement were recorded and are presented on attached Supplemental Record Drawings Nos. 1 and 2.

All relocated waste subsequently was covered with grading fill which was obtained from several different sources, as discussed in Section 7.0. The fill was placed and compacted in maximum 12-inch thick lifts which were compacted with a minimum of two passes of a vibratory padfoot roller. In addition to the padfoot roller, the lift was generally compacted with a smooth drum roller. The use of the smooth drum roller aided compaction and facilitated in-place moisture-density testing. Areas that did not require any fill to achieve subgrade received 2 to 3 inches of compacted grading fill to achieve an acceptable subgrade for construction of the gas venting layer. The top of grading fill (final cover subgrade) elevations were recorded and are presented on attached Supplemental Record Drawings Nos. 3 and 4.

8.3 Construction QA/QC Requirements

8.3.1 QC Test Requirements

The QC monitoring requirements for the placement and compaction of grading fill included visual inspection of each lift to ensure that it was adequately moistened, scarified, within grade tolerance, and free of boulders or other deleterious materials prior to placement of the next lift. In-place moisture-density testing was performed using a nuclear densitometer at a minimum frequency of 9 tests per acre-lift. Measurement of in-place permeability was not required for grading fill.

8.3.2 QC Test Results

Grading fill construction monitoring was carried out in accordance with earth fill QA/QC requirements outlined in the contract documents. Acceptability of the work was determined by performing in-place density and moisture content tests with a nuclear densitometer, supplemented by visual inspection. The locations of in-place moisture-density tests for top of subgrade are shown on the attached construction quality test location Drawing No. 1. The results show that the grading fill was placed and compacted in accordance with the requirements set forth in the in contract documents. Copies of all the field in-place moisture-density test reports are included in Appendix E.

During the placement of grading fill, several in-place moisture-density tests failed to meet the acceptance criteria by not attaining adequate compaction and/or because of insufficient or excess moisture. The failed area was identified in the field and reworked either by scarification, water adjustment, or additional compaction. The area was then retested and the reworking procedure repeated until the lifts passed.

8.3.3 Slope Verification

Prior to LPS placement, the Contractor submitted complete information on grades of the subgrade on a 50-foot x 50-foot grid. URS checked the grades to verify that the slopes were within the specified range of 4 percent to 20 percent. Where corrective grading was required, the affected area was re-surveyed and a plan showing revised grades was submitted. Final subgrade contours are presented on attached Supplemental Record Drawings Nos. 3 and 4.

9.0 GAS COLLECTION/VENTING SYSTEM

9.1 Construction and Material Requirements

A gas venting system was constructed on top of the prepared subgrade to vent any gases which may accumulate underneath the final cover. As required, gas vents were constructed at a minimum of 1 per acre as shown on the contract drawings. As discussed in Section 4.8, the proposed gas vent locations were revised. They were constructed a minimum of 3 feet into the waste and extend a minimum of 3 feet above the top of the final cover. The perforated section of the vent is surrounded by NYSDOTSS No. 1 stone wrapped by geotextile. The vent pipe and goose neck (180 degree) bend consist of Schedule 40 PVC pipe. The bends are equipped with insect/bird screens made of geonet material.

A gas collection layer made of geocomposite (geonet sandwiched between two geotextiles) was constructed as required to cover the entire landfill surface within the limit of final cover. The geocomposite met the requirement of producing a minimum transmissivity of 3×10^{-5} m^2/sec. The geocomposite was tested for transmissivity by the Contractor's independent testing laboratory resulting in conformance to the contract documents.

9.2 Construction Methods and Equipment

The gas vents were excavated on top of the subgrade utilizing an excavator. Geotextile was placed in the excavated area and backfilled with the riser pipe and stone. The riser pipe was extended approximately 7 feet above subgrade to allow for the final cover. Upon completion of the final cover system, goose neck (180 degree) bends were installed on the top of the riser pipes. Insect/bird screens were installed just inside the vent opening.

Geocomposite was installed by both the Contractor and their subcontractor, Chenango Contracting. Rolls of geocomposite were deployed and continuously seamed. The geonet was tied using plastic fasteners. The geotextile portion was seamed by sewing or folding over fabric lap and having a laborer inspect the seams during LPS placement operations to ensure that no soil materials entered the seam.

During the construction of the upper layers of the final cover, there were several instances when the gas collection system required repair. Equipment damaged several of the gas vent risers. The damaged vent was repaired by cutting out the damaged section, adding a splicing coupler and installing a new section. During rain events, the geocomposite portion of the gas vent system occasionally would become clogged with silt. The entire portion of clogged geocomposite was either cut out and repaired by tying in a new piece or by overlaying a new piece tied into undamaged sections.

9.3 Construction Quality Control Methods

Construction monitoring requirements for the gas venting system included the following:

- Visual inspection of the materials for damage or irregularities
- Inspection of geocomposite panel installation and seaming

10.0 LOW PERMEABILITY SOIL LAYER

10.1 Construction and Material Requirements

An 18-inch LPS layer was constructed over the gas venting layer as part of the final cover system. The LPS layer was constructed, as required, in two separate lifts--a first lift of 12 inches and the second lift of 6 inches. As discussed in the following sub-section, the Contractor was required to construct a test pad to determine which methods and equipment were suitable for the construction of the LPS layer. As required, the LPS layer was compacted to 95 percent of the Standard Proctor maximum dry density at a minimum of 2 percentage points below optimum moisture content percentage, and has a maximum permeability of 1×10^{-7} cm/sec.

Material used to construct the LPS layer was obtained from the Owner-furnished source as discussed in Section 7.2.

10.2 Test Pad

In order to determine the suitability of the equipment proposed by the Contractor to achieve the required work, such as permeability and layer bonding, a test pad was constructed. The test pad was built and tested prior to placement of low permeability soil within the limits of final cover. The location of the test pad is presented on attached Supplemental Record Drawing Nos. 5 and 6. The test pad, approximately 50 feet by 50 feet in area, was placed and compacted in a 12-inch lift followed by a 6-inch lift. The soil was placed at a minimum moisture content of 2 percentage points below the optimum moisture content and was compacted to a minimum dry density of 95 percent of the Standard Proctor maximum dry density. The Contractor compacted each lift with two passes of both a vibrating padfoot and smooth drum roller. The in-place density and moisture content were determined using a nuclear densitometer. When the moisture and density requirements of each lift were satisfied, a Shelby tube sample was extracted from the test pad. A test for undisturbed permeability was performed from Shelby tube samples for each lift. The test results demonstrate that by using the Contractor's equipment, methods, and construction procedures, placement of an LPS layer having a minimum in-place dry density of 95 percent of the Standard Proctor maximum dry density and a maximum permeability of 1.0×10^{-7} cm/sec could be achieved. After construction of the two lifts,

a cut was made through the pad with a backhoe to evaluate the bonding between lifts. The permeability test reports are provided in Appendix F.

10.3 Construction Methods and Equipment

The general methods and procedures employed in the successful completion of the test pad were implemented for the placement of the 18-inch LPS layer. The LPS borrow material typically was hauled directly from the offsite stockpile to the area of placement via 10-wheel dump trucks. The 12-inch first lift was spread over the geocomposite using a low ground pressure dozer, typically a Catapillar D5LGP or a John Deere 850B. Care was taken to prevent damage to the underlying geocomposite during the placement operation.

The natural moisture content of the LPS material generally was adjusted by adding water. The water was hauled via water truck to the location of placement and applied with either spray nozzles or hand-held hoses. The water was mixed into the soil during grading and compacting operations.

Each lift was compacted with a minimum of two passes of both a vibratory padfoot roller and vibratory smooth drum roller. Upon successful testing of the first lift, the surface of the first lift was scarified with a dozen or disc for bonding with the second lift. The second lift was placed, watered, and compacted in the same manner as the first lift.

The moisture content of accepted exposed (uncovered) lifts was maintained by surface scarification and frequent water application. If the Contractor could not immediately cover the lifts with the required overlying cover materials, the surface of the lift was scarified and water was applied via water truck as frequently as necessary until the lift was properly covered.

If a lift failed in-place moisture-density testing, the affected area would either receive additional compaction or be completely reworked depending on the cause of failure. The Contractor would make additional passes with the padfoot and/or smooth drum rollers if the lift required additional compaction. If the lift lacked sufficient moisture, the affected area was either disced or churned up with a dozer, and then watered via water truck and mixed through grading. The remediated lift was recompacted and retested. This procedure was repeated until the area passed the moisture-density testing.

10.4 Construction Quality Control Requirements

10.4.1 QC Test Requirements

Construction QC monitoring of the placement of low permeability soil included the following:

- Moisture-density tests were performed on the compacted in-place LPS using a nuclear densitometer. Nuclear densitometer tests were conducted in accordance with ASTM D-2922 and D-3017. These tests determined the in-place moisture content and dry density. The minimum frequency of tests was 9 tests per acre-lift. The acceptance criterion for moisture-density tests was in-place dry density greater than 95 percent of the Standard Proctor maximum dry density and moisture content greater than the moisture content, at which the recompacted permeability test satisfied the permeability acceptance criteria (minimum value of 2 percentage points below optimum moisture content).

- Constant-head triaxial permeability tests were performed on Shelby tube samples extracted from the compacted LPS lifts after the in-place moisture-density was approved. The minimum frequency of Shelby tube sampling was one test per acre-lift. The acceptance criterion for the permeability of the low permeability soil was 1.0×10^{-7} cm/sec or less.

- Visual inspection of placement procedures.

The first lift of the LPS layer was placed in a 12-inch thickness to avoid damaging the underlying geocomposite. In-place moisture-density tests taken on the first lift generally were performed at an 8-inch depth so that the underlying geocomposite was not punctured during testing. The tests were taken at a 6-inch depth for the 6-inch thick second lift. For subsequent permeability tests, samples were obtained from Shelby tubes pushed to a 10-inch depth. All holes caused by in-place testing were filled with bentonite to maintain a low permeability barrier.

10.4.2 QC Test Results

The following sections discuss and summarize the results of the in-place moisture-density and permeability testing of the LPS layer. The total number of tests required versus the total number of tests performed for QC testing is presented in Table 10-1. This table demonstrates that the number of tests performed satisfies the required testing frequency.

10.4.2.1 In-place Moisture-Density Tests

In-place moisture-density (IPD) tests were performed on each lift of the LPS layer at or exceeding the minimum frequency of 9 per acre per lift. Test locations on the second lift were offset (in plan view) from locations on the first lift. Additional IPD tests were performed in suspect areas. The locations of the IPD tests are shown on attached QA/QC In-place Test Location Drawing Nos. 2 and 3. Copies of the IPD test reports are included in Appendix F.1.

10.4.2.2 Undisturbed Permeability Tests

Shelby tube samples were taken at a minimum frequency of one per acre-lift. Generally two tubes were pushed at each location, a primary tube for testing and a backup tube in case the primary sample was damaged in the laboratory or showed some other malfunction. The majority of the sample locations were predetermined by URS, however, if after inspection the quality of an area appeared suspect, the sample location would be relocated to that area. The employed procedure of sampling the most apparent suspect quality areas ensured a higher level of confidence.

The tubes were pushed using a Shelby tube hammer supplied by GGE. This hammer consisted of a weight that mechanically slides freely up and down a rod approximately 4 feet high (similar to a proctor hammer). After the tube was driven into the soil lift and allowed to rest, it was carefully twisted and extracted by hand. The tubes immediately were sealed with caps and duct tape to maintain moisture, and immediately sent to the laboratory for analysis. The holes created by the Shelby tubes were filled with bentonite.

TABLE 10-1

REQUIRED QC TESTING FREQUENCIES VS. PERFORMED FOR LOW PERMEABILITY SOIL LAYER

Test Description	Min. Frequency Required	Total Tests Required[1]	Total Tests Performed	Actual Frequency
In-Place Moisture-Density ASTM D-3017	9/Acre/Lift			
First Lift	9/Acre	152	361	21/Acre
Second Lift	9/Acre	152	326	19/Acre
In-Place Permeability - ASTM D-5084	1/Acre/Lift			
First Lift	1/Acre	17	18	1/Acre
Second Lift	1/Acre	17	18	1/Acre

NOTES:

(1) Total number of tests are based on 16.9 acres of final cover surface area.

The locations of the in-place permeability test samples are provided on the attached QA/QC In-place Test Location Drawing Nos. 2 and 3. None of the samples failed to meet the maximum allowable permeability criterion of 1×10^{-7} cm/sec. A summary of the test results and the individual test reports are provided in Appendix F.2.

10.4.3 Thickness Verification

The Contractor achieved the top of LPS layer elevations which were established on a minimum 50-foot x 50-foot grid provided by the Contractor's surveyor. From these elevations, the thickness of the LPS layer could be verified by subtracting the top-of-subgrade elevation from the top-of-LPS elevation in each respective location. URS reviewed these thicknesses to verify that the 18-inch layer was within the specified tolerance of plus or minus one tenth of a foot, although visual inspection and grade stakes during the actual construction progress also exhibited that required thickness was achieved.

Included with this report are Supplemental Record Drawings Nos. 5 and 6 showing top-of-LPS elevations, top of subgrade elevations, and LPS thickness for the area that received the final cover system. These drawings illustrate that the 18-inch LPS layer was constructed within the allowable thickness tolerance.

11.0 BARRIER PROTECTION LAYER

11.1 Construction and Material Requirements

Earth fill, as discussed in Section 7.1, was utilized for the construction of a 24-inch thick barrier protection layer on top of the LPS layer. The barrier protection layer was required to be placed in two separate 12-inch lifts. Each lift was required to be compacted to a minimum of 90 percent of the Standard Proctor maximum dry density at a minimum of 3 percentage points below and a maximum of 3 percentage points above optimum moisture content.

11.2 Construction Methods and Equipment

The borrow material was hauled generally using 10-wheeled trucks from both the Owner-furnished source and the Contractor-furnished source directly to the area of barrier protection soil placement. Upon scarification of the top of the LPS layer, the first 12-inch lift of barrier protection soil was spread using dozers. The natural moisture content of the earth fill occasionally was adjusted by adding water prior to compaction. The water was applied over the entire surface of the lift using a water truck equipped with spray nozzles and a hand-held hose. The water was mixed by either using a tractor and disc or a dozer.

Each lift was compacted with a minimum of two passes of a vibratory smooth drum roller and typically received additional passes from a vibratory padfoot roller. After scarification of the top of the first lift, the second 12-inch lift was placed and compacted in the same manner as the first lift. The required grades were achieved by utilizing grade stakes on a 50-foot x 50-foot grid.

When in-place moisture density testing revealed that soil density values were too low, additional roller passes were made and the lift retested. A water truck was utilized when soil moisture was too low. Water was thoroughly mixed with the soil using a tractor and disc.

11.3 Construction Quality Control Requirements

11.3.1 QC Test Requirements

QC requirements for the placement and compaction of the barrier protection layer included visual inspection of the LPS layer and previous lift of barrier protection layer to ensure that they were moistened adequately, scarified, and free of boulders or other deleterious materials prior to placement of the next lift. In-place moisture-density testing was performed using a nuclear densitometer at a minimum frequency of 9 tests per acre-lift. The total number of tests required versus the total number performed is presented in Table 11-1. Measurement of in-place permeability was not required for the barrier protection layer.

11.3.2 QC Test Results

Barrier protection layer QC testing was carried out in accordance with the contract specifications. Acceptability of the work was determined by testing in-place density and moisture content with a nuclear densitometer, supplemented by visual inspection. The locations of field in-place moisture-density tests are shown on the attached QA/QC In-place Test Location Drawing Nos. 4 and 5. The results show that the barrier protection layer was placed and compacted to a minimum of 90 percent of the Standard Proctor maximum dry density at a minimum of 3 percentage points below and a minimum of 3 percentage points above the optimum moisture content. Copies of all the field in-place moisture-density test reports are included in Appendix G.

11.3.3 Thickness Verification

The Contractor achieved the required top of barrier protection layer elevations which were established on a minimum 50-foot x 50-foot grid provided by the Contractor's surveyor. From these elevations, the thickness of the barrier protection layer was verified by subtracting the top-of-LPS layer elevation from the top-of-barrier protection layer elevation in each respective location. URS reviewed these thicknesses to verify that the barrier protection thickness was within the required tolerance of plus or minus one-tenth of a foot, although visual inspection and grade stakes during actual construction progress also exhibited that required thickness was achieved.

TABLE 11-1

REQUIRED QC TESTING FREQUENCIES VS. PERFORMED FOR BARRIER PROTECTION LAYER (EARTH FILL)

Test Description	Min. Frequency Required	Total Tests Required	Total Tests Performed	Actual Frequency
In-Place Moisture Density ASTM D-3017				
First Lift Second Lift	9/acre 9/acre	152 152	303 202	18/acre 13/acre

NOTES:

Total number of tests are based on 16.9 acres of final cover surface area.

Included with this report are Supplemental Record Drawings Nos. 7 and 8 showing top-of-barrier protection layer elevations, top-of-LPS elevations, and barrier protection layer thicknesses for the area receiving the final cover system. These drawings illustrate that the 24-inch barrier protection layer was constructed within the allowable thickness tolerance.

12.0 VEGETATIVE COVER

12.1 Construction and Material Requirements

A 6-inch topsoil layer was placed above the barrier protection layer to complete the final cover system. Approximately 4 acres of the landfill surface was covered with topsoil ("pure topsoil") material obtained from the Owner-furnished Town of Amherst source. The remainder of the site received a mixture of soil and compost. The soil portion of the mixture was obtained from a Contractor-furnished source (MKB) and the compost portion was obtained from an Owner-furnished source (City of Lockport Compost Facility). As determined by the Contractor's testing laboratory, the ratio of soil and compost to achieve the required minimum organic content of 10 percent is 50/50 blend by volume (3 inches of soil and 3 inches of compost). The entire landfill site subsequently was mulched, fertilized, and hydro-seeded to establish vegetative growth in accordance with the contract specifications.

12.2 Construction Methods and Equipment

Both the Contractor-furnished and Owner-furnished topsoil materials (topsoil, soil, and compost) were hauled directly to the area of placement using 10-wheeled trucks. The pure topsoil was spread in a minimum 6-inch layer using dozers. The soil/compost topsoil mixture was spread by dozers in two separate lifts--a 3-inch layer of soil and a 3-inch layer of compost. The two 3-inch lifts were blended thoroughly using a tractor and disc. Required grades for the topsoil were verified using grade stakes on a 50-foot x 50-foot grid.

12.3 Thickness Verification

The Contractor achieved the top of topsoil layer elevations which were established on a minimum 50-foot x 50-foot grid established by the Contractor's surveyor. From these elevations, the thickness of the topsoil layer was verified by subtracting the top-of-barrier protection elevation from the top-of-topsoil elevation in each respective location. URS reviewed these thicknesses to verify that the layer was a minimum of 6-inches thick, although visual inspection and grade stakes during actual construction progress also exhibited that required thickness was achieved.

Included with this report are Supplemental Record Drawing Nos. 9 and 10 showing top-of-topsoil elevations, top-of-barrier protection elevations, and topsoil thicknesses for the area receiving the final cover system. These drawings illustrate that the topsoil layer was constructed with a minimum thickness of 6 inches.

13.0 DRAINAGE STRUCTURES

13.1 Perimeter Drainage Ditches

Three perimeter drainage ditches, denoted on the attached record drawings as A, B, and C, were constructed to collect both surface run-on and run-off. Perimeter Ditches A and B were constructed on the east side of the eastern portion of the landfill to divert run-on from areas to the north and east. Perimeter Ditch C was constructed along the west side of the railroad to divert run-on from the railroad and run-off from the final cover transition slope.

Perimeter Ditch A will carry flows from north to south along the east side the eastern portion of the landfill partially inside the final cover area. Inside the final cover area, the ditch is underlain by the complete 4-foot thickness of final cover. An existing 12-inch CMP, which collects surface water from the east side of Oakhurst Street, outlets into Perimeter Ditch A, which in turn, outlets into the existing drainage ditch that runs along the east side of the railroad.

Perimeter Ditch B flows from south to north along the east side of the eastern portion of the landfill, outside of the final cover area. It outlets into the existing drainage ditch that runs along the east side the railroad.

Perimeter Ditch C flows from the south to the north end of the western portion of the landfill along the west-side of the railroad right-of-way. The majority of the ditch is underlain by the 4 feet of final cover. The remainder of the ditch is underlain by bedrock inside the limit of final cover and native soil outside the limit of final cover (see record drawings attached). It outlets into the existing creek on the north end of the landfill.

All three perimeter ditches have rip-rap outlet protection aprons to minimize erosion.

13.2 Drainage Swales and Downchute

Two drainage swales (A and B) were constructed on top of the final cover system to intercept surface run-off. Earth fill material was utilized to construct the swales (berms) on top of the barrier

protection layer. Earth fill was placed and compacted in maximum 12-inch lifts to a height of approximately 18-inches. The earth fill was compacted to a minimum of 90 percent of the Standard Proctor maximum dry density at a minimum moisture content of 3 percentage points below and a maximum of 3 points above optimum moisture content. In-place moisture density tests were performed at a frequency of 1 test per 100 lineal feet of the swale. Test results are presented in Appendix G. The swales were covered with 6 inches of topsoil and seeded to establish vegetative cover.

Swale A was constructed along the western edge of the final cover area adjacent to the "steep" slope area. The swale carries flow from south to north where it intersects with Swale B and flows down to the Gulf through a rip-rap lined downchute channel.

Swale B was constructed on the north end of the final cover area. The swale carries flow from east to west where it intersects with Swale A and the downchute. The east end of the swale was relocated from that shown on the Contract drawings to the south approximately 100 feet due to lack of adequate grade. In its originally intended location, an excessive amount of earth fill would have been required to achieve an adequate slope for the swale. Therefore, to keep project costs to a minimum, the swale was relocated to the south.

The downchute carried flow from both Swales A and B down the 20 percent slope area through an 18-inch thick, rip-rap lined channel. An outlet protection apron was constructed to dissipate flow prior to outlet into the Gulf. The side berms of the downchute were constructed of earth fill and QC tested in the same manner as the swales. The test results are presented in Appendix G. The 18 inches of rip-rap lining in the downchute is completely underlain by geotextile filter fabric along the entire length of the downchute.

14.0 SITE ACCESS ROAD

A site access road was constructed on the eastern portion of the landfill and continues to a point approximately 25 feet west of the railroad crossing. The access road consists of a stabilization fabric overlain by 12-inches of run-of-crusher stone. The location of the road is presented on the attached Record Drawing No. 9.

15.0 CHAIN-LINK FENCE

A 6-foot high chain-link fence was installed along a portion of the site perimeter to minimize unauthorized site access by persons and vehicles that may jeopardize the integrity of the final cover system. Twenty-foot wide fence gates were installed where the fence crosses the access road. The location of the fence is presented on Record Drawing No. 12. The fence was installed in accordance with the contract specifications.

