102nd Street Landfill Site

Niagara Falls, New York

Final Close Out Report

Operable Units 1 & 2

Volume 1

Prepared for:
Occidental Chemical Corporation
Olin Corporation

Olin

Prepared by:
IT Corporation
Greenville, SC

the IT group

August 13, 1999
Revision 0

Prepared for:
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OPERABLE UNITS 1 & 2

IT Corporation

Prepared for
Occidental Chemical Corporation
Olin Corporation

August 13, 1999
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Table of Contents

TABLE OF CONTENTS

List of Abbreviations and Acronyms

AO	Administrative Order
APL	Aqueous Phase Liquids
ARARs	Applicable Relevant and Appropriate Requirements
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CFR	Code of Federal Regulations
COR	Final Closeout Report
DEC	New York State Department of Environmental Conservation
EPA	The United States Environmental Protection Agency
FER	Final Engineering Report
GSTP	Geotechnical Sampling and Testing Plan
NAPL	Non-Aqueous Phase Liquids
Olin	Olin Corporation
OSWER	Office of Solid Waste and Emergency Response
OU	Operable Unit
OxyChem	Occidental Chemical Corporation
PFA	Predesign Field Activities
PFAR	Predesign Field Activities Report
QA/QC	Quality Assurance/Quality Control
QAPP	Quality Assurance Project Plan
RA	Remedial Action
RAR	Remedial Action Report
RAWP	Remedial Action Work Plan
RD	Remedial Design
RDD	Remedial Design Document
RDR	Remedial Design Report
RDWP	Remedial Design Work Plan
ROD	Record of Decision
SATP	Remedial Action Sampling and Testing Program
Site	102nd Street Landfill in Niagara Falls, NY
The Companies	Occidental Chemical Corporation and Olin Corporation

List of Drawings

1.0 INTRODUCTION

This Final Closeout Report (COR) documents that the Occidental Chemical Corporation (OxyChem) and Olin Corporation (Olin), (collectively referred to as "the Companies"), completed construction activities for Operable Units 1 and 2 (OU-1 and OU-2), landfill residuals, perimeter soils, shallow groundwater, non-aqueous phase liquids, and the sediments in the Niagara River within 300 feet of the shore at the 102nd Street Landfill Site (Site) in accordance with the United States Environmental Protection Agency (EPA) document Close Out Procedures for National Priorities List Sites, dated August 1995 [Office of Solid Waste and Emergency Response (OSWER) Directive 9320.2-09], and Procedures for Completion and Deletion of National Priorities List Sites and Update (OSWER Directive 9320.2-3C). Operable Unit 3 (OU-3) consisted of the abandonment and relocation of the 42-inch 100th Street storm sewer that traversed the 102nd Street Landfill Site. The consideration of OU-3 as a separate site for closeout purposes was requested by the EPA Project Manager and the closeout report was approved by EPA in February 1999. The landfill residuals, perimeter soils, shallow groundwater, and non-aqueous phase liquids are considered OU-1 and the sediments in the Niagara River within 300 feet of the shore are considered OU-2 at the Site.

EPA and New York State Department of Environmental Conservation (DEC) personnel conducted a pre-final inspection of OU-1 and OU-2 on May 5, 1999 and determined that the contractors have constructed the remedy in accordance with remedial design (RD) plans and specifications, and no further work is required.

2.0 SUMMARY OF SITE CONDITIONS

The Site covers approximately 22.1 acres and is located in Niagara Falls, Niagara County, New York. It consists of two separate properties owned, respectively, by OxyChem and Olin plus contiguous and related areas as defined in the September 26, 1990 Record of Decision (ROD), as amended on June 9, 1995. The Companies' property is bordered on the south by the Niagara River, on the north by Buffalo Avenue, on the west by Griffon Park, and on the east by privately owned land. The Site, as defined in the ROD for the purpose of the overall remediation, also includes the areas immediately adjacent to the north and to the west, and the adjoining river sediments, as well as closely proximate areas necessary to carry out the remediation.

The Site was operated as a disposal site for industrial wastes by both Companies and their predecessors. OxyChem, and its predecessors, operated their 15.6-acre portion of the Site as a landfill from approximately 1943 until 1970. Olin operated their 6.5-acre portion (which occupies the eastern section of the overall Site) as a landfill from 1948 to 1970.

The Site was divided into three OUs for investigative and remedial alternative feasibility studies. The three OUs are:

- OU-1: Landfill residuals, perimeter soils, shallow groundwater, and non-aqueous phase liquids;
- OU-2: Sediments in the Niagara River within 300 feet of the shore;
- OU-3: The portion of the 100th Street Storm Sewer that crosses the site.

This report addresses OU-1 and OU-2 only.

The selected remedial action for the Site was presented in the ROD issued on September 26, 1990. The Remedial Design Work Plan (RDWP) for the Site, which describes the overall approach to the design of remedial measures, was approved by EPA on May 6, 1992.

Predesign Field Activities (PFA) were conducted at the Site between September 22 to October 27, 1992. The PFA obtained information on the soil conditions along the perimeter of the Site for the engineering design. The Predesign Field Activity Report (PFAR), which documented the PFA, was submitted to the EPA on November 20, 1992.

A Supplemental Offshore Boring Program was completed in August 1994 in order to determine the feasibility of aligning the Slurry Wall closer to the existing shoreline. An additional boring program was also completed in August 1994 along the proposed alignment for relocation of the 100th Street Storm Sewer. The results of these programs were documented in the Supplemental Offshore Boring Program Addendum to the PFAR and the Storm Sewer Relocation Drilling Program Addendum to the PFAR issued in August 1994 and September 1994, respectively.

These documents provided the basis for the selected revised remedial alternatives for OU-1 and OU-2 as presented in the Amended ROD issued on June 9, 1995. The selected remedial alternatives include the following.

- OU-1:
  - Consolidation of off-site perimeter soils under the cap;
  - Construction of a slurry wall encompassing the Site;
  - Capping the site with a compound liner system consisting of a compacted soil layer and a synthetic flexible membrane liner;
  - Restriction of access;
  - Institutional controls;
  - Recovery and treatment of aqueous phase liquids (APL);
  - Recovery and treatment of non-aqueous phase liquids (NAPL);
  - Monitoring of post-remedial action;
- OU-2:
  - Removal of embayment sediments with subsequent placement on the Site.

The Final Engineering was documented in the Final Engineering Report (FER) issued September 9, 1995 and revised February 5, 1996. The FER, including drawings and technical specifications, constitutes the Remedial Design Report (RDR) as defined in the Site's Administrative Order (AO) for RD and Remedial Action (RA), September 30, 1991. The RD is consistent with the selected remedy described in the Amended ROD and has taken into account and accommodated applicable or relevant and appropriate requirements (ARARS).

Perimeter soils were present along the north, east, and west sides of the landfill. The Remedial Design Document (RDD) for the Remedial Action Sampling and Testing Program (SATP) for Perimeter Soils was prepared to determine the depth of excavation throughout the Perimeter

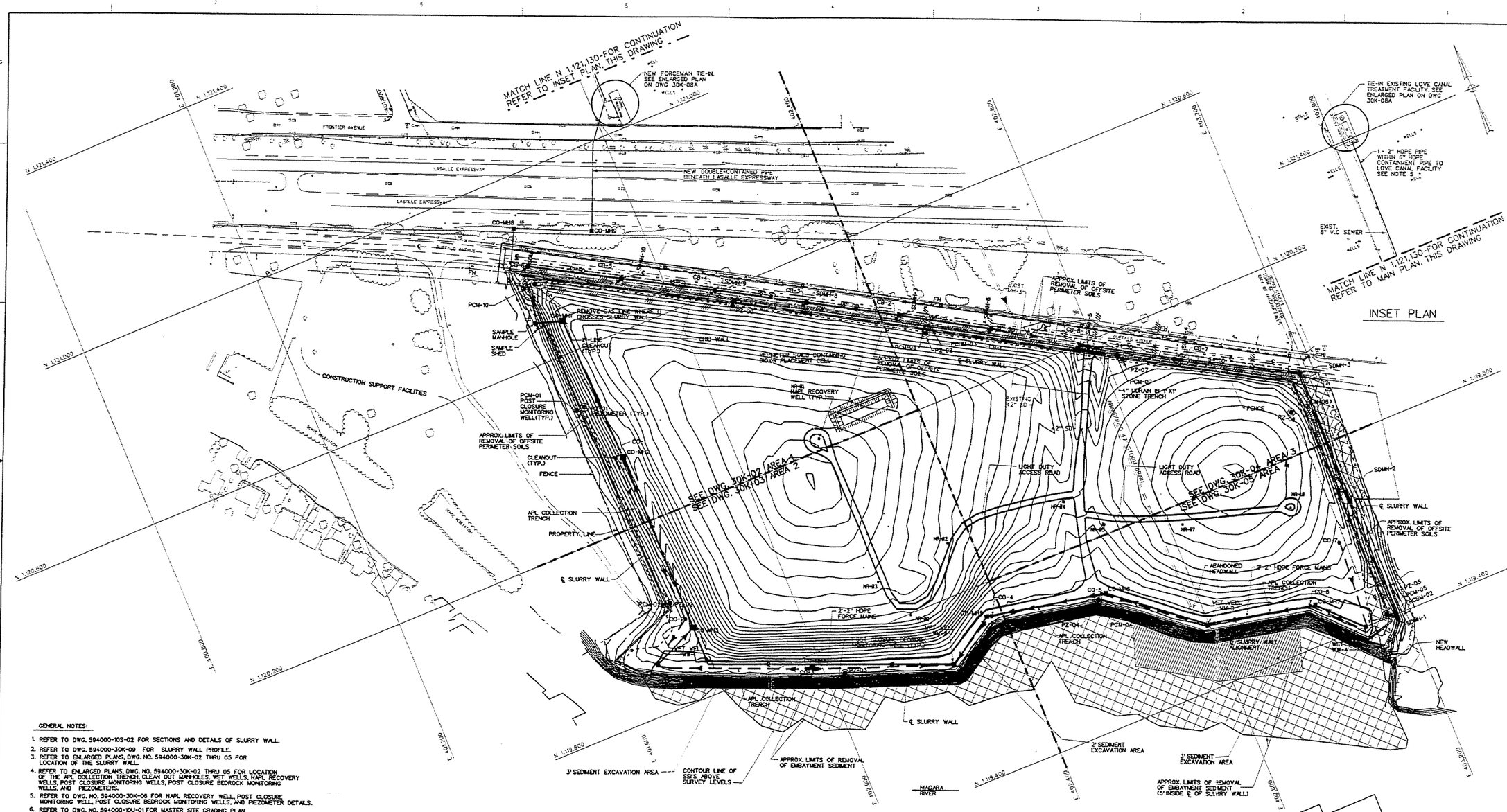
Soils area. A Remedial Action Work Plan (RAWP) was also prepared. The RAWP and SATP were approved by the EPA on June 30, 1995, and July 24, 1995, respectively. A Verification Sampling Data Summary Report which presents the results of the SATP was issued in November, 1995. The remediation of the Perimeter Soils was completed on August 6, 1996 in advance of the general Site remediation in order to allow the construction of the new storm sewer adjacent to Buffalo Avenue and the eastern boundary of the Site. Remediation of soils located in a triangular piece of land north of the Site across Buffalo Avenue was completed on November 19, 1993 and documented in the RA Report dated December 23, 1995.

The RA activities were performed according to design specifications set forth in the 1996 RD package with the following exceptions:

- The approved design drawings had a walkway on the bulkhead. This walkway was not installed.

- Aqueous phase liquid was to be stored in aboveground storage tanks and hauled off-site; however, the APL is pumped via a force main to the Love Canal Treatment Facility.

Drawing 5940000-30K-01-05, "As-Built Master Site Remediation Plan" provides an overview of the completed construction.



GENERAL NOTES:

1. REFER TO DWG. 594000-10S-02 FOR SECTIONS AND DETAILS OF SLURRY WALL.
2. REFER TO DWG. 594000-30K-09 FOR SLURRY WALL PROFILE.
3. REFER TO ENLARGED PLANS, DWG. NO. 594000-30K-02 THRU 05 FOR LOCATION OF THE SLURRY WALL.
4. REFER TO ENLARGED PLANS, DWG. NO. 594000-30K-02 THRU 05 FOR LOCATION OF THE APL COLLECTION TRENCH, CLEAN OUT MANHOLES, WET WELLS, NAPL RECOVERY WELLS, POST CLOSURE MONITORING WELLS, POST CLOSURE BEDROCK MONITORING WELLS, AND PIEZOMETERS.
5. REFER TO DWG. NO. 594000-30K-06 FOR NAPL RECOVERY WELL, POST CLOSURE MONITORING WELL, POST CLOSURE BEDROCK MONITORING WELLS, AND PIEZOMETER DETAILS.
6. REFER TO DWG. NO. 594000-10U-01 FOR MASTER SITE GRADING PLAN.
7. REFER TO DWG. 594000-30K-08C FOR WET WELL DETAILS
8. REFER TO SITE REMEDIATION PLAN DWGS. 594000-30K-02 THRU 05 FOR CHAIN LINK FENCE LOCATION.
9. REFER TO DWG. 594000-30K-06B FOR PLANS SHOWING REMOVAL/CONSOLIDATION OF PERIMETER SOILS FOR AREAS 1 THRU 4 RESPECTIVELY.
10. REFER TO DWGS. 594000-30K-03 AND 05 FOR DELINEATION OF THE LIMITS OF REMOVAL OF OFFSHORE SEDIMENT.
11. REFER TO DWG. 594000-10Z-02 FOR LEGEND & ABBREVIATIONS.

LIST OF EXISTING UTILITIES

UTILITY	OWNING UTILITY/AGENCY
1. CITY WATER	CITY OF NIAGARA FALLS, NEW YORK
2. GAS	NATIONAL FUEL GAS CORPORATION
3. TELEPHONE	NEW YORK TELEPHONE
4. POWER	NIAGARA MOHAWK POWER CORPORATION
5. CABLE TV	NIAGARA FRONTIER CABLE TELEVISION
6. STORM SEWER	CITY OF NIAGARA FALLS AND TOWN OF WHEATFIELD, NY

REV.	DATE	REVISION DESCRIPTION	DES CHK	APPROVED
A	05/29/13	ENGINEERING REPORT SUBMITTAL (PRELIMINARY/INTERMEDIATE)	JTG	JGK
B	6/3/94	DELETED CURTAIN WALL, ADDED OPTIONAL SLURRY WALL ALIGNMENT, ADDED NOTES (5 & 9) - ISSUED FOR REVIEW AND COMMENT-RELOCATION OF UNDERGROUND UTILITIES AND REMOVAL/CONSOLIDATION OF PERIMETER SOILS		
C	09/28/15	FINAL ENGINEERING REPORT (DRAFT SUBMITTAL)		
D	02/01/95	ISSUE FOR BID		
1	02/03/96	ISSUED FOR CONSTRUCTION		

REV.	DATE	REVISION DESCRIPTION	DES CHK	APPROVED
2	5/7/96	REVISED SLURRY WALL LOCATION IN SE CORNER		
3	3/12/97	STORM SEWER AS-BUILTS		
4	8/13/97	ADDED STORM SEWER CB-8 W/TIE IN TO SDMH-5 AND 4" UCRAN W/TIE IN TO CB-8		
5	1/23/98	AS-BUILT		

DWG NO	REFERENCE DRAWINGS
594000-10S-01	SITE DETAILS
594000-10S-02	CAPPING SYSTEM & BULKHEAD - SECTIONS AND DETAILS
594000-10U-01	MASTER SITE GRADING PLAN
594000-30K-02	SITE REMEDIATION PLAN - AREA 1
594000-30K-03	SITE REMEDIATION PLAN - AREA 2
594000-30K-04	SITE REMEDIATION PLAN - AREA 3

DWG NO	REFERENCE DRAWINGS
594000-30K-05	SITE REMEDIATION PLAN - AREA 4
594000-30K-06	APL, NAPL AND MONITORING WELLS AND MISC. DETAILS
594000-30K-06B	MASTER SITE REMEDIATION PLAN - EXCAVATION DEPTH OF PERIMETER SOILS
594000-30K-06C	APL WET WELL DETAILS
594000-30K-09	SLURRY WALL PROFILE

FLUOR DANIEL

DESIGNED BY: U. KUMTHEKAR/A. BUMB
CHECKED BY: S. LAWRENCE
DRAFTSMAN: C. MARS
RELEASE DATE:
LEAD ENGR./SPEC.: C. TAYLOR
APPROVED:
PROJECT ENGR.: C. MARS
APP. DATE:
CLIENT: OXYCHEM/OLIN
APP. DATE:

OXYCHEM/OLIN
REMEDIAL DESIGN
102nd STREET LANDFILL SITE
NIAGARA FALLS, NEW YORK

AS-BUILT
MASTER SITE REMEDIATION PLAN

SCALE: 1"=80' | DRAWING NUMBER: 594000-30K-01 | REV: 5

MANUAL CHANGES MADE: YES ☐ NO ☐ | CAD FILE UPDATED: YES ☐ NO ☐ | MODEL UPDATED: YES ☐ NO ☐ | HDD DRAWING No: 30K01.DGN

3.0 DEMONSTRATION OF CONSTRUCTION ACTIVITY QUALITY ASSURANCE/ QUALITY CONTROL

Activities at the Site were consistent with the ROD, ROD Addendum, ROD Amendment, and the RD package for design and construction. The Remedial Design Package, including the Quality Assurance Project Plan (QAPP), incorporated the quality assurance and quality control (QA/QC) procedures and protocol. The Remedial Action Report (RAR) contains the documentation of QA/QC compliance and documentation of remedial activities (presented in Attachment 1).