APPENDIX A

CONSTRUCTION PHOTOGRAPHS

LOCKPORT LANDFILL
Lockport, New York

Photo #1: Western Landfill Portion prior to Final Cover Construction

Photo #2: Eastern Landfill Portion prior to Final Cover Construction

URS
CONSULTANTS, INC.

LOCKPORT LANDFILL
Lockport, New York

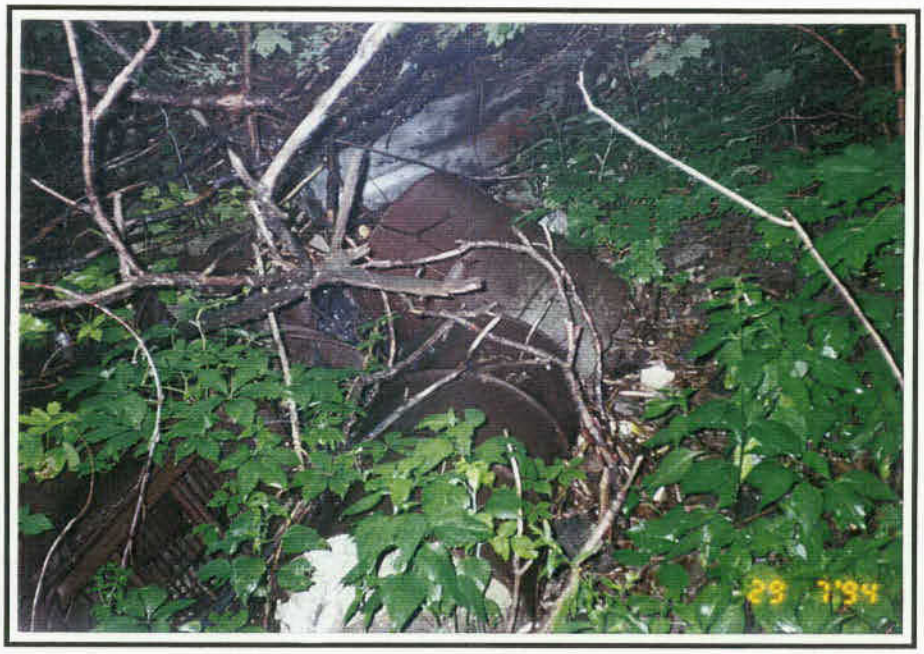


Photo #3: Surficial Debris on the "Steep" Slope Area prior to removal

Photo #4: Surficial Debris on the "Steep" Slope Area prior to removal

URS
CONSULTANTS, INC.

LOCKPORT LANDFILL
Lockport, New York

Photo #5: Test Pit Excavation on the "Very Steep" Slope

Photo #6: Excavation of the 1V on 2H Slope (Very Steep Slope)

URS
CONSULTANTS, INC.

LOCKPORT LANDFILL

Lockport, New York

Photo #7: Grading and Excavation of the 1V on 2H Slope (Very Steep Slope)

Photo #8: Waste Removal and Earth Fill Placement in the area near the Wetlands

URS
CONSULTANTS, INC.

LOCKPORT LANDFILL
Lockport, New York

Photo #9: Relocated Waste Placement

Photo #10: Relocated Waste Compaction

URS
CONSULTANTS, INC.

LOCKPORT LANDFILL
Lockport, New York

Photo #11: Subgrade Preparation, Geocomposite Installation, and LPS Layer Construction

Photo #12: Subgrade Preparation

URS
CONSULTANTS, INC.

LOCKPORT LANDFILL
Lockport, New York

Photo #13: Geocomposite Installation and LPS Layer Construction

Photo #14: Geocomposite Installation

URS
CONSULTANTS, INC.

LOCKPORT LANDFILL
Lockport, New York

Photo #15: Test Pad Construction

Photo #16: Moisture-Density Testing of the LPS Layer

URS
CONSULTANTS, INC.

Photo #17: Compaction of the LPS Layer

Photo #18: Moisture Maintenance of the LPS Layer

Photo #19: Barrier Protection Layer Placement - 1st Lift

Photo #20: Barrier Protection Layer Placement - 2nd Lift

Photo #21: Rip-Rap Placement in Downchute

Photo #22: Completed Downchute

Photo #23: Compost Placement

Photo #24: Compost/Soil Blending for Topsoil

APPENDIX B

FIELD CLARIFICATION MEMOS

AND BULLETINS

URS CONSULTANTS, INC.
282 DELAWARE AVENUE
BUFFALO, NEW YORK 14202

Suburban Pipe Line Co., Inc
5947 East Molloy Road
Syracuse, New York 13211
Attn: Mr. Rod Raab

Field Clarification Memo No. FCM L-1

Project: Lockport City Landfill
Remedial Action Construction

Contractor: Suburban Pipe Line Company, Inc.

Gentlemen:

This is a Field Clarification to resolve conflicts in the Contract Plans and Specifications and/or to avoid conflicts between different trades. It does not involve any change in the Contract price or Contract completion time.

DESCRIPTION OF CLARIFICATION:

Clarify the limits of the following as shown on attached Figure No. 1:

- Area where waste shall be removed (Waste Removal-Type III) and replaced with General Fill
- Limit of final cover

All work shall be performed in accordance with the Contract Documents.

REASON FOR CHANGE:
Clarification needed based upon actual field conditions and per City of Lockport and NYSDEC request.

DRAWING AND/OR SPECIFICATION REFERENCE:
Contract Documents
Attached Figure No. 1

Distribution
George Peters--Suburban
James Drumm--NYSDEC
Ronald Cavalieri--URS
Robert Hoffman--URS
John Claypool--City of Lockport

Issued by: J. MacDowell
Resident Engineer

Date: 8/10/94

Enc.

\35180\ 1:100 8/9/94-1 ELB

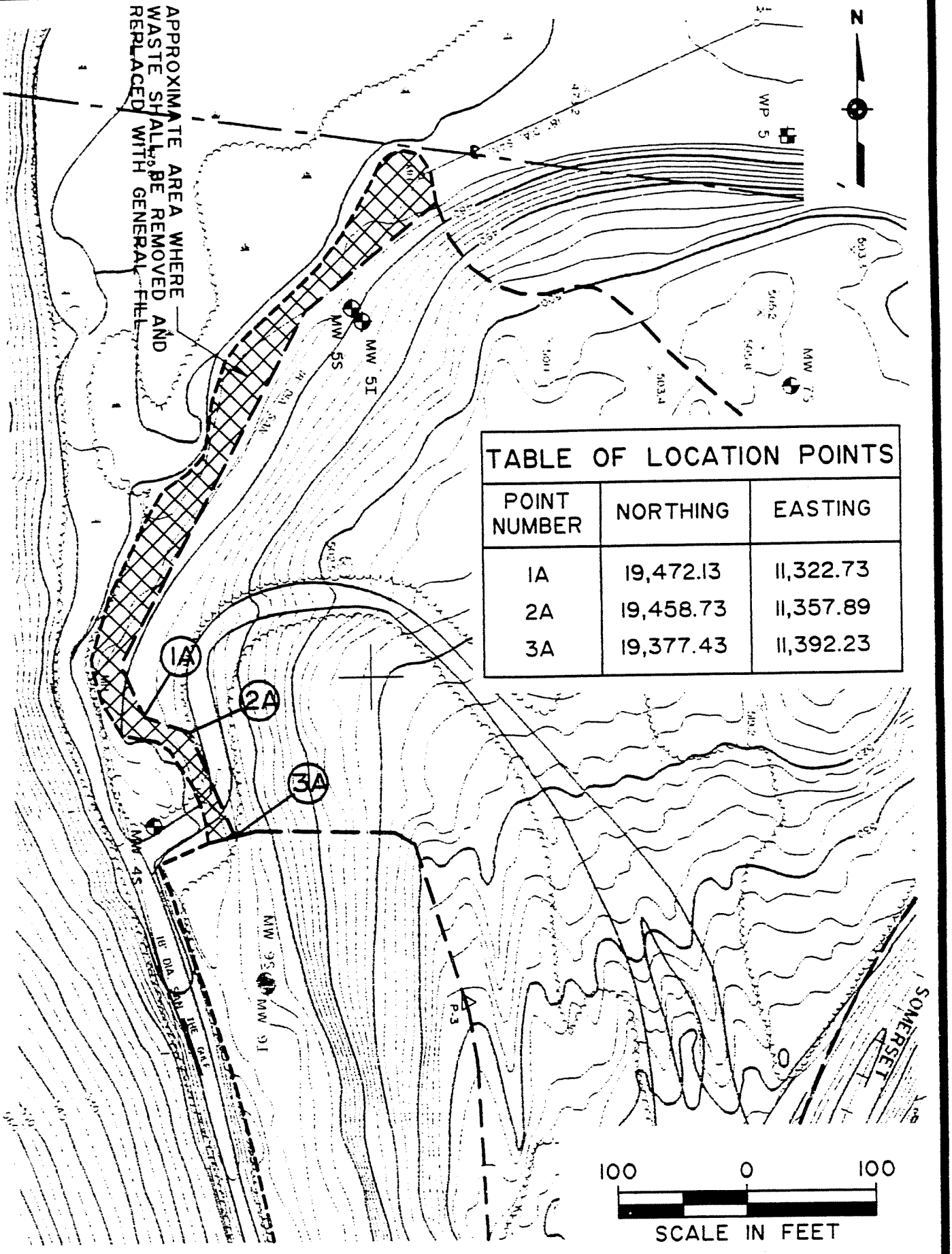


TABLE OF LOCATION POINTS		
POINT NUMBER	NORTHING	EASTING
1A	19,472.13	11,322.73
2A	19,458.73	11,357.89
3A	19,377.43	11,392.23

C--6146

URS CONSULTANTS INC.

LOCKPORT CITY LANDFILL
REVISED CONSTRUCTION LIMITS

FIGURE 1

URS CONSULTANTS, INC.
282 DELAWARE AVENUE
BUFFALO, NEW YORK 14202

Suburban Pipe Line Co., Inc
5947 East Molloy Road
Syracuse, New York 13211
Attn: Mr. Rod Raab

Field Clarification Memo No. FCM L-2

Project: Lockport City Landfill
Remedial Action Construction

Contractor: Suburban Pipe Line Company, Inc.

Gentlemen:

This is a Field Clarification to resolve conflicts in the Contract Plans and Specifications and/or to avoid conflicts between different trades. It does not involve any change in the Contract price or Contract completion time.

DESCRIPTION OF CLARIFICATION:

Clarify the limit of final cover as shown on attached Figure No. 1.

REASON FOR CHANGE:

Clarification needed to reflect actual field conditions (i.e. waste not present in the area omitted).

Per NYSDEC and the City of Lockport request

DRAWING AND/OR SPECIFICATION REFERENCE:
Contract Documents
Attached Figure No. 1

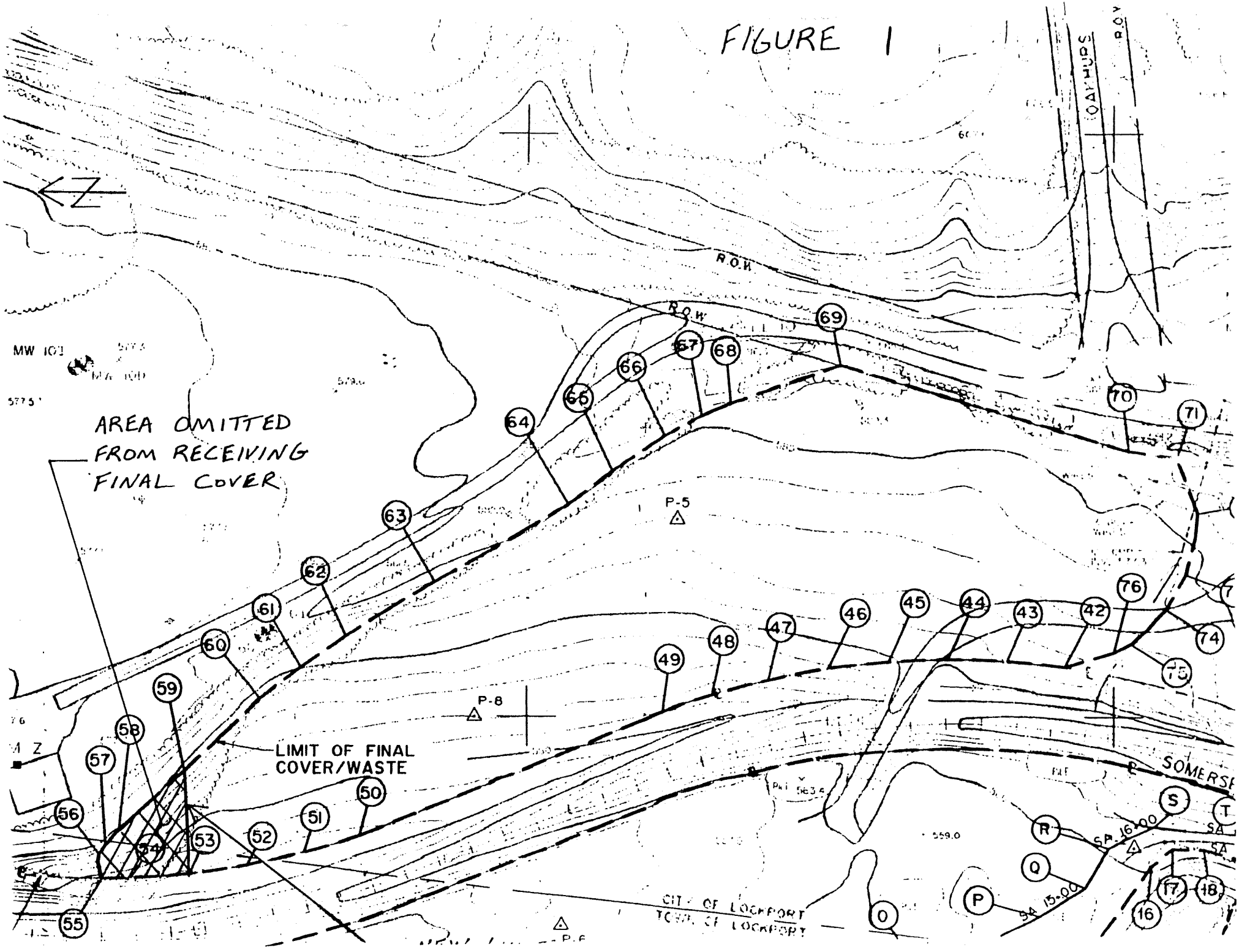
Distribution
George Peters--Suburban
James Drumm--NYSDEC
Ronald Cavalieri--URS
Robert Hoffman--URS
John Claypool--City of Lockport

Issued by: J MacDowell
Resident Engineer

Date: 8/16/94

Enc.

FIGURE 1


AREA OMITTED FROM RECEIVING FINAL COVER
LIMIT OF FINAL COVER/WASTE
R.O.W
MW 101
P-5
P-8
CITY OF LOCKPORT
TOWN OF LOCKPORT
SOMERSET
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URS CONSULTANTS, INC.
282 DELAWARE AVENUE
BUFFALO, NEW YORK 14202

Suburban Pipe Line Co., Inc.
5947 East Molloy Road
Syracuse, New York 13211
Attn: Mr. Rod Raab

Field Clarification Memo No. FCM L-3

Project: Lockport City Landfill
Remedial Action Construction

Contractor: Suburban Pipe Line Company, Inc.

Gentlemen:

This is a Field Clarification to resolve conflicts in the Contract Plans and Specifications and/or to avoid conflicts between different trades. It does not involve any change in the Contract price or Contract completion time.

DESCRIPTION OF CLARIFICATION:

Clarify Perimeter Ditch C from DC 1+41 to DC 17+33 as shown on Attached Details 1, 2, and 3. The stationing where each respective detail applies is based on survey information submitted by Suburban Pipe Line Co. and is approximate only. The actual limits where each detail applies shall be field determined.

REASON FOR CHANGE:

Clarification needed to reflect actual field conditions (i.e. Ditch modified to prevent excavation of the railroad embankment) and per Suburban Pipe Line Co. request

DRAWING AND/OR SPECIFICATION REFERENCE:
Contract Documents
Attached Details 1, 2, and 3

Distribution
George Peters--Suburban
James Drumm--NYSDEC
Ronald Cavalieri--URS
Robert Hoffman--URS
John Claypool--City of Lockport

Issued by: J. MacDowell
Resident Engineer

Date: 8/16/94

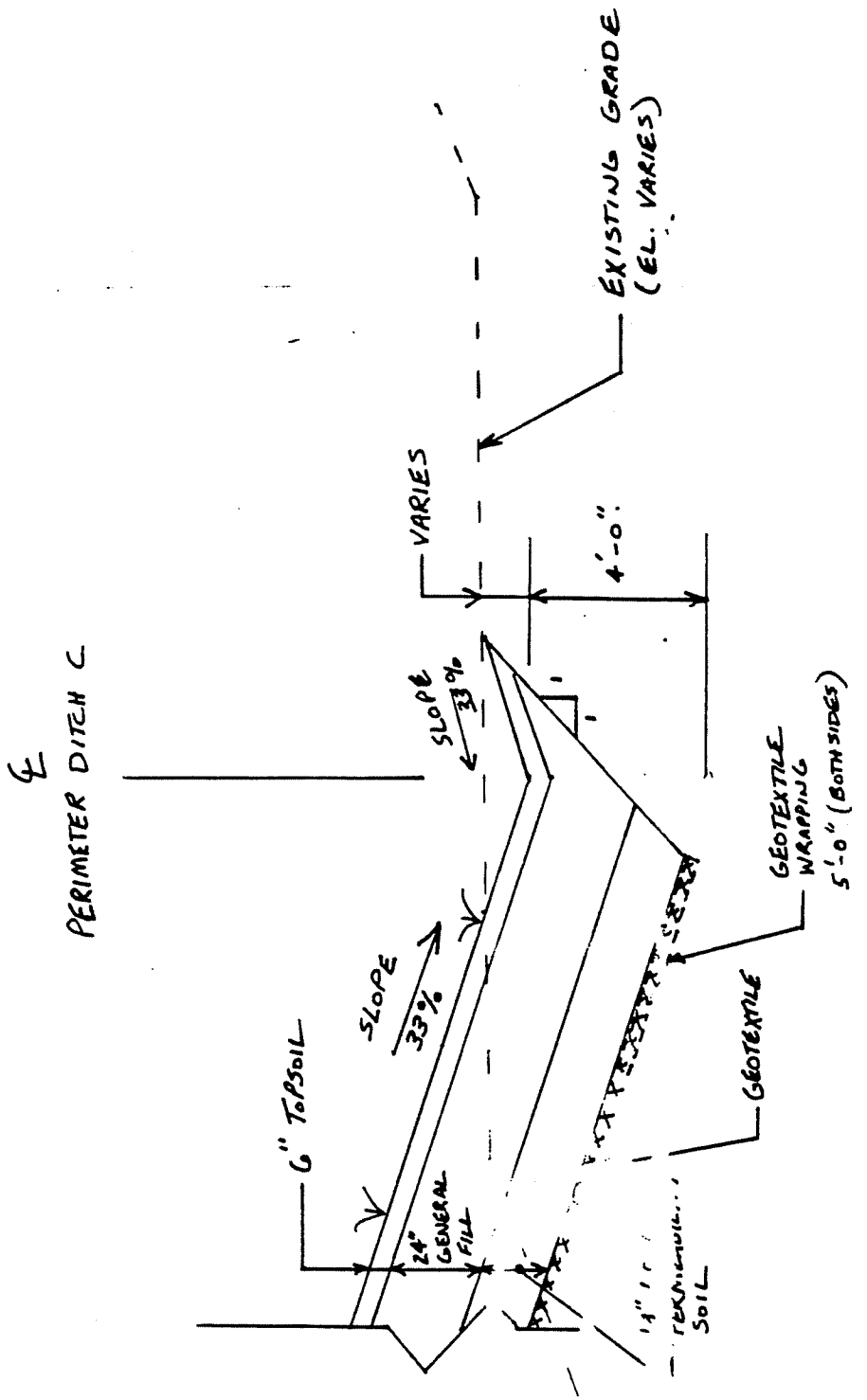
Enc.

URS CONSULTANTS, INC.

PROJECT .....
SUBJECT .....
.....

PAGE .....OF .....
SHEET NO. .....OF .....
JOB NO. .....
MADE BY .....DATE .....
CHKD. BY .....DATE .....

REF.
PAGE



DETAIL 1 (DC 17+00 - DC 16+50)

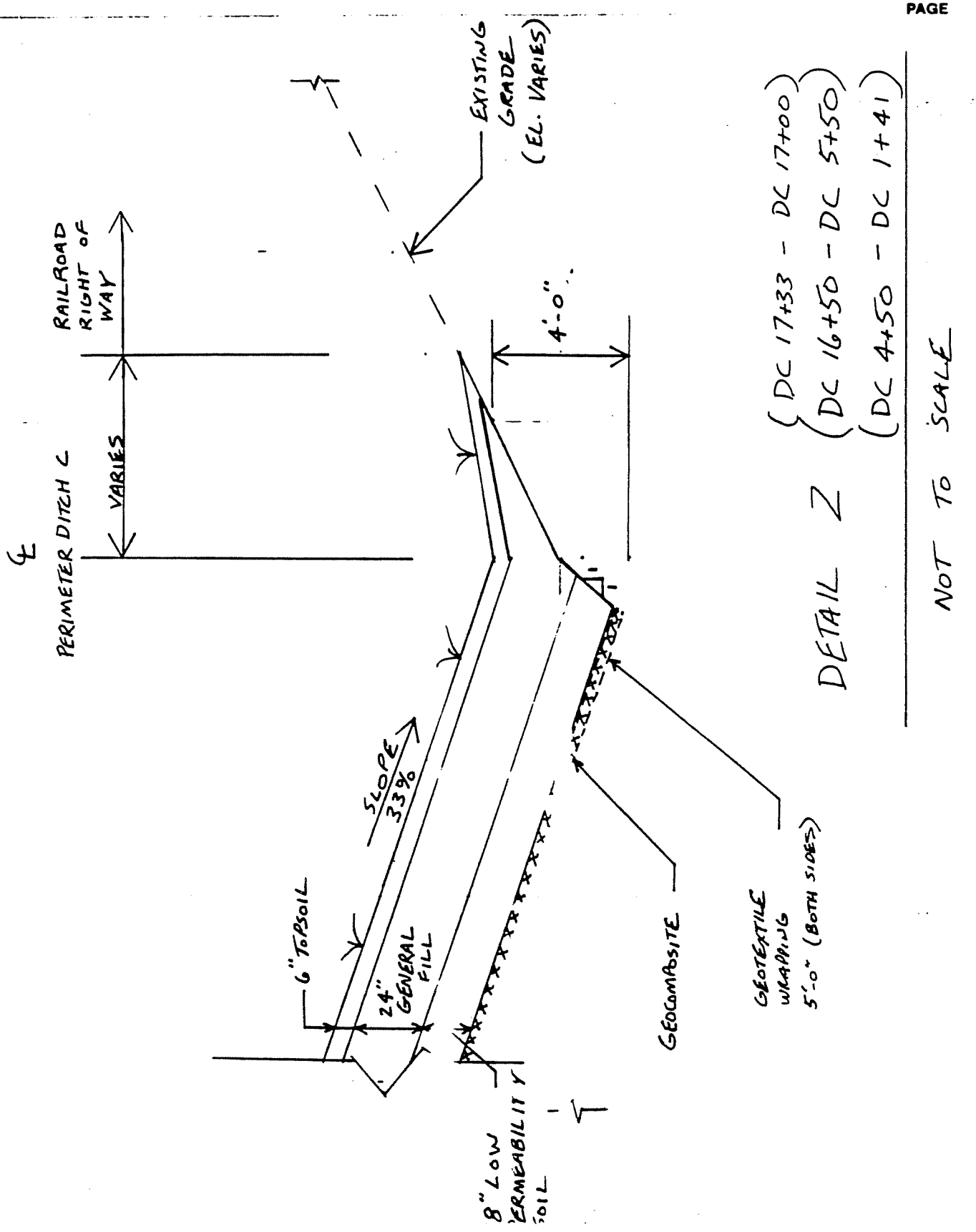
NOT TO SCALE

URS CONSULTANTS, INC.

PROJECT .....
SUBJECT .....
.....

PAGE .....OF .....
SHEET NO. .....OF .....
JOB NO. .....
MADE BY .....DATE .....
CHKD. BY .....DATE .....

REF. PAGE



DETAIL Z (DC 17+33 - DC 17+00) (DC 16+50 - DC 5+50) (DC 4+50 - DC 1+41)

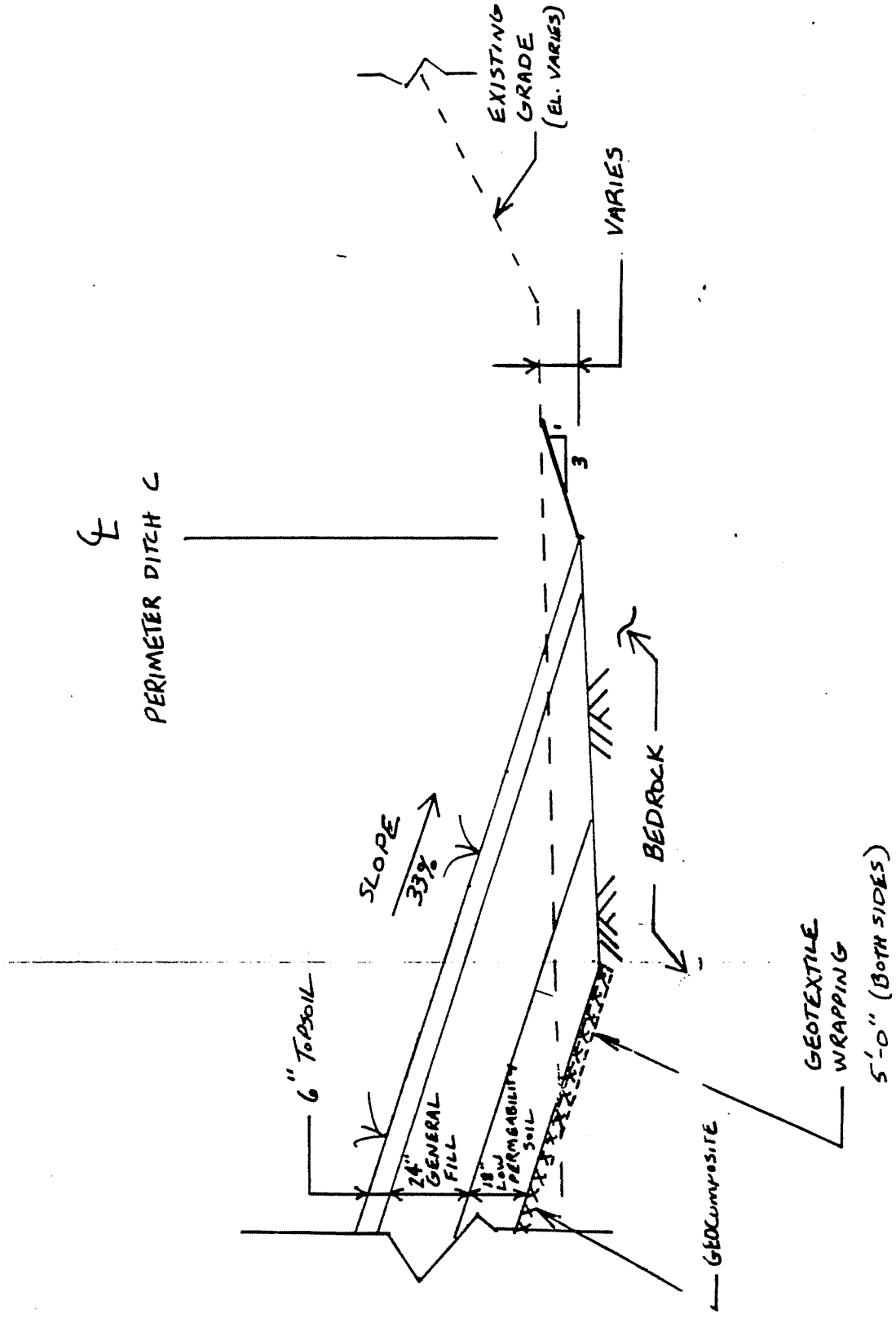
NOT TO SCALE

URS CONSULTANTS, INC.

PROJECT .....
SUBJECT .....
.....

PAGE .....OF .....
SHEET NO. .....OF .....
JOB NO. .....
MADE BY .....DATE .....
CHKD. BY .....DATE .....

REF.
PAGE



DETAIL 3 (DC 5+50 - DC 4+50)

NOT TO SCALE

URS CONSULTANTS, INC.
282 DELAWARE AVENUE
BUFFALO, NEW YORK 14202

Suburban Pipe Line Co., Inc
5947 East Molloy Road
Syracuse, New York 13211
Attn: Mr. Rod Raab

Field Clarification Memo No. FCM L-4

Project: Lockport City Landfill
Remedial Action Construction

Contractor: Suburban Pipe Line Company, Inc.

Gentlemen:

This is a Field Clarification to resolve conflicts in the Contract Plans and Specifications and/or to avoid conflicts between different trades. It does not involve any change in the Contract price or Contract completion time.

DESCRIPTION OF CLARIFICATION:

Clarify the perforations on the gas vent riser pipes to the following:

- Hole diameter = 5/16 inch
- Hole frequency = Total of 20 holes per lineal foot of pipe
- Hole spacing = 5 equally spaced rows along the length of pipe

REASON FOR CHANGE:

Per Suburban Pipe Line Co., Inc. request.
Additional information needed to fabricate the work.

DRAWING AND/OR SPECIFICATION REFERENCE:

Contract Documents
Drawing No. 16, Detail H

Distribution
George Peters--Suburban
James Drumm--NYSDEC
Ronald Cavalieri--URS
Robert Hoffman--URS
John Claypool--City of Lockport

Issued by: Mark Dowell
Resident Engineer

Date: 8/20/94

Enc.

URS CONSULTANTS, INC.
282 DELAWARE AVENUE
BUFFALO, NEW YORK 14202

Mr. Roderick J. Raab
Suburban Pipe Line Co. Inc.
5947 East Molloy Road
Syracuse, New York 13211

FIELD CLARIFICATION MEMO: L - 5

PROJECT: City of Lockport
Lockport Landfill
Remedial Action

CONTRACTOR: Suburban Pipe Line Co.

Gentlemen:

This is a Field Clarification to resolve conflicts in the Contract Plans and Specifications and/or to avoid conflicts between different trades. It does not involve any change in the Contract price or Contract completion time.

DESCRIPTION OF CLARIFICATION:

Delete the requirement to wrap the edges of the geocomposite liner with (ten feet) of geotextile fabric.

REASON FOR CHANGE:

Per the request of the Owner and with the permission of the NYSDEC. The wrapping of the edge of the geocomposite with geotextile is not required.

DRAWING AND/OR SPECIFICATION REFERENCE:

Contract Documents
Contract Drawing 15, details A, B, C, and D.
Contract Drawing 16, details F, G. and I.

Distribution:

J. Drumm - NYSDEC
J. Claypool - City of Lockport
G. Peters - Suburban
R. Cavalieri - URS
J. MacDowell - URS Field Office
File: 35180.03 (FCM-1)

Issued by: Robert J. Hoffman
Construction Manager

Date: August 23, 1994

J\35180.03\WP\COR\FMCL5.RR\yg

URS CONSULTANTS, INC.
282 DELAWARE AVENUE
BUFFALO, NEW YORK 14202

Suburban Pipe Line Co., Inc
5947 East Molloy Road
Syracuse, New York 13211
Attn: Mr. Rod Raab

Field Clarification Memo No. FCM L-6

Project: Lockport City Landfill
Remedial Action Construction

Contractor: Suburban Pipe Line Company, Inc.

Gentlemen:

This is a Field Clarification to resolve conflicts in the Contract Plans and Specifications and/or to avoid conflicts between different trades. It does not involve any change in the Contract price or Contract completion time.

DESCRIPTION OF CLARIFICATION:

Clarify the waste removal on the "very steep" slope area to the lines and grades shown on the attached Figure No. 1. The excavated area shall receive a minimum of 6 inches of topsoil and be permanently seeded. All work performed shall be in accordance with the Contract Documents. Additional erosion and sedimentation control measures will be required in this area and shall be addressed in a forthcoming bulletin.

The Measurement and Payment of the work performed shall be in accordance with the following:

- Item 10 (Topsoil Placement);
- Item 11 (Loading and Hauling Owner Provided Topsoil);
- Item 12 (Blending Owner Provided Soil and Compost for Topsoil);
- Item 13 (Permanent Seeding);
- Item 20 (Waste Removal Type I).

REASON FOR CHANGE:

To reflect actual field conditions and per NYSDEC and the City of Lockport request.

DRAWING AND/OR SPECIFICATION REFERENCE:

Contract Documents
Attached Figure No.1

Distribution

George Peters--Suburban
James Drumm--NYSDEC
Ronald Cavalieri--URS
Robert Hoffman--URS
John Claypool--City of Lockport

Issued by: H. MacDowell
Resident Engineer

Date: 8/24/94

Enc.

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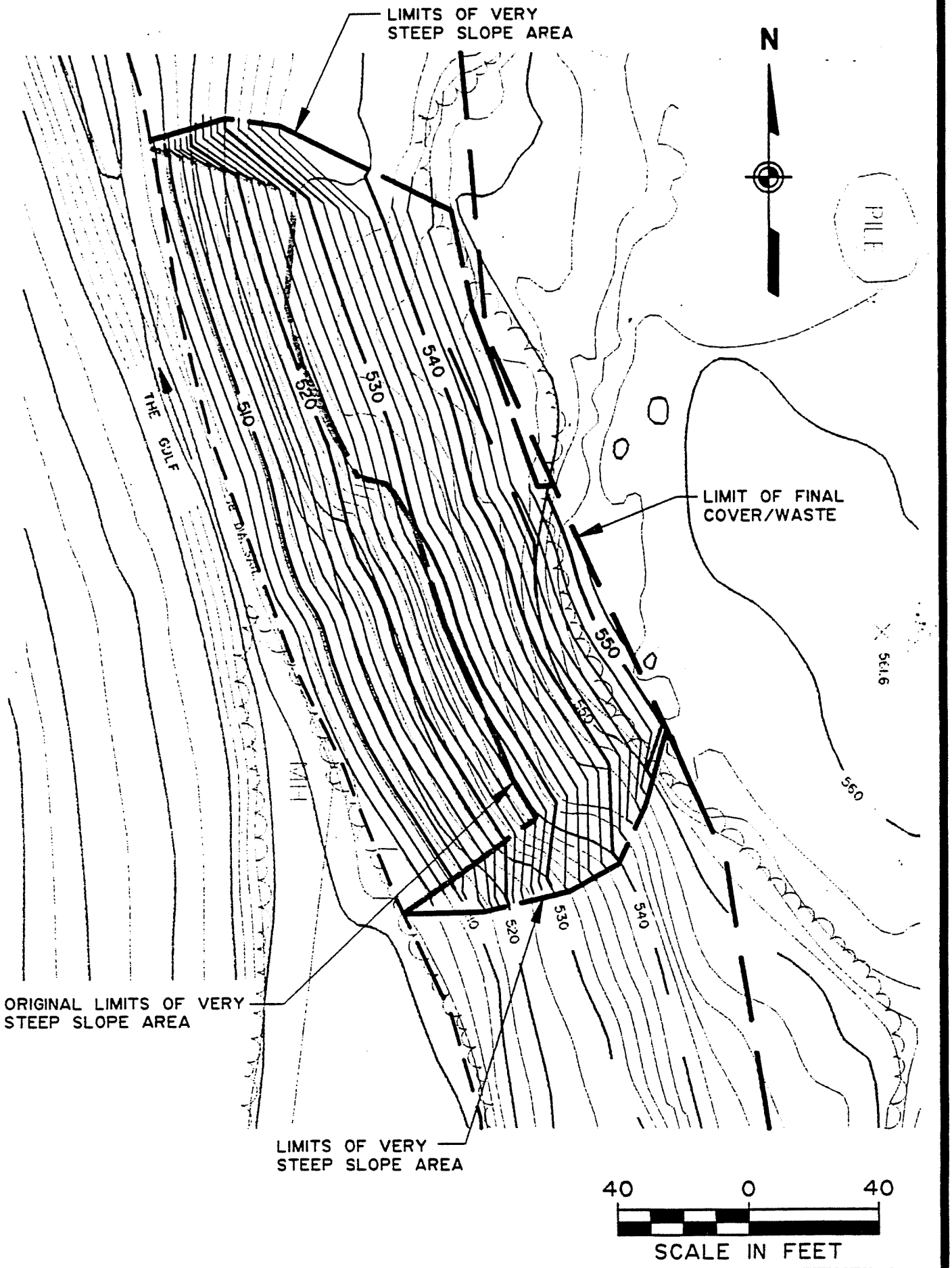


-6135

URS

LOCKPORT LANDFILL
FINAL GRADING PLAN VERY STEEP SLOPE AREA

FIGURE 1

URS CONSULTANTS, INC.
282 DELAWARE AVENUE
BUFFALO, NEW YORK 14202

Suburban Pipe Line Co., Inc
5947 East Molloy Road
Syracuse, New York 13211
Attn: Mr. Rod Raab

Field Clarification Memo No. FCM L-7

Project: Lockport City Landfill
Remedial Action Construction

Contractor: Suburban Pipe Line Company, Inc.

Gentlemen:

This is a Field Clarification to resolve conflicts in the Contract Plans and Specifications and/or to avoid conflicts between different trades. It does not involve any change in the Contract price or Contract completion time.

DESCRIPTION OF CLARIFICATION:

Clarify the limit of final cover at the Northeast corner of the western portion of the landfill as shown on attached Figure No. L-7-1.

REASON FOR CHANGE:

Clarification needed to reflect actual field conditions (i.e. waste not present in the area omitted).

Per NYSDEC and the City of Lockport request

DRAWING AND/OR SPECIFICATION REFERENCE:
Contract Documents
Attached Figure No. L-7-1

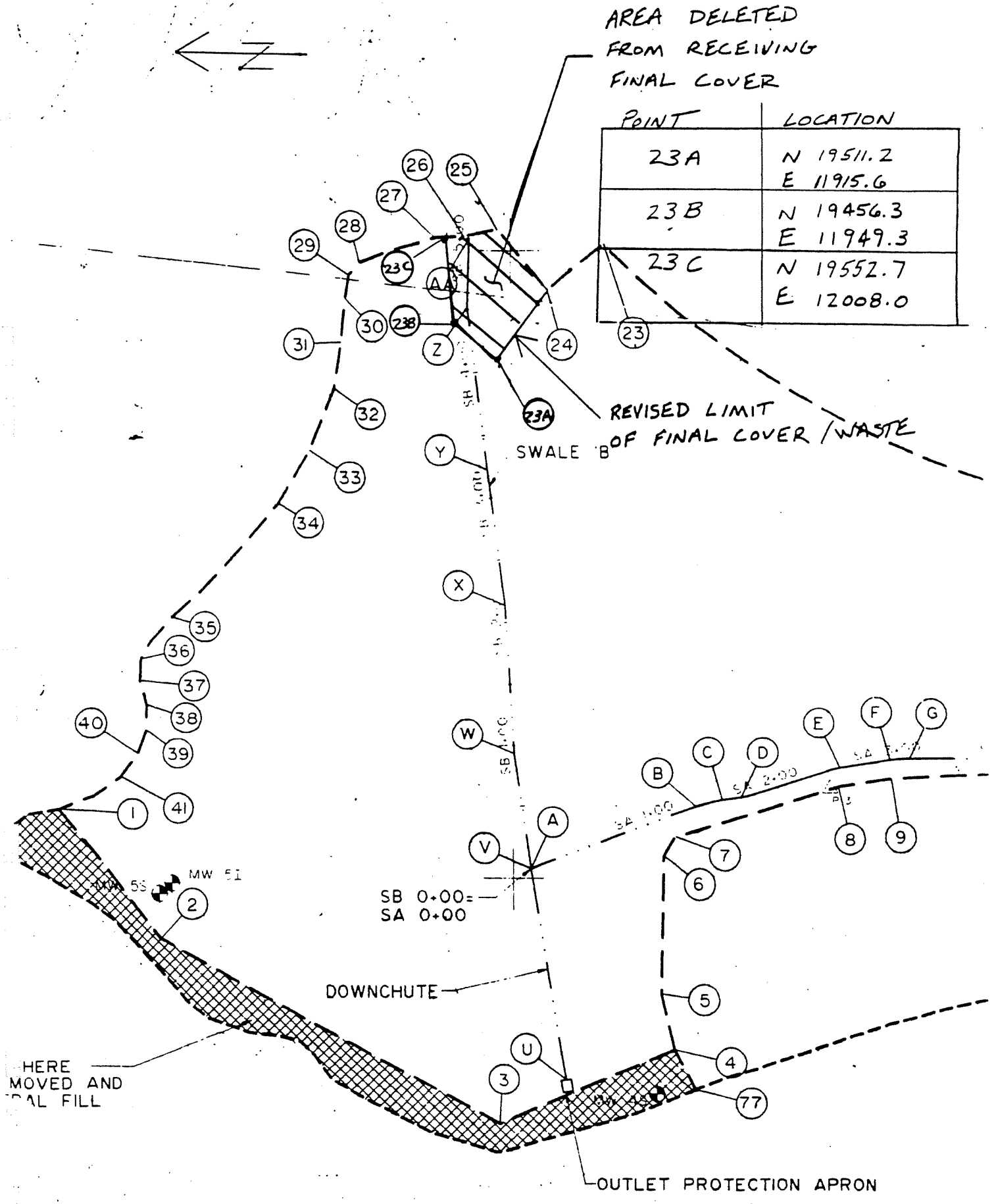
Distribution
George Peters--Suburban
James Drumm--NYSDEC
Ronald Cavalieri--URS
Robert Hoffman--URS
John Claypool--City of Lockport

Issued by: J. MacDowell
Resident Engineer

Date: 8/25/94

Enc.

FIGURE L-7-1



POINT	LOCATION
23A	N 19511.2 E 11915.6
23B	N 19456.3 E 11949.3
23C	N 19552.7 E 12008.0

URS CONSULTANTS, INC.
282 DELAWARE AVENUE
BUFFALO, NEW YORK 14202

Suburban Pipe Line Co., Inc
5947 East Molloy Road
Syracuse, New York 13211
Attn: Mr. George Peters

Field Clarification Memo No. FCM L-8

Project: Lockport City Landfill
Remedial Action Construction

Contractor: Suburban Pipe Line Company,Inc.

Gentlemen:

This is a Field Clarification to resolve conflicts in the Contract Plans and Specifications and/or to avoid conflicts between different trades. It does not involve any change in the Contract price or Contract completion time.

DESCRIPTION OF CLARIFICATION:

Clarify the location of the gas vents as follows:

- The gas vents on the portion of the landfill east of the tracks shall be moved to the high point as directed by the Engineer;
- The majority of gas vents on the portion of the landfill west of the tracks shall be moved to the high point as directed by the Engineer.

One additional gas vent shall be installed in accordance with the Contract Documents at a location designated by the Engineer. Additional gas vent shall be paid for in accordance with Item 16 (Gas Vent) of the Contract.

REASON FOR CHANGE:

To locate gas vents at high points of the landfill and per NYSDEC and City of Lockport request.

DRAWING AND/OR SPECIFICATION REFERENCE:
Contract Documents

Distribution
Rod Raab--Suburban
James Drumm--NYSDEC
Ronald Cavalieri--URS
Robert Hoffman--URS
John Claypool--City of Lockport

Issued by: J. MacDowell
Resident Engineer

Date: 8/25/94

URS CONSULTANTS, INC.
282 DELAWARE AVENUE
BUFFALO, NEW YORK 14202

Suburban Pipe Line Co., Inc
5947 East Molloy Road
Syracuse, New York 13211
Attn: Mr. George Peters

Field Clarification Memo No. FCM L-9

Project: Lockport City Landfill
Remedial Action Construction

Contractor: Suburban Pipe Line Company,Inc.

Gentlemen:

This is a Field Clarification to resolve conflicts in the Contract Plans and Specifications and/or to avoid conflicts between different trades. It does not involve any change in the Contract price or Contract completion time.

DESCRIPTION OF CLARIFICATION:

Load, haul and place Owner supplied C&D material in areas requiring fill to achieve final cover subgrade in a maximum two (2) feet thick layer. This layer shall then be covered with a minimum one (1) foot layer of compacted grading fill.

The Owner supplied C&D fill is located directly east of the City of Lockport Maintenance Garage. The exact location shall be as designated by the Engineer. 950 cubic yards of C&D fill exists in this area. After removing the fill from this area, the ground surface shall be leveled to closely match the surrounding grade.

The measurement and payment for this work will be in accordance with Item 22 Waste Removal - Type III. However, the quantity shall be measured by volume of containers filled, not by survey.

REASON FOR CHANGE:

Clarification will reduce the amount of grading fill required, subsequently resulting in a cost savings to the Owner and the NYSDEC. Placement of C&D material in the landfill is exempt from Part 360 regulations.

Per NYSDEC and the City of Lockport request.

DRAWING AND/OR SPECIFICATION REFERENCE:

Contract Documents

Distribution
Rod Raab--Suburban
James Drumm--NYSDEC
Ronald Cavalieri--URS
Robert Hoffman--URS
John Claypool--City of Lockport

Issued by: JJ MacDowell
Resident Engineer

Date: 8/26/94

Enc.