4.0 MONITORING RESULTS

The objective of the remedial action was containment. Post-closure care and monitoring will be performed to achieve clean-up objectives as described in Section 5.0, Summary of Operation and Maintenance.

5.0 SUMMARY OF OPERATION AND MAINTENANCE

The operation and maintenance of the landfill cap, containment, and collection systems will be provided by the Companies and is described in the Post Closure Operation and Maintenance Manual. The Post Closure Operation and Maintenance Manual provides a program that is consistent with requirements per 40 Code of Federal Regulations (CFR) 264.310 and 40 CFR Part 264, Subpart F to verify that the containment and monitoring systems are functioning as expected and designed, and to insure that the integrity of the remedial action is maintained over time. The Manual describes the major components of the program and provides maintenance and inspection schedules, checklists, and descriptions of specific tasks. The major components of the operation and maintenance program are as follows:

- APL collection and conveyance;
- NAPL collection;
- Cap subdrain collection;
- Soil and vegetative cover;
- Run-on and run-off controls;
- Groundwater level monitoring; and
- Groundwater sampling and analysis.

The post-closure care and monitoring will be performed for as long as needed to achieve clean up objectives. The program will be re-evaluated and modified at five-year intervals.

The manual will be issued before startup.

6.0 PROTECTIVENESS

This Site Unit (OU-1 and OU-2) meets the completion requirements as specified in OSWER Directive 9320.2-3C, Procedures for Completion and Deletion of National Priorities List Sites and Update. The RAR verifies that the site unit has achieved the objectives of the ROD, ROD Addendum, and ROD Amendment cleanup objective. The 102nd Street Landfill no longer poses a threat to human health or the environment. A bibliography of all reports relevant to the completion of this site unit is included in Section 8.0.

7.0 FIVE YEAR REVIEW

The post-closure care and monitoring will be re-evaluated and modified, if necessary, every five years, as required by the Comprehensive Emergency Response and Liability Act (CERCLA).

8.0 BIBLIOGRAPHY

7/90 Remedial Investigation Final Report, Vol. 1 & 2 (Conestoga-Rover & Associates & Woodward-Clyde Consultants) and the Feasibility Study Final Report, Vol. 1 & 2 (Sirrine Environmental Consultants).

9/26/90 EPA Record of Decision (ROD), 102nd Street Landfill Site, Niagara Falls, NY.

9/30/91 EPA Administrative Order (AO) for Remedial Design and Remedial Action, Index No. II CERCLA-10223.

5/6/92 Remedial Design Work Plan (RDWP), 102nd Street Landfill Site, Niagara Falls, NY; (Fluor Daniel).

11/20/92 Predesign Field Activities Report (PFAR), 102nd Street Landfill Site, Niagara Falls, NY; (Fluor Daniel).

3/3/93 Feasibility Review of Remedial Approach for 42-inch Storm Sewer (including hydraulic analysis of existing Storm Sewer), 102nd Street Landfill Site, Niagara Falls, NY; (Fluor Daniel).

3/25/94 The Predesign Field Activities (PFA) Geotechnical Sampling and Testing Plan (GSTP) Addendum for the Storm Sewer Relocation Drilling Program, 102nd Street Landfill Site, Niagara Falls, NY; (Fluor Daniel).

8/94 Supplemental Offshore Boring Program Addendum to the PFAR, 102nd Street Landfill Site, Niagara Falls, NY; (Fluor Daniel).

9/94 Storm Sewer Relocation Drilling Program Addendum to the PFAR, 102nd Street Landfill Site, Niagara Falls, NY; (Fluor Daniel).

6/9/95 EPA ROD Amendment, 102nd Street Landfill Site, Niagara Falls, NY; (EPA).

6/30/95 RAWP for the Perimeter Soils, 102nd Street Landfill Site, Niagara Falls, NY; (Fluor Daniel).

7/24/95 Remedial Action SATP for the Perimeter Soils, 102nd Street Landfill Site, Niagara Falls, NY; (Fluor Daniel).

9/9/95 Remedial Design Package, including the Engineering Report and Construction Management Plan, 102nd Street Landfill Site, Niagara Falls, NY; (Fluor Daniel).

11/95 Remedial Program for Perimeter Soils Verification Data Summary Report, 102nd Street Landfill Site, Niagara Falls, NY; (Fluor Daniel).

2/5/96 Remedial Design Package, including the Engineering Report and Construction Management Plan, 102nd Street Landfill Site, Niagara Falls, NY; (Fluor Daniel), revised.

5/10/96 Final Excavation Plan, 102nd Street Landfill Site, Niagara Falls, NY; (Smith).

ATTACHMENT 1

REMEDIAL ACTION REPORT
OPERABLE UNIT 1 AND OPERABLE UNIT 2

102nd STREET LANDFILL SITE
NIAGARA FALLS, NEW YORK

REMEDIAL ACTION REPORT

OPERABLE UNIT 1
AND
OPERABLE UNIT 2

IT Corporation

Prepared for
Occidental Chemical Corporation
Olin Corporation

August 13, 1999
Revision 0

TABLE OF CONTENTS

Section **Page**

TABLE OF CONTENTS (Continued)

List of Abbreviations and Acronyms

AO	Administrative Order
APL	Aqueous Phase Liquids
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CFR	Code of Federal Regulations
cm/sec	centimeters per second
CQAPP	Site Construction Quality Assurance Project Plan
DEC	New York State Department of Environmental Conservation
EPA	The United States Environmental Protection Agency
ESD	Explanation of Significant Differences
FER	Final Engineering Report
GAC	Granular Activated Carbon
GCL	Geosynthetic Clay Liner
gpm	gallons per minute
HDPE	High Density Polyethylene
LLDPE	Linear Low Density Polyethylene
msl	mean sea level
NAPL	Non-Aqueous Phase Liquids
NR	Non-Aqueous Phase Liquid Recovery
NTU	Turbidity Units
Olin	Olin Corporation
O&M Manual	Post Closure Operation and Maintenance Manual
OSWER	Office of Solid Waste and Emergency Response
OU	Operable Unit
OxyChem	Occidental Chemical Corporation
PCBM	Post Closure Bedrock Monitoring
PCM	Post Closure Monitoring
PFA	Predesign Field Activities
PFAR	Predesign Field Activities Report
psi	pounds per square inch
PVC	Polyvinyl Chloride
PZ	Piezometer
QA/QC	Quality Assurance/Quality Control
RA	Remedial Action
RAR	Remedial Action Report
RAWP	Remedial Action Work Plan
RD	Remedial Design
RDD	Remedial Design Document
RDWP	Remedial Design Work Plan
RI	Remedial Investigation

List of Abbreviations and Acronyms (Continued)

ROD	Record of Decision
SATP	Remedial Action Sampling and Testing Program
Site	102nd Street Landfill in Niagara Falls, NY
SSI	Site Specific Indicators
TAL	Target Analyte List
TCL	Target Compound List
The Companies	Occidental Chemical Corporation and Olin Corporation
VLDPE	Very Low Density Polyethylene
WTS	Water Treatment System

List of Appendices

List of Tables

List of Tables (Continued)

List of Drawings

Drawing Number	Title
594000-10Z-01-03	Cover Sheet
594000-10Z-02-02	Legend and Abbreviations
594000-30K-01-05	As Built Master Site Remediation Plan (80 scale)
594000-10U-01-08	As Built Master Site Grading Plan (80 scale)
594000-30K-02-03	As Built Site Remediation Plan - Area 1 (40 scale)
594000-30K-03-02	As Built Site Remediation Plan - Area 2 (40 scale)
594000-30K-04-04	As Built Site Remediation Plan - Area 3 (40 scale)
594000-30K-05-05	As Built Site Remediation Plan - Area 4 (40 scale)
594000-30K-06-03	As Built APL, NAPL and Monitoring Wells and Misc. Details
594000-30K-06B-02	As Built Master Site Remediation Plan - Excavation Depth of Perimeter Soils
594000-30K-06C-01	As Built APL Wet Well Details
594000-30K-08-05	As Built APL Collection System - Sections and Details
594000-30K-09-02	As Built Slurry Wall Profile
594000-10S-01-03	As Built Site Details
594000-10S-02-01	As Built Capping System & Bulkhead- Sections and Details
594010-10U-07-06	Force Main Routing Plan
594010-30K-08A-04	Force Main Met (Sampling)/Sump MH to L.C. Facility Details
594000-102PROF1-04	Force Main From Metering/Sampling MH to L.C. Facility Profile
23594010-SK-270-107-04	Instrument Block Diagram
594000-25J-02-07	P&ID APL System

EXECUTIVE SUMMARY

This Remedial Action Report (RAR) documents the execution of the Remedial Action Program for the landfill residuals, off-site soils, shallow groundwater, non-aqueous phase liquids (NAPL) [Operable Unit 1 (OU-1)], and the Niagara River embayment sediments (OU-2), at the 102nd Street Landfill Site (Site) in Niagara Falls, New York. The Site consists of two separate properties owned by Occidental Chemical Corporation (OxyChem) and Olin Corporation (Olin), (collectively referred to as "the Companies"), plus contiguous and related areas. The Site was operated as a disposal site for industrial wastes by both Companies and predecessors. Oversight for the remedial action was provided by the United States Environmental Protection Agency (EPA) and the New York State Department of Environmental Conservation (DEC).

The purpose of the remedial action program for OU-1 was to:

- Excavate, consolidate, and isolate perimeter and off-Site soils under the cap that exhibited concentrations of the Site Specific Indicators (SSI) above the survey level;
- Construct a slurry wall that encompassed the Site and keyed into the confining Clay/Glacial Till to provide a barrier to aqueous phase liquids (APL) and NAPL migration from the Site;
- Provide a capping system consisting of a combination of geosynthetic and natural soil materials installed over the Site to minimize infiltration of precipitation into the landfill and to isolate the landfill contents;
- Restrict access to the Site with a six-foot high chain link fence that encircles the Site along the property line and river;
- Provide institutional controls in the form of deed restrictions or similar restrictions to ensure that future land use at the Site is limited so as to preclude certain types of access to the Landfill and eliminate groundwater use for human consumption at the Site.
- Recover APL with a collection system consisting of a collection trench and four wet wells to create and maintain an inward gradient across the perimeter slurry wall and to treat the APL;
- Recover and treat NAPL by using eight (8) dedicated extraction wells;
- Provide post-remedial action performance monitoring of the containment system with ten (10) piezometers, ten (10) monitoring wells, and three (3) bedrock monitoring wells to determine remedial system effectiveness.

The purpose of the remedial program for OU-2 was to:

- Remove impacted embayment sediments, including highly impacted sediments exhibiting concentrations of SSIs above the survey level, and consolidate/isolate under the landfill cap.

The Remedial Action Program for OU-1 and OU-2 was conducted between April 23, 1996 and June 29, 1998. The force main extension to Love Canal was constructed between December 1998 and April 1999 at which time all construction was complete.

Inspections, sampling and testing were conducted in accordance with the Site Construction Quality Assurance Project Plan (CQAPP) in order to document substantial conformance with the performance standards, project design, specifications and procedures. Field Change Approvals were utilized to document changes to the approved plans and specifications.

The pre-final inspection was conducted on May 5, 1999 with the EPA/DEC representatives and the Companies' Representative. A "punch list" of items was observed and rectified according to plans and specifications. An inspection was conducted by the Engineer of Record on June 17, 1999.

The operation and maintenance of the landfill cap, containment, and collection systems will be provided by the Companies and is described in the Post Closure Operation and Maintenance Manual (O&M Manual). The O&M Manual provides a program to verify that the containment and monitoring systems are functioning as expected and designed, and to ensure that the integrity of the remedial action is maintained over time. The post-closure care and monitoring will be performed for 30 years. This program will be reevaluated and modified, if necessary, every five (5) years as required by the Comprehensive Environmental Response Compensation and Liability Act (CERCLA).

The remedial activities implemented for OU-1 and OU-2 were completed in conformance with the requirements of the Remedial Design Documents (RDDs), the Record of Decision (ROD), ROD Addendum, ROD Amendment, and the Administrative Order (AO). Exceptions to be noted include: the bulkhead walkway was not installed, and APL is pumped to the Love Canal Treatment Facility in lieu of being hauled off-site.

1.0 INTRODUCTION

This Remedial Action Report (RAR) documents the Remedial Action Program for the landfill residuals, off-Site soils, shallow groundwater, non-aqueous phase liquids (NAPL) and Niagara River embayment sediments as presented in the Final Engineering Report (FER) (Fluor Daniel, Revised: February 5, 1996). The landfill residuals, off-Site soils, shallow groundwater, and NAPL constitute Operable Unit 1 (OU-1) and the Niagara River embayment sediments constitute Operable Unit 2 (OU-2) at the 102nd Street Landfill Site (Site). The remedial action (RA) for OU-1 and OU-2 will be described in detail in this RAR.

This RAR has been prepared in accordance with the United States Environmental Protection Agency (EPA) document Close Out Procedures for National Priorities List Sites, dated August 1995 [Office of Solid Waste and Emergency Response (OSWER) Directive 9320.2-09].

1.1 Site Description

The Site covers approximately 22.1 acres and is located in Niagara Falls, Niagara County, New York. It consists of two separate properties owned by Occidental Chemical Corporation (OxyChem) and Olin Corporation (Olin), (the Companies), plus contiguous and related areas as defined in the September 1990 Record of Decision (ROD), as amended on June 9, 1995. The Companies' properties are bordered on the south by the Niagara River, on the north by Buffalo Avenue, on the west by Griffon Park, and on the east by privately owned land which includes the Belden Site. The Site as defined for the purpose of the overall remediation also includes the areas immediately adjacent to the east, north, and to the west, the adjoining river sediments, as well as closely proximate areas necessary to carry out the remediation. The 100th Street storm sewer and outfall, owned and maintained by the City of Niagara Falls, traversed the Site.

1.2 Background

The Site was operated as a disposal Site for industrial wastes by both Companies and their predecessors. OxyChem, and its predecessors, operated their 15.6-acre portion of the Site as a landfill from approximately 1943 until 1970. Olin operated their 6.5-acre portion (which occupies the eastern section of the overall Site) as a landfill from 1948 to 1970.

The Site was divided into three OUs for investigative and remedial alternative feasibility studies. The three OUs are:

OU-1: landfill residuals, perimeter soils, shallow groundwater, and non-aqueous phase liquids.

OU-2: sediments in the Niagara River within 300 feet of the shore;

OU-3: the portion of the 100th Street Storm Sewer that crosses the Site.

This report describes the remedial action of OU-1 and OU-2 only. The OU-3 report was previously completed and approved by EPA in February 1999.

The selected remedial action for the Site was presented in the ROD issued on September 26, 1990. The Remedial Design Work Plan (RDWP) for the Site, which describes the overall approach to the design of remedial measures, was approved by EPA on May 6, 1992. The selected remedial alternative for OU-1 and OU-2 included the following components:

OU-1:

- Consolidation of perimeter and off-Site soils under the cap;
- Construction of a slurry wall encompassing the Site;
- Capping the Site with a compound liner consisting of a compacted soil layer and a synthetic flexible membrane liner;
- Restriction of access;
- Institutional controls
- Recovery and treatment of aqueous phase liquids (APL);
- Recovery and treatment of non-aqueous phase liquids (NAPL);
- Monitoring of post-remedial action.

OU-2:

- Removal and off-Site incineration of highly impacted embayment sediments, and removal of the remaining impacted sediments with subsequent placement on the Site.

Predesign Field Activities (PFA) were conducted at the Site from September 22 to October 27, 1992. The PFA obtained information on the soil conditions along the perimeter of the Site for

the engineering design. The Predesign Field Activity Report (PFAR), which documented the PFA, was submitted to EPA on November 20, 1992.

Off-Site soils requiring remediation as determined by the remedial investigation (RI) and ROD were located in a narrow triangular parcel of land (Triangular Area) located north of the Site and across Buffalo Avenue. The Remedial Design Document (RDD) for the Triangular Area North of Buffalo Avenue, which included the Remedial Action Sampling and Testing Program (SATP) for the Accelerated Remedial Program for Off-Site Soils was prepared to determine the depth of excavation throughout the Triangular Area. A Remedial Design Work Plan (RDWP) was also prepared. The EPA approved the RDWP on May 6, 1992. The RDD was approved by EPA on October 12, 1993. A Verification Sampling Data Summary Report, which presents the results of the SATP, was submitted to EPA/State on December 1, 1993. The remediation of the Triangular Area was completed on November 19, 1993. The remedial action for the Triangular Area was documented in the Remedial Action Report (RAR) submitted on December 23, 1993. The RAR for the Triangular Area North of Buffalo Avenue is included in Appendix A.

The original alignment of the slurry wall in the preliminary remedial design was a straight-line configuration located outside of the areas of highly impacted embayment sediments. To save approximately three (3) acres of wetlands and aquatic habitat in the embayment area that would have been filled in as a result of the original slurry wall alignment, the Companies evaluated a modified version of the design which involved re-positioning the slurry wall closer to the shoreline.

As a result of this conclusion, a Supplemental Offshore Boring Program was completed in August 1994 in order to determine the feasibility of aligning the slurry wall closer to the existing shoreline. The results of these programs were documented in the Supplemental Offshore Boring Program Addendum to the PFAR issued on August 1994. The slurry wall alignment was moved closer to the shoreline and the excavated sediments were placed in the landfill.

This document provided the basis for a revised remedial alternative for OU-2 as presented in the Amended ROD issued on June 9, 1995. The selected remedial alternative for OU-2 was removal of embayment sediments with subsequent placement on the Site. The requirement for incineration of diluted.

Perimeter soils were present along the north, east, and west sides of the landfill. The RDD for the SATP for Perimeter Soils was prepared to determine the depth of excavation throughout the

Perimeter Soils area. A Remedial Action Work Plan (RAWP) was also prepared. The RAWP and SATP were approved by EPA on June 30, 1995, and July 24, 1995, respectively. A Verification Sampling Data Summary Report which presents the results of the SATP was issued in November 1995. The remediation of the Perimeter Soils was completed on August 6, 1996.

A NAPL Recovery Well Testing Program was conducted as part of the remedial design (RD) for the Site. The purpose of the testing program was to obtain data that could be used to evaluate the potential yield of NAPL, to evaluate the necessity of a NAPL well recovery system, and to obtain data to finalize design of NAPL recovery system, if a system was deemed practical. A NAPL Recovery Well Testing Work Plan was prepared for the installation and testing of a NAPL recovery test well. The NAPL Recovery Well Testing Work Plan was approved by the EPA on May 17, 1994. A NAPL Recovery Well Testing Program report which presents the results of the program was issued in June 1995.

The FER, which incorporated and accommodated comments from the City of Niagara Falls, EPA, and DEC, was issued September 9, 1995 and revised February 5, 1996. The FER, including drawings and technical specifications, constitutes the RD Report as defined in the Site's Administrative Order (AO) for Remedial Design and Remedial Action, September 30, 1991. The RD is consistent with the selected remedy described in the Amended ROD.

1.3 Purpose/Scope of Work

The purpose of the remedial program for OU-1 was to:

- Excavate, consolidate, and isolate perimeter and off-site soils under the cap that exhibit presence of the Site Specific Indicators (SSI) above the survey level;
- Construct a slurry wall that would encompass the Site and be keyed into the confining Clay/Glacial Till to provide a barrier to APL and NAPL migration from the Site;
- Provide a capping system consisting of a combination of geosynthetic and natural soil materials that will be installed over the Site to minimize infiltration of precipitation into the landfill and to isolate the landfill contents;
- Restrict access to the Site with a six-foot high chain link fence that will encircle the Site along the property line and along the bulkhead during construction and post remedial action;

- Provide institutional controls in the form of deed restrictions or similar restrictions to ensure that future land use at the Site is limited so as to preclude certain types of access to the Landfill and eliminate groundwater use for human consumption at the Site;
- Recover APL with a collection system consisting of a collection trench and four wet wells to create and maintain an inward gradient across the perimeter slurry wall and to treat the APL;
- Recover and treat NAPL by using eight (8) dedicated extraction wells;
- Provide post-remedial action performance monitoring of the containment system with ten (10) piezometers, ten (10) monitor wells, and three (3) bedrock monitoring wells to determine remedial system effectiveness.

The purpose of the remedial program for OU-2 was to;

- Remove impacted embayment sediments, including highly impacted sediments exhibiting concentrations of SSI's above the survey level;
- Consolidate/isolate under the landfill cap.

This RAR documents the remedial activities that took place at OU-1 and OU-2 as required in the ROD, ROD amendment, and ROD addendum.

2.0 CHRONOLOGY OF EVENTS

07/90	Remedial Investigation Final Report, Vol. 1 & 2 and the Feasibility Study Final Report, Vol. 1 & 2 were accepted by EPA Region II & State of New York.
09/26/90	EPA's Region II Administrator signed the ROD.
09/30/91	EPA's Region II Assistant Regional Counsel signed the Administrative Order (AO) for Remedial Design and Remedial Action, Index No. II CERCLA-10223.
05/06/92	EPA approved the Remedial Design Work Plan (RDWP).
9/22/92-10/27/92	Predesign field activities (PFA) took place.
11/20/92	Predesign Field Activities Report (PFAR) issued.
10/12/93	EPA approved the Remedial Design Document, Accelerated Remedial Program For Off-Site Soils Triangular Area North of Buffalo Avenue, which included the Remedial Action Work Plan (RAWP) and Remedial Action Sampling and Testing Program (SATP).
11/19/93	Remediation of the Triangular Area completed.
12/01/93	Triangular Area Verification Sampling Data Summary Report issued which presented the results of the SATP for the Accelerated Remedial Program for the Triangular Area.
12/23/93	Triangular Area Remedial Action Report (RAR) issued.
12/93	EPA issued an Explanation of Significant Differences (ESD).
05/17/94	EPA approved the NAPL Recovery Well Testing Work Plan.
08/94	Supplemental Offshore Boring Program Addendum to the PFAR was issued.
08/94	Supplemental Offshore Boring Program was completed to determine the feasibility of aligning the Slurry Wall closer to the existing shoreline.
11/94	Relocated utilities.
06/95	NAPL Recovery Well Testing Program report issued which presents the results of the program.
06/30/95	EPA approved the RAWP for the Perimeter Soils.
07/24/95	EPA approved the SATP for the Perimeter Soils, prepared to determine the depth of excavation throughout the Perimeter Soils area.

09/09/95	Remedial Design Package including the Engineering Report and Construction Management Plan issued.
11/95	Perimeter Soils Verification Sampling Data Summary Report issued, which presented the results of the SATP for the Remedial Program for Perimeter Soils.
02/05/96	Remedial Design Package including the Engineering Report and Construction Management Plan revised and issued.
03/21/96	Remedial Action Contract Awarded.
04/96	Erosion and Sediment Control began.
04/22/96-06/25/96	Site mobilization (Start to Completion)
05/10/96	Final Excavation Plan issued.
06/04/96-08/06/96	Perimeter Soils Excavation
06/11/96-09/05/96	Cofferdam placement
07/03/96-11/05/96	Sediment Excavation
08/05/96-10/07/96	Bulkhead- Phase I
08/26/96-09/13/96	Slurry Wall- Phase I
09/19/96-10/12/96	APL Collection Trench
10/15/96-11/16/96	Slurry Wall- Phase II
11/01/96-08/15/97	Bulkhead- Phase II
11/12/96-01/23/97	Remove Cofferdam.
11/26/96-09/09/97	Subbase Placement
04/22/97-07/01/97	Wet Well Installation
06/10/97-02/22/99	APL Force Main Installation
07/02/97-11/24/97	Well Installation (NAPL, PCM, PCBM, PZ)
07/17/97-09/28/97	Geosynthetic Clay Liner (GCL) Deployment
07/17/97-10/02/97	Linear Low Density Polyethylene (LLDPE) Liner Deployment
07/24/97-10/02/97	Geonet Deployment
07/25/97-10/03/97	Geotextile Deployment
07/30/97-10/29/97	Select Cover Fill Placement
09/04/97-10/11/97	Bulkhead Granular Fill Placement
10/03/97-10/30/97	Topsoil Placement
10/31/97-11/24/97	Seeding
12/10/98-02/25/98	APL Forcemain Extension to Love Canal

3.0 PERFORMANCE STANDARDS AND CONSTRUCTION QUALITY CONTROL

This section provides a discussion on how the performance standards and quality control objectives were achieved in order to meet the objectives of the remedial action program for OU-1 and OU-2. The objective of the remedial activities for OU-1 and OU-2, as presented in the ROD, ROD Amendment, and ROD Addendum was discussed in Section 1.3. The performance standards, or the design basis/criteria, for the remedial tasks conducted are presented in the design drawings and specifications included in the FER. The following is a list of specifications that pertain to the remedial activities for OU-1 and OU-2. Specifications are provided in Appendix AG.

Specification 02006 - Inspection and Testing Services

Specification 02011 - Monitor Well and Piezometer Installation

Specification 02012 - NAPL Recovery Well Installation

Specification 02013 - APL Wet Well Installation

Specification 02022 - Topographic Survey

Specification 02110 - Clearing and Grubbing

Specification 02200 - Earthwork

Specification 02234 - Aggregate for Light Duty Access Roads and Bituminous Pavement Base

Specification 02513 - Bituminous Concrete Paving

Specification 02725 - Underground Piping Systems

Specification 02776 - Geosynthetic Lining System

Specification 02834 - Chain Link Fence - Galvanized

Specification 02901 - Slurry Wall

Specification 02902 - APL Collection Trench

Specification 03300 - Cast-In-Place Concrete

Specification 03400 - Precast Concrete

Specification 11231 - Water Treatment Systems

Specification 59000 - General Requirements - Equipment

Specification 50026 - General Requirements - Piping Installation

Specification 65000 - General Requirements - Electrical

Specification 70002 - General Requirements - Instrument Installation

Specification 02776A - High Density Polyethylene (HDPE) Lining Repair

The EPA/State on-Site representative and the Companies' quality assurance representative provided oversite of the construction activities throughout the execution of the remedial action (RA) program. Inspections, sampling, and testing were routinely conducted in accordance with the Site Construction Quality Assurance Project Plan (CQAPP) in order to maintain compliance with the performance standards, project design, specifications and procedures. Inspections of construction equipment, materials, and Site conditions and structures were performed and documented in specification checklists, non-conformance reports, quality control inspection reports, and daily and monthly summary reports. The results of inspections, sampling, and testing conducted for the construction activities are discussed in Section 4.0.

4.0 CONSTRUCTION ACTIVITIES

The remedial action contract was awarded on March 21, 1996, and construction activities began on April 22, 1996. This section describes in detail the construction activities that were performed at the Site. Before particular construction tasks could begin, submittals for construction materials had to be processed and approved. During this approval process, the remedial action contractor (contractor) may have submitted materials which differed from the approved FER specifications. Any approved changes have been incorporated into the As-Built Drawings, which have been modified and consolidated since the FER.

Soil materials that were brought onto the Site were required to have a Target Analyte List/Target Compound List (TAL/TCL) analysis performed prior to approval. Appendix C contains the Analytical Data Validation Reports. Geotechnical information on soil materials approved during the submittal process is presented in Tables 4.0-1 and 4.0-2. Additional geotechnical information, including gradation curves, is included in Appendix B.

4.1 Embayment

4.1.1 Embayment Sediment Excavation and Placement

On May 28, 1996, installation of the silt curtain/fish screen began at the southwest corner of the Site. The purpose of the silt curtain/fish screen was to prevent the migration of sediments downstream during the construction of the cofferdam and to keep aquatic wildlife from entering construction areas. The silt curtain was composed of a woven geotextile (Amoco™ 1199) wrapped around a six inch polyethylene foam log on one end and a 3/8 inch steel chain on the other end as shown on Drawing 594000-10S-01. The six-inch polyethylene foam was used for floatation of the silt curtain, while the 3/8-inch steel chain was used to anchor the silt curtain to the river bottom. The silt curtain was also anchored by connecting it to concrete blocks, which were also placed on the river bottom. The silt curtain was prevented from moving horizontally by driving metal posts into the river bottom and tying off the geotextile fabric to the posts. The posts were staked at intervals (25-foot maximum) to prevent horizontal movement caused by river currents and wave action. The posts were equipped with warning lights to prevent damage to boaters.

On June 11, 1996, construction of the cofferdam began at the southwest corner of the Site with the installation of a haul road made with clay material from the Frontier Stone Quarry in

Lockport, New York. Table 4.1-1 contains geotechnical information on the cofferdam. The cofferdam was constructed to limit infiltration of river water into the embayment area during sediment de-watering and excavation. The cofferdam was constructed by placing clay material at the end of the haul road and pushing the soil into the river with a dozer. This process continued until the elevation of the cofferdam was 566 feet above mean sea level (msl), and there was enough load-bearing capacity in the soil to begin compaction. The side slopes of the cofferdam were formed to 2:1 slopes and were brought up to an final elevation of 568 feet above msl to provide access for vehicles and to limit river water seepage into the embayment area. A 40-mil polyvinyl chloride (PVC) liner was placed on the river side of the cofferdam to help prevent soil erosion from occurring. Appendix E contains the Temporary Cofferdam Design Report.

At the mouth of the Little Niagara River, near the southwest corner of the Site, additional shoring of the cofferdam was necessary in order to prevent the cofferdam from sliding into the channel. This was accomplished by installing a 175 linear foot sheet pile section. Thirty foot long steel PZ-27 sheet piles were driven to a tip (bottom of sheet pile) elevation of 538 feet above msl. Appendix F contains the West End Cofferdam Steel Sheet Piling Design Report.

Three "cofferdam legs" were constructed between the cofferdam and shore to divide the embayment area into sections for ease in handling water and excavating sediments. New York State DEC Fish and Wildlife Division officials removed fish that were trapped inside the cofferdam and placed them in the Niagara River. Surface water remaining in the cell was discharged directly to the Niagara River by mechanical pumping methods. The discharge was closely monitored, so when the discharge turbidity was above 30 NTU, it was directed to the water treatment system for treatment prior to discharge. Excavation activities commenced when an embayment cell was de-watered. All surface water entering the embayment cells after initial dewatering was directed to the water treatment system for treatment prior to discharge.

Exclusion zones and personnel decontamination areas were set-up and maintained before excavation was initiated. Excavation began on July 3, 1996 at the southwest corner of the Site and generally proceeded eastward. A backhoe excavator was used to load the sediment into "off-road" dump trucks for transport to a containment area on-site. The majority of the embayment sediments were excavated to a depth of two feet. There were two separate areas where the embayment sediments were excavated to a three foot depth. Excavation depths

were surveyed in-place and verified by the oversight contractor. Coordinates of excavation areas are shown on Drawings 594000-30K-03 and 30K-05.

Excavated sediments were hauled onto a contained area on the Site where they were further de-watered and stabilized using gypsum, quick lime, or other miscellaneous Site materials, such as Site soils, bricks, concrete and cobbles. Embayment sediments were used as fill to meet the design grades of the Landfill. The materials were placed as fill using typical earth-moving equipment such as bulldozers, backhoes, front end loaders and dump trucks.

4.1.2 Embayment Backfill and Aquatic Habitat Restoration

Backfilling of the excavated areas began on July 25, 1996. The backfill material utilized was Pine Hill Sand taken from the Pine Hill Quarry in Lancaster, New York. The material was placed in one foot lifts in the two foot (depth) excavation areas, and in two foot lifts in the three foot (depth) excavation areas. The sand was graded and compacted using a dozer.

Wild celery (Vallesnaria Americana) was planted in the embayment sand backfill beginning on October 28, 1996. The objective of habitat mitigation for the embayment area was to produce beds of wild celery and other submerged aquatic species with aerial coverage of 80 percent or more. Combining two plants with a five gram Agriform® tablet into one planting unit completed the planting. Planting units were then planted on 4.5 foot centers. The planting density was 2,151 planting units per acre or 4,302 plants per acre. A total of 6.4 acres of embayment area was planted.

The landscaping contractor performed an inspection in July 1997, and it was confirmed that significant growth had occurred in the Vallesnaria Americana plantings and that continued growth is expected to occur. Additional information and shipping receipts are located in Appendix G.

Removal of the earthen cofferdam began on November 12, 1996 and was completed on January 23, 1997. Removal was accomplished by utilizing a backhoe and dump trucks. The material was hauled onto the Site where it was either placed on the bulkhead, used as subbase material on the northeast corner of the OxyChem property, or stockpiled for future use. Significant delays were caused by freeze-thaw cycles, which disrupted removal operations. Removal of the silt curtain was completed on January 29, 1997.

4.2 Site Work and Earthwork

4.2.1 Sedimentation and Erosion Control

Sedimentation and erosion control work began on April 29, 1996 with the installation of silt fence around the Site for the purpose of controlling the amounts of silts and fines. The silt fences were constructed of pre-manufactured sections, with a woven geotextile (Amoco CEF™ style 2130) stapled to 2-inch square wooden posts. A trenching machine was used to excavate a small trench, into which the silt fence was inserted. The trench was then backfilled with washed #1 stone. The silt fence was initially installed around the perimeter of the Site, but was moved and re-configured as construction operations progressed.

Diversion berms were also constructed in conjunction with the silt fence to provide surface water control. The berms were typically one to three feet high and four feet wide on top with 2:1 slopes. Clay was utilized for the berms. The soil was graded in 12-inch lifts, compacted with vibratory compaction equipment, and tested with a nuclear compaction testing gauge. The results of the compaction tests are summarized on Table 4.2-1 and are located in Appendices B and D.

The berms were used to convey surface water to sedimentation ponds, which were constructed near the center of the Site. All surface water was directed to the west pond, which then would flow through a stone/fabric filter trap and into the east pond. The east pond was lined with clay and was separated from the west pond by a middle berm. The clayey soil used in the construction of the ponds was placed in 12 inch lifts, compacted with vibratory compaction equipment, and tested with a nuclear compaction testing gauge. Surface water collected in the east pond was sampled and tested prior to discharge. Water not meeting discharge parameters was directed to the water treatment system and treated prior to discharge.

As areas were filled and graded, the erosion control and sedimentation system, changed to meet the needs of on-going construction activities as needed.

4.2.2 Triangular Area Excavation and Placement

The Triangular Area is a narrow triangular parcel of land with its long axis trending east-west and varied in width from approximately 10 feet (east end) to 125 feet (west end) and was approximately 1110 feet long. The LaSalle Expressway bordered the triangular area on the

south by Buffalo Avenue and on the north. This parcel is located north of the landfill, across Buffalo Avenue. Excavation of soils took place in October and November of 1993, with the soils being placed in the Site's Fill Material Placement Cell. The excavated areas were backfilled with clay material and then covered by 6 inches of topsoil. The Remedial Action Report concerning the Triangular Area is located in Appendix A.

4.2.3 Perimeter Soils Excavation and Placement

"Off-site" perimeter soils located outside of the perimeter slurry wall were excavated and transported onto the Site for consolidation and placement. The soils were located in 50 pre-determined grids with design excavation depths ranging from 1.5 feet to 8.5 feet. The grids were bounded by a line 6.25 feet inside and parallel to the center line of the perimeter slurry wall and by coordinates determined from the RI. Grids were excavated to the edge of concrete of Buffalo Avenue along the north side of the Site. This was a change from the design coordinates, and is documented in a Field Change Approval form located in Appendix AE. The coordinates and excavation depths are shown on Drawing 594000-30K-06B. Perimeter Soil detail is shown on Drawing 594000-10S-01.