URS
AN INTERNATIONAL PROFESSIONAL SERVICES ORGANIZATION

URS CONSULTANTS, INC.
282 DELAWARE AVENUE
BUFFALO, NEW YORK 14202

Mr. Roderick J. Raab
Suburban Pipe Line Co. Inc.
5947 East Molloy Road
Syracuse, New York 13211

FIELD CLARIFICATION MEMO: L - 10

PROJECT: City of Lockport
Lockport Landfill
Remedial Action

CONTRACTOR: Suburban Pipe Line Co.

Gentlemen:

This is a Field Clarification to resolve conflicts in the Contract Plans and Specifications and/or to avoid conflicts between different trades. It does not involve any change in the Contract price or Contract completion time.

DESCRIPTION OF CLARIFICATION:

For Section 02485 - SEEDING, clarify the following:

1. For the seeded area of the very steep slopes, the project seed mix listed under Subsection 2.01, A., shall be clarified to eliminate Kentucky Bluegrass at 15% proportion by weight and in its place, us the same percent of Crownvetch (Coronialla varia).

2. The application listed under Subsection 3.03, A., 1., shall be two (2) pounds of grass seed for 1,000 square feet if broadcast based upon live seed (germination) and purity.

REASON FOR CHANGE:

1. To insure an adequate seed mix for the very steep slope.

2. To clarify the correct measurement of seed application.

DRAWING AND/OR SPECIFICATION REFERENCE:

Contract Documents
USDA: A GUIDE TO: Conservation Plantings on Critical Areas for New York.

Distribution:

J. Drumm - NYSDEC
J. Claypool - City of Lockport
G. Peters - Suburban
R. Cavalieri - URS
J. MacDowell - URS Field Office
File: 35180.03 (FCM-1)

Issued by: Robert J. Hoffman
Construction Manager

Date: September 7, 1994

URS CONSULTANTS, INC.
282 DELAWARE AVENUE
BUFFALO, NEW YORK 14202

Suburban Pipe Line Co., Inc
5947 East Molloy Road
Syracuse, New York 13211
Attn: Mr. Rod Raab

Field Clarification Memo No. FCM L-11

Project: Lockport City Landfill
Remedial Action Construction

Contractor: Suburban Pipe Line Company, Inc.

Gentlemen:

This is a Field Clarification to resolve conflicts in the Contract Plans and Specifications and/or to avoid conflicts between different trades. It does not involve any change in the Contract price or Contract completion time.

DESCRIPTION OF CLARIFICATION:

For Section 02518 - Geotextile, Subsection 3.01.N, the maximum exposure time for geotextile shall be clarified to 30 days.

REASON FOR CHANGE:

Per Suburban Pipe Line Co., Inc. request and manufacturers recommendation.
Per NYSDEC approval.

DRAWING AND/OR SPECIFICATION REFERENCE:

Contract Specification Section 02518, Subsection 3.01.N
Attached letter of recommendation from manufacturer dated October 3, 1994.

Distribution
George Peters--Suburban
James Drumm--NYSDEC
Ronald Cavalieri--URS
Robert Hoffman--URS
John Claypool--City of Lockport

Issued by: _____
Resident Engineer

Date: 10/10/94

Enc.

Hoechst Celanese

October 3, 1994 **Fax: 716-439-0508**
jmc-99-94

Technical Fibers Group
Hoechst Celanese Corporation
Spunbond Business Unit
Post Office Box 5650
Spartanburg, SC 29304-5650
803 579 5007
Toll Free 1 800 845 7597
Fax 803 579 5930

Mr. Roderick J. Raab
Suburban Pipeline Co., Inc.
5947 East Molloy Road
Syracuse, NY 13211

Re: **Prolonged Outdoor Exposure of Trevira Spunbond Geotextiles**
Lockport City Landfill

Dear Rod:

Hoechst Celanese Corporation recommends that Trevira Spunbond be installed in such a manner as to limit prolonged exposure to ultraviolet radiation. However, we recognize that exposure to sunlight cannot always be controlled (i.e., inclement weather, construction delays, etc.). Also, Trevira Spunbond polyester has a superior rating in terms of U.V. degradation and requires no stabilizers to maintain exceptional performance during prolonged exposure.

I have enclosed, a copy of a Tech Note that details a test program that included several types of geotextiles. These geotextiles were exposed to sunlight for prolonged periods of time at three different geographic locations. Please refer to table two and three for the percent strength retained and percent strain retained after one month of exposure. Given your geographic location, I believe it is safe to assume that the fabric could be exposed up to 30 days without significant deterioration.

If you have any questions, please feel free to contact me at 800-845-7597.

Sincerely,

Jay M. Cariveau
Account Executive - Industrial Products
Spunbond Business Unit

Enclosures: Tech Note 18

c: D.B. Wedding

TREVIRA® SPUNBOND

TECH NOTE

Hoechst Celanese Corporation P.O. Box 5887 Spartanburg, SC 29304

OUTDOOR WEATHERING RESISTANCE of GEOTEXTILES

OVERVIEW

It is well established in the literature that outdoor weathering and its accompanying ultraviolet degradation of plastics can occur. What the literature does not provide, however, is information regarding the magnitude of the strength reduction, how does the effect vary with the temperature of exposure, and how do carbon black and other stabilizers retard the process.

To investigate some of these questions, three identical outdoor test racks were constructed and setup at the following locations:

- At the Geosynthetic Research Institute in Philadelphia, Pennsylvania
- At the Hoechst Celanese Corporation in Spartanburg, South Carolina
- At the Texas Research Institute in Austin, Texas

All test racks were facing due south and were made from wooden frames positioned at 45° to the horizontal. The test racks were all painted light gray and the samples were stapled in a very prescribed manner. All samples were oriented in their machine directions. At specific time intervals of 1, 2, 4, and 8 months the samples were removed, sent to GRI, and then tested for their residual strength and elongation (i.e., strain) properties.

GEOTEXTILES TESTED

Seven (7) different geotextiles were selected for this study. Three were Hoechst Celanese TREVIRA® Spunbond products of 4, 8 and 16 oz/yd² nominal weights, and the other four were commercially available 8 oz/yd² nominal weight fabrics from Polyfelt, Phillips, Amoco and Quline. All were needlepunched nonwoven fabrics. The polymer type, fiber type and post treatment processing, however, varied considerably. Table 1 presents the different geotextiles, their physical properties and their grab tensile strengths. Also included is the 2.0 inch wide tensile strength and strain at failure of the as-received fabrics since these particular values will be used for comparison with the exposed samples after outdo weathering.

TREVIRA SPUNBOND

Results of Test Program

Having the average base-line strength and strain information given in Table 1, and the average strength and strain of the exposed geotextiles at the various exposure times, average percent retained strength and strain of the exposed geotextiles at the various exposure times, can be calculated.

This summary information for strength is provided in Table 2. The complimentary information for strain is provided in Table 3.

A rapid glance at the overall retained strength response shown in Table 2 gives very clear insight into the effect of exposure Latitude. The geotextiles exposed in Philadelphia, the most northern location at Latitude 40°N, were significantly less affected than the other two sites which are further south. Spartanburg, at Latitude 35°N, and Austin, at Latitude 30°N were strongly influenced almost immediately, the Austin exposure being the more severe. It should also be mentioned that the Philadelphia exposure was on an outside balcony and was partially shielded from late afternoon sunlight. The combination of these two features (most northerly climate and partial shielding) resulted in relatively high values of retained strength for all of the fabrics that were evaluated.

Summary

Identical outdoor exposure testing of seven different needlepunched nonwoven geotextiles were conducted at Philadelphia, Pennsylvania; Spartanburg, South Carolina; and Austin, Texas. Exposure times were up to eight months. The results of strength retained and strain retained analysis of the data as compared to the original strength and strain at failure showed a number of interesting features:

(a) The Latitude of exposure and the test setup itself is very significant. The Philadelphia tests, being the most northerly exposure and partially sheltered by an overhanging roof, had the lowest strength and strain reductions. Spartanburg and Austin, being southerly Latitudes and located on completely exposed roof tops had the highest strength and strain reductions.

(b) The polypropylene geotextiles showed far greater strength and strain reductions than the polyester geotextiles.

(c) The polypropylene fabric with HALS inhibitors performed better than those polypropylene fabrics with carbon black.

(e) Among the polyester geotextiles, the TREVIRA® Spunbond Type 1155 had the greatest strength and strain retained. This is felt to be due to its relatively heavy weight and the polyester polymer base.

TREVIRA SPUNBOND

Table 1 - Geotextiles Used in This Study and Relevant Properties.

(a) Trade Names and General Description

Trade Name	Manufacturer	Polymer	Fiber	Post Treatment
Trevira 1114	Hoechst Celanese	Polyester	Continuous	None
Trevira 1125	Hoechst Celanese	Polyester	Continuous	None
Trevira 1155	Hoechst Celanese	Polyester	Continuous	None
TS700	Polyfelt	Polypropylene	Continuous	Burnished 2 sides
8NP	Phillips	Polypropylene	Staple	Burnished 1 side
4553	Amoco	Polypropylene	Staple	Slight Burnish
Q80	Wellman Quline	Polyester	Staple	None

(b) Physical and Mechanical Properties

Trade Name	Nominal Weight (oz/sq. yd.)	Actual Weight (oz/sq.yd.)	Grab Tensile (lb)	2.0" Wide Strip Tensile* Tensile Strength (lb/in)	Strain at Failure (%)
Trevira 1114	4	4.1	150	48	72
Trevira 1125	8	7.7	339	108	80
Trevira 1155	16	16.3	769	224	87
TS700	8	8.3	233	64	151
8NP	8	8.8	218	74	93
4553	8	8.5	224	83	63
Q80	8	11.0	187	90	115

*Two inch strip tensile test data is given since it will be used for comparison to the exposed fabric strength of the same specimen size. The values listed here are the average of ten replicate tests.

TREVIRA SPUNBOND

Table 2 - Retained Strength Results and Percentages (in Parenthesis) for Outdoor Weathering Tests Conducted in this Study

(a) Exposure at GRI in Philadelphia, Pennsylvania

Geotextile Type	Exposure Time (months) 0	1	2	4	8
Trevira 1114	48 (100%)	47 (98%)	45 (94%)	41 (85%)	43 (90%)
Trevira 1125	108 (100%)	102 (94%)	102 (94%)	98 (91%)	92 (85%)
Trevira 1155	224 (100%)	224 (100%)	222 (99%)	221 (99%)	230 (100%)
Polyfelt TS700	64 (100%)	75 (100%)	75 (100%)	62 (97%)	58 (91%)
Phillips 8NP	74 (100%)	81 (100%)	83 (100%)	60 (81%)	48 (65%)
Amoco 4553	83 (100%)	80 (96%)	80 (96%)	71 (86%)	67 (81%)
Quline Q80	90 (100%)	106 (100%)	98 (100%)	105 (100%)	90 (100%)

(b) Exposure at H-C in Spartanburg, South Carolina

Geotextile Type	Exposure Time (months) 0	1	2	4	7.3
Trevira 1114	48 (100%)	43 (90%)	38 (79%)	28 (58%)	20 (42%)
Trevira 1125	108 (100%)	105 (97%)	92 (85%)	86 (80%)	79 (73%)
Trevira 1155	224 (100%)	204 (91%)	212 (95%)	195 (87%)	183 (82%)
Polyfelt TS700	64 (100%)	68 (100%)	57 (89%)	50 (78%)	44 (69%)
Phillips 8NP	74 (100%)	45 (61%)	25 (34%)	12 (16%)	6 (8%)
Amoco 4553	83 (100%)	48 (58%)	32 (39%)	17 (20%)	16 (19%)
Quline Q80	90 (100%)	80 (89%)	64 (71%)	63 (70%)	53 (59%)

(c) Exposure at TRI in Austin, Texas

Geotextile Type	Exposure Time (months) 0	1	2	4	8
Trevira 1114	48 (100%)	37 (77%)	35 (73%)	27 (56%)	9 (19%)
Trevira 1125	108 (100%)	101 (94%)	94 (87%)	73 (68%)	67 (62%)
Trevira 1155	224 (100%)	228 (100%)	210 (94%)	187 (83%)	177 (79%)
Polyfelt TS700	64 (100%)	62 (97%)	65 (100%)	51 (80%)	32 (50%)
Phillips 8NP	74 (100%)	38 (51%)	22 (30%)	15 (20%)	1 (1%)
Amoco 4553	83 (100%)	79 (95%)	56 (67%)	23 (28%)	4 (5%)
Quline Q80	90 (100%)	79 (88%)	68 (76%)	79 (88%)	53 (59%)

TREVIRA SPUNBOND

Table 3 - Retained Strain Results and Percentages (in Parenthesis) for Outdoor Weathering Tests Conducted in this Study

(a) Exposure at GRI in Philadelphia, Pennsylvania

Geotextile Type	Exposure Time (months) 0	1	2	4	8
Trevira 1114	72 (100%)	71 (99%)	77 (100%)	68 (94%)	56 (78%)
Trevira 1125	80 (100%)	83 (100%)	83 (100%)	77 (96%)	65 (81%)
Trevira 1155	87 (100%)	85 (98%)	92 (100%)	100 (100%)	69 (79%)
Polyfelt TS700	151 (100%)	132 (87%)	117 (77%)	114 (75%)	81 (54%)
Phillips 8NP	93 (100%)	83 (89%)	83 (89%)	55 (59%)	42 (45%)
Amoco 4553	63 (100%)	68 (100%)	65 (100%)	65 (100%)	47 (75%)
Quline Q80	115 (100%)	104 (90%)	95 (83%)	105 (91%)	73 (63%)

(b) Exposure at H-C in Spartanburg, South Carolina

Geotextile Type	Exposure Time (months) 0	1	2	4	7.3
Trevira 1114	72 (100%)	73 (100%)	57 (79%)	48 (67%)	41 (56%)
Trevira 1125	80 (100%)	83 (100%)	71 (89%)	68 (85%)	55 (69%)
Trevira 1155	87 (100%)	95 (100%)	90 (100%)	83 (95%)	56 (64%)
Polyfelt TS700	151 (100%)	90 (60%)	85 (56%)	86 (57%)	55 (36%)
Phillips 8NP	93 (100%)	46 (49%)	38 (41%)	31 (33%)	18 (19%)
Amoco 4553	63 (100%)	52 (83%)	37 (59%)	38 (60%)	27 (43%)
Quline Q80	115 (100%)	89 (77%)	69 (60%)	61 (33%)	41 (36%)

(c) Exposure at TRI in Austin, Texas

Geotextile Type	Exposure Time (months) 0	1	2	4	8
Trevira 1114	72 (100%)	61 (85%)	54 (75%)	51 (71%)	36 (50%)
Trevira 1125	80 (100%)	78 (98%)	77 (96%)	77 (96%)	55 (69%)
Trevira 1155	87 (100%)	82 (94%)	81 (93%)	81 (93%)	50 (57%)
Polyfelt TS700	151 (100%)	88 (58%)	92 (61%)	87 (58%)	57 (38%)
Phillips 8NP	93 (100%)	37 (40%)	35 (38%)	41 (44%)	17 (18%)
Amoco 4553	63 (100%)	61 (97%)	49 (78%)	45 (71%)	26 (41%)
Quline Q80	115 (100%)	89 (77%)	84 (73%)	74 (64%)	45 (39%)

URS CONSULTANTS, INC.
282 DELAWARE AVENUE
BUFFALO, NEW YORK 14202

Suburban Pipe Line Co., Inc
5947 East Molloy Road
Syracuse, New York 13211
Attn: Mr. Rod Raab

Field Clarification Memo No. FCM L-12

Project: Lockport City Landfill
Remedial Action Construction

Contractor: Suburban Pipe Line Company, Inc. (SPLC)

Gentlemen:

This is a Field Clarification to resolve conflicts in the Contract Plans and Specifications and/or to avoid conflicts between different trades. It does not involve any change in the Contract price or Contract completion time.

DESCRIPTION OF CLARIFICATION:

The mixed stockpile(i.e. clay soils and topsoil) located at the Town of Amherst Compost Facility can be utilized for the second lift (top 12 inches) of earth fill placement-barrier protection layer(24-inch general fill layer), based upon a maximum organic content of 3.8 % as tested and reported by SPLC.

Loading and hauling of the mixed stockpile (as Owner's provided material) shall be paid for under Payment Item No. 11 - Loading and Hauling Owners Provided Earth Fill, Low Permeability Soil and Topsoil. Placement of the mixed stockpile material shall be paid for under Payment Item No. 8 - Earth Fill Placement. The method of Measurement and Payment for each item as specified in the Contract Specifications shall apply.

REASON FOR CHANGE:

Per the request of SPLC and with approval of the City of Lockport and the verbal approval of the NYSDEC.

DRAWING AND/OR SPECIFICATION REFERENCE:

Contract Documents

Distribution
George Peters--Suburban
James Drumm--NYSDEC
Ronald Cavalieri--URS
Robert Hoffman--URS
John Claypool--City of Lockport

Issued by: _____
Resident Engineer

Date: 12/16/94

URS

AN INTERNATIONAL PROFESSIONAL SERVICES ORGANIZATION

URS CONSULTANTS, INC.
282 DELAWARE AVENUE
BUFFALO, NEW YORK 14202

Mr. Roderick J. Rabb
Suburban Pipe Line Co. Inc.
5947 East Molloy Road
Syracuse, New York 13211

BULLETIN NO.: L-1

DATE: July 18, 1994

PROJECT: Lockport City Landfill

CONTRACT: Remedial Action

General:

a. This Bulletin is issued to define the scope of revisions in drawings and/or specifications for a contemplated change order for this project.

b. Except as otherwise specifically mentioned, the general character of the work required by this Bulletin shall be the same as originally specified for the project now under construction and all incidentals required in connection with the work hereinafter described shall be included even though not specifically mentioned.

c. Work covered by this Bulletin shall not be started without authorization to proceed.

d. Please prepare and submit in accordance with the Contract Specifications of this Contract a change order proposal.

DESCRIPTION OF CHANGE:

Allow the sampling, analysis and handling of existing drums and their contents discovered during the work - see Attachment No. 1.

REASON FOR CHANGE:

As directed by the City of Lockport and the NYS DEC

DRAWING REFERENCE:

Contract Documents
Attachment No. 1

Distribution:

J. Claypool, City of Lockport
R. Cavalieri, URS
R. Hoffman, URS
J. MacDowell, URS Field Office
G. Peters, Suburban Pipe
35180.03, B-1, C-4

Issued by: Robert J. Hoffman
Construction Manager

ATTACHMENT NO. 1

1.0 SCOPE OF WORK

The work includes, but is not limited to, the following:

DRUM STAGING AREA

The Contractor shall construct and maintain a staging area for sampling and storage of overpacked drums. The staging area shall be lined with a 40 mil high density polyethylene liner (HDPE) and constructed in such a way to prevent the spread of contamination to the surrounding soils and groundwater. The Contractor will be responsible for determining the size of the drum staging area. The location of the drum staging area shall be approved by the Engineer.

HEALTH AND SAFETY

All work shall be performed in accordance with the Contractor's Site Health and Safety Plan (HASP). Based on anticipated hazards, personnel will be required to wear a minimum of Level D personal protective equipment (PPE). The adequacy of PPE shall be confirmed through air monitoring conducted by the Contractor in accordance with the HASP. If the need to upgrade the level of personal protection arises, the Contractor will provide his personnel with the appropriate PPE, including levels A, B and C as described in the HASP.

DRUM IDENTIFICATION, REMOVAL AND STAGING

A drum log of all drums found on the surface or within an excavation shall be prepared stating:

a.) Any marking, identification, and other information on each drum. The drums shall be sequentially numbered (using paint pens) on the top of the excavated drum and on top and side of each overpack.

b.) The identification number applied to each drum and location where found.

c.) Condition of each drum including bulging, corrosion, exotic metal drums, leakage, dents, poly drum, and poly lined drums.

d.) Drum contents including percent full.

The drum log shall be updated daily and resubmitted to the Engineer at the end of each week.

Drums shall be removed from the excavation and overpacked adjacent to the excavation. The drums shall then be moved to the staging area in accordance with the Waste Removal Plan. Drums with missing bungs, tops, or seals shall be replaced prior to moving them to the staging area. Different size overpacks shall be used for deformed drums so drums will not have to be pounded to place them in overpacks. The drums in the staging area shall be covered by a 10 mil HDPE sheet immediately after staging.

DRUM SAMPLING AND ANALYSIS

The Contractor shall open drums for identification and sampling of contents at the drum staging area. All drums shall be opened using non-sparking tools and methods in accordance with OSHA regulations.

Efficient scheduling of all sampling and analysis shall be the Contractors responsibility. A maximum twenty-eight (28) day turnaround time is required for the results on all samples. The laboratory must be approved by the NYSDOH and participating in the ASP program. At a minimum, the drum contents must be analyzed for RCRA Characterization (ignitability, corrosivity, reactivity, and TCLP). The Contractor is responsible for obtaining all other necessary data which may be required by a Treatment, Storage and Disposal Facility (TSDF) for disposal of the drums.

2.0 MEASUREMENT AND PAYMENT

1. The measurement for the work shall be for each drum overpacked, removed, staged, sampled and analyzed as shown, specified or directed.

2. The unit cost for each drum shall be full compensation for furnishing and providing all equipment, labor, tools, overpack containers, personal protective equipment and appurtenances necessary to complete the work. No extra payment shall be made for the construction of the drum staging area.

3. The quantity of drums containing waste is unknown. The Contractor will not be entitled to an adjustment of the unit price based on the actual quantity of drums found.

URS CONSULTANTS, INC.
282 DELAWARE AVENUE
BUFFALO, NEW YORK 14202

Suburban Pipe Line Co., Inc
5947 East Molloy Road
Syracuse, New York 13211
Attn: Mr. Rod Raab

BULLETIN NO. L-6

DATE: December 27, 1994

PROJECT: Lockport City Landfill

CONTRACT: Remedial Action Construction

General:

a. This Bulletin is issued to define the scope of revisions in drawings and/or specifications for a contemplated change order for this project.
b. Except as otherwise specifically mentioned, the general character of the work required by this Bulletin shall be the same as originally specified for the project now under construction and all incidentals required in connection with the work hereinafter described shall be included even though not specifically mentioned.
c. Work covered by this Bulletin shall not be started without authorization to proceed.
d. Please prepare and submit in accordance with the Contract Specifications of this Contract a change order proposal.

DESCRIPTION OF CHANGE:

Based on the drum logs, divide the remaining forty(40) drums into four(4) lots of ten(10) drums each. Composite sample each lot for a total of four(4) individual samples. Analyze the samples for RCRA characterization (ignitability, corrosivity, reactivity, and TCLP) and for PCB's. Efficient scheduling of all sampling and analysis shall be the Contractors responsibility. A maximum twenty-eight (28) day turnaround time is required for the results on all samples. The laboratory must be approved by NYSDOH and be a NYSDEC ASP approved lab.