Trees and other debris were removed from the areas to be excavated. The trees were cut to ground level, chipped or shredded, and used as daily cover or for erosion control. The perimeter fence was removed and replaced by temporary construction fences. Exclusion zones and personnel decontamination areas were set up.

Excavation was typically performed by using a backhoe excavator to load the soils into dump trucks. Excavation began on June 21, 1996 at the southwest corner of the Site in grid P-50 and proceeded northward. Grids were excavated to the required depth (indicated in the Perimeter Soils Verification Summary Report), and immediately backfilled with clay material from Grand Island, New York. Geotechnical testing results are summarized in Table 4.0-2 and are located in Appendices B and C. Excavated material was hauled onto the Site and used as fill to meet the design landfill grades. Backfill material was graded in 12-inch lifts, compacted with vibratory compaction equipment, and tested to 90% standard proctor density with a nuclear compaction testing gauge. Results of the compaction tests are summarized in Table 4.2-2 and are located in Appendix D.

Excavation proceeded along the western boundary of the Site until June 28, 1996. Equipment was then moved from grid P-36 to the southeast corner of the Site, near grid P-1. This was done to avoid Buffalo Avenue traffic and to facilitate the installation of the storm sewer. Grids P-1 and P-2 were excavated until groundwater was encountered at 1.74 feet and 2.87 feet, respectively. Excavation proceeded northward along the eastern boundary and then westward along Buffalo Avenue.

Excavation in grids P-7A, P-8A, P-9A, P-10, and P-11 were deeper than the planned design depths. This was due to "roofing shingle" type materials that were encountered during the excavation of these grids. This material was used as fill in the landfill.

Special precautions were taken in grids P-27 through P-31, since these were the grids which potentially had soils containing dioxin. The soils excavated from these grids were placed in a specially constructed cell. The intent of this cell was to encapsulate the soils containing dioxin in a temporary cell until the perimeter slurry wall was complete. The cell was located on the Site where fill was planned to cover the area, and it was constructed using 1×10^{-7} cm/sec permeability clay. A 12-inch thick base section as well as side berms were constructed with clay material. The clay was placed in 12-inch lifts, compacted with vibratory compaction equipment, and tested to 90% standard proctor density with a nuclear compaction testing gauge. The results of the compaction tests are summarized in Table 4.2-3 and are located in Appendices B and D. Fill placed in the cell was covered nightly by 6 mil polyethylene sheeting. After grids P-27 through P-31 were excavated, the cell was covered with at least three feet of common Site fill materials and erosion control measures were put in place.

Excavation in grids P-26 through 34 was also deeper than the planned design depths. This was due to "fly ash and gypsum" type material that was encountered during the excavation of these grids. Material from grids P-26, P-32, P-33 and P-34 was placed in the landfill. This additional material from grids P-27 through P-31 was placed in the cell.

Perimeter soils excavation was completed on August 6, 1996 with the completion of grid P-27.

4.2.4 Filling and Grading

Materials generated by construction activities were placed on-site in bermed areas and used as fill to meet the contours of the design grades. The final "as-built" contours are shown on Drawing 594000-10U-01. Site fill was generated from the following sources:

Embayment Sediments - Silty sands
Perimeter Soils - Mixed soils
Slurry Wall Spoils- Mixed soils
APL Collection Trench Spoils- Mixed soils
Storm Sewer Spoils- Mixed soils
Little Niagara River Dredge Spoils- Silty sands
Drill Spoils- Mixed soils
Cofferdam Material- Frontier Clay
Cribwall Trench Spoils- Clayey soils
Building Demolition Debris- Bricks, concrete, wood
Riprap from river bank- Large armor stone
Used Activated Carbon- Water Treatment System
Brine Solids (used for soil stabilization)
Quick Lime (used for soil stabilization)
Gypsum (used for soil stabilization)
Personal Protective Equipment

The materials listed above were generated by construction activities or brought onto the Site to be used as fill to meet the landfill grading plan. Fill material overruns caused by over-excavation of materials and more than anticipated sediment stabilization required a new Grading Plan (Revision #7) to be developed. The landfill was re-contoured with minimum slopes of 3%. All fills existing on May 7, 1997 were re-graded to meet Revision 7 contours. Some previously placed subbase material was incorporated into the Site fills.

Erosion control and surface water control was always maintained to prevent erosion from occurring and the escape of materials from the Site. The fill materials were graded and continuously compacted by vibratory compaction equipment. The fill materials were moved using typical earth-moving equipment such as bulldozers, backhoes, front end loaders, and dump trucks.

4.2.5 Bulkhead

The bulkhead construction began after river sediments were removed from the embayment area. The bulkhead was constructed in two phases. The first phase was constructed to an elevation of 570 feet above msl to provide a working platform for the installation of the perimeter

slurry wall and APL collection trench. The second phase was constructed, after completion of the slurry wall and APL collection trench, to provide additional bearing capacity for the landfill and to provide surface and sub-surface drainage. Details of the bulkhead system are shown on Drawings 594000-10S-01 and 10S-02.

Construction of Phase I began on August 5, 1996, near the southwest corner of the Site utilizing clay material. Table 4.2-4 contains geotechnical information. Construction started by placing a lift (typically two to three feet thick) on top of the previously excavated sediments. This lift provided support for typical earth-moving equipment (bulldozers and backhoes) and was not tested for compaction. Following this initial lift, each successive 12-inch lift was compacted with vibratory compaction equipment and tested to 95% standard proctor density with a nuclear compaction testing gauge. Additional testing requirements for the bulkhead included soil moisture content with ±2% of optimum and a Torvane Shear test result of greater than 1 ton/ft^2. The additional testing was required due to a change from the originally specified material. This design change is documented in a Field Change Approval form located in Appendix AE. Testing results for Phase I bulkhead compaction tests are summarized in Table 4.2-5 and are located in Appendices B, C, and D.

This construction procedure was followed until the grade reached an elevation of 570 feet above msl, which was high enough to allow for the installation of the perimeter slurry wall and APL collection trench. Phase II of bulkhead construction began after completion of the perimeter slurry wall and APL collection trench. Class II riprap was placed on the bulkhead slope and additional material was placed on the bulkhead above the elevation of 570 feet above msl. Woven geotextile fabric (Mirafi® 700X) was placed on the slope of the bulkhead after a small anchor trench was excavated near the top of the bulkhead slope. Six inches of #2 washed stone was placed on the woven geotextile. Eighteen (18) inches of Class II riprap, obtained from the Frontier Stone Quarry in Lockport, New York, was then placed on the #2 stone from below the river elevation to the top of the bulkhead (which was approximately 570 feet above msl). Testing information on the riprap stone can be found in Appendix B.

The first bulkhead material that was placed as part of Phase II was placed "inside" of the slurry wall to bring the bulkhead up to grade with the select cover fill layer. The additional clayey bulkhead material was also tested to 95% standard proctor density, ±2% from optimum moisture content and 1 ton/ft^2 torvane shear strength. Clay material was primarily used for this purpose,

but other clay materials were also approved. Testing results for Phase II bulkhead compaction tests are summarized in Table 4.2-5 and is located in Appendices B, C and D.

The "drainage blanket" and "granular fill" areas were installed after the geosynthetic lining system was placed on top of the constructed clayey bulkhead. The drainage blanket consisted of subsurface perforated high density polyethylene (HDPE) pipes, which ran along the bulkhead and assisted in the drainage of the swale underdrain pipes within the cap of the landfill. These HDPE pipes were surrounded by 12-inches of washed #2 stone, which drains into the riprap bedding stone and into the Niagara River. A non-woven geotextile (Linq 350 EX®) was laid over the drainage blanket and heat-lystered to the non-woven geotextile (Evergreen Technologies TG700®) deployed during the geosynthetic lining system installation.

Granular fill was then placed on the non-woven geotextile. The material was a silty sand from the Sand Pit Road Borrow Pit in Lockport, New York. The material was placed in 12-inch lifts, compacted with vibratory compaction equipment, and tested to 90% standard proctor density with a nuclear compaction testing gauge. This layer went from the bulkhead slope northward and met the select cover fill layer. Testing results for the Granular Fill compaction tests are summarized in Table 4.2-6 and are located in Appendices B, C and D.

The non-woven geotextile (Linq 350 EX®) placed on top of the drainage blanket was pulled up the shaped granular fill slope and anchored into the granular fill material after the granular fill layer was installed. Six inches of #2 washed stone was placed as the riprap bedding stone on the non-woven geotextile. Additional Class II riprap was placed to the top of the bulkhead after the bedding stone was placed. Additional Class I riprap, also obtained from the Frontier Stone Quarry in Lockport, New York, was brought in and placed in-between the larger Class II riprap to fill in the voids and stabilize the material.

Additional drainage stone was placed and the Site access road was installed on top of the bulkhead. The additional drainage stone was installed on top of a layer of woven geotextile (Linq GTF 300®) which was anchored into the granular fill material. On top of the woven geotextile, 12 inches of washed #2 stone was placed from the top of the riprap stone to approximately 25 feet from the riprap. This stone provided additional drainage for surface runoff from the landfill. The construction of the Site access roads is discussed in Section 4.2.7.

4.2.6 Retaining Wall

A three- to four-foot high retaining wall was constructed along the Buffalo Avenue side of the Site. The retaining wall was consisted of various sizes of reinforced concrete sections, which were stacked to form a frame. Inside of the frame, #4 and #5 stone was placed as backfill reinforcement. Prior to placing the concrete sections, a six-foot wide, approximately 1 to 2 feet deep trench was dug along the retaining wall alignment. Six inches of sand was placed in the trench to provide a level foundation for the retaining wall. Prior to placing the cover fill and topsoil, a non-woven geotextile (Mirafi S800®) was placed on the landfill side of the retaining wall to prevent the backfill stone from being clogged by silt. The additional fabric was overlapped with the non-woven geotextile (Evergreen Technologies TG700®) from the geosythetic lining system. An "Aqua-Drain" strip was installed under the retaining wall to serve as an underdrain for the sand foundation. The aqua-drain strip was connected to catch basins #1 through #7. A detail showing the retaining wall system is shown on Drawing 594000-10S-02. Appendix H contains the Crib Wall Design Report, which was submitted by the contractor.

4.2.7 Site Access Roads

The Site access roads provide access through the center gate from Buffalo Avenue to the NAPL extraction wells, the bulkhead, and the wet wells. Due to the elimination of the Loadout Facility, no heavy duty access roads were constructed. The site access road layout was modified from the FER drawings due to Revision #7 of the Final Grading Plan and the elimination of two NAPL extraction wells (see Section 4.6.4 for detail on NAPL wells).

The Site access roads were constructed by laying down a woven geotextile (Linq GTF 300®) and placing from six to twelve inches of crusher stone. The stone was compacted with vibratory compaction equipment and tested to 90% standard proctor density with a nuclear compaction testing gauge. Site access roads compaction testing results are summarized in Table 4.2-7 and are located in Appendices B and D. The site access road detail is shown on Drawing 594000-10S-01, and the road layouts are shown on Drawing 594000-10U-01 and Drawings 594000-30K-02 through 30K-05.

4.2.8 Perimeter Fencing

A six-foot tall chain link fence with extended 1'-3" barbed wire was placed around the entire perimeter of the Site.

4.3 On-Site Monitoring During Remedial Activities

4.3.1 Air Monitoring

Air monitoring was performed as required by the Site Health and Safety Plan and implemented by the contractor's Health and Safety Plan. Perimeter dust monitoring and instruments were re-located depending on weather conditions. Additional monitoring was required for confined space entries and special excavation activities. Mini-rams®, HNu's®, Draeger® Tubes and Mini-Rays® were some of the instruments used by the contractor to monitor the air quality. Air monitoring logs were maintained.

4.3.2 Construction Water Treatment

The water treatment system (WTS) was designed to remove suspended solids and organic constituents of concern from waters generated during construction activities. The WTS was a skid-mounted package with granular activated carbon (GAC) and sand filtration systems, which was delivered to the Site prefabricated, complete with wiring and controls. The WTS was designed to treat up to 70 gallons per minute (gpm) at the maximum influent concentrations. The WTS was initially located at the center of the Site and a 250,000-gallon temporary modular storage tank was constructed adjacent to it. Over the course of construction, the modular tank was dismantled (with the HDPE being placed under the capping system), and the WTS was moved to areas that were easily assessable for operation and maintenance purposes.

The WTS treated water generated by Site activities, including: Site surface run-off, excavation waters, embayment area de-watering, aqueous liquids from the APL collection trench, well development water, and decontamination water, as well as personnel washer water and other Site-generated liquids. Operation of the WTS was generally 10 hours per day, five or six days per week. As construction operations and water storage requirements dictated, the WTS was often operated 24 hours per day, 7 days per week. Operation logs were kept and maintained by the contractor's staff and the logs are available upon request.

The WTS was monitored by weekly and monthly laboratory analysis, as required by the project specifications. The analytical laboratory results were combined with the system flow data and then compared to the allowable discharges. If exceedences were observed in the lead vessel, the WTS was shut down and the carbon and/or sand filters were changed. The "spent" filter materials were placed in the landfill. The results of the WTS analytical testing events are summarized in Table 4.3-1.

Effluent sampling showed increased levels of chromium in January 1998. It was determined that the chromium was generated by the surface water runoff contacting with the surface water berms and holding ponds, which were constructed of clayey material naturally containing chromium. A request was made to raise the metals effluent limits on March 21, 1997. The request was granted on April 25, 1997 by DEC; the chromium limit was raised to 0.18 pounds per day. Relevant correspondences are contained in Appendix AF.

Ultrasound thickness testing of the system vessels was performed in October 1997 to check the integrity of the system. Several "spot" check were made around both GAC vessels as well as the sand filter. The thicknesses measured were determined to be adequate to continue water treatment operations.

4.4 Containment Systems

A perimeter slurry wall was constructed around the Site as a containment system for Site groundwater. The slurry wall was keyed into the underlying clay/till confining layer.

4.4.1 Slurry Wall

Excavation of the perimeter slurry wall began on August 28, 1996. The slurry wall was constructed in two phases to allow for completion of the bulkhead and installation of the APL collection trench between the phases. Phase I started at the east end of the site near station 2+50 and finished at station 25+90 on September 13, 1996. Phase II resumed at station 25+90 on October 15, 1996 and was finished at station 2+70 on November 16, 1996. Total length of the slurry wall constructed was 4927 feet.

Construction was accomplished by excavating a three-foot wide trench to the designed depth while keeping the trench filled with a 6% by weight slurry to maintain sidewall stability. After excavation, a soil-bentonite backfill mixture was placed into the trench. The soil-bentonite

backfill was at least 3% bentonite by weight, had a three to six inch slump, was free of debris and had a maximum permeability of $1x10^{-7}$ centimeters per second (cm/sec). The soil used in the backfill mixture was clayey material from the Summit Park borrow pit in Wheatfield, New York. MI Drilling Fluids in Greybull, Wyoming produced the bentonite used. Certifications for the bentonite are located in Appendix K. The backfill mixture was continuously mixed into a uniform composition and consistency on the ground adjacent to the trench using typical grading equipment, such as a bulldozer and backhoe. During Phase II, for the section of the slurry wall located along the bulkhead, the backfill was mixed in a remote mixing area and hauled to the trench in dump trucks. Testing of the trench slurry and backfill mixture was conducted continuously as construction progressed. The results of these tests are summarized in Tables 4.4-1 and 4.4-2 and additional information is located in Appendices I and J. Drawing 594000-30K-09 shows the layout of the slurry wall and the excavation depths. Coordinates of intersection points are shown on Drawings 594000-30K-02 through 30K-05.

Construction progressed with one excavator excavating the trench to the desired depth, while the backfill mixing equipment was placing backfill into the previously excavated trench sections. The distance between the two operations was generally between 100 and 200 feet. As excavation continued, measurements (soundings) of the trench depths were continuously performed, along with visual inspections of the trench spoils to ensure that the three foot "key" into the clay/till layer was achieved. In some areas, excavation was deeper than designed because the three foot key into the confining layer was not achieved at the design depth. Daily sounding were also made of the backfill slope to monitor for sloughing of foreign material, which could create a void space in the containment system. When slough areas were suspected, the trench backfill material in the area in question was immediately removed.

The Phase I and II slurry wall connection was made by excavating beyond the ending stations of Phase I to ensure that the required depths were maintained. The tie-in area was also thoroughly mixed with the excavator arm to ensure a satisfactory connection.

A two-foot thick clay cap was constructed on top of the wall after sections of the slurry wall were completed. This was performed by first deploying one roll width of woven geotextile (Exxon GTF-300®) over the trench and then placing 12-inch lifts of clay material on top of the fabric. Lifts were compacted with vibratory compaction equipment and tested to 90% standard proctor density with a nuclear compaction testing gauge. Stricter testing requirements for the bulkhead were enforced (95% standard proctor, ±2% from optimum moisture and greater than 1 ton/ft^2

torvane shear test) on sections of the cap along the bulkhead. Results of slurry wall cap compaction tests are summarized in Table 4.4-3 and are located in Appendices B, C and D.

Shelby tube samples were taken from the slurry wall for permeability analysis in the laboratory. The project specifications require a maximum slurry wall permeability of $1x10^{-7}$ cm/sec. The station and depths listed in Table 4.4-4 were selected at random and at critical points along the slurry wall alignment by project personnel.

Black/gray sediment-like silty/sands were found instead of backfill mixture in the tip of the Shelby tube taken from station 3+00 at a 20-foot depth. Subsequent samples were taken in the station 3+00 area to delineate the problem area. Shelby tubes samples were collected at stations 2+85 and 3+15 and were found to be satisfactory.

The Quality Assurance/Quality Control (QA/QC) Plan required the contractor to take seven more samples from the slurry wall and to perform corrective action on the wall between stations 2+85 and 3+15. Additional samples were required at the stations shown in Table 4.4-5.

The six split spoon samples were visually inspected for foreign material and debris and found to be satisfactory. The sample from station 5+85 was sent to the laboratory for permeability analysis. The sample had a permeability of $3.7x10^{-8}$ cm/sec, which exceeded the project specifications.

The contractor submitted a plan to address the area between stations 2+85 and 3+15. The plan called for placing a steel bulkhead at stations 2+85 and 3+15, and excavating the backfill out of the trench between these locations. Bentonite slurry (6%) was added to the trench to support the trench side walls and help reinforce the bulkheads as the backfill was excavated. New backfill was mixed in a 30 cubic yard dumpster and placed in the trench.

Excavation activities for the correction action began on May 22, 1997, with the area excavated to approximately 25 feet in depth. Bentonite slurry was added to the trench as the backfill was excavated. Backfill placement was completed on May 23, 1997. In-situ mixing of the tie-in areas was performed with a backhoe to ensure a satisfactory connection was obtained after the steel bulkheads were removed. Two Shelby tube samples were collected from the repaired area at station 2+85 and station 3+00, with both samples collected at a depth of 22 feet. These samples were taken on May 30, 1997 and both were found to be visually acceptable. The

samples had permeabilities of $3.0x10^{-8}$ cm/sec and $2.6x10^{-8}$ cm/sec, respectively. Results of other repair testing data and other pertinent information are summarized in Table 4.4-6.

Information on the slurry wall repair is located in Appendix L.

4.5 Capping System

The capping system consisting of:

- twelve (12) inches of compacted clay
- a geosynthetic clay liner
- a geomembrane
- a geonet drainage layer
- geotextile
- eighteen (18) inches of compacted clay
- topsoil and seeding was placed over the entire Site to prevent the infiltration of surface waters.

4.5.1 Subbase Layer

The subbase layer consists of one foot of clayey material compacted to 90% standard proctor density, within ±4% of optimum moisture. The subbase layer was placed directly on top of the Site fills imported to the Site and generated by Site construction activities. The layer serves as a part of the capping system of the landfill and as the foundation for the geosynthetic lining system. A detail showing the capping system is shown on drawing 594000-10S-02.

The clayey materials used in constructing the subbase layer were imported from the Frontier Stone Quarry in Lockport, New York; Helmick Farm in Lewiston, New York; and the Summit Park Lakes in Wheatfield, New York. Table 4.5-1 summarizes the geotechnical information. Information on these borrow sources is located in Appendices B and C. Geotechnical and compaction tests are summarized in Tables 4.5-1 and 4.5-2.

4.5.2 Geosynthetic Clay Liner

A geosynthetic clay liner (GCL) was placed on top of the subbase layer as part of the geosynthetic lining system. The GCL is composed of granular bentonite "squeezed" between

two layers of woven geotextile. Two different styles of GCL were placed on the landfill. Claymax 200R®, manufactured by Cetco, was placed on flat areas and on slopes of moderate grade. Bentomat ST, also manufactured by Cetco, was placed on steeper slopes due to its greater shear stress than the Claymax 200R. Results of factory QA/QC tests are summarized in Table 4.5-3 and are located in Appendix M.

The GCL was deployed directly upon the smooth surface of the subbase clay layer. These layers were overlapped to provide a "good seal" between panels. The overlap was increased from six inches to twelve inches during the installation to ensure that no shrinkage gaps were present. The GCL provided an excellent and stable base for the installation of the Lining System. The GCL was covered and sealed by the geomembrane liner nightly to prevent hydration of the bentonite. The GLC was promptly removed and replaced if it became hydrated.

Several rolls of Claymax 200R® arrived on the Site with a manufacturer's defect. A roller-type mechanism at the factory was defective resulting in random gaps of the bentonite between the geotextiles. This was corrected in the field by placing extra Claymax 200R pieces over the defective areas. The Claymax 200R was doubled up for rolls that had extensive defects in some areas.

4.5.3 Linear Low Density Polyethylene Liner Layer

A 40-mil linear low density polyethylene (LLDPE) Liner was placed on top of the GCL to form the liner portion of the capping system. Thirty-four (34) rolls of geomembrane manufactured by National Seal Company were used during the project duration. Results of factory QA/QC tests are summarized in Table 4.5-4 and are located in Appendix N. The geomembrane rolls were deployed directly over the GCL layer and subsequently sealed using an automated polymer fusion process, with the fusion being obtained through a double hot wedge. These parallel welds created an air channel, which allowed air pressure tests to be conducted later to verify integrity. In areas where the fusion welding process could not be used, an extrusion fillet weld was applied.

Two changes were made to the FER plans and specifications:

- 40-mil Liner: The specified material, 40 mil very low density polyethylene (VLDPE), is no longer manufactured and was replaced by the 40-mil LLDPE.

- Anchor Trench: The liner anchor trench was eliminated on the west, north, and east sides. To replace the anchor trench, an additional run-out length was added to ensure the liner was securely anchored. Drawing 594000-10S-02 shows details. Appendix AE contains the Field Change Approval.

Geomembrane deployment began on July 17, 1997 on the eastern slopes of the landfill. The panels were deployed in a manner so that the seams were parallel to the slopes. The GCL was inspected to insure that no foreign matter was present before any geomembrane panels were deployed. The panels were fusion welded together and subsequently tested. Trial tests were conducted daily by the contractor, utilizing the welding machines (fusion or extrusion welder) and the operator who would be performing the work before any panels were welded. These tests were conducted to ensure that proper operating conditions were achieved before the actual seams were welded. Shear and peel stress tests were performed on the samples and compared to the project specifications. Seams were made only after a satisfactory trial seam had been obtained. Results of trial seam tests are summarized in Tables 4.5-5 and 4.5-6 and are located in Appendix O.

The contractor recorded information about the seams, including; time and date of weld, panel numbers, trial number, and seam location and length when two panels had been welded together. The seam information is summarized in Table 4.5-7 and is located in Appendix O. Wherever possible, air pressure testing was then performed. This involved injecting 30 pounds per square inch (psi) of air pressure into the air channel produced during the fusion welding process. Leaks in the welded channel were located and repaired if any were detected. Results of the pressure testing are summarized in Table 4.5-7 and are located in Appendix O.

Seams, which could not be air pressure tested, were subjected to a vacuum-box test. In this test, soapy water was applied over the area to be tested. Negative pressure is then applied over the area, with failures being detected by soap bubbles appearing, which were detected by the observer. Any defects were noted and repaired.

A repair log was also maintained by the contractor. Repairs were made to seam failures, tie-in areas, holes in the geomembrane, and other areas requiring repairs. Repairs were typically made by extrusion welding a patch onto the faulty area. Repaired areas were then vacuum-box tested to ensure that they were properly repaired. The repair log is summarized in Table 4.5-8 and is located in Appendix O.

One destructive test was required to be performed for every 500 feet of welded seam. The tests were taken at random locations throughout the project. A total of 81 destructive tests were performed, with all 81 tests meeting the project specifications. After the sample was taken, the area was subsequently repaired and tested. Results of the destructive testing are summarized in Table 4.5-9 and are located in Appendices O and P.

4.5.4 Geonet Layer

A layer of geonet was placed over the liner to provide cap drainage. Polynet 3000® manufactured by National Seal Company was deployed by overlapping adjacent rolls and tied together using plastic ties to ensure continuity within the geonet drainage layer. Placing a patch over the area and using the plastic fasteners to secure the area repaired defects or tears detected within the geonet. Results of factory QA/QC tests are summarized in Table 4.5-10 and are located in Appendix Q.

4.5.5 Geotextile Layer

A non-woven geotextile (Evergreen Technologies TG700®) was placed over the geonet to provide separation between the geonet and the select cover fill layers. Rolls of the geotextile were overlapped and heat bonded together to provide a continuous separation layer. Any holes or rips in the geotextile were repaired by heat bonding a patch to the damaged section. Results of factory QA/QC tests are summarized in Table 4.5-10 and are located in Appendix R. Field QA/QC documentation is located in Appendix S.

4.5.6 Select Cover Fill

The select cover fill layer consisted of 18 inches of clayey material compacted to 80% standard proctor density, within ±4% of optimum moisture. The select cover fill layer was placed directly on top of the non-woven geotextile installed as part of the geosynthetic lining system. The layer serves as a part of the capping system of the landfill and protects the geosynthetic lining system. A detail showing the capping system is shown on drawing 594000-10S-02.

The clayey materials used in constructing the select cover fill layer were primarily imported from the Summit Park Lakes in Wheatfield, New York. Additional material was also imported from the Helmick Farm in Lewiston, New York. Table 4.5-11 summarizes geotechnical information.

Information on these borrow sources is located in Appendices B and C. Results of the compaction tests are summarized in Table 4.5-12 and are located in Appendix D.

4.5.7 Topsoil Layer

Six inches of topsoil was placed directly on the select cover fill layer to provide soil for vegetative growth and to bring the landfill to the final grade. The topsoil was imported from the Frontier Stone Quarry in Lockport, New York; and Chestnut Ridge Road in Amherst, New York (Buffalo Creek Topsoil). Table 4.5-13 summarizes geotechnical information. The soils were graded in six-inch lifts and "tracked" in-place with bulldozing equipment. Additional geotechnical and analytical information is located in Appendices B and C.

4.5.8 Vegetation

Vegetation was established by hydroseeding a mixture of grass seeds, fertilizer, organic mulch, innoculater and water. The landfill vegetation consisted of a special mixture of the following materials:

Climax Timothy	14.97 lbs/bag
Annual Ryegrass	14.77 lbs/bag
Lancer Perennial Pea	9.97 lbs/bag
Bounty Bromegrass	4.63 lbs/bag
Pizza Orchardgrass	4.57 lbs/bag
White Clover	2.46 lbs/bag
Red Top	2.40 lbs/bag
Inert materials	1.20 lbs/bag

Each 55 pound bag was mixed with 100 pounds of nitrogen-based fertilizer, 650 pounds of organic mulch, 1/2 bag of innoculator, and 1500 gallons of water. This mixture covered 1/2 acre.

A separate mixture was applied to the perimeter areas, and consisted of the following materials:

Triple Crown Perennial Rye	24.06 lbs/bag
Kentucky Bluegrass	12.34 lbs/bag
Creeping Red Fescue	12.12 lbs/bag
Inert	1.48 lbs/bag

All areas were mulched with straw and erosion control measures were put in place, which included installation of additional silt fences and drainage swales, and lining the drainage swales with "Jute" erosion control matting once hydroseeding was complete. All seeding and erosion control measures were performed using the New York State Guidelines for Urban Erosion and Sediment Control.

4.6 Collection Systems

4.6.1 APL Collection Trench

A 2,285-foot long APL collection trench was constructed along the south half of the Site, just inside the slurry wall, to collect aqueous phase groundwater and transport it in an eight-inch perforated HDPE pipe to the wet wells. The two-foot wide APL collection trench was constructed using the bio-polymer slurry drainage trench method. The trench was constructed with seven clean-outs, which may be utilized at a later date to clean the collection pipe if or when needed.

The collection system was constructed by first excavating the trench to design grades while keeping the trench full of bio-polymer slurry. This work was completed with a backhoe. Table 4.6-1 lists bottom of trench elevations. The bio-polymer slurry was used to maintain a vertical trench and prevent the trench sidewalls from caving in. The slurry was mixed in a batch plant on-site, and the slurry was tested per specifications to ensure that the specified properties were maintained. Results of the slurry tests are summarized in Table 4.6-2 and are located in Appendix T.

A woven geotextile fabric was placed into the trench to cover the side walls of the trench after the trench was excavated. Six inches of #1 washed stone were placed into the trench to serve as pipe bedding material. An eight-inch perforated HDPE pipe, which had been butt fusion welded, was then placed on the bedding stone. Concrete anchors were attached to the pipe to ensure that the pipe would sink to the bottom of the trench. A "leveling wire" was attached to the anchors to allow the contractor to raise or lower the pipe to the design grades. Table 4.6-1 lists pipe elevations at stations.

The trench was backfilled with the #1 washed stone to existing grade after the pipe was leveled. The remaining woven geotextile fabric was folded over the backfill stone and a clay cap was placed over the trench. Clay material was used, with each lift being compacted with vibratory

compaction equipment and tested to 90% standard proctor density with a nuclear compaction testing gauge. The more stringent testing requirements of the bulkhead were enforced (95% standard proctor, ±2% from optimum moisture and greater than 1 ton/ft^2 torvane shear test) on sections of the cap along the bulkhead. Results of APL collection trench cap compaction tests are summarized in Table 4.6-3 and are located in Appendices B, C and D.

After construction was completed, the system was developed to remove the polymer and to ensure free-flowing conditions for APL collection. Development was completed by chlorinating a section of the trench and re-circulating the liquids in the trench by mechanical pumping methods. The trench section was considered developed when the liquid's pH was neutral (between 6 and 8) and its viscosity measured less than 30 seconds in a Marsh Funnel. As the development of one section was completed, equipment was moved to the next section.

4.6.2 Wet Wells

The APL collection trench piping drains into four wet wells located along the bulkhead at strategic locations. Drawings 594000-30K-03 and 30K-05 shows wet well locations. The wet wells are approximately 22 feet deep, six foot by six foot concrete chambers with the APL collection trench pipe penetrating the side walls. The APL collected in the wet well is pumped through the APL force main system to the Love Canal Treatment Facility for pre-treatment prior to discharge to the City of Niagara Falls Sewer System.

The wet wells were installed into the bulkhead clayey soil by installing a 12 foot-5 inch by 12 foot-5 inch steel sheet pile cell and excavating the soils inside the cell to an elevation of 552 feet above MSL. Appendix U contains the wet well shoring design, which was submitted by the contractor. One foot of #2 bedding stone was placed on the bottom of the cell and the wet well was subsequently placed in sections after the cell was excavated and dewatered. The APL collection pipe was inserted into holes that were cut into the wet well sections. The APL collection pipe was joined to another section of pipe by a six inch stainless steel coupling. Appendix V contains coupling information.

Sections of the APL collection trench were removed to allow access to the pipe to facilitate the connection between the APL collection trench pipe and the wet well. Sections were excavated and subsequently repaired.

A stainless steel submersible pump was installed inside of each wet well inside of a six inch casing. The pump discharged into a one inch stainless steel pipe, which rises vertically out of the pump casing to the top of the wet well. The pipe is equipped with a gear-driven flowmeter, which sends a signal back to the sampling and metering shed, located near the northwest corner of the Site, where the flow is displayed. Pump operation is determined by the APL level in the wet well, which is measured by a Level Transmitter. High and low pumping levels are programmed into the control system and the system can either be run manually or automatically. Each wet well has it's own separate level transmitter and pumping system and connects to the APL force main pipe. Appendix V contains manufacturers' information on all of the wet well components. Drawings 594000-10S-01 and 594000-25J-02 provide a Flow Diagram and a Piping and Instrumentation (P&ID) Diagram, respectively, for the APL system.

Each wet well is equipped with a concrete top with a four foot by four foot locking door. Inside each wet well is a platform located approximately 8 feet below the top of the wet well where personnel can access the pump casing and flow meter/transmitter. A 36 inch wide by 48 inch high by 12 inch deep locking NEMA 4X enclosure is mounted to the top of each wet well and contains the electrical controls required to run the system.

4.6.3 APL Force Main

The APL force main conveys the APL collected in the individual wet wells to the South Collection Pump Chamber No. 3 and then to the treatment systems through a two inch diameter HDPE pipe. The original design called for a loadout facility to transfer the APL to tank trucks for off-site disposal. The force main begins at Wet Well #4 with two-2 inch HDPE pipes (one main pipe and one spare) and collects APL from Wet Wells #3, #2, and #1 before turning north along the top of the western landfill slope. Drawings 594000-30K-02, 30K-03 and 30K-05 show details for APL force main locations. There are seven in-line cleanout manholes located along the force main route for pipe cleaning. The six-foot deep manholes are located near the APL collection trench cleanout pipes. The APL force main pipes were placed side-by-side in a shallow trench with the electrical cables required for wet well operations. Pipes are located 4 feet below final grade for freezing protection. The pipes were hydrotested before a clay cap was placed over the trench. Clay materials were used for the cap, with each lift being compacted with vibratory compaction equipment and tested to 90% standard proctor density with a nuclear compaction testing gauge. The more stringent testing requirements of the bulkhead were enforced (95% standard proctor, ±2% from optimum moisture content and

greater than 1 ton/ft^2 torvane shear test) on sections of the cap along the bulkhead. Results of APL force main cap compaction tests are summarized in Table 4.6-4 and are located in Appendices B, C and D.

The APL force main pipes turn west, cross the slurry wall, and enter the sampling and metering manhole in the northwest corner of the Site. All force main outside the slurry wall are contained in an additional 6 inch or 8 inch HDPE pipe for spill control. The sampling and metering manhole contains another flow meter/transmitter, with a signal being sent to the sampling shed located just to the south. The sampling shed contains the electrical control panels and components required to run the APL force main system and interface with the Love Canal Treatment Facility.