All work shall be performed in accordance with the Contractor's Site Health and Safety plan(SHASP).

Provide a detailed price to complete the work as outlined. The price shall include all materials, labor, tools, equipment, PPE, and appurtenances necessary to complete the work as per Article 11 of the contract GENERAL CONDITIONS.

REASON FOR CHANGE:

Per City of Lockport and request, to provide information for the disposal of the forty(40) drums of hazardous waste.

DRAWING REFERENCE:

Contract Documents

Distribution
George Peters--Suburban
James Drumm--NYSDEC
Ronald Cavalieri--URS
Robert Hoffman--URS
John Claypool--City of Lockport

Issued by: _____
Resident Engineer

Date: 12/27/94

URS CONSULTANTS, INC.
282 DELAWARE AVENUE
BUFFALO, NEW YORK 14202

Mr. George Peters
Suburban Pipe Line Co. Inc.
5947 East Molloy Road
Syracuse, New York 13211

BULLETIN NO.: L-8
DATE: December 29, 1994
PROJECT: Lockport City Landfill
CONTRACT: Remedial Action

General:

a. This Bulletin is issued to define the scope of revisions in drawings and/or specifications for a contemplated change order for this project.

b. Except as otherwise specifically mentioned, the general character of the work required by this Bulletin shall be the same as originally specified for the project now under construction and all incidentals required in connection with the work hereinafter described shall be included even though not specifically mentioned.

c. Work covered by this Bulletin shall not be started without authorization to proceed.

d. Please prepare and submit in accordance with the Contract Specifications of this Contract a change order proposal.

DESCRIPTION OF CHANGE:
Final disposal of the first five (5) drums of hazardous waste material as follows:

a. The General Contractor shall provide supervision, manpower, equipment and materials as necessary to coordinate and properly carry out the work described herein;

b. The General Contractor shall employ a hazardous waste subcontractor, or shall preform the work himself, the removal of the five overpack drums from the staging pad and shall load the overpack drums in a truck for transportation to a final disposal location;

c. The drums shall be shipped and disposed of via Chemical Waste Management at their Resource Management Facility, 5371 Cook Road, Morrow, GA 30260, or alternate disposal facilities after written approval of the NYSDEC and URS.

D. The estimated cost of all work **must** follow the requirements of Article 11 of the contract General Conditions. Specifically, the cost estimate MUST be a detailed cost showing labor, equipment, materials, transportation, etc., and appropriate markup for both subcontractors and the general contractor.

E. All work shall be in compliance with all local, state, federal laws and regulations. Local sales tax will not be included as the Owner, The City of Lockport is Tax Exempt. All state taxes associated with drum disposal shall be included.

REASON FOR CHANGE: The work is necessary to remove and the proper disposal of five drums of hazardous materials excavated from the site.

DRAWING REFERENCE: Contract Documents
Chemical Waste Management cost quotation of 12/14/94
Waste Stream Technology's Laboratory Chronicle dated 10/14/94

DISTRIBUTION:
R. Cavalieri-- URS
J. Claypool--- City of Lockport
J. Drumm--NYSDEC. J. MacDowell-- URS

Issued by: Robert J. Hoffman

APPENDIX C

CORRESPONDENCE WITH THE NYSDEC

WASTE STREAM TECHNOLOGY

Laboratory Chronicle

Report Date : 10/14/94
Group Number : 9402-060

Prepared For :
Mr. Ken Paisley
Sevenson Environmental Services,Inc.
2749 Lockport Road
Niagara Falls, NY 14302

Site : Suburban Landfill-Lockport

Field and Laboratory Information

Client Id	WST Lab #	Matrix	Date Sampled	Date Received	Time
Slope-Barrel #1	WS08293	Sludge	9/20/94	9/21/94	0800
RR Tracks-Barrel #2	WS08294	Sludge	9/20/94	9/21/94	0800
RR Tracks-Barrel #3	WS08295	Sludge	9/20/94	9/21/94	0800
Upper Slope #5	WS08296	Sludge	9/20/94	9/21/94	0800
Sample Status Upon Receipt : No irregularities.					

Analytical Services

Analytical Parameters	Number of Samples	Turnaround Time
TCLP VOA	4	Standard
TCLP SVOA	4	Standard
TCLP Pest	4	Standard
TCLP Herb	4	Standard
TCLP Metals	4	Standard
PCB	4	Standard
RCRA	4	Standard

Report Released By : Daniel W. Voelker

ENVIRONMENTAL LABORATORY ACCREDITATION
CERTIFICATION NUMBER (ELAP) 11179

WASTE STREAM

METHODOLOGIES

The specific methodologies employed in obtaining the analytical data reported are indicated on each of the result forms. The method numbers shown refer to the following U.S. Environmental Protection Agency Reference:

U.S. Environmental Protection Agency, "Method for Chemical Analysis of Water and Wastes," EPA 600/4-79-020, March 1983 Revision.

U.S. Environmental Protection Agency, "Test Methods for Evaluating Solid Waste - Physical/Chemical Methods," Office of Solid Waste and Emergency Response, November 1986, SW-846, Third edition.

U.S. Environmental Protection Agency, Federal Register, 40 CFR Part 136, October 1984.

U.S. Environmental Protection Agency, Federal Register, 40 CFR Part 268, Appendix I, November 1986.

ORGANIC DATA COMMENT PAGE

Laboratory Name - Waste Stream Technology

USEPA Defined Organic Data Qualifiers:

U - Indicates compound was analyzed for but not detected.

J - Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed, or when the mass spectral data indicates the presence of a compound that meets identification criteria, but the result is less than the sample quantitation limit but greater than zero.

C - This flag applies to pesticide results where the identification has been confirmed by GC/MS.

B - This flag is used when the analyte is found in the associated blank as well as the sample.

E - This flag identifies all compounds whose concentrations exceed the calibration range of the GC/MS instrument or that specific analysis.

D - This flag identifies all compounds identified in an analysis at a secondary dilution factor.

G - Matrix spike percent recovery is greater than expected upper limit of analytical performance.

L - Matrix spike percent recovery is less than the expected lower limit of analytical performance.

Waste Stream Technology

TCLP 8240 Results Report

Site : Suburban Landfill-Lockport
Date Sampled : 9/20/94
Date Received : 9/21/94 @ 0800

Group Number : 9402-060
Sample Matrix : TCLP Extract
Report Units : PPM (mg/L)

WST Lab ID			WS08293		WS08294		WS08295	
Client ID			Slope-Barrel #1		RR Tracks-Barrel #2		RR Tracks-Barrel #3	
TCLP Extraction Date			9/28/94		9/29/94		9/28/94	
Analysis Date			9/29/94		9/30/94		9/29/94	
Compound			**Result**	**Q**	**Result**	**Q**	**Result**	**Q**
vinyl chloride	0.2	✓	0.2	U	2.5	U	0.1	U
1,1-dichloroethene	NS	✓	0.10	U	1.25	U	0.05	U
chloroform	6.0	✓	0.10	U	**31.6**		0.05	U
2-butanone	NS		**4.16**		25.0	U	1.0	U
1,2-dichloroethane	0.5		0.10	U	1.25	U	0.05	U
carbon tetrachloride	0.5		0.10	U	1.25	U	0.05	U
trichloroethene	0.5		0.10	U	1.25	U	**0.75**	
benzene	0.5		0.10	U	1.25	U	0.05	U
tetrachloroethene	0.7		0.10	U	1.25	U	0.05	U
chlorobenzene	100.0		0.10	U	1.25	U	0.05	U
1,4-dichlorobenzene	7.5		0.10	U	1.25	U	0.05	U
Detection Limit Multiplier			2		25		1	
Surrogate % Rec.	**QC Limits**							
1,2-dichloroethane-d4	70 - 121		107		111		114	
toluene-d8	81 - 117		112		112		114	
bromofluorobenzene	74 - 121		110		109		109	

Waste Stream Technology

TCLP 8240 Results Report

Site : Suburban Landfill-Lockport
Date Sampled : 9/20/94
Date Received : 9/21/94 @ 0800

Group Number : 9402-060
Sample Matrix : TCLP Extract
Report Units : PPM (mg/L)

WST Lab ID		WS08296		MB092894		MB092994	
Client ID		Upper Slope #5		NA		NA	
TCLP Extraction Date		9/29/94		9/28/94		9/29/94	
Analysis Date		9/30/94		9/29/94		9/30/94	
Compound		**Result**	**Q**	**Result**	**Q**	**Result**	**Q**
vinyl chloride		0.2	U	0.1	U	0.1	U
1,1-dichloroethene		0.10	U	0.05	U	0.05	U
chloroform		**0.12**		0.05	U	0.05	U
2-butanone		2.0	U	1.0	U	1.0	U
1,2-dichloroethane		0.10	U	0.05	U	0.05	U
carbon tetrachloride		0.10	U	0.05	U	0.05	U
trichloroethene		0.10	U	0.05	U	0.05	U
benzene		0.10	U	0.05	U	0.05	U
tetrachloroethene		0.10	U	0.05	U	0.05	U
chlorobenzene		0.10	U	0.05	U	0.05	U
1,4-dichlorobenzene		0.10	U	0.05	U	0.05	U
Detection Limit Multiplier		2		1		1	
Surrogate % Rec.	**QC Limits**						
1,2-dichloroethane-d4	70 - 121	104		106		103	
toluene-d8	81 - 117	103		104		105	
bromofluorobenzene	74 - 121	101		98		104	

MB denotes Method Blank.
NA denotes Not Applicable.

WASTE STREAM TECHNOLOGY

TCLP(1311)/8270 Base, Neutral and Acid Extractables Report

Site : Suburban Landfill-Lockport
Date Sampled : 9/20/94
TCLP Extraction Date : 9/26/94
TCLP 3510 Extraction Date : 9/27/94
TCLP 3520 Extraction Date : 9/28/94
Date Analyzed : 9/28/94

Group Number : 9402-060
Date Received : 9/21/94 @ 0800
Report Units : PPB (ug/L)
Sample Matrix : TCLP Extract

	WST Lab ID	WS08293		WS08294		WS08295	
	Client ID	Slope-Barrel #1		RR Tracks-Barrel #2		RR Tracks-Barrel #3	
mg/L COMPOUNDS	Detection Limit	Result	Q	Result	Q	Result	Q
5.0 pyridine	10	10	U	10	U	10	U
7.5 1,4-dichlorobenzene	10	10	U	10	U	10	U
200 Total cresols (o,m & p)	30	30	U	**4.84**	J	**249**	
2.0 nitrobenzene	10	10	U	10	U	10	U
3.0 hexachloroethane	10	10	U	10	U	10	U
0.5 hexachlorobutadiene	10	10	U	10	U	10	U
2,4,6-trichlorophenol	10	10	U	10	U	10	U
400 2,4,5-trichlorophenol	10	10	U	10	U	10	U
0.13 2,4-dinitrotoluene	10	10	U	10	U	10	U
0.13 hexachlorobenzene	10	10	U	10	U	10	U
100 pentachlorophenol	50	50	U	50	U	50	U
Surrogate %Recovery	**QC Limits**						
2-fluorophenol	21-100	0 #		75		69	
phenol-d6	10-94	0 #		94		60	
nitrobenzene-d6	35-114	0 #		77		90	
2-fluorobiphenyl	43-116	100		89		86	
2,4,6-tribromophenol	10-123	72		106		80	
p-terphenyl-d14	33-141	153		97		94	

# denotes recovery outside QC limits due to matrix effects.

WASTE STREAM TECHNOLOGY

TCLP(1311)/8270 Base, Neutral and Acid Extractables Report

Site : Suburban Landfill-Lockport
Date Sampled : 9/20/94
TCLP Extraction Date : 9/26/94
TCLP 3510 Extraction Date : 9/27/94
TCLP 3520 Extraction Date : 9/28/94
Date Analyzed : 9/28/94

Group Number : 9402-060
Date Received : 9/21/94 @ 0800
Report Units : PPB (ug/L)
Sample Matrix : TCLP Extract

	WST Lab ID	WS08296		MB092694	
	Client ID	Upper Slope #5		NA	
COMPOUNDS	**Detection Limits**	**Result**	**Q**	**Result**	**Q**
pyridine	10	10	U	10	U
1,4-dichlorobenzene	10	10	U	10	U
Total cresols (o,m & p)	30	30	U	30	U
nitrobenzene	10	10	U	10	U
hexachloroethane	10	10	U	10	U
hexachlorobutadiene	10	10	U	10	U
2,4,6-trichlorophenol	10	10	U	10	U
2,4,5-trichlorophenol	10	10	U	10	U
2,4-dinitrotoluene	10	10	U	10	U
hexachlorobenzene	10	10	U	10	U
pentachlorophenol	50	50	U	50	U
Surrogate %Recovery	**QC Limits**				
2-fluorophenol	21-100	53		90	
phenol-d6	10-94	86		87	
nitrobenzene-d6	35-114	99		70	
2-fluorobiphenyl	43-116	4 #		89	
2,4,6-tribromophenol	10-123	59		79	
p-terphenyl-d14	33-141	85		90	

MB denotes Method Blank.

NA denotes Not Applicable.

# denotes recovery outside QC limits due to matrix effects.

Waste Stream Technology Inc

TCLP Herbicide Report

Site : Suburban Landfill-Lockport
Date Sampled : 9/20/94
Date Received : 9/21/94 @ 0800
TCLP Extraction Date: 9/23/94

Group Number : 9402-060
Report Units : mg/L
Matrix : TCLP Extract

	Lab ID Number	WS08293	WS08294
	Client ID	Slope-Barrel #1	RR Tracks-Barrel #2
	Date Extracted	9/27/94	9/27/94
	Date Analyzed	9/30/94	9/30/94
Compound	Detection Limit	Result	Result
2,4-D	1.0	U	U
2,4,5-TP (Silvex)	1.0	U	U
Dilution Factor		100	100
Surrogate % Recovery			
2,4-Dichlorophenylacetic acid		Diluted Out	Diluted Out

	Lab ID Number	WS08295	WS08296
	Client ID	RR Tracks-Barrel #3	Upper Slope #5
	Date Extracted	9/27/94	9/27/94
	Date Analyzed	9/30/94	9/30/94
Compound	Detection Limit	Result	Result
2,4-D	1.0	U	U
2,4,5-TP (Silvex)	1.0	U	U
Dilution Factor		100	100
Surrogate % Recovery			
2,4-Dichlorophenylacetic acid		Diluted Out	Diluted Out

	Lab ID Number	MB092794	
	Client ID	NA	
	Date Extracted	9/27/94	
	Date Analyzed	9/29/94	
Compound	Detection Limit	Result	Result
2,4-D	0.01	U	
2,4,5-TP (Silvex)	0.01	U	
Dilution Factor		1	
Surrogate % Recovery			
2,4-Dichlorophenylacetic acid		14	

MB denotes Method Blank

Waste Stream Technology Inc

TCLP Pesticide Report

Site : Suburban Landfill-Lockport
Date Sampled : 9/20/94
Date Received : 9/21/94 @ 0800
TCLP Extraction Date : 9/23/94

Group Number : 9402-060
Report Units : ug/L
Matrix : TCLP Extract

	Lab ID Number	WS08293	
	Client ID	Slope-Barrel #1	
	Date Extracted	9/24/94	
	Date Analyzed	10/4/94	
Compound	Detection Limit	Result	Result
gamma-BHC (Lindane)	0.2	U	
Heptachlor	1.2	U	
Heptachlor Epoxide	3.2	U	
Endrin	0.8	U	
Methoxychlor	1.4	U	
Chlordane	6.0	U	
Toxaphene	6.0	U	
Dilution Factor		10	
Surrogate % Recovery	QC Limits		
Tetrachloro-m-xylene	60 - 150	Diluted Out	
Decachlorobiphenyl	60 - 150	Diluted Out	

	Lab ID Number	WS08294	
	Client ID	RR Tracks-Barrel #2	
	Date Extracted	9/24/94	
	Date Analyzed	10/4/94	
Compound	Detection Limit	Result	Result
gamma-BHC (Lindane)	2.0	U	
Heptachlor	12	U	
Heptachlor Epoxide	32	U	
Endrin	8.0	U	
Methoxychlor	14	U	
Chlordane	60	U	
Toxaphene	60	U	
Dilution Factor		100	
Surrogate % Recovery	QC Limits		
Tetrachloro-m-xylene	60 - 150	Diluted Out	
Decachlorobiphenyl	60 - 150	Diluted Out	

Waste Stream Technology Inc

TCLP Pesticide Report

Site : Suburban Landfill- Lockport
Date Sampled : 9/20/94
Date Received : 9/21/94 @ 0800
TCLP Extraction Date : 9/23/94

Group Number : 9402-060
Report Units : ug/L
Matrix : TCLP Extract

	Lab ID Number	WS08295	WS08296
	Client ID	RR Tracks-Barrel #3	Upper Slope #5
	Date Extracted	9/24/94	9/24/94
	Date Analyzed	10/4/94	10/4/94
Compound	**Detection Limit**	**Result**	**Result**
gamma-BHC (Lindane)	0.2	U	U
Heptachlor	1.2	U	U
Heptachlor Epoxide	3.2	U	U
Endrin	0.8	U	U
Methoxychlor	1.4	U	U
Chlordane	6.0	U	U
Toxaphene	6.0	U	U
Dilution Factor		10	10
Surrogate % Recovery	**QC Limits**		
Tetrachloro-m-xylene	60 - 150	Diluted Out	Diluted Out
Decachlorobiphenyl	60 - 150	Diluted Out	Diluted Out

	Lab ID Number	MB94267	
	Client ID	NA	
	Date Extracted	9/24/94	
	Date Analyzed	10/4/94	
Compound	**Detection Limit**	**Result**	**Result**
gamma-BHC (Lindane)	0.02	U	
Heptachlor	0.12	U	
Heptachlor Epoxide	0.32	U	
Endrin	0.08	U	
Methoxychlor	0.14	U	
Chlordane	0.60	U	
Toxaphene	0.60	U	
Dilution Factor		1	
Surrogate % Recovery	**QC Limits**		
Tetrachloro-m-xylene	60 - 150	90	
Decachlorobiphenyl	60 - 150	71	

MB denotes Method Blank.
NA denotes Not Applicable.

Waste Stream Technology Inc

TCLP Metals Analysis Result Report

Site : Suburban Landfill-Lockport
Date Sampled : 9/20/94
Date Received : 9/21/94 @ 0800
TCLP Extraction Date: 9/26/94

Group Number : 9402-060
Report Units : mg/L
Matrix : TCLP Extract

	Lab ID Number	WS08295	WS08296	
	Client ID	RR Tracks-Barrel #3	Upper Slope #5	
	Date Digested	9/27/94	9/27/94	
	Date Analyzed	9/30/94	9/30/94	
	Analyte	Detection Limit	[illegible]	[illegible]	Analysis Method
5.0	Lead	0.132	193	< 0.132	6010
1.0	Cadmium	0.016	0.069	< 0.016	6010
100	Barium	0.06	0.054	0.73	6010
5.0	Chromium	0.07	0.158	< 0.07	6010
5.0	Silver	0.05	< 0.05	< 0.05	6010
5.0	Arsenic	0.005	< 0.005	< 0.005	7060
1.0	Selenium	0.002	< 0.002	< 0.002	7740
0.2	Mercury	0.0012	< 0.0012	< 0.0012	7470

Waste Stream Technology Inc

TCLP Metals Analysis Result Report

Site : Suburban Landfill-Lockport
Date Sampled : 9/20/94
Date Received : 9/21/94 @ 0800
TCLP Extraction Date: 9/26/94

Group Number : 9402-060
Report Units : mg/L
Matrix : TCLP Extract

	Lab ID Number	WS08293	WS08294	
	Client ID	Slope-Barrel #1	RR Tracks-Barrel #2	
	Date Digested	9/27/94	9/27/94	
	Date Analyzed	9/30/94	9/30/94	
Analyte	**Detection Limit**			Analysis Method
Lead	0.132	13.9	< 0.132	6010
Cadmium	0.016	0.077	< 0.016	6010
Barium	0.06	0.264	0.272	6010
Chromium	0.07	< 0.07	< 0.07	6010
Silver	0.05	< 0.05	< 0.05	6010
Arsenic	0.005	< 0.005	< 0.005	7060
Selenium	0.002	< 0.002	0.002	7740
Mercury	0.0012	< 0.0012	< 0.0012	7470

Waste Stream Technology Inc

TCLP Metals Analysis Result Report

Site : Suburban Landfill-Lockport
Date Sampled : 9/20/94
Date Received : 9/21/94 @ 0800
TCLP Extraction Date: 9/26/94

Group Number : 9402-060
Report Units : mg/L
Matrix : TCLP Extract

	Lab ID Number	MB092694-1		
	Client ID	NA		
	Date Digested	9/27/94		
	Date Analyzed	9/30/94		
Analyte	Detection Limit	[illegible]	[illegible]	Analysis Method
Lead	0.132	< 0.132		6010
Cadmium	0.016	< 0.016		6010
Barium	0.06	< 0.06		6010
Chromium	0.07	< 0.07		6010
Silver	0.05	< 0.05		6010
Arsenic	0.005	< 0.005		7060
Selenium	0.002	< 0.002		7740
Mercury	0.0012	< 0.0012		7470

MB denotes Method Blank
NA denotes Not Applicable

WASTE STREAM TECHNOLOGY

8080 PCB REPORT

Site : Suburban Landfill-Lockport
Date Sampled : 9/20/94
Date Received : 9/21/94 @ 0800

Group Number : 9402-060
Report Units : PPM (mg/kg)
Matrix : Sludge

	Lab ID	WS08293	WS08294	
	Client ID	Slope-Barrel #1	RR Tracks-Barrel #2	
	Extraction Date	9/24/94	9/24/94	Detection
Compound	Analysis Date	10/3/94	10/3/94	Limit
Aroclor 1016		U	U	0.25
Aroclor 1221		U	U	0.25
Aroclor 1232		U	U	0.25
Aroclor 1242		U	U	0.25
Aroclor 1248		U	U	0.25
Aroclor 1254		U	U	0.25
Aroclor 1260		U	U	0.25
Surrogate % Rec.				**QC Limit**
Tetrachloro-m-xylene		55 #	103	60-150
Decachlorobiphenyl		50 #	53 #	60-150
Detection Limit Multiplier		1	1	
Percent Solids (%)		46	78	

# denotes a recovery outside QC Limits due to matrix effects.

WASTE STREAM TECHNOLOGY

8080 PCB REPORT

Site : Suburban Landfill-Lockport
Date Sampled : 9/20/94
Date Received : 9/21/94 @ 0800

Group Number : 9402-060
Report Units : PPM (mg/kg)
Matrix : Sludge

	Lab ID	WS08295	WS08296	MB94270	
	Client ID	RR Tracks-Barrel #3	Upper Slope #5	NA	
	Extraction Date	9/24/94	9/24/94	9/24/94	Detection
Compound	Analysis Date	10/3/94	10/3/94	9/30/94	Limit
Aroclor 1016		U	U	U	0.25
Aroclor 1221		U	U	U	0.25
Aroclor 1232		U	U	U	0.25
Aroclor 1242		U	U	U	0.25
Aroclor 1248		3.52	10.3	U	0.25
Aroclor 1254		1.95	U	U	0.25
Aroclor 1260		U	U	U	0.25
Surrogate % Rec.					**QC Limit**
Tetrachloro-m-xylene		59 #	68	84	60 - 150
Decachlorobiphenyl		69	74	91	60-150
Detection Limit Multiplier		1	1	1	
Percent Solids (%)		74	68	NA	

MB denotes Method Blank
NA denotes Not Applicable
# denotes a recovery outside QC limits due to sample matrix effects.

Waste Stream Technology Inc.

Method 1010 - Ignitability Report

Site: Suburban Landfill-Lockport
Date Received : 9/21/94 @ 0800

Group Number : 9402-060
Matrix : Sludge

WST Lab ID	Client ID	Sample Date	Analysis Date	Sample Result
WS08293	Slope-Barrel #1	9/20/94	9/27/94	Fail (81)
WS08294	RR Tracks-Barrel #2	9/20/94	9/27/94	Pass
WS08295	RR Tracks-Barrel #3	9/20/94	9/27/94	Fail (82)
WS08296	Upper Slope #5	9/20/94	9/27/94	Fail (108)

Pass = No flash detected at a temperature up to 210 degrees Fahrenheit

Fail = Flash detected at the temperature noted in parentheses in degrees Fahrenheit

Waste Stream Technology Inc.

Sulfide & Cyanide Spot Test Results

Site: Suburban Landfill-Lockport
Date Received : 9/21/94 @ 0800

Group Number : 9402-060
Units of Measure: PPM
Matrix: Sludge

WST Lab ID	Client ID	Sample Date	Analysis Date	Sulfide Result	Cyanide Result
WS08293	Slope-Barrel #1	9/20/94	9/26/94	< 10	< 1
WS08294	RR Tracks-Barrel #2	9/20/94	9/26/94	< 10	< 1
WS08295	RR Tracks-Barrel #3	9/20/94	9/26/94	< 10	< 1
WS08296	Upper Slope #5	9/20/94	9/26/94	< 10	< 1

Sulfide Detection Limit : 10 PPM.

Cyanide Detection Limit : 1 PPM.

Waste Stream Technology Inc.

Corrosivity Report Form

Method 9045

Site: Suburban Landfill-Lockport
Date Sampled: 9/20/94
Date Received: 9/21/94 @ 0800

Group Number: 9402-020
Sample Matrix: Sludge
Units of Measure: pH units

WST Lab ID	Client ID	Date Analyzed	pH Result	Corrosivity Limits
WS08293	Slope-Barrel #1	9/26/94	4.26	< 4 or > 11
WS08294	RR Tracks-Barrel #2	9/26/94	5.40	< 4 or > 11
WS08295	RR Tracks-Barrel #3	9/26/94	5.15	< 4 or > 11
WS08296	Upper Slope #5	9/26/94	5.38	< 4 or > 11

WASTE STREAM TECHNOLOGY

302 GROTE STREET
BUFFALO, NY 14207
(716) 876-5290

Cy-102-060 4/2

SUBSURFACE

CHAIN OF CUSTODY RECORD

PROJECT NO:

SITE NAME: Lockport Landfill

SAMPLERS (SIGNATURE): [signature]

SAMPLE NO.	DATE	TIME	COMP	GRAB	MATRIX	SAMPLE LOCATION	SIZE & NO. OF CONTAINERS	VOA	SVOA	TEST	HERB	METALS	PCB	PCRA	PRESERVATIVES	REMARKS
WSD52465	9/20	1250		X		RR TRACKS - BARGE #3	4 oz	X								
	9/20	1255		X		RR TRACKS - BARGE #3	4 oz	X								
	9/20	345		X		Upper Slope #5	8 oz		X	X						yellow slimy goo
	9/20	350		X		Upper Slope #5	8 oz				X	X				mixed w/ Dirt +
WSD52466	9/20	355		X		Upper Slope #5	8 oz						X	X		DEBRIS. 60-70 ppm
	9/20	400		X		Upper Slope #5	4 oz	X								on HNU.
	9/20	405		X		Upper Slope #5	4 oz	X								

RELINQUISHED BY (SIGNATURE)	DATE/TIME	RECEIVED BY (SIGNATURE)	RELINQUISHED BY (SIGNATURE)	DATE/TIME	RECEIVED BY (SIGNATURE)
[signature]	9/20 1830	Delivery to [illegible]	→	9/21/PM 0800	[signature]
RELINQUISHED BY (SIGNATURE)	DATE/TIME	RECEIVED BY (SIGNATURE)	RELINQUISHED BY (SIGNATURE)	DATE/TIME	RECEIVED BY (SIGNATURE)
RELINQUISHED BY (SIGNATURE)	DATE/TIME	RECEIVED BY (SIGNATURE)	DATE/TIME	REMARKS	

Distribution Original accompanies shipment. Copy to coordinator field files

LAB USE: REFRIGERATOR # _____ SHELF # _____

WASTE STREAM TECHNOLOGY

302 GROTE STREET
BUFFALO, NY 14207
(716) 876-5290

94012-(2002)1/2

CHAIN OF CUSTODY RECORD

PROJECT NO:

SITE NAME: (SURFSIDE) Lackport Landfill

SAMPLERS (SIGNATURE):

SAMPLE NO.	DATE	TIME	COMP	GRAB	MATRIX	SAMPLE LOCATION	SIZE & NO. OF CONTAINERS	VOA	SVOA	PEST	HERB	METALS	PCB	RCRA	PRESERVATIVES	REMARKS
WSG82493	9/20	1035	X		sludge	Slope - Barrel #1	4 oz	+								oily Sludge,
	9/20	1040	X				8 oz		X	+						205 ppm on HNU,
	9/20	1045	X				8 oz				X	+				Layered Rubber look in
	9/20	1050	X				4 oz	+								Places, old drum w/ orange X
	9/20	1055	X				8 oz						X	X		
WSG82497	9/20	1200	X	X		RR Tracks - Barrel #2	8 oz		X	X						Taken from Partially
	9/20	1205		X			8 oz				X	X				Drum, Carmel like
	9/20	1215		X			4 oz	X								Color and texture mix,
	9/20	1225		X			8 oz						X	X		w/ mat. Strong,
	9/20	1235		X			4 oz	X								200-250 ppm HNU
WSG82495	9/20	1240		X		RR Tracks - Barrel #2 #3	8 oz		X	X						Found under #2
	9/20	1245		X			8 oz				X	X				in HNU. Bright Purple
	9/20	1247		X			8 oz						X	X		with soils. Color

RELINQUISHED BY (SIGNATURE)	DATE/TIME	RECEIVED BY (SIGNATURE)	RELINQUISHED BY (SIGNATURE)	DATE/TIME	RECEIVED BY (SIGNATURE)
	9/20 1830			9/21/91 0800	
RELINQUISHED BY (SIGNATURE)	DATE/TIME	RECEIVED BY (SIGNATURE)	RELINQUISHED BY (SIGNATURE)	DATE/TIME	RECEIVED BY (SIGNATURE)
RELINQUISHED BY (SIGNATURE)	DATE/TIME	RECEIVED BY (SIGNATURE)	DATE/TIME	REMARKS	

*Distribution Original accompanies shipment. Copy to coordinator field files

LAB USE: REFRIGERATOR # _____ SHELF # _____

URS
AN INTERNATIONAL PROFESSIONAL SERVICES ORGANIZAT

URS CONSULTANTS, INC.
282 DELAWARE AVENUE
BUFFALO, NEW YORK 14202-1805
(716) 856-5636
FAX: (716) 856-2545

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VIRGINIA BEACH
WASHINGTON, D.C.

August 25, 1993

Mr. James J. Drumm , Project Manager
Bureau of Construction Services
Division of Hazardous Waste Remediation
New York State Department of
Environmental Conservation
50 Wolf Road
Albany, New York 12233-71010

RE: LOCKPORT CITY LANDFILL C&D FILL

Dear Mr. Drumm:

On behalf of the City of Lockport (City), URS Consultants, Inc. (URS) hereby requests written approval from the New York State Department of Environmental Conservation (NYSDEC) to place approximately 900 cubic yards of exempt C&D material in the Lockport City Landfill (Landfill). These C&D materials, as discussed previously, have been generated from the construction/repair projects performed previously by the City and are currently stockpiled near the Landfill.

As discussed in more detail below the placement of the C&D material in the Landfill is exempt from the Part 360 regulations, and will result in a cost benefit to both the City and the NYSDEC.

A. Exception from the Permit Requirements

The above referenced C&D materials primarily consist of recognizable uncontaminated concrete and concrete products (including steel reinforcing bars), asphalt pavement, brick, soil and rock. Therefore, in accordance with the 6NYCRR Part 360.7.1(b)(1)(i) the placement of this material in the Landfill is exempt from the permit requirements.

B. Cost Benefit

Since the Landfill is currently being remediated, both the City and the NYSDEC will benefit from this action because this C&D material will offset the quantity of the required general fill and will directly offset the cost associated with this item. The associated cost saving is estimated as follows:

	Unit Price
Item 22 (Waste Removal Type III)	$3.00/c.y.
Item 8 (Earth Fill Placement)	(2.00/c.y.)
Item 28 (Furnishing, Loading and Hauling Contractor Provided Earthfill)	(6.50/c.y.)
Unit Savings	$5.50/c.y.
Estimated Quantity	900 c.y.
Cost Savings	$4,950

Please note that due to the time constraint, we would appreciate your response by August 26, 1994.

Should you have any questions regarding this letter, please call.

Sincerely,

URS CONSULTANTS, INC.

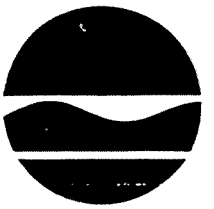
Ronald R. Cavalieri

Ronald R. Cavalieri, P.E.
Project Manager

cc: Mr. John Claypool - City of Lockport
Mr. Robert Hoffman - URS
Mr. John MacDowell - URS Field Office
Ms. Meshkat Assian - URS
File: 35180.03 (C-7)

J\35180\WP\COR\8-23-94.JD\yg(mm)
08:25:94:11:19

New York State Department of Environmental Conservation
50 Wolf Road, Albany, New York, 12233-7010



Langdon Marsh
Commissioner

AUG 2 9 1994

John E. Claypool. P.E.
Commissioner of Public Works
Lockport Municipal Building
One Locks Plaza
Lockport. NY 14094

SEP 2
35180.03

Dear Mr. Claypool:

Re: Site No. 9-32-010
Lockport City Landfill
Niagara County

Upon review of the August 25. 1994 letter from Ron Cavalieri. P.E. of URS to Jim Drumm of my staff. we find the placement of approximately 900 yd^3 of exempt C&D debris in the landfill to be acceptable. As you are aware. under Title 3 all change orders must be finalized before being sent to the Department for approval. It is at this time that we will review for cost acceptability.

If you have any questions. please call Jim Drumm at (518) 457-9285.

Sincerely,

George W. Harris. P.E.
Chief. Western Field Services Section
Bureau of Construction Services
Division of Hazardous Waste Remediation

cc: R. Cavalieri - URS
D. Hettrick - NYSDOH

Distribution
RRC
RJH
T. Mac
M. Asian
FILE 35180.03

New York State Department of Environmental Conservation
50 Wolf Road, Albany, New York, 12233-

Langdon Marsh

Commissioner

AUG 2 2 1994

John E. Claypool, P.E.
Commissioner of Public Works
Lockport Municipal Building
One Locks Plaza
Lockport, NY 14094

AUG 2 6 1994
35780.03

Dear Mr. Claypool:

Re: Site No. 9-32-010
Lockport City Landfill
Niagara County

On August 9, 1994 we received a proposal from your consultant, Ron Cavalieri of URS regarding the "very steep slope" area of the Lockport City Landfill. Mr. Cavalieri states that the original plan was to excavate to bedrock in this area. However, test pits in this area showed bedrock to be far deeper than expected. Since excavation to bedrock is no longer feasible, URS proposed to cut back the area to a 1:2 slope, cover with topsoil and seed.

The Department believes this proposal is acceptable and the contractor may be notified to proceed. However, the following items must additionally be addressed:

1. The erosion and control plan must provide for measures to prevent significant run onto and run off from the area during slope work.

2. The material is being left in place under the assumption it is not a threat to health and the environment. This must be verified by URS through a grid sampling plan, the details of which must be approved by the Department.

Once again, let me state that the Department will consider the reasonableness of the cost when the change order is submitted to us.

Distribution		
KRC		
RH		
J-Mac		
M. Preston		
FILE	35780.03	

If you have any questions, please call Jim Drumm at (518) 457-9285.

Sincerely,

George W. Harris, P.E.
Chief, Western Field Services Section
Bureau of Construction Services
Division of Hazardous Waste Remediation

cc: D. Hettrick - DOH
R. Cavalieri - URS

35180.03

C-7

URS

AN INTERNATIONAL PROFESSIONAL SERVICES ORGANIZATION

URS CONSULTANTS, INC.
282 DELAWARE AVENUE
BUFFALO, NEW YORK 14202-1805
(716) 856-5636
FAX: (716) 856-2545

ATLANTA
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BUFFALO
CLEVELAND
COLUMBUS
DENVER
NEW YORK
PARAMUS, NJ
NEW ORLEANS
SAN FRANCISCO
SAN MATEO
SEATTLE
VIRGINIA BEACH
WASHINGTON, D.C.

September 12, 1994

George W. Harris, P.E.
Chief, Western Field Services Section
Bureau of Construction Services
Division of Hazardous Waste Remediation
NYSDEC
50 Wolf Road
Albany, New York 12233-7010

RE: LOCKPORT CITY LANDFILL
SOIL SAMPLING AND ANALYTICAL TESTING

Dear Mr. Harris:

The purpose of this letter is to respond to the NYSDEC comments dated September 2, 1994 regarding the work plan for soil sampling and analytical testing at the above referenced facility. A copy of the comment letter is attached (Attachment A).

As we discussed with Mr. James Drumm on September 7, 1994, URS's responses to the comments are as follows:

1) The equipment cleaning procedure (Section 2.0 of the field sampling plan) has been revised to state that a non-phosphate soap/water solution will be used and to eliminate solvent/acid rinses. A copy of the revised equipment cleaning procedure is included in the updated work plan (Attachment B)

2) URS's standard operating procedure for shallow probe soil sampling is to remove any vegetative layer prior to sampling. However, sampling will be done prior to placement of top soil and seeding since this work has not been done yet. The shallow probe sampling procedure has been revised to reflect this change. A copy of the revised procedure is included in Attachment B.

3) The estimated hours for the project manager and project engineer include time for preparation and implementation of the work plan and contracting with the laboratory to perform the analytical work. Section 1 of the work plan (Attachment B) has been revised to identify this scope of work. URS believes the estimated hours for this scope is fair and reasonable.

We trust these responses to your comments are acceptable. The City of Lockport requests written approval of the work plan and budget prior to performance of the work. Due to the rigid time schedule for this project your immediate attention to this matter is appreciated.

If you have any questions, or if you require any additional information, please contact us.

Sincerely,
URS CONSULTANTS, INC.

Ronald R. Cavalieri, P.E.
Project Manager
cc: J. Claypool, C-Lockport
R. Hoffman - URS
File: 35180, 03, C-7

ATTACHMENT A

New York State Department of Environmental Conservation
50 Wolf Road, Albany, New York, 12233-7010

SEP 0 2 1994

Langdon Marsh
Commissioner

John E. Claypool, P.E.
Commissioner of Public Works
City of Lockport
Lockport Municipal Building
One Locks Plaza
Lockport, NY 14094

SEP 1 2 1994
35180.03

Dear Mr. Claypool:

Re: Site No. 9-32-010
Lockport City Landfill
Niagara County

Upon review of the soil sampling and analytical testing plan for the Lockport City Landfill site dated August 30, 1994, we offer the following comments:

1. Equipment Cleaning Procedures. We don't normally use methanol for decontaminating sampling equipment. If disposable equipment is not used we would prefer to see the following procedures followed.

   a. Steps 1 & 2 are okay
   b. Step 3 wash with alconox
   c. rinse thoroughly with deionized water
   d. Steps 7 & 8 are okay

2. Shallow probe sampling, Step 1 calls for removal of the grass layer. We would prefer to see the samples taken before the grass and topsoil are applied.

3. Table 2; the hours for project manager and project engineer are excessive. We see no need for the project manager to use more than two hours and the project engineer a maximum of 10. Additionally, you may want to consider giving the plan to the contractor and getting a price quote from them. The DEC will accept either.

Distribution	
KRC	
RJH	
J. Macbowell	
M. Astian	
FILE	35180.03

If you have any questions, please call Jim Drumm at (518) 457-9285.

Sincerely,

George W. Harris, P.E.
Chief, Western Field Services Section
Bureau of Construction Services
Division of Hazardous Waste Remediation

cc: R. Cavalieri - URS
D. Hettrick - DOH

ATTACHMENT B

WORK PLAN
FOR
SOIL SAMPLING AND ANALYTICAL TESTING
AT
THE LOCKPORT CITY LANDFILL

TABLE OF CONTENTS

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LIST OF APPENDICES

1.0 INTRODUCTION

1.1 Background

During the test pit operation in the very steep slope area, bedrock was found to be deeper than anticipated. After careful review by URS Consultants, Inc. (URS) and meetings and telephone conversation with NYSDEC personnel, it was decided to remove waste in the very steep slope area to achieve a maximum 1V on 2H slope. The excavated area will receive a minimum 6-inches of topsoil and be permanently seeded. An erosion control fabric will be placed over the topsoil layer for erosion control.

The NYSDEC approved this plan and requested that after the grading is complete four (4) shallow probe soil samples be collected and analyzed to determine the character of the waste to remain in place on the very steep slope area.

1.2 Scope of Project

URS will prepare and implement a work plan for collection of four (4) surface soil samples from the very steep slope area and analysis of the samples for a selected list of parameters. Its effort in this project will include contracting of a laboratory to perform the analytical work.

1.3 Project Team

URS will use the existing project personnel to collect the samples as shown in the "Project Management Plan for Remedial Action Construction Lockport City Landfill Site", April 1994. The resident engineer and environmental technician will responsible for collecting the soil samples and shipping them to the chemical laboratory. A field sampling plan, as shown in Appendix A, will provide specific sampling techniques and sample point locations for collecting the soil samples.

2.0 SCOPE OF WORK

2.1 Shallow Probe Soil Samples

This phase will commence upon final approval by the city of Lockport and NYSDEC. As previously mentioned, a total of four (4) surface soils will be collected. The sample point locations (SPS-6, SPS-7, SPS-8, and SPS-9) are shown on Figure 1. These locations were chosen to provide an equidistant spread over the very steep slope area.

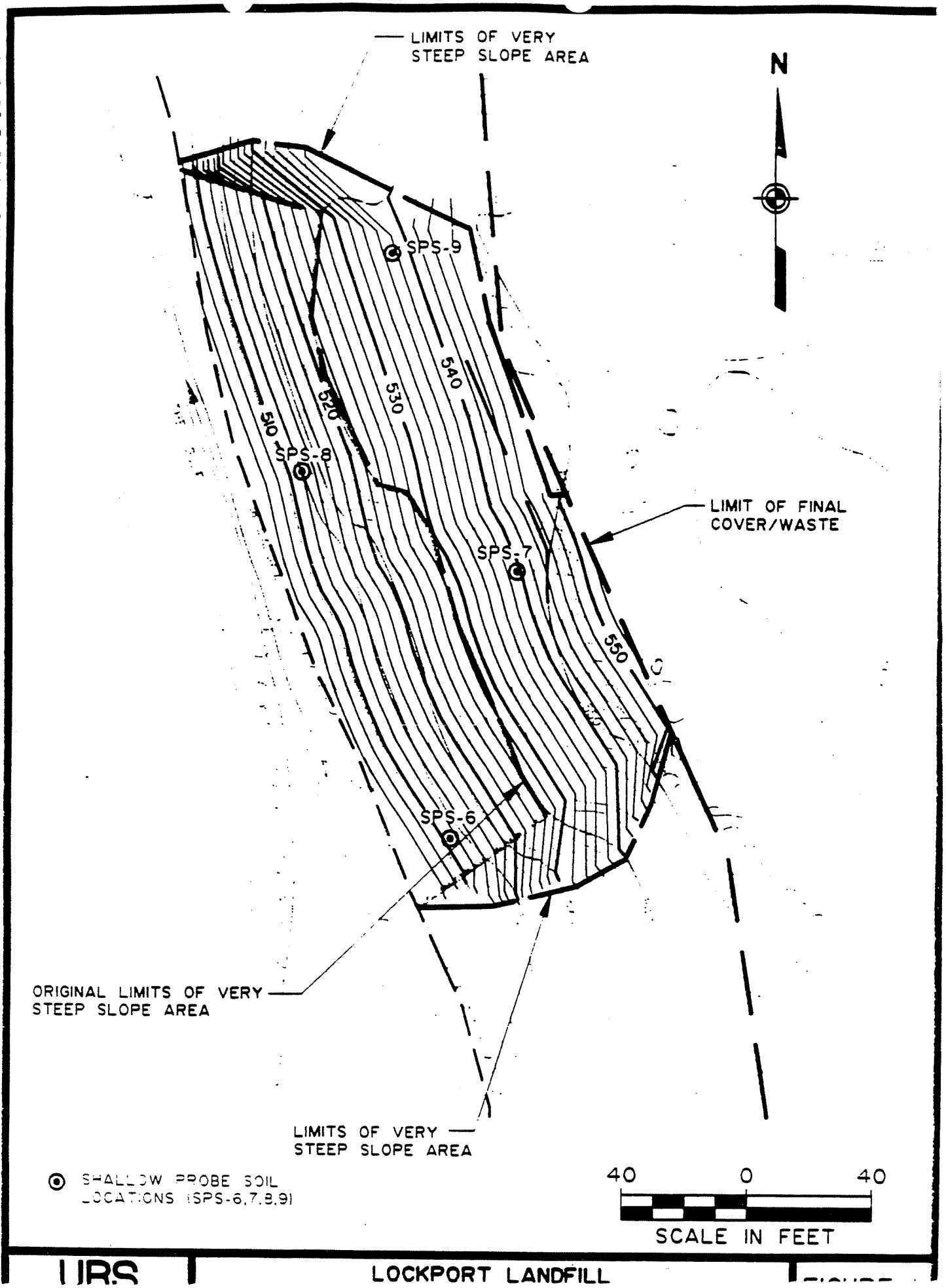
2.2 Chemical Analysis

The chemical analysis listed on Table 1 will be performed in accordance with the NYSDEC Analytical Services Protocol (ASP), September 1989, 12/91 Revision which meets or exceeds USEPA CLP protocols. Laboratory deliverables will be in accordance with NYSDEC ASP Category A data package which includes:

- SDG Narrative
- NYSDEC Data Package Summary Forms
- Tentatively Identified Compounds Form 1-TIC

One sample (SPS-7) will receive Schedule A parameters while the remaining three samples (SPS-6, SPS-8, SPS-9) will receive the Schedule B parameter list. Justification for the sample list parameter is based on findings during the RI. One sample (WS-1) was collected in the study area at the toe of the slope. This sample showed no volatile organics, pesticides or PCB's. Therefore, sample SPS-7 was chosen for the full list (Schedule A) due to sample point location (top of the study area). The three remaining samples will receive the analytical fractions that were detected during the RI (Schedule B).