The APL force main exits the sampling manhole heading north. The remainder of the force main construction from the sampling manhole to the pump discharge chamber at Love Canal was performed using directional boring technology. Boring was performed from manhole to manhole. Manholes were placed using open cut and backfill. The conduit for the electrical cable was also installed using directional boring from manhole to manhole beginning at the sampling manhole and surfacing at the power pole on the Love Canal property.

Boring technology used a hydraulically powered track carrier drill rig using a combination of rotating carbide boring head, linear thrust, and bentonite jetting. Pressurized bentonite fluid was jetted out of the boring head to stabilize the walls of the borehole. Forward thrust was applied to the boring head using the attached drill. The cutting head was removed and a backreamer enlarged the borehole by chopping the soil and insitu compacting. Bentonite fluid was also used in backreaming to lubricate the hole for the containment pipe installation.

Monitoring of the line grade and location was accomplished using a radiodetection locator. A recessed compartment machined in the boring head housed a sonde which sent a radio signal to a hand held receiver operated by a technician above the boring head. The receiver indicated the degree of angle of the boring head, the position of the sonde, and its location and depth. A remote receiver located on the drilling rig allowed the machine operator to also evaluate information from the sonde. Changing direction of the boring head was accomplished by stopping the rotation of the drill steel to face the desired direction and apply thrust. This operation was monitored continuously until the desired vertical or horizontal position was attained as provided on the approved design drawings.

The boring system utilized a "strike alert system" that detects voltage with an audible alarm located on the drilling rig. A remote sensor was located on the boring head to detect electrical current from buried cables.

Force main piping from the sampling manhole to the lift station at Love Canal was installed as a two-inch diameter HDPE carrier pipe installed in a six-inch diameter HDPE containment pipe. The six-inch diameter containment pipe was installed using the boring method and the two-inch diameter force main carrier pipe was pushed through the containment pipe by hand. The electrical cable was routed in a two-inch diameter HDPE conduit that was installed by boring. A tracer wire was routed above the force main piping system (pipe) for detection during excavation. A clean out was provided in each manhole and at the Love Canal manhole.

Level probes were provided for leak detection in the sampling manhole, manholes 8 and 9, and at the Love Canal manhole. Detected leaks are alarmed at the control panel at Love Canal, which then automatically shut off the wet well pumps.

Drawing 594010-10U-07-06, "Force Main Routing Plan", shows the routing of the double containment force main from the sampling manhole to the lift station at Love Canal.

Drawing 594010-30K-08A-04, "Force Main From Metering Sump Manhole to Love Canal Facility Plant Details", provides detailed routing information and specific construction details.

Drawing 59400-102PROF1-04, "Force Main From Metering Sump Manhole to Love Canal Facility Profile", gives the pipe profile and elevation and miscellaneous details.

Drawing 23594010-SK-270-107-04, "Instrument Block Diagram", shows a plan for the leak detection system.

The route of the force main is north from the sampling manhole, with a deflection to the northeast 130 feet from the sampling manhole near the 102nd Street Landfill's northwest property line. The route continues 95 feet northeast under Buffalo Avenue to clean-out manhole number 8. The pipe slope is a gradual descent from the sampling manhole to clean-out manhole number 8. The force main route exits clean-out manhole number 8 at a 90-degree angle, proceeds 166 feet in the southeastern direction parallel to and 40 feet south of the east bound lane of the LaSalle Expressway, and enters clean-out manhole number 9. The pipe slope from clean-out manhole number 8 to clean-out manhole number 9 is a gradual ascent to

approximately 20 feet before clean-out manhole number 9, where the grade changes and the pipe descends toward clean-out manhole number 9. The force main route exits clean-out manhole number 9 at a 90-degree angle, and proceeds 190 feet in the northeastern direction under LaSalle Expressway to a deflection point on the north side of the LaSalle Expressway. The route becomes more east-northeast and travels 100 feet to the existing manhole at Love Canal. The pipe slope from clean-out manhole number 9 to the manhole at Love Canal is a gradual ascent. The pipe enters the clay bottom Love Canal manhole below it and proceeds north to the existing Love Canal Pump Discharge Chamber Number 3. The slope from the manhole at Love Canal is a gradual ascent.

Both six-inch containment pipes that enter the manhole at Love Canal were closed off with flexible couplings to provide a double barrier to ensure that no material will exit the Love Canal Landfill.

A "goose neck" pipe extension was placed at the downstream termination of the two-inch diameter force main at pump discharge chamber number 3 at Love Canal. A check valve was also installed on the two-inch diameter pipe and a rain shield was placed on the six-inch diameter pipe at the vertical opening. The termination of both the carrier two-inch diameter and the containment six-inch diameter pipe elevations are higher than the top of leachate holding tank at the Love Canal Facility. This leachate holding tank is flow equalized with pump discharge chamber number 3. This piping arrangement provides tertiary protection from material exiting Love Canal.

4.6.4 Non Aqueous Phase Liquid (NAPL) Wells

The NAPL well installation program began on June 4, 1997 with the drilling of the pilot holes. Four and a quarter inch diameter hollow stem augers were used to drill the pilot holes, with continuous split spoon samples being taken from 15 feet below final grade to 1.5 feet into the clay/fill. The holes were augured until the underlying clay/till layer was encountered. All of the drill cuttings were used as fill in the landfill. The pilot holes were drilled at the design locations to check for the presence of NAPL at those locations. If no NAPL was found, the hole was filled with grout and the drill rig was moved to another location within a 30-foot radius of the original pilot hole. If no NAPL was found after drilling three pilot holes, the NAPL recovery well (NR well) for that location was not installed. Drawings 594000-30K-02 through 30K-05 show NAPL well locations. Three pilot holes were drilled at each location near NR-6 and NR-9, but no NAPL

was found. Three pilot holes were drilled, with NAPL being found on the third pilot hole in each case, at NR-7 and NR-10. NAPL was found on the first pilot holes for NR-1, -2, -3, -4 and -8. NR-5 was installed during the NAPL Recovery Well Testing Program and was installed on June 22, 1994. Information on all of the pilot holes can be found in Table 4.6-5 and the boring logs can be found in Appendix W.

A caisson rig was used to augur the borehole for the wells after the locations of the seven new NR wells were determined. A 12-inch diameter, schedule 4, type 304 stainless steel casing was placed in the borehole after the borehole was augured. The ten-foot well screen used was constructed of type 316 stainless steel, with No. 20 slots. The well was then backfilled with sand, bentonite pellets, and grout. A locking cap was later placed on the wells and a concrete pad was poured around each well. Appendix X contains well installation logs, and Drawing 594000-30K-06 shows details.

The NR wells were developed by placing a jetting tool into the wells and spraying high pressure water out of the jetting tool into the well screen. The water pressure in the jetting tool exceeded 260 psi, with the four nozzles coming out of the jetting tool being 3/16 inch in diameter. The jetting tool was slowly rotated while making several passes over the well screen. The wells were pumped until the liquids were clear of fines or the wells were pumped dry. Wells were allowed to recharge and were pumped dry a total of three times. Liquids were pumped into a 1500-gallon plastic tank and then transferred to a larger tanker truck. A total of 7550 gallons of liquid were generated during NR well development. After allowing heavier material to settle, the APL was decanted off the top of the tanker and treated by the water treatment system. Remaining liquids were containerized and incinerated off-site by Laidlaw in Deer Park, Texas. Table 4.6-6 lists NR well development information.

4.7 Post Closure Monitoring Systems

4.7.1 Post Closure Monitoring Wells

Ten post closure monitoring wells (PCM wells) were installed around the perimeter of the Site to allow for post closure monitoring. Drawings 594000-30K-2 through 30K-05 show PCM well locations. The PCM wells were installed just outside of the perimeter slurry wall. The PCM wells were two-inch diameter, schedule 5, type 304 stainless steel. The well screens used were of similar materials with a No. 6 slot screen.

The well boreholes were augured using a drill rig with 4.25-inch diameter hollow stem augers. The augers were advanced into the underlying clay/till layer. All drill cuttings were contained and used as fill in the landfill. The well casing was then placed into the borehole and subsequently backfilled with sand bentonite pellets and grout. A cast iron protective casing with a locking cap was then placed over the casing. A small concrete pad was later poured around each well. Appendices Y and Z contain the PCM well boring and well installation logs, respectively. Drawing 594000-30K-06 shows additional PCM well installation details.

The PCM wells were developed by surging each well and pumping at least ten well volumes of groundwater out of the well or by pumping each well dry three times. Pumping would continue until the ten well volumes were pumped and the water was clear and visibly free of fines. All well development water was treated by the water treatment system. Information on the PCM well development is shown in Table 4.7-1.

4.7.2 Post Closure Bedrock Monitoring Wells

Three post closure bedrock monitoring wells (PCBM wells) were installed around the perimeter of the Site to allow for post closure monitoring of the Site. They were located just outside the slurry wall and adjacent to three PCM wells. (PCBM-1 is adjacent to PCM-3, PCBM-2 is adjacent to PCM-5, and PCBM-3 is adjacent to PCM-8.) Drawings 594000-30K-02 through 30K-05 show PCBM well locations. The materials of construction were similar to PCM wells, except for the addition of a 10-inch diameter, schedule 10, type 304 stainless steel outer casing and a six-inch diameter, schedule 10, type 304 inner casing. The borehole was cored 15 feet into the bedrock before the inner casing was placed. All drill cuttings were contained and used as fill in the landfill. A cast iron protective casing with a locking cap was then placed over the casing. A small concrete pad was later poured around each well.

The PCBM wells were developed in the same fashion as the PCM wells with the information listed in Table 4.7-2. All well development water was treated by the water treatment system.

Appendices AA and AB contain the boring and well installation logs for the PCBM wells, respectively.

4.7.3 Piezometers

Ten piezometers (PZ) were installed and developed in the same manner as the PCM wells to allow for future monitoring of groundwater level within the landfill. They were installed just inside of the slurry wall adjacent to the PCM well of similar numbering. Drawings 594000-30K-02 through 05 show piezometer locations. Piezometer development information is shown in Table 4.7-3.

Appendices AC and AD contain the boring and well installation logs for the piezometers, respectively.

5.0 CONCLUSIONS

The remedial action program for OU-1 and OU-2 was completed successfully, in accordance with the AO, ROD, and ROD Amendment, and provides the level of protection to human health, welfare and environment that was required by these documents.

6.0 FINAL INSPECTION

The pre-final inspection was conducted on May 5, 1999 with the DEC and the Companies' representatives. The following personnel were present:

John M. Burns	Olin Corporation
Tomas Robinson	DEC Representative
James Thornton	OxyChem Representative from CRA Services
Bill Horn	Miller Springs Remediation, Inc.
David Cummings	Olin Corporation
Paul Olivo	USEPA Region II
Lorraine M. Miller	Olin Corporation

The following is a "punch list" of observed items that were observed:

1. Complete final grading around cleanout manhole -8 and -9, and seed and mulch disturbed areas along the south side of the LaSalle Expressway.

2. Repair liner at Love Canal (by utility pole south end), replace cover material, place topsoil, and seed and mulch disturbed areas.

3. Repair fence on north and south sides of the LaSalle Expressway.

4. Complete fence work at the northwest corner of the 102nd Street site. Install the man gate adjacent to the Meter Building.

5. Complete the drainage layer installation at the northwest corner of the 102nd Street site. Place cover material and topsoil. Seed and mulch new topsoil.

6. Repair the topsoil area disturbed during fence installation at the southwest corner of the site. Seed and mulch as required.

7. Repair the erosion rill on the west slope of the 102nd Street Landfill.

The Engineer of Record, Charles Taylor, P.E., conducted an inspection June 17, 1999, accompanied by James Thornton of CRA Services, and Bill Horn of Miller Springs Remediation Inc. All of the above punchlist items have been completed.

7.0 OPERATION AND MAINTENANCE PLAN

The operation and maintenance of the landfill cap, containment, and collection systems will be provided by the Companies and is described in the Post Closure Operation and Maintenance Manual. The Post Closure Operation and Maintenance Manual provides a program that is consistent with requirements per 40 Code of Federal Regulations (CFR) 264.310 and 40 CFR Part 264, Subpart F. The manual will verify that the containment and monitoring systems are functioning as expected and designed, and will insure that the integrity of the remedial action is maintained over time. The manual describes the major components of the program and provides maintenance and inspection schedules, checklists, and descriptions of specific tasks. The major components of the operation and maintenance program are as follows:

- APL collection and conveyance;
- NAPL collection ;
- Cap subdrain collection;
- Soil and vegetative cover;
- Run-on and run-off controls;
- Groundwater level monitoring; and
- Groundwater sampling and analysis.

The post-closure care and monitoring will be performed for as long as needed to achieve clean up objectives. The program is being reevaluated and modified based on final design and construction (e.g., addition of force main) and to reflect actual field experience on startup. The program will be re-evaluated and modified at five-year intervals.

The manual will be issued before startup.

8.0 CERTIFICATION THAT REMEDY MEETS PERFORMANCE STANDARDS

NEW YORK STATE PROFESSIONAL ENGINEER'S CERTIFICATION FOR:

102nd STREET LANDFILL SITE

REMEDIAL ACTION REPORT

LANDFILL RESIDUALS, PERIMETER SOILS, SHALLOW GROUNDWATER, NON-AQUEOUS PHASE LIQUIDS (NAPL), AND EMBAYMENT SEDIMENTS

OPERABLE UNITS 1 & 2

NIAGARA FALLS, NEW YORK

August 13, 1999.

Prepared by IT Corporation

This report documents the remedial action activities completed at 102nd Street Landfill Site. The action included remediation for the landfill residuals, perimeter soils, shallow groundwater, and non-aqueous phase liquids and the sediments in the Niagara River within 300 feet of the shore. I certify that the remedial action implemented for these activities was completed in substantial conformance with the requirements of the Remedial Design Documents, the ROD, ROD Amendment, and the Administrative Order. The data presented is considered to be technically correct to the best of my knowledge.

Charles Taylor, Jr. 8-13-99

Charles Taylor, State of New York Professional Engineer (073024)

TABLES

Table 4.0-1

Summary of Geotechnical Results
Pre-Construction Testing

102nd Street Landfill Site

Date	Sample No.	Borrow Source	Water Content	Atterburg Limits LL	PL	PI	Soil Classification	Gradation < 200 Sieve	Hydrometer	Standard Proctor	Permeability (cm/sec)
5/16/96	05166-1	Love Canal Stockpile	18.2%	38	21	17	CL	62	23	113.5 pcf @ 15.0%	1.50E-07
5/17/96	05176-1	Summit Park	23.4%	51	24	27	CH	98	60	103.0 pcf @ 22.0%	4.90E-08
5/17/96	05176-2	Frontier Stone	17.6%	31	18	13	CL	86	31	114.5 pcf @ 16.0%	9.10E-08
5/30/96	05306-2	Love Canal DCF Clay	25.9%	48	21	27	CL	85	38	108.5 pcf @ 19.0%	5.10E-08
8/21/96	08216-1A	Summit Park	40.7%	45	21	24	CL	100	59	105.5 pcf @ 20.5%	3.90E-08
7/28/97	07287-2	Helmick Farm									
8/7/97	08077-2	Sand Pit Road	7.4%	-	-	-	SM	38	-	110.5 pcf @ 13.0%	-

Table 4.0-2

Summary of Geotechnical Results
Miscellaneous Testing

102nd Street Landfill Site

Date	Sample No.	Borrow Source	Project Location	Water Content	Atterburg Limits LL	PL	PI	Soil Classification	Gradation < 200 Sieve	Hydrometer	Standard Proctor	Permeability (cm/sec)
6/12/96	06126-1	Grand Island	Perimeter Soils	19.3%	31	16	15	CL	80	29	121.5 pcf @ 13.0%	2.90E-07
6/28/96	06286-1	Grand Island	Perimeter Soils	15.5%	35	16	19	CL	77	27	117.5 pcf @ 14.5%	1.30E-06
8/12/96	08126-1	On-Site Fill	Filling/Grading	9.9%	-	-	-	GC-GM	32	-	125.0 pcf @ 11.5%	-
10/1/96	10016-1	Niagara Stone	Buffalo Avenue Subbase	4.6%	-	-	-	GW-GM	7	-	140.5 pcf @ 9.0%	-
10/3/96	10036-1	Niagara Stone	RipRap Bedding	1.2%	-	-	-	GP	1	-	-	-
10/3/96	10036-2	Frontier Stone	Slurry Wall Cap	21.3%	41	17	24	CL	86	37	111.0 pcf @ 18.0%	9.00E-08
10/3/96	10036-3	Frontier Stone	Slurry Wall Cap	17.9%	-	-	-	CL	87	33	-	-
12/5/96	12056-1	Frontier Stone	Slurry Wall Cap	17.9%	-	-	-	CL	87	32	-	-
7/14/97	07147-1	Pine Hill	Force Main Trench	11.5%	-	-	-	SP-SM	9	-	-	-
8/7/97	08077-2	Sand Pit Road	Granular Fill	7.4%	-	-	-	SM	38	-	110.5 pcf @ 13.0%	-
9/4/97	09047-2	Sand Pit Road	Granular Fill	5.9%	-	-	-	SM	17	-	-	-
10/8/97	10087-1	Sand Pit Road	Granular Fill	4.7%	-	-	-	SM	13	-	-	-
10/14/97	10147-1	Frontier Stone Quarry	Haul Roads	3.3%	-	-	-	GP-GM	5	-	104.0 (max), 95.7 (min)	2.10E-01