Due to the limited number of samples and the material being left in place, no field QC samples will be collected or analyzed. The laboratory required batch QC will be sufficient for the quantity of samples being collected and analyzed.



URS

LOCKPORT LANDFILL

TABLE 1

ANALYTICAL SCHEDULES AND METHOD REFERENCES

SCHEDULE	DOCUMENT/METHOD NO.	REFERENCES
Schedule A (Soils)		
TCL Volatiles	91-1	1
TCL Semivolatiles	91-2	1
TCL Pesticides/PCBs	91-3	1
TAL Metals (24)		

Aluminum	200.7 CLP-M	Magnesium	200.7 CLP-M
Antimony	200.7 CLP-M	Manganese	200.7 CLP-M
Arsenic	206.2 CLP-M	Mercury	245.1 CLP-M + 245.5 CLP-M
Barium	200.7 CLP-M	Nickel	200.7 CLP-M
Beryllium	200.7 CLP-M	Potassium	200.7 CLP-M
Cadmium	200.7 CLP-M	Selenium	270.2 CLP-M
Calcium	200.7 CLP-M	Silver	200.7 CLP-M
Chromium	200.7 CLP-M	Sodium	200.7 CLP-M
Cobalt	200.7 CLP-M	Thallium	279.2 CLP-M
Copper	200.7 CLP-M	Vanadium	200.7 CLP-M
Iron	200.7 CLP-M	Zinc	200.7 CLP-M
Lead	239.2 CLP-M	Cyanide	335.2 CLP-M

Schedule B (Soils)		
TCL Semivolatiles	91-2	
TAL Metals (24)		

Aluminum	200.7 CLP-M	Magnesium	200.7 CLP-M
Antimony	200.7 CLP-M	Manganese	200.7 CLP-M
Arsenic	206.2 CLP-M	Mercury	245.1 CLP-M + 245.5 CLP-M
Barium	200.7 CLP-M	Nickel	200.7 CLP-M
Beryllium	200.7 CLP-M	Potassium	200.7 CLP-M
Cadmium	200.7 CLP-M	Selenium	270.2 CLP-M
Calcium	200.7 CLP-M	Silver	200.7 CLP-M
Chromium	200.7 CLP-M	Sodium	200.7 CLP-M
Cobalt	200.7 CLP-M	Thallium	279.2 CLP-M
Copper	200.7 CLP-M	Vanadium	200.7 CLP-M
Iron	200.7 CLP-M	Zinc	200.7 CLP-M
Lead	239.2 CLP-M	Cyanide	335.2 CLP-M

2.3 Data Interpretation

After receipt of the analytical data, it will be reviewed and interpreted by a URS senior environmental scientist to ensure compliance with environmental regulations.

3.0 PROJECT SCHEDULE

The schedule for this work will commence when the City of Lockport and NYSDEC gives approval for the sampling. The sampling will take one (1) day. There will be a four (4) week turnaround time for the analytical laboratory to produce the data. Once the data is received at URS, two (2) days will be required for data interpretation for a total of five (5) weeks to complete the work from the date of the Notice to Proceed.

4.0 PROJECT MANAGEMENT/KEY PERSONNEL

The project management and key personnel utilized for these tasks will be the same personnel as presented in the "Project Management Plan for Remedial Action Construction", URS Consultants, April 1994.

5.0 PROJECT COST

The estimated total cost for the engineering services described herein is $5,976.63 Table 2 provides a breakdown of the costs.

TABLE 2
SAMPLING SERVICES

A. Direct Labor

Classification	NYSDE Level	Average Rate ($/Hour)	Estimated Hours	Estimated Cost
Principal	IX	44.12	1	44.12
Project Manager	VIII	40.89	4	163.56
Project Engineer	VI	26.55	20	531.00
Senior Technician	III	14.46	8	115.68
			TOTAL	854.36

B. Indirect Labor 1103.58

(129.17% of Direct)

C. Fee (15% of A&B) 293.69

(0.15 x 1957.94)

D. Direct Expenses 125.00

Misc.-supplies: 100
Local Travel: 25

E. Subcontractor's Costs

Laboratory Services: 3,600.00

TOTAL $5,976.63

J:\35180\wp\Lockport
09-13-94:09:07/ta

APPENDIX A

FIELD SAMPLING PLAN

FIELD SAMPLING PLAN

1.0 SHALLOW SOIL PROBE SAMPLING

Summary: Shallow probe samples may be collected by use of a stainless-steel hand auger (bucket type). The depth to sampling is soil-matrix-dependent and is generally limited to less than 10 feet.

Procedure

1) Collect soil samples prior to placement of topsoil and seeding using a precleaned stainless steel scoop.
2) Advance the stainless-steel, precleaned hand auger into the soil until the bucket is full (approximately 6 inches).
3) Using a stainless-steel precleaned spatula or lab spoon, remove the contents from the bottom of the auger into VOA sample bottles. Place the remaining sample into stainless steel bow and homogenize. Fill the remaining sample bottles.
4) Secure a teflon-lined cap onto the bottle and place the sample on ice in a cooler for transport to the laboratory.
5) Label the sample bottle with the appropriate sample tag. Be sure to label the tag carefully and clearly, addressing all the categories or parameters. Complete all chain-of-custody documents and record in the field log book.
6) Decontaminate equipment after use and between sample locations by the procedure in Section C10.0.
7) Record all field data in the field notebook.

Reference: "Characterization of Hazardous Waste Sites, A Methods Manual, Volume 2, Available Sampling Methods", 3rd Edition, USEPA, November 1986.

2.0 EQUIPMENT CLEANING PROCEDURES

Summary: To assure that no outside contamination will be introduced into the sample/data, thereby invalidating the sample/data. The following cleaning protocols will apply for all equipment used to collect samples/data during the field investigations.

Procedures

1) Thoroughly clean equipment with a non-phosphate soap and water until all visible contamination is gone.
2) Rinse with tap water until visible evidence of soap is gone.
3) Rinse several times with deionized water.
4) Air dry before using.
5) If equipment is not used immediately, wrap with aluminum foil (shiny side out).

3.0 SAMPLE LABELING

Summary: In order to prevent misidentification and to aid in the handling of environmental samples collected during the field investigation, the following procedures will be followed:

Procedure

1) Affixed to each sample container will be non-removable (when wet) labels. The sample bottle will be wrapped with 2-inch cellophane tape. Apply label and wrap with tape to cover label. The following information will be written with permanent marker:

- Site name
- Sample identification (Section B11.1)
- Project number
- Date/time

- Sampler's initials
- Sample preservation
- Analysis required

Each sample of each matrix will be assigned a unique identification alpha-numeric code as follows:

SPS-6/SPS-7/SPS-8/SPS-9

SPS = Shallow Probe Soil - #

4.0 SAMPLE SHIPPING

Summary: Proper documentation of sample collection and the methods used to control these documents are referred to as chain-of-custody procedures. Chain-of-custody procedures are essential for presentation of sample analytical chemistry results as evidence in litigation or at administrative hearings held by regulatory agencies. Chain-of-custody procedures also service to minimize loss or misidentification of samples and to ensure that unauthorized persons do not tamper with collected samples.

The procedures used in the RI/FS to follow the chain-of-custody guidelines outlined in NEIC Policies and Procedures, prepared by the National Enforcement Investigations Center (NEIC) of the U.S. Environmental Protection Agency Office of Enforcement.

Procedure

1) The chain-of-custody record should be completely filled out, with all relevant information as in the example.

2) The white original goes with the samples. It should be placed in a ziplock bag and taped inside the sample cooler.

3) Mark volume level on bottle with grease pencil.

4) Place about 3 inches of inert cushioning material such as vermiculite or zonolite

in bottom of cooler.

5) Place bottles in cooler in such a way that they do not touch (use cardboard dividers).

6) Put VOA vials in ziplock bag and place them in the center of the cooler.

7) Pack bottles, especially VOA vials, in ice in plastic bags.

8) Pack cooler with water ice in ziplock plastic bags.

9) Pack cooler with cushioning material.

10) Put paperwork in plastic bags and tape with masking tape to inside lid of cooler.

11) Tape drain shut.

12) Wrap cooler completely with strapping tape at two locations. Secure lid by taping. Do not cover any labels.

13) Place lab address on top of cooler.

14) All samples must be shipped to the laboratory within 24 hours of collection via overnight carrier.

For out-of-town laboratory, add the following:

- Put "This side up" labels on all four sides and "Fragile" labels on at least two sides.
- Affix numbered custody seals on front right and left of cooler. Cover seals with wide, clear tape.

New York State Department of Environmental Conservation
50 Wolf Road, Albany, New York, 12233-7010

Langdon Marsh
Commissioner

SEP 14 1994

John E. Claypool, P.E.
Commissioner of Public Works
City of Lockport
Lockport Municipal Building
One Locks Plaza
Lockport, NY 14094

SEP 19 1994
35180.03

Dear Mr. Claypool:

Re: Site No. 9-32-010
Lockport City Landfill
Niagara County

Upon review of the work plan for soil sampling and analytical testing at the Lockport City Landfill, we conditionally approve the plan. The plan does not name the laboratory which will analyze the samples. We have been told that the consultant (URS) plans to use one of their standby laboratories. If so, please verify this as soon as possible.

If you have any questions, please call Jim Drumm at (518) 457-9285.

Sincerely,

George W. Harris, P.E.
Chief, Western Field Services Section
Bureau of Construction Services
Division of Hazardous Waste Remediation

cc: R. Cavalieri - URS (FAX)
D. Hettrick - DOH

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J. Mac.
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URS
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SEATTLE
VIRGINIA BEACH
WASHINGTON D.C.

November 2, 1994

Mr. George W. Harris, P.E.
Chief, Western Field Services Section
Bureau of Construction Services
Division of Hazardous Waste Remediation
New York Sate Department of
Environmental Conservation
50 Wolf Road
Albany, New York 12233-7010

RE: LOCKPORT CITY LANDFILL
SOIL SAMPLING AND ANALYTICAL TESTING

Dear Mr. Harris:

The purpose of this letter is to present the results of the soil sampling and analytical testing requested by the New York State Department of Environmental Conservation (NYSDEC) for the waste to remain in place on the very steep slope at the above referenced facility. The soil sampling and testing was completed in accordance with the approved Work Plan dated September 12, 1994.

Analytical Data Review

Four surface soil samples were collected from the very steep slope area at the Lockport Landfill. The samples were analyzed for various TCL/TAL parameters (samples LCL-SPS-6, LCL-SPS-8 and LCL-SPS-9 were analyzed for SVOA and metals, while LCL-SPS-7 was analyzed for VOA, SVOA and Pesticides/PCBs). All analyses were performed in accordance with NYSDEC Analytical Services Protocol, September 1989, Revision 12/91. The deliverables were compliant with NYSDEC ASP Category A. A review of the data by a URS Senior Environmental Scientist indicates the data is accurate, precise and usable as reported. A copy of the analytical results for the four surface soil samples is attached (Attachment A).

Several base neutrals (primarily polynuclear aromatic hydrocarbons) and pesticide/PCB compounds were detected in the surface soil samples collected from the very steep slope area. These results are consistent (if not lower) with the previous subsurface soil analytical data presented in the RI/FS. It should be noted that the surficial soil samples obtained from the very steep slope were, until recently, subsurface soils. The contractor who is capping the site excavated this soil to achieve a maximum 1V:2H slope.

A comparison was made of landfill soil boring samples taken from the Remedial Investigation first round sampling (Remedial Investigation Report at the Lockport City Landfill - Appendix M, URS, April 1992), and the very steep slope soil samples collected on September 15, 1994. This comparison was performed in order to determine if there is a significant variation between the two sets of samples. Both sets of samples were analyzed for various Target Compound List parameters and had similar analytical results.

The summary below presents the comparison of both sets of samples.

	1990 Soil Boring Analytical Results	1994 Very Steep Slope Surface Soil Analytical Results
Total VOC	227,000 µg/kg	Not Detected
Total Base Neutrals	234,000 µg/kg	17,000 µg/kg
Total Carcinogenic PAHs	65,000 µg/kg	15,100 µg/kg
Total PCBs	59,200 µg/kg	14,200 µg/kg
Total Pesticides	811 µg/kg	454 µg/kg

Please note that the surface soil samples (SPS-2, SPS-3), taken in close proximity to the very steep slope samples in 1990, also had similar chemical concentrations to the 1994 very steep slope samples. Therefore, URS concludes that the soil conditions are not any different than that presented in the Remedial Investigation.

As stated in the Design Analysis Report (DAR - Section 5.4) prepared by URS Consultants, March 1994, waste samples collected in the vicinity of the steep slope (WS-1 is located on the very steep slope) during the RI, were subjected to EP TOX testing, with no results exceeding SGC values. Therefore, it would appear that there is no potential for exposure from that material. The EP TOX test results also indicated that the resulting groundwater should not become contaminated.

The very steep slope area is presently being capped with a six-inch topsoil cover by the Remedial Action Contractor. This remedy is consistent with the design rationale presented in the DAR for the steep slopes. URS recommends that no further action is necessary.

Should you have any questions regarding this letter, or should you require additional information, please call.

Sincerely,

URS CONSULTANTS, INC.

Mary E. Betka for

Ronald R. Cavalieri, P.E.
Project Manager

Enc.

cc: Mr. James Drumm - NYSDEC/Albany
Mr. John E. Claypool - City of Lockport
Mr. Robert Hoffman - URS
Ms. Meshkat S. Assian - URS
File: 35180.03 (C-7)

ATTACHMENT A

LABORATORY REPORT

IEA
An Aquarion Company

200 Monroe Turnpike
Monroe, Connecticut 06468

Phone 203 261 4458
Fax 203 268 5346

October 13, 1994

RECEIVED
URS CONSULTANTS INC.
OCT 14 1994

JOB # 35180-03

Ms. Mary Bitka
URS Consultants
282 Delaware Avenue
Buffalo, NY 14202-1805

Dear Ms. Bitka:

Please find enclosed the analytical results of four samples received at our laboratory on September 23, 1994. This report contains sections addressing the following information at a minimum:

- sample summary
- analytical methodology
- state certifications
- definitions of data qualifiers and terminology
- analytical results
- chain-of-custody

IEA Report #3094-0988	Purchase Order #PROJ#0535180.03
Project ID: LOCKPORT	

Copies of this analytical report and supporting data are maintained in our files for a minimum of five years unless special arrangements have been made. Unless specifically indicated, all analytical testing was performed at this laboratory location and no portion of the testing was subcontracted.

We appreciate your selection of our services and welcome any questions or suggestions you may have relative to this report. Please contact your customer service representative at (203) 261-4458 for any additional information. Thank you for utilizing our services; we hope you will consider us for your future analytical needs.

I have reviewed and approved the enclosed data for final release.

Very truly yours,

Jeffrey C. Curran
Laboratory Manager

JCC/adj

Distribution
RBC
RJH
J. Dyk.
M. Assian

FILE 35180.03, R-1

3094-0988
URS CONSULTANTS
PROJECT SUMMARY

The samples were analyzed for the parameters listed in the Analytical Summary Table.

METHODOLOGY

Volatile organics were determined using purge and trap GC/MS. The instrumentation used was a Tekmar Dynamic Headspace Concentrator interfaced with a Hewlett-Packard Model 5995/5972A GC/MS/DS.

Semi-volatile organics were determined using capillary GC/MS. The instrumentation used was a Hewlett-Packard Model 5890 gas chromatograph interfaced with Model 5970/5971 Mass Selective Detector.

Pesticides and polychlorinated biphenyls (PCB's) were determined using GC/ECD. The instrumentation used was a HP Model 5890 gas chromatograph equipped with an electron capture detector (Ni^{63}).

Metals were determined by ICP using either a JA61 simultaneous ICAP or a PE6500-XR sequential ICP. Graphite furnace elements were determined using either a PEZ5100 or a PEZ3030 GFAAS. Mercury was determined by the cold vapor technique utilizing the Spectro Products Model HG-4 mercury analyzer.

Cyanide was determined colorimetrically after preliminary distillation.

The analyses were conducted according to NYSDEC '91 ASP Protocols.

DISCUSSION

Volatile Organics - The ratio of cis-1,3-dichloropropene versus trans-1,3-dichloropropene in the calibration standard was 47 and 53 percent, respectively.

No problems were encountered.

Semi-Volatile Organics - Samples LCL SPS-6 and LCL SPS-8 exhibited internal standard area suppression of perylene-d_{12}. The samples were reanalyzed with similar results, therefore proving matrix interference. Both sets of data have been reported with the reanalyses designated with the suffix "RE".

Pesticides/PCB's - All samples were extracted and concentrated without any apparent problems.

Surrogate recoveries were outside the advisory QC limits on one or both columns for method blank PBLK43.

Batch QC has been submitted.

Due to software limitations, the scaling factor could not be displayed on the chromatograms.

Metals - Antimony and mercury failed the control limits for spike recovery analysis of sample 0978033 resulting in an "N" flag. A matrix effect appears to be the cause of the flags.

No other problems were encountered.

RESULTS

The results are presented in the following Tables. Also enclosed is the data package containing all relevant data.

Soil

TABLE VO-1.0
3094-0988
URS CONSULTANTS
EPA TCL VOLATILE ORGANICS

All values are ug/Kg dry weight basis.

	Sample Identification		
Dilution Factor	1.0	1.26	
Method Blank I.D.	VBLKBF	VBLKBF	
Compound	Method Blank	LCL SPS-7	Quantitation Limits with no Dilution
Chloromethane	U	U	10
Bromomethane	U	U	10
Vinyl Chloride	U	U	10
Chloroethane	U	U	10
Methylene Chloride	3J	~~40B~~ MEB	10
Acetone	12	~~28B~~ 10/17/94	10
Carbon Disulfide	U	U	10
1,1-Dichloroethene	U	U	10
1,1-Dichloroethane	U	U	10
1,2-Dichloroethene (total)	U	U	10
Chloroform	U	U	10
1,2-Dichloroethane	U	U	10
2-Butanone	2J	U	10
1,1,1-Trichloroethane	U	U	10
Carbon Tetrachloride	U	U	10
Bromodichloromethane	U	U	10
1,2-Dichloropropane	U	U	10
cis-1,3-Dichloropropene	U	U	10
Trichloroethene	U	U	10
Dibromochloromethane	U	U	10
1,1,2-Trichloroethane	U	U	10
Benzene	U	U	10
trans-1,3-Dichloropropene	U	U	10
Bromoform	U	U	10
4-Methyl-2-pentanone	U	U	10
2-Hexanone	U	U	10
Tetrachloroethene	U	U	10
1,1,2,2-Tetrachloroethane	U	U	10
Toluene	U	U	10
Chlorobenzene	U	U	10
Ethylbenzene	U	U	10
Styrene	U	U	10
Xylene (total)	U	U	10

See Appendix for qualifier definitions.
Note: Sample detection limit = quantitation limit x dilution factor.

TABLE VO-2.0
3094-0988
URS CONSULTANTS
VOLATILE TENTATIVELY IDENTIFIED COMPOUNDS

Sample Identification: Method Blank VBLKBF

CAS#	Compound	RT	Estimated Concentration, ug/Kg
	None detected		

Sample Identification: LCL SPS-7

CAS#	Compound	RT	Estimated Concentration, ug/Kg
	Unknown	24.86	18J
	Unknown siloxane	25.80	7J

See Appendix for qualifier definitions.

TABLE SV-1.0
3094-0988
URS CONSULTANTS
EPA TCL SEMI-VOLATILE ORGANICS

All values are ug/Kg dry weight basis.

	Sample Identification				
Dilution Factor	1.0	1.25	1.25	1.25	
Method Blank I.D.	SBLKZI	SBLKZI	SBLKZI	SBLKZI	
Compound	Method Blank	LCL SPS-6	LCL SPS-6 RE	LCL SPS-7	Quantitation Limits with no Dilution
Phenol	U	U	U	U	330
bis(2-Chloroethyl)ether	U	U	U	U	330
2-Chlorophenol	U	U	U	U	330
1,3-Dichlorobenzene	U	22J	22J	U	330
1,4-Dichlorobenzene	U	U	U	U	330
1,2-Dichlorobenzene	U	U	U	U	330
2-Methylphenol	U	U	U	U	330
2,2'-oxybis(1-Chloropropane)	U	U	U	U	330
4-Methylphenol	U	U	U	U	330
N-Nitroso-di-n-propylamine	U	U	U	U	330
Hexachloroethane	U	U	U	U	330
Nitrobenzene	U	U	U	U	330
Isophorone	U	U	U	U	330
2-Nitrophenol	U	U	U	U	330
2,4-Dimethylphenol	U	U	U	U	330
bis(2-Chloroethoxy)methane	U	U	U	U	330
2,4-Dichlorophenol	U	U	U	U	330
1,2,4-Trichlorobenzene	U	13J	14J	16J	330
Naphthalene	U	16J	18J	4J	330
4-Chloroaniline	U	U	U	U	330
Hexachlorobutadiene	U	U	U	U	330
4-Chloro-3-methylphenol	U	U	U	U	330
2-Methylnaphthalene	U	10J	11J	U	330
Hexachlorocyclopentadiene	U	U	U	U	330
2,4,6-Trichlorophenol	U	U	U	U	330
2,4,5-Trichlorophenol	U	U	U	U	800
2-Chloronaphthalene	U	U	U	U	330
2-Nitroaniline	U	U	U	U	800
Dimethylphthalate	U	U	U	U	330
Acenaphthylene	U	37J	37J	8J	330
2,6-Dinitrotoluene	U	U	U	U	330
3-Nitroaniline	U	U	U	U	800
Acenaphthene	U	13J	15J	U	330

See Appendix for qualifier definitions.
Note: Sample detection limit = quantitation limit x dilution factor.

TABLE SV-1.0
3094-0988
URS CONSULTANTS
EPA TCL SEMI-VOLATILE ORGANICS

All values are ug/Kg dry weight basis.

	Sample Identification				
Dilution Factor	1.0	1.25	1.25	1.25	
Method Blank I.D.	SBLKZI	SBLKZI	SBLKZI	SBLKZI	
Compound	Method Blank	LCL SPS-6	LCL SPS-6 RE	LCL SPS-7	Quantitation Limits with no Dilution
2,4-Dinitrophenol	U	U	U	U	800
4-Nitrophenol	U	U	U	U	800
Dibenzofuran	U	22J	22J	8J	330
2,4-Dinitrotoluene	U	U	U	U	330
Diethylphthalate	7J	~~10JB~~	~~11JB~~	~~8JB~~	330
4-Chlorophenyl-phenylether	U	U	U	U	330
Fluorene	U	21J	22J	U	330
4-Nitroaniline	U	U	U	U	800
4,6-Dinitro-2-methylphenol	U	U	U	U	800
N-Nitrosodiphenylamine (1)	U	U	U	U	330
4-Bromophenyl-phenylether	U	U	U	U	330
Hexachlorobenzene	U	74J	78J	260J	330
Pentachlorophenol	U	U	U	U	800
Phenanthrene	U	340J	370J	45J	330
Anthracene	U	74J	79J	10J	330
Carbazole	U	72J	56J	8J	330
Di-n-butylphthalate	22J	~~75JB~~	~~77JB~~	~~68JB~~	330
Fluoranthene	U	760	830	100J	330
Pyrene	U	640	680	91J	330
Butylbenzylphthalate	U	31J	U	U	330
3,3'-Dichlorobenzidine	U	U	U	U	330
Benzo(a)anthracene	U	410J	460	54J	330
Chrysene	U	490	530	68J	330
bis(2-Ethylhexyl)phthalate	37J	690B	710B	640B	330
Di-n-octylphthalate	U	U	U	U	330
Benzo(b)fluoranthene	U	910	1,000	110J	330
Benzo(k)fluoranthene	U	390J	500	68J	330
Benzo(a)pyrene	U	470	500	70J	330
Indeno(1,2,3-cd)pyrene	U	160J	100J	60J	330
Dibenzo(a,h)anthracene	U	U	40J	12J	330
Benzo(g,h,i)perylene	U	140J	98J	66J	330

See Appendix for qualifier definitions.
Note: Sample detection limit = quantitation limit x dilution factor.

TABLE SV-1.1
3094-0988
URS CONSULTANTS
EPA TCL SEMI-VOLATILE ORGANICS

All values are ug/Kg dry weight basis.

	Sample Identification				
Dilution Factor	1.0	1.25	1.25	1.37	
Method Blank I.D.	SBLKZI	SBLKZI	SBLKZI	SBLKZI	
Compound	Method Blank	LCL SPS-8	LCL SPS-8 RE	LCL SPS-9	Quantitation Limits with no Dilution
Phenol	U	U	U	U	330
bis(2-Chloroethyl)ether	U	U	U	U	330
2-Chlorophenol	U	U	U	U	330
1,3-Dichlorobenzene	U	U	11J	U	330
1,4-Dichlorobenzene	U	U	U	U	330
1,2-Dichlorobenzene	U	U	U	U	330
2-Methylphenol	U	U	U	U	330
2,2'-oxybis(1-Chloropropane)	U	U	U	U	330
4-Methylphenol	U	U	U	U	330
N-Nitroso-di-n-propylamine	U	U	U	U	330
Hexachloroethane	U	U	U	U	330
Nitrobenzene	U	U	U	U	330
Isophorone	U	U	U	U	330
2-Nitrophenol	U	U	U	U	330
2,4-Dimethylphenol	U	U	U	U	330
bis(2-Chloroethoxy)methane	U	U	U	U	330
2,4-Dichlorophenol	U	U	U	U	330
1,2,4-Trichlorobenzene	U	U	U	U	330
Naphthalene	U	34J	37J	8J	330
4-Chloroaniline	U	U	U	U	330
Hexachlorobutadiene	U	U	U	U	330
4-Chloro-3-methylphenol	U	U	U	U	330
2-Methylnaphthalene	U	23J	26J	11J	330
Hexachlorocyclopentadiene	U	U	U	U	330
2,4,6-Trichlorophenol	U	U	U	U	330
2,4,5-Trichlorophenol	U	U	U	U	800
2-Chloronaphthalene	U	U	U	U	330
2-Nitroaniline	U	U	U	U	800
Dimethylphthalate	U	U	U	U	330
Acenaphthylene	U	130J	130J	33J	330
2,6-Dinitrotoluene	U	U	U	U	330
3-Nitroaniline	U	U	U	U	800
Acenaphthene	U	26J	30J	U	330

See Appendix for qualifier definitions.
Note: Sample detection limit = quantitation limit x dilution factor.

TABLE SV-1.1
3094-0988
URS CONSULTANTS
EPA TCL SEMI-VOLATILE ORGANICS

All values are ug/Kg dry weight basis.

	Sample Identification				
Dilution Factor	1.0	1.25	1.25	1.37	
Method Blank I.D.	SBLKZI	SBLKZI	SBLKZI	SBLKZI	
Compound	Method Blank	LCL SPS-8	LCL SPS-8 RE	LCL SPS-9	Quantitation Limits with no Dilution
2,4-Dinitrophenol	U	U	U	U	800
4-Nitrophenol	U	U	U	U	800
Dibenzofuran	U	100J	120J	6J	330
2,4-Dinitrotoluene	U	U	U	U	330
Diethylphthalate	7J	~~18JB~~	~~20JB~~	U	330
4-Chlorophenyl-phenylether	U	U	U	U	330
Fluorene	U	53J	58J	10J	330
4-Nitroaniline	U	U	U	U	800
4,6-Dinitro-2-methylphenol	U	U	U	U	800
N-Nitrosodiphenylamine (1)	U	U	U	U	330
4-Bromophenyl-phenylether	U	U	U	U	330
Hexachlorobenzene	U	24J	26J	U	330
Pentachlorophenol	U	U	U	U	800
Phenanthrene	U	2,300	2,600	87J	330
Anthracene	U	300J	310J	26J	330
Carbazole	U	180J	150J	26J	330
Di-n-butylphthalate	22J	~~90JB~~	~~100JB~~	~~83JB~~	330
Fluoranthene	U	3,300	3,800	240J	330
Pyrene	U	2,400	2,700	220J	330
Butylbenzylphthalate	U	180J	200J	140J	330
3,3'-Dichlorobenzidine	U	U	U	U	330
Benzo(a)anthracene	U	1,500	1,800	140J	330
Chrysene	U	1,600	1,800	160J	330
bis(2-Ethylhexyl)phthalate	37J	1,300B	1,400B	~~360JB~~	330
Di-n-octylphthalate	U	U	U	U	330
Benzo(b)fluoranthene	U	2,800	3,800	260J	330
Benzo(k)fluoranthene	U	1,400	1,300	200J	330
Benzo(a)pyrene	U	1,400	1,600	190J	330
Indeno(1,2,3-cd)pyrene	U	480	300J	84J	330
Dibenzo(a,h)anthracene	U	140J	100J	U	330
Benzo(g,h,i)perylene	U	390J	230J	84J	330

MEB 10/17/94

See Appendix for qualifier definitions.
Note: Sample detection limit = quantitation limit x dilution factor.

TABLE SV-2.0
3094-0988
URS CONSULTANTS
MISCELLANEOUS

Sample Identification: Method Blank SBLKZI

CAS#	Compound	RT	Estimated Concentration, ug/Kg
	Aldol condensation product	7.29	91,000JA
	Unknown	6.63	1,400J
	Unknown	8.65	750J
	Unknown	6.20	260J
141797	3-Penten-2-one, 4-methyl-	5.61	230JN
103231	Hexanedoic acid, bis(2-ethylhex	27.84	96JN

Sample Identification: LCL SPS-6

CAS#	Compound	RT	Estimated Concentration, ug/Kg
	Aldol condensation product	7.11	94,000JAB
612715	1,1':3',1"-Terphenyl,5'-phenyl-	33.68	3,500JN
	Unknown alkane	32.36	2,100J
	Unknown	37.75	1,400J
	Unknown alkane	35.42	1,200J
	Unknown	6.44	1,200J
	Unknown	36.06	740J
	Unknown PAH $C_{20}H_{12}$	33.12	590J
	Unknown	8.46	580JB
	Unknown	40.04	440J
	Unknown alkane	28.45	340J
	Unknown	25.36	340J
57103	Hexadecanoic acid	23.53	340JN
141797	3-Penten-2-one,4-methyl-	5.41	330JNB
	Unknown alkane	31.17	290J
	Unknown alkane	30.16	230J
	Unknown alkane	29.27	230J
57114	Octadecanoic acid	25.53	190JN
	Unknown alkane	27.61	180J
84651	9,10-Anthralenedione	24.11	150JN
	Unknown alkane	26.72	140J

See Appendix for qualifier definitions.

TABLE SV-2.1
3094-0988
URS CONSULTANTS
MISCELLANEOUS

Sample Identification: LCL SPS-6 RE

CAS#	Compound	RT	Estimated Concentration, ug/Kg
	Aldol condensation product	6.90	55,000JAB
	Aldol condensation product	7.08	7,500JAB
1166183	1,1':3,1":3",1"-Quaterphenyl	33.48	3,800JN
	Unknown alkane	32.19	1,800J
	Unknown	37.42	1,000J
	Unknown alkane	35.16	1,000J
	Unknown	35.79	660J
	Unknown	8.39	650JB
	Unknown	6.44	650JB
57103	Hexaedcanoic acid	23.45	440JN
	Unknown	39.64	350J
141797	3-Penten-2-one,4-methyl-	5.33	320JNB
	Unknown alkane	28.36	320J
	Unknown alkane	31.03	290J
	Unknown	39.94	260J
	Unknown alkane	30.04	230J
	Unknown	5.95	200JB
	Unknown alkane	29.18	180J
	Unknown lakane	27.51	170J
84651	9,10-Anthracenedione	24.01	150J
	Unknown alkane	26.63	130J

Sample Identification: LCL SPS-7

CAS#	Compound	RT	Estimated Concentration, ug/Kg
	Aldol condensation product	7.13	100,000JAB
	Unknown	6.48	1,100JB
	Unknown tetrachlorobiphenyl-	25.03	860J
	Unknown	8.46	630JB
	Unknown tetrachlorobiphenyl	24.94	530J
	Unknown trichlorobiphenyl	22.92	520J
	Unknown pentachlorobiphenyl	25.47	450J
	Unknown	6.00	420JB
	Unknown tetrachlorobiphenyl	25.37	410J
	Unknown pentachlorobiphenyl	26.25	390J
	Unknown tetrachlorobiphenyl	24.10	340J

See Appendix for qualifier definitions.

TABLE SV-2.2
3094-0988
URS CONSULTANTS
MISCELLANEOUS

Sample Identification: LCL SPS-7 (continued)

CAS#	Compound	RT	Estimated Concentration, ug/Kg
141797	3-Penten-2-one,4-methyl-	5.40	340JNB
	Unknown tetrachlorobiphenyl	24.38	330J
	Unknown tetrachlorobiphenyl	23.76	320J
	Unknown trichlorobiphenyl	24.20	310J
	Unknown pentachlorobiphenyl	26.77	290J
	Unknown tetrachlorobiphenyl	24.86	250J
	Unknown hexachlorobiphenyl	27.74	240J
	Unknown pentachlorobiphenyl	27.31	230J
	Unknown pentachlorobiphenyl	25.59	220J
	Unknown alkane	35.34	210J

Sample Identification: LCL SPS-8

CAS#	Compound	RT	Estimated Concentration, ug/Kg
	Aldol condensation product	7.10	98,000JAB
	Unknown alkane	32.39	12,000J
	Unknown alkane	33.77	7,100J
	Unknown alkane	35.44	6,400J
	Unknown PAH $C_{20}H_{12}$	33.14	3,200J
	Unknown alkane	37.44	2,700J
	Unknown	37.74	1,800J
612715	1,1′:3′,1"Terphenyl,5′-phenyl	33.67	1,700JN
	Unknown	6.44	1,100JB
	Unknown alkane	39.88	1,000J
	Unknown	36.06	760J
	Unknown	8.45	560JB
	Unknown alkane	31.21	490J
	Unknown PAH $C_{15}H_{12}$	23.54	450J
	Unknown alkane	28.47	430J
	Unknown alkane	30.18	430J
	Unknown alkane	29.29	390J
	Unknown	6.01	330JB
	Unknown PAH $C_{15}H_{12}$	23.26	320J
	Unknown PAH $C_{15}H_{12}$	23.33	320J
141797	3-Penten-2-one,4-methyl-	5.40	310JNB

See Appendix for qualifier definitions.

TABLE SV-2.3
3094-0988
URS CONSULTANTS
MISCELLANEOUS

Sample Identification: LCL SPS-8 RE

CAS#	Compound	RT	Estimated Concentration, ug/Kg
	Aldol condensation product	7.10	120,000JAB
	Unknown alkane	32.23	17,000J
	Unknown alkane	33.57	9,100J
	Unknown alkane	35.19	7,700J
612715	1,1':3'1"Terphenyl,5'phenyl-	33.48	5,400JN
	Unknown PAH $C_{20}H_{12}$	32.96	4,700J
	Unknown	37.12	2,800J
	Unknown	37.41	2,000J
	Unknown PAH $C_{20}H_{12}$	32.31	1,300J
	Unknown	35.78	1,200J
	Unknown alkane	39.47	1,200J
	Unknown	8.40	640JB
	Unknown	6.46	520JB
	Unknown PAH $C_{15}H_{12}$	23.46	490J
	Unknown alkane	31.07	460J
	Unknown alkane	30.07	420J
	Unknown alkane	28.39	410J
486259	9H-Fluoren-9-one	21.39	380JN
	Unknown alkane	29.19	370J
	Unknown PAH $C_{15}H_{12}$	23.17	370J
5737133	Cyclopenta(def)phenanthrene	24.89	360JN

Sample Identification: LCL SPS-9

CAS#	Compound	RT	Estimated Concentration, ug/Kg
	Aldol condensation product	7.11	100,000JAB
	Unknown	6.46	1,300JB
	Unknown alkane	32.33	670J
	Unknown	8.46	650JB
	Unknown alkane	35.41	550J
	Unknown	37.72	460J
57103	Hexadecanoic acid	23.52	430JN
	Unknown	6.01	360JB
	Unknown	25.33	350J
	Unknown alkane	33.72	340J

See Appendix for qualifier definitions.

TABLE SV-2.4
3094-0988
URS CONSULTANTS
MISCELLANEOUS

Sample Identification: LCL SPS-9 (continued)

CAS#	Compound	RT	Estimated Concentration, ug/Kg
141797	3-Penten-2-one,4-methyl-	5.40	310JN
57114	Octadecanoic acid	25.53	270JN
	Unknown	36.04	220J
	Unknown lkane	28.44	220J
	Unknown	33.86	210J
	Unknown	36.17	210J
	Unknown alkane	31.15	200J
	Unknown	17.27	200J
	Unknown alkane	37.42	180J
	Unknown	32.56	170J
	Unknown alkane	30.14	160J

See Appendix for qualifier definitions.

TABLE GC-1.0 Soil
3094-0988
URS CONSULTANTS
EPA TCL PESTICIDES/PCB'S

All values are ug/Kg dry weight basis.

Client Sample I.D.	Method Blank	LCL SPS-7	LCL SPS-7 DL	Quant. Limits with no Dilution
Lab Sample I.D.	091994-B09	0988002	0988002DL	
Method Blank I.D.	PBLK43	PBLK43	PBLK43	
Dilution Factor	1.00	2.50	25.0	
alpha-BHC	U	U	U	1.7
beta-BHC	U	U	U	1.7
delta-BHC	U	U	U	1.7
gamma-BHC (Lindane)	U	U	U	1.7
Heptachlor	U	U	U	1.7
Aldrin	U	U	U	1.7
Heptachlor Epoxide	U	U	U	1.7
Endosulfan I	U	U	U	1.7
Dieldrin	U	87P	120PD	3.3
4,4'-DDE	U	U	U	3.3
Endrin	U	U	U	3.3
Endosulfan II	U	U	U	3.3
4,4'-DDD	U	U	U	3.3
Endosulfan Sulfate	U	U	U	3.3
4,4'-DDT	U	U	U	3.3
Methoxychlor	U	U	U	17
Endrin Ketone	U	U	U	3.3
Endrin Aldehyde	U	U	U	3.3
alpha-Chlordane	U	180P	260PD	1.7
gamma-Chlordane	U	54P	74PD	1.7
Toxaphene	U	U	U	170
Aroclor-1016	U	U	U	33
Aroclor-1221	U	U	U	67
Aroclor-1232	U	U	U	33
Aroclor-1242	U	U	U	33
Aroclor-1248	U	3600	5100D	33
Aroclor-1254	U	3500	5100D	33
Aroclor-1260	U	3200P	4000D	33
Date Received		09/16/94	09/16/94	
Date Extracted	09/19/94	09/19/94	09/19/94	
Date Analyzed	09/23/94	09/28/94	09/23/94	

See Appendix for qualifier definitions
Note: Compound detection limit = quantitation limit x dilution factor

TABLE AS-1.0 Soil
3094-0988
URS CONSULTANTS
EPA TAL METALS

All values are mg/Kg dry weight basis.

Client Sample I.D.	LCL SPS-6	LCL SPS-7	LCL SPS-8	LCL SPS-9
Lab Sample I.D.	0988001	0988002	0988003	0988004
Aluminum	12900	19700	15600	10300
Antimony	11.0BN	7.4BN	5.9UN	14.6BN
Arsenic	13.7	15.6B	23.9S	19.0
Barium	574.	784.	572.	388.
Beryllium	2.8	3.2	3.6	3.5
Cadmium	10.5	12.8	10.0	8.5
Calcium	59900	53500	69900	61400
Chromium	120.	142.	117.	84.1
Cobalt	18.0	25.9	24.2	14.0
Copper	1050	2800	1590	603.
Cyanide	0.61U	0.64U	0.61U	0.64U
Iron	51400	57600	58700	61000
Lead	4630	5140	2340	1300
Magnesium	20500	22000	17100	15200
Manganese	860.	1010	851.	1170
Mercury	0.68N	0.73N	0.82N	0.13UN
Nickel	161.	299.	164.	71.4
Potassium	2810	3010	3630	2150
Selenium	0.30B	0.26U	0.46B	0.26B
Silver	9.6	17.0	8.3	3.2
Sodium	1400	1510	1720	579.B
Thallium	0.25UW	0.26UW	1.3UW	0.26U
Vanadium	24.6	23.0	21.5	22.8
Zinc	2780	3710	2630	1550

See Appendix for qualifier definitions

ORGANICS APPENDIX

U - Indicates that the compound was analyzed for but not detected.

J - Indicates that the compound was analyzed for and determined to be present in the sample. The mass spectrum of the compound meets the identification criteria of the method. The concentration listed is an estimated value, which is less than the specified minimum detection limit but is greater than zero.

B - This flag is used when the analyte is found in the blanks as well as the sample. It indicates possible sample contamination and warns the data user to use caution when applying the results of this analyte.

N - Indicates that the compound was analyzed for but not requested as an analyte. Value will not be listed on tabular result sheet.

S - Estimated due to surrogate outliers.

X - Matrix spike compound.

(1) - Cannot be separated.

(2) - Decomposes to azobenzene. Measured and calibrated as azobenzene.

A - This flag indicates that a TIC is a suspected aldol condensation product.

E - Indicates that it exceeds calibration curve range.

D - This flag identifies all compounds identified in an analysis at a secondary dilution factor.

C - Confirmed by GC/MS.

T - Compound present in TCLP blank.

P - This flag is used for a pesticide/aroclor target analyte when there is a greater than 25 percent difference for detected concentrations between the two GC columns (see Form X).

INORGANICS APPENDIX

C - Concentration qualifiers

U - Indicates analyte result less than instrument detection limit (IDL)

B - Indicates analyte result between IDL and contract required detection limit (CRDL)

Q - QC qualifiers

E - Reported value is estimated because of the presence of interference

M - Duplicate injection precision not met

N - Spiked sample recovery not within control limits

S - The reported value was determined by the method of standard additions (MSA)

W - Post-digest spike recovery furnace analysis was out of 85-115 percent control limit, while sample absorbance was less than 50 percent of spike absorbance

* - Duplicate analysis not within control limit

+ - Correlation coefficient for MSA is less than 0.995

M - Method codes

P - ICP

A - Flame AA

F - Furnace AA

CV - Cold vapor AA (manual)

C - Cyanide

NR - Not Required

NC - Not Calculated as per protocols

STATE CERTIFICATIONS

In some instances it may be necessary for environmental data to be reported to a regulatory authority with reference to a certified laboratory. For your convenience, the laboratory identification numbers for the IEA-Connecticut laboratory are provided in the following table. Many states certify laboratories for specific parameters or tests within a category (i.e. method 325.2 for wastewater). The information in the following table indicates the lab is certified in a general category of testing such as drinking water or wastewater analysis. The laboratory should be contacted directly if parameter-specific certification information is required.

IEA-Connecticut
Certification Summary (as of June 1993)

State	Responsible Agency	Certification	Lab Number
Connecticut	Department of Health Services	Drinking Water, Wastewater	PH-0497
Kansas	Department of Health and Environmental Services	Drinking Water, Wastewater/Solid, Hazardous Waste	E-210/E-1185
Massachusetts	Department of Environmental Protection	Potable/Non-Potable Water	CT023
New Hampshire	Department of Environmental Services	Drinking Water, Wastewater	252891
New Jersey	Department of Environmental Protection	Drinking Water, Wastewater	46410
New York	Department of Health	CLP, Drinking Water, Wastewater, Solid/ Hazardous Waste	10602
North Carolina	Division of Environmental Management	Wastewater	388
Rhode Island	Department of Health	Chemistry...Non-Potable Water and Wastewater	A43
California	Department of Health Services	Hazardous Waste	1778

40940-0988
URS CONSULTANTS
SAMPLE SUMMARY

CLIENT ID	LAB ID	MATRIX	DATE COLLECTED	DATE RECEIVED
LCL SPS-6	0988001	SOIL	09/15/94	09/16/94
LCL SPS-7	0988002	SOIL	09/15/94	09/16/94
LCL SPS-8	0988003	SOIL	09/15/94	09/16/94
LCL SPS-9	0988004	SOIL	09/15/94	09/16/94

IEA, INC.
ANALYTICAL SUMMARY

URS CONSULTANTS
LOCKPORT
3094-0988

#SAMPLES	MATRIX	#REPS	DESCRIPTION
3	SOIL	1	TARGET COMPOUND BNA's + TICS
		1	TOTAL CYANIDES BY CLP PROTOCOL
		1	TARGET ANALYTE LIST METALS
	SAMPLE IDs : LCL SPS-8, LCL SPS-9, LCL SPS-6		
1	SOIL	1	FULL TAL LIST ANALYSIS + TIC's
	SAMPLE IDs : LCL SPS-7		