Table 4.1-1

Summary of Geotechnical Results
Cofferdam

102nd Street Landfill Site

Date	Sample No.	Borrow Source	Water Content	Atterburg Limits LL	PL	PI	Soil Classification	Gradation < 200 Sieve	Hydrometer	Standard Proctor	Permeability (cm/sec)
6/28/96	06286-1	Frontier Stone	18.6%	-	-	-	CL	81	24	-	-
7/1/196	07016-1	Frontier Stone	15.5%	27	15	12	CL	84	24	118.0 pcf @ 14.5%	1.50E-06
7/1/196	07016-2	Frontier Stone	16.9%	-	-	-	CL	85	28	-	-
7/1/196	07016-3	Frontier Stone	19.6%	-	-	-	CL	85	29	-	-
7/3/96	07036-1	Frontier Stone	16.2%	-	-	-	CL	80	22	-	-
7/10/96	07106-1	Frontier Stone	17.4%	31	16	15	CL	86	29	116.0 pcf @ 14.5%	5.00E-07
7/18/96	07186-1	Frontier Stone	18.3%	36	15	21	CL	93	41	111.5 pcf @ 17.5%	3.00E-07
9/26/96	09266-1	Frontier Stone	20.9%	33	17	16	CL	87	34	113.5 pcf @ 16.5%	2.70E-07

Table 4.2-1

Summary of Geotechnical Results
Erosion/Sedimentation Control

102nd Street Landfill Site

Date	Test No.	Test Location	Material	Depth or Elevation	Dry Density(pcf)	Water Content(%)	% Proctor Density
5/24/96	1	Diversion Berm #1	Love Canal	-	108.1	17.6%	95.3%
5/24/96	2	Diversion Berm #2	Love Canal	-	109.8	17.8%	96.7%
5/24/96	3	Diversion Berm #3	Love Canal	-	108.7	18.6%	95.8%
6/12/96	1	Sedimentation Pond Berm	Love Canal DCF	2nd Lift	103.3	15.8%	95.2%
6/12/96	2	Sedimentation Pond Berm	Love Canal DCF	1st Lift	104.9	19.1%	96.7%
6/12/96	3	Sedimentation Pond Berm	Love Canal	1st Lift	107.1	17.9%	94.4%
6/13/96	1	Sedimentation Pond Berm	Love Canal DCF	1st Lift	107.8	16.6%	99.4%
6/14/96	1	Sedimentation Pond Berm	Love Canal DCF	3rd Lift	111.2	17.8%	102.5%
6/14/96	2	Sedimentation Pond Berm	Love Canal DCF	2nd Lift	113.8	14.9%	104.9%
6/14/96	3	Sedimentation Pond Berm	Love Canal DCF	1st Lift	114.2	14.6%	105.3%
6/17/96	1	Sedimentation Pond Bottom	Love Canal DCF	1st Lift	110.5	15.5%	101.8%
6/17/96	2	Sedimentation Pond Bottom	Love Canal DCF	1st Lift	107.6	14.9%	99.2%
6/17/96	3	Sedimentation Pond Bottom	Love Canal DCF	1st Lift	107.1	15.0%	98.7%
6/17/96	4	Sedimentation Pond Bottom	Love Canal DCF	1st Lift	115.4	13.4%	106.4%
6/20/96	1	Sedimentation Pond Bottom	Love Canal DCF	2nd Lift	111.6	15.6%	102.9%
6/20/96	2	Sedimentation Pond Bottom	Love Canal DCF	2nd Lift	114.4	14.6%	105.4%
6/21/96	1	Sedimentation Pond Berm	Love Canal DCF	3rd Lift	110.1	15.6%	101.5%
6/21/96	2	Sedimentation Pond Bottom	Love Canal DCF	3rd Lift	113.6	15.4%	104.7%
6/21/96	3	Sedimentation Pond Bottom	Love Canal DCF	3rd Lift	110.1	15.3%	101.5%
6/21/96	4	Sedimentation Pond Berm	Love Canal DCF	3rd Lift	112.5	15.9%	103.7%
6/21/96	5	Sedimentation Pond Berm	Love Canal DCF	4th Lift	114.7	14.8%	105.7%
6/21/96	6	Sedimentation Pond Bottom	Love Canal DCF	1st Lift	114.4	15.9%	105.4%
6/25/96	3	Sedimentation Pond South Berm	Love Canal DCF	5th Lift	107.2	18.5%	98.8%
6/25/96	4	Sedimentation Pond North Berm	Love Canal DCF	3rd Lift	104.6	16.1%	96.4%
6/25/96	5	Sedimentation Pond South Berm	Love Canal DCF	6th Lift	107.7	19.1%	99.3%
6/25/96	6	Sedimentation Pond Middle Berm	Love Canal DCF	4th Lift	117.4	13.1%	108.2%
6/25/96	7	Sedimentation Pond South Berm	Love Canal DCF	6th Lift	102.7	16.4%	94.7%
6/25/96	9	Sedimentation Pond North Berm	Love Canal DCF	3rd Lift	106.5	15.3%	98.2%
6/25/96	11	Sedimentation Pond South Berm	Love Canal DCF	7th Lift	110.7	14.5%	102.0%
6/25/96	12	Sedimentation Pond North Berm	Love Canal DCF	5th Lift	105.0	16.6%	96.8%
6/25/96	13	Sedimentation Pond South Berm	Love Canal DCF	8th Lift	107.4	15.5%	99.0%
6/25/96	15	Sedimentation Pond South Berm	Love Canal DCF	9th Lift	100.4	14.8%	92.5%
6/25/96	16	Sedimentation Pond Middle Berm	Love Canal DCF	6th Lift	112.6	12.7%	103.8%
6/25/96	17	Sedimentation Pond South Berm	Love Canal DCF	10th Lift	113.7	14.6%	104.8%
6/25/96	18	Sedimentation Pond Middle Berm	Love Canal DCF	7th Lift	102.6	15.1%	94.6%
6/26/96	1	Sedimentation Pond South Berm	Love Canal DCF	11th Lift	106.4	15.3%	98.1%
6/26/96	2	Sedimentation Pond North Berm	Love Canal DCF	8th Lift	111.4	14.4%	102.7%
6/26/96	1	Sedimentation Pond South Berm	Love Canal DCF	12th Lift	112.3	14.8%	103.5%
7/9/96	1	West Side Berm	Love Canal DCF	1st Lift	107.5	15.4%	99.1%
7/9/96	1	West Side Berm	Love Canal DCF	2nd Lift	96.3	18.0%	88.8%
7/9/96	2	Retest of No. 7	Love Canal DCF	2nd Lift	103.2	17.9%	95.1%
7/10/96	1	West Side Berm	Love Canal DCF	3rd Lift	106.3	14.9%	98.0%
7/10/96	1	West Side Berm	Love Canal DCF	4th Lift	104.7	14.8%	96.5%
7/11/96	1	Southwest corner of Fill berm	Love Canal DCF	1st Lift	110.1	14.6%	101.5%
7/11/96	1	Southwest corner of Fill berm	Love Canal DCF	2nd Lift	105.1	16.6%	96.9%
7/31/96	11	South Side of Site Berm	Love Canal DCF	1st Lift	112.0	13.6%	103.2%
8/1/96	3	West Side Berm	Love Canal DCF	1st Lift	105.0	16.4%	96.8%

Table 4.2-2, page 1 of 3

Summary of Soil Compaction Results
Perimeter Soils

102nd Street Landfill Site

Date	Test No.	Test Location	Material	Depth or Elevation	Dry Density(pcf)	Water Content(%)	% Proctor Density	Remarks
6/21/96	7	West End of Site	Grand Island	1st Lift	122.1	13.0%	103.8%	
6/25/96	1	West End of Site	Grand Island	2nd Lift	119.2	14.5%	101.3%	
6/25/96	2	West End of Site	Grand Island	1st Lift	118.2	13.2%	100.4%	
6/25/96	8	West End of Site	Grand Island	1st Lift	119.2	13.7%	101.3%	
6/25/96	10	West End of Site	Grand Island	2nd Lift	122.6	12.2%	104.2%	
6/25/96	14	West End of Site	Grand Island	3rd Lift	123.5	12.0%	104.9%	
6/25/96	19	West End of Site	Grand Island	4th Lift	125.2	11.8%	106.4%	
6/26/96	1	West End of Site	Grand Island	1st Lift	105.4	11.7%	89.5%	
6/26/96	2	Retest of No. 1	Grand Island	1st Lift	108.0	12.0%	91.8%	Recompacted
6/26/96	3	West End of Site	Grand Island	5th Lift	123.0	12.4%	104.5%	
6/26/96	6	West End of Site	Grand Island	1st Lift	124.2	12.6%	105.5%	
6/26/96	8	West End of Site	Grand Island	2nd Lift	127.6	10.4%	108.4%	
6/28/96	1	Northwest Corner	Grand Island	1st Lift	110.8	13.9%	94.1%	
7/1/96	1	East side, 25 ft from River	Grand Island	1st Lift	130.5	8.8%	110.9%	
7/2/96	1	East side, 174 ft from River	Grand Island	1st Lift	120.9	10.9%	102.7%	
7/2/96	2	East side, 150 ft from River	Grand Island	2nd Lift	121.1	11.2%	102.9%	
7/3/96	1	East side, 240 ft from River	Grand Island	1st Lift	122.8	9.5%	104.3%	
7/3/96	2	East side, 270 ft from River	Grand Island	2nd Lift	121.1	10.4%	102.9%	
7/5/96	1	East side	Grand Island	1st Lift	127.1	10.2%	108.0%	
7/5/96	2	East side	Grand Island	1st Lift	119.4	12.8%	101.4%	
7/5/96	3	East side	Grand Island	2nd Lift	113.1	14.5%	96.1%	
7/5/96	4	East side	Grand Island	3rd Lift	117.5	12.7%	99.8%	
7/6/96	1	East side	Grand Island	2nd Lift	110.0	14.1%	93.5%	
7/6/96	2	East side	Grand Island	2nd Lift	110.6	11.7%	94.0%	
7/6/96	3	East side	Grand Island	4th Lift	120.0	11.2%	102.0%	
7/6/96	4	East side	Grand Island	4th Lift	115.7	13.4%	98.3%	
7/6/96	5	East side	Grand Island	2nd Lift	112.4	13.1%	95.5%	
7/6/96	6	East side	Grand Island	1st Lift	108.9	12.9%	92.5%	
7/7/96	1	East side	Grand Island	1st Lift	119.7	9.0%	101.7%	
7/7/96	2	East side	Grand Island	3rd Lift	116.2	10.7%	98.7%	
7/7/96	3	East side	Grand Island	3rd Lift	121.6	11.1%	103.3%	
7/7/96	4	East side	Grand Island	2nd Lift	119.7	11.6%	101.7%	
7/7/96	5	East side	Grand Island	3rd Lift	114.2	10.9%	97.0%	
7/7/96	6	East side	Grand Island	4th Lift	113.0	11.8%	96.0%	
7/9/96	1	East side	Grand Island	Final Lift	109.0	10.3%	92.6%	
7/9/96	2	East side	Grand Island	4th Lift	111.2	11.4%	94.5%	
7/9/96	3	East side	Grand Island	2nd Lift	123.8	10.2%	105.2%	
7/9/96	5	East side	Grand Island	3rd Lift	120.3	11.0%	102.2%	
7/9/96	6	East side	Grand Island	4th Lift	122.6	11.1%	104.2%	
7/9/96	9	East side	Grand Island	5th Lift	106.7	12.0%	90.7%	
7/9/96	10	East side	Grand Island	6th Lift	117.7	9.6%	100.0%	
7/10/96	1	East side	Grand Island	1st Lift	117.4	12.6%	99.7%	
7/10/96	2	East side	Grand Island	2nd Lift	116.3	11.0%	98.8%	
7/10/96	3	East side	Grand Island	Final Lift	113.5	13.3%	96.4%	
7/10/96	5	East side	Grand Island	3rd Lift	121.3	11.0%	103.1%	
7/10/96	6	East side	Grand Island	4th Lift	113.9	12.5%	96.8%	
7/10/96	7	East side	Grand Island	5th Lift	115.2	13.0%	97.9%	
7/10/96	9	East side	Grand Island	6th Lift	111.4	13.8%	94.6%	
7/11/96	1	East side	Grand Island	2nd Lift	106.1	15.3%	90.1%	
7/11/96	2	East side	Grand Island	3rd Lift	118.1	13.3%	100.3%	
7/11/96	3	East side	Grand Island	4th Lift	110.3	13.7%	93.7%	
7/11/96	5	East side	Grand Island	5th Lift	114.0	12.0%	96.9%	
7/11/96	6	East side	Grand Island	6th Lift	121.0	11.8%	102.8%	
7/11/96	7	East side	Grand Island	7th Lift	108.4	11.3%	92.1%	
7/11/96	9	East side	Grand Island	8th Lift	115.0	9.7%	97.7%	
7/12/96	1	East side	Grand Island	1st Lift	122.7	10.4%	104.2%	

Table 4.2-2, page 2 of 3

Summary of Soil Compaction Results
Perimeter Soils

102nd Street Landfill Site

Date	Test No.	Test Location	Material	Depth or Elevation	Dry Density(pcf)	Water Content(%)	% Proctor Density	Remarks
7/12/96	2	East side	Grand Island	2nd Lift	126.3	8.9%	107.3%	
7/12/96	3	East side	Grand Island	3rd Lift	124.6	10.7%	105.9%	
7/12/96	4	East side	Grand Island	4th Lift	120.9	9.7%	102.7%	
7/12/96	5	East side	Grand Island	1st Lift	114.4	11.2%	97.2%	
7/12/96	6	East side	Grand Island	1st Lift	117.7	10.6%	100.0%	
7/12/96	7	East side	Grand Island	2nd Lift	114.9	10.2%	97.6%	
7/12/96	8	East side	Grand Island	3rd Lift	115.8	9.6%	98.4%	
7/12/96	9	East side	Grand Island	4th Lift	103.3	10.0%	87.8%	
7/16/96	1	Northeast Corner	Grand Island	1st Lift	121.5	9.3%	103.2%	
7/16/96	2	Northeast Corner	Grand Island	2nd Lift	111.2	10.7%	94.5%	
7/16/96	3	Northeast Corner	Grand Island	3rd Lift	116.3	10.1%	98.8%	
7/16/96	4	Northeast Corner	Grand Island	4th Lift	110.9	11.8%	94.2%	
7/16/96	5	Northeast Corner	Grand Island	4th Lift	120.6	10.5%	102.5%	
7/16/96	6	Northeast Corner	Grand Island	5th Lift	118.1	9.3%	100.3%	
7/16/96	7	Northeast Corner	Grand Island	6th Lift	122.4	9.3%	104.0%	
7/16/96	8	Northeast Corner	Grand Island	7th Lift	119.6	9.9%	101.6%	
7/16/96	9	Northeast Corner	Grand Island	8th Lift	115.3	11.2%	98.0%	
7/16/96	10	Northeast Corner	Grand Island	9th Lift	118.8	9.5%	100.9%	
7/17/96	1	Northeast Corner	Grand Island	1st Lift	120.2	12.8%	102.1%	
7/17/96	2	Northeast Corner	Grand Island	2nd Lift	115.3	10.3%	98.0%	
7/17/96	4	Northeast Corner	Grand Island	1st Lift	119.6	9.9%	101.6%	
7/17/96	5	Northeast Corner	Grand Island	2nd Lift	110.8	12.4%	94.1%	
7/17/96	6	Northeast Corner	Grand Island	1st Lift	106.5	11.4%	90.5%	
7/18/96	1	North Side	Grand Island	3rd Lift	126.6	9.9%	107.6%	
7/18/96	2	North Side	Grand Island	1st Lift	120.5	10.7%	102.4%	
7/18/96	3	North Side	Grand Island	1st Lift	107.7	10.9%	91.5%	
7/19/96	1	North Side	Grand Island	1st Lift	115.0	10.7%	97.7%	
7/19/96	2	North Side	Grand Island	2nd Lift	122.0	10.6%	103.7%	
7/19/96	3	North Side	Grand Island	3rd Lift	115.4	12.3%	98.0%	
7/22/96	3	North Side	Grand Island	1st Lift	106.2	13.9%	90.2%	
7/22/96	4	North Side	Grand Island	2nd Lift	114.6	13.9%	97.4%	
7/22/96	5	North Side	Grand Island	3rd Lift	115.2	14.0%	97.9%	
7/23/96	1	North Side	Grand Island	1st Lift	106.2	15.1%	90.2%	
7/23/96	2	North Side	Grand Island	2nd Lift	106.7	14.2%	90.7%	
7/23/96	3	North Side	Grand Island	3rd Lift	107.3	15.2%	91.2%	
7/24/96	1	North Side	Grand Island	1st Lift	107.9	13.8%	91.7%	
7/24/96	2	North Side	Grand Island	2nd Lift	110.5	13.6%	93.9%	
7/25/96	1	Northeast Corner	Grand Island	2nd Lift	123.6	10.8%	105.0%	
7/25/96	2	Northeast Corner	Grand Island	1st Lift	111.1	14.2%	94.4%	
7/25/96	3	Northeast Corner	Grand Island	2nd Lift	118.4	12.6%	100.6%	
7/25/96	4	Northeast Corner	Grand Island	3rd Lift	121.8	11.4%	103.5%	
7/26/96	1	Northeast Corner	Grand Island	1st Lift	115.2	12.9%	97.9%	
7/26/96	2	Northeast Corner	Grand Island	2nd Lift	119.3	12.2%	101.4%	
7/26/96	7	Northeast Corner	Grand Island	1st Lift	106.0	16.2%	90.1%	
7/26/96	8	Northeast Corner	Grand Island	2nd Lift	116.9	12.1%	99.3%	
7/29/96	2	North Side of Site	Grand Island	1st Lift	108.1	11.5%	91.8%	
7/29/96	3	North Side of Site	Grand Island	1st Lift	112.5	11.8%	95.6%	
7/29/96	4	North Side of Site	Grand Island	2nd Lift	107.1	12.7%	91.0%	
7/29/96	5	North Side of Site	Grand Island	2nd Lift	96.4	14.8%	81.9%	
7/29/96	6	Retest of No. 5	Grand Island	2nd Lift	108.6	12.8%	92.3%	
7/29/96	7	North Side of Site	Grand Island	3rd Lift	108.1	13.6%	91.8%	
7/29/96	8	North Side of Site	Grand Island	4th Lift	107.1	14.9%	91.0%	
7/30/96	1	North Side	Grand Island	1st Lift	106.6	15.8%	90.6%	
7/30/96	2	North Side	Grand Island	2nd Lift	110.6	13.9%	94.0%	
7/30/96	3	North Side	Grand Island	1st Lift	108.7	15.3%	92.4%	
7/30/96	4	North Side	Grand Island	2nd Lift	106.6	12.1%	90.6%	

Table 4.2-2, page 3 of 3

Summary of Soil Compaction Results
Perimeter Soils

102nd Street Landfill Site

Date	Test No.	Test Location	Material	Depth or Elevation	Dry Density(pcf)	Water Content(%)	% Proctor Density	Remarks
7/31/96	1	North Side of Site	Grand Island	1st Lift	107.8	15.0%	91.6%	
7/31/96	2	North Side of Site	Grand Island	1st Lift	110.9	15.0%	94.2%	
7/31/96	3	North Side of Site	Grand Island	2nd Lift	108.2	14.1%	91.9%	
7/31/96	4	North Side of Site	Grand Island	2nd Lift	107.8	14.6%	91.6%	
7/31/96	5	North Side of Site	Grand Island	3rd Lift	109.5	14.4%	93.0%	
7/31/96	6	North Side of Site	Grand Island	3rd Lift	109.0	14.9%	92.6%	
7/31/96	7	North Side of Site	Grand Island	4th Lift	110.8	13.7%	94.1%	
8/1/96	1	North Side of Site	Grand Island	1st Lift	107.5	15.8%	99.1%	
8/1/96	2	North Side of Site	Grand Island	2nd Lift	128.2	10.5%	118.2%	
8/1/96	4	North Side of Site	Grand Island	1st Lift	121.9	10.7%	112.4%	
8/1/96	5	North Side of Site	Grand Island	2nd Lift	119.0	10.4%	109.7%	
8/1/96	6	North Side of Site	Grand Island	3rd Lift	107.9	10.6%	99.4%	
8/1/96	7	North Side of Site	Grand Island	3rd Lift	118.2	10.9%	108.9%	
8/2/96	1	North Side of Site	Grand Island	1st Lift	115.6	12.1%	106.5%	
8/2/96	2	North Side of Site	Grand Island	1st Lift	121.5	10.3%	112.0%	
8/2/96	3	North Side of Site	Grand Island	2nd Lift	111.9	12.6%	103.1%	
8/2/96	4	North Side of Site	Grand Island	2nd Lift	116.4	12.0%	107.3%	
8/2/96	6	North Side of Site	Grand Island	3rd Lift	115.2	12.1%	106.2%	
8/2/96	7	North Side of Site	Grand Island	4th Lift	107.8	14.3%	99.4%	
8/5/96	1	North Side of Site	Grand Island	1st Lift	110.0	18.6%	101.4%	
8/5/96	2	North Side of Site	Grand Island	1st Lift	107.5	19.8%	99.1%	
8/5/96	4	North Side of Site	Grand Island	2nd Lift	110.4	14.1%	101.8%	
8/5/96	6	North Side of Site	Grand Island	3rd Lift	108.6	14.2%	100.1%	
8/5/96	7	North Side of Site	Grand Island	3rd Lift	108.1	15.3%	99.6%	
8/5/96	8	North Side of Site	Grand Island	4th Lift	107.5	14.5%	99.1%	
8/6/96	1	North Side of Site	Grand Island	1st Lift	107.1	17.8%	98.7%	
8/6/96	2	North Side of Site	Grand Island	1st Lift	108.6	13.9%	100.1%	
8/6/96	3	North Side of Site	Grand Island	2nd Lift	106.0	15.8%	97.7%	
8/6/96	7	North Side of Site	Grand Island	3rd Lift	107.2	14.3%	98.8%	
8/6/96	8	North Side of Site	Grand Island	4th Lift	106.0	15.0%	97.7%	
8/6/96	16	North Side of Site	Grand Island	5th Lift	108.1	14.3%	99.6%	
8/6/96	17	North Side of Site	Grand Island	3rd Lift	110.9	15.8%	102.2%	
8/23/96	1	East side	Love Canal	1st Lift	109.7	14.1%		
8/23/96	2	East side	Love Canal	1st Lift	113.4	13.0%		
8/23/96	5	East side	Love Canal	2nd Lift	108.1	16.2%		

Table 4.2-3

Summary of Soil Compaction Results
Dioxin Cell

102nd Street Landfill Site

Date	Test No.	Test Location	Material	Depth or Elevation	Dry Density(pcf)	Water Content(%)	% Proctor Density	Remarks
6/4/96	1	Bottom/West	Love Canal DCF	1st Lift	109.7	17.6%	96.7%	
6/4/96	2	North Side/West	Love Canal DCF	1st Lift	104.8	18.9%	92.3%	
6/4/96	3	North Side/East	Love Canal DCF	1st Lift	103.6	17.3%	91.3%	
6/4/96	4	Bottom/East	Love Canal DCF	1st Lift	113.1	17.9%	99.6%	
6/4/96	5	South Side/East	Love Canal DCF	1st Lift	104.0	18.3%	91.6%	
6/4/96	6	South Side/West	Love Canal DCF	1st Lift	104.7	18.8%	92.2%	
6/5/96	1	Bottom West Side	Love Canal DCF	1st Lift	115.2	15.6%	106.2%	
6/5/96	2	Bottom Center	Love Canal DCF	1st Lift	115.3	16.6%	106.3%	
6/5/96	3	Bottom East Side	Love Canal DCF	1st Lift	113.1	16.6%	104.2%	
6/5/96	4	South Berm/East Side	Love Canal DCF	1st Lift	109.7	16.7%	101.1%	
6/5/96	5	South Berm/West Side	Love Canal DCF	1st Lift	98.0	21.7%	90.3%	Regraded and compacted
6/5/96	6	Retest of No. 5 on 6/5/96	Love Canal DCF	-	111.3	16.1%	102.6%	Regraded and compacted
6/5/96	7	Retest of No. 6 on 6/5/97	Love Canal DCF	-	114.6	14.2%	105.6%	
6/5/96	8	South Berm/East Side	Love Canal DCF	2nd Lift	113.0	14.5%	104.1%	
6/5/96	9	South Berm/West Side	Love Canal DCF	2nd Lift	110.6	16.4%	101.9%	
6/6/96	1	North Berm/West Side	Love Canal DCF	1st Lift	121.6	15.2%	112.1%	
6/6/96	2	North Berm/East Side	Love Canal DCF	1st Lift	119.9	15.5%	110.5%	
6/6/96	3	North Berm/Middle	Love Canal DCF	1st Lift	104.2	15.3%	96.0%	
6/6/96	4	South Berm/West Side	Love Canal DCF	3rd Lift	108.6	15.4%	100.1%	
6/6/96	5	South Berm/Middle	Love Canal DCF	3rd Lift	111.0	17.1%	102.3%	
6/6/96	6	West Berm/North Side	Love Canal DCF	2nd Lift	108.7	18.2%	100.2%	
6/6/96	7	North Berm/West Side	Love Canal DCF	2nd Lift	109.4	15.6%	100.8%	
6/6/96	8	North Berm/East Side	Love Canal DCF	2nd Lift	109.9	16.0%	101.3%	
6/6/96	9	South Berm/West Side	Love Canal DCF	4th Lift	114.1	15.9%	105.2%	
6/6/96	10	South Berm/East Side	Love Canal DCF	4th Lift	110.4	17.5%	101.8%	
6/6/96	11	West Berm/South Side	Love Canal DCF	3rd Lift	112.9	15.0%	104.1%	
6/6/96	12	North Berm/West Side	Love Canal DCF	3rd Lift	101.4	16.4%	93.5%	
6/6/96	13	North Berm/East Side	Love Canal DCF	3rd Lift	105.9	15.6%	97.6%	
6/6/96	14	West Berm/Middle	Love Canal DCF	4th Lift	102.7	17.5%	94.7%	
6/6/96	15	South Berm/West Side	Love Canal DCF	5th Lift	112.3	15.1%	103.5%	
6/6/96	16	South Berm/East Side	Love Canal DCF	5th Lift	101.4	17.5%	93.5%	
6/6/96	17	South Berm/West Side	Love Canal DCF	6th Lift	113.5	15.0%	104.6%	
6/6/96	18	South Berm/East Side	Love Canal DCF	6th Lift	107.9	15.0%	99.4%	
6/6/96	19	West Berm/North Side	Love Canal DCF	5th Lift	112.7	15.5%	103.9%	
6/6/96	20	North Berm/West Side	Love Canal DCF	4th Lift	103.9	17.7%	95.8%	
6/6/96	21	North Berm/East Side	Love Canal DCF	4th Lift	104.3	18.4%	96.1%	
6/6/96	22	North Berm/East Side	Love Canal DCF	5th Lift	101.8	17.9%	93.8%	
6/6/96	23	North Berm/West Side	Love Canal DCF	5th Lift	103.2	17.1%	95.1%	
6/20/96	3	East Berm/Top	Love Canal DCF	Top Berm	110.1	16.3%	101.5%	
6/20/96	4	East Berm/Middle Lift	Love Canal DCF	Middle Berm	114.4	14.3%	105.4%	
8/2/96	12	Cell Cap, Top Center	Love Canal	1st Lift	111.5	14.6%	98.3%	

Table 4.2-4

Summary of Geotechnical Results
Bulkhead

102nd Street Landfill Site

Date	Sample No.	Borrow Source	Water Content	Atterburg Limits LL	PL	PI	Soil Classification	Gradation < 200 Sieve	Hydrometer	Standard Proctor	Permeability (cm/sec)
8/6/97	08066-1	Frontier Stone	17.7%	31	17	14	CL	88	35	114.5 pcf @ 16.0%	6.50E-08
8/9/97	08096-1	Frontier Stone	17.0%	24	16	8	CL	74	13	119.5 pcf @ 12.5%	2.00E-06
8/19/96	08196-1	Frontier Stone	17.5%	32	16	16	CL	78	28	117.0 pcf @ 14.0%	8.30E-08
8/22/96	08226-1	Frontier Stone	13.6%	27	18	9	CL	78	23	121.0 pcf @ 13.0%	2.00E-07
8/30/96	08306-2	Frontier Stone	19.6%	31	16	15	CL	83	29	117.0 pcf @ 14.5%	6.80E-08
9/6/96	09066-8	Frontier Stone	15.8%	29	16	13	CL	83	26	118.0 pcf @ 14.5%	9.90E-08
9/6/96	09066-9	Frontier Stone	15.6%	31	16	15	CL	83	28	116.0 pcf @ 15.0%	9.90E-08
9/26/96	09266-1	Frontier Stone	20.9%	33	17	16	CL	-	-	-	-
9/26/96	09266-2	Frontier Stone	19.3%	-	-	-	CL	-	-	-	-
9/26/96	09266-3	Frontier Stone	16.6%	-	-	-	CL	-	-	-	-
9/26/96	09266-4	Frontier Stone	21.5%	-	-	-	CL	-	-	-	-
9/26/96	09266-5	Frontier Stone	18.6%	-	-	-	CL	-	-	-	-
9/26/96	09266-6	Frontier Stone	17.7%	-	-	-	CL	-	-	-	-
9/26/96	09266-7	Frontier Stone	16.0%	-	-	-	CL	-	-	-	-
9/26/96	09266-8	Frontier Stone	16.6%	-	-	-	CL	-	-	-	-

Table 4.2-5, page 1 of 6

Summary of Soil Compaction Results
Bulkhead

102nd Street Landfill Site

Date	Test No.	Test Location	Material	Depth or Elevation	Dry Density(pcf)	Water Content(%)	% Proctor Density	Remarks
8/5/96	5	Cell 1	Frontier	2nd Lift	113.0	13.8%	98.7%	Torvane=1.13 ton/ft^2
8/5/96	9	Cell 1	Frontier	3rd Lift	115.0	13.9%	100.4%	Torvane=1.13 ton/ft^2
8/6/96	9	Cell 1	Frontier	1st Lift	113.0	15.5%	98.7%	Torvane=1.00 ton/ft^2
8/6/96	18	Cell 1	Frontier	2nd Lift	111.4	16.8%	97.3%	Torvane=1.00 ton/ft^2
8/7/96	1	Retest of No. 18, 8/6/96	Frontier	-	110.3	16.1%	96.3%	Torvane=1.05 ton/ft^2
8/7/96	12	Cell 1	Frontier	1st Lift	112.6	16.2%	98.3%	Torvane=1.20 ton/ft^2
8/7/96	21	Retest of No. 12	Frontier	1st Lift	111.5	14.1%	97.4%	Torvane=1.40 ton/ft^2
8/8/96	2	Cell 1	Frontier	1st Lift	111.8	14.4%	97.6%	Torvane=1.10 ton/ft^2
8/9/96	4	Cell 1	Frontier	1st Lift	109.8	14.6%	95.9%	Torvane=.97 ton/ft^2
8/9/96	5	Cell 1	Frontier	2nd Lift	106.2	14.7%	92.8%	Torvane=1.04 ton/ft^2
8/12/96	1	Cell 1	Frontier	Existing Lift	119.8	14.3%	104.6%	Torvane=.94 ton/ft^2
8/12/96	2	Cell 1	Frontier	1st Lift	109.2	14.6%	95.4%	Torvane=.90 ton/ft^2
8/12/96	15	Cell 1	Frontier	1st Lift	114.8	14.3%	100.3%	Torvane=1.01 ton/ft^2
8/12/96	16	Retest of No. 1 & 2	Frontier	-	109.9	14.4%	96.0%	Torvane=1.1 ton/ft^2
8/15/96	5	Cell 1	Frontier	2nd Lift	109.3	16.0%	95.5%	Torvane=1.20 ton/ft^2
8/16/96	5	Cell 1	Frontier	2nd Lift	110.1	14.7%	96.2%	Torvane=1.10 ton/ft^2
8/16/96	6	Cell 1	Frontier	3rd Lift	115.9	14.2%	101.2%	Torvane=1.10 ton/ft^2
8/16/96	10	Cell 1	Frontier	2nd Lift	125.2	14.8%	109.3%	Torvane=1.20 ton/ft^2
8/19/96	6	Cell 2	Frontier	1st Lift	120.3	15.3%	105.1%	Torvane=1.10 ton/ft^2
8/20/96	2	Cell 2	Frontier	1st Lift	118.4	14.1%	103.4%	Torvane=1.10 ton/ft^2
8/21/96	1	Cell 2	Frontier	1st Lift	118.7	13.5%	103.7%	
8/21/96	2	North of Test No.1	Frontier	1st Lift	115.8	12.3%	101.1%	
8/21/96	3	South of Test No.1	Frontier	1st Lift	118.9	13.1%	103.8%	
8/21/96	4	East of Test No. 1	Frontier	1st Lift	115.2	14.5%	100.6%	
8/21/96	5	West of Test No.1	Frontier	1st Lift	119.0	13.8%	103.9%	
8/21/96	6	Retest of No. 1	Frontier	1st Lift	118.2	14.2%	103.2%	Torvane=1.10 ton/ft^2
8/21/96	7	Cell 2	Frontier	1st Lift	116.4	14.5%	101.7%	Torvane=1.00 ton/ft^2
8/22/97	1	Cell 2	Frontier	1st Lift	113.1	14.8%	98.8%	Torvane=1.00 ton/ft^2
8/23/96	3	Cell 2	Frontier	1st Lift	114.4	14.2%	99.9%	Torvane=1.10 ton/ft^2
8/23/96	4	Cell 2	Frontier	1st Lift	117.7	14.7%	102.8%	Torvane=1.10 ton/ft^2
8/23/96	6	Cell 2	Frontier	2nd Lift	112.8	17.3%	98.5%	Torvane=1.00 ton/ft^2
8/26/96	11	Cell 2	Frontier	1st Lift	115.4	15.9%	100.8%	Torvane=1.20 ton/ft^2
8/28/96	1	Cell 2	Frontier	1st Lift	115.3	15.0%	100.7%	Torvane=1.30 ton/ft^2
8/28/96	2	Cell 2	Frontier	2nd Lift	110.7	14.9%	96.7%	Torvane=1.10 ton/ft^2
8/29/96	1	Cell 1	Frontier	1st Lift	109.3	15.4%	95.5%	Torvane=1.20 ton/ft^2
8/30/96	1	Cell 1	Frontier	1st Lift	110.7	15.7%	96.7%	Torvane=1.10 ton/ft^2
9/3/96	1	Cell 1	Frontier	1st Lift	109.4	16.1%	95.5%	Torvane=1.10 ton/ft^2
9/3/96	2	Cell 1	Frontier	2nd Lift	110.1	15.9%	96.2%	Torvane=1.01 ton/ft^2
9/4/97	1	Cell 1	Frontier	1st Lift	113.0	16.9%	98.7%	Torvane=1.00 ton/ft^2
9/5/97	1	Cell 1	Frontier	1st Lift	109.5	15.9%	95.6%	Torvane=1.10 ton/ft^2
9/6/96	1	Cell 1	Frontier	1st Lift	109.3	14.4%	95.5%	Torvane=1.20 ton/ft^2
9/6/96	2	Cell 1	Frontier	1st Lift	111.4	14.2%	97.3%	Torvane=1.10 ton/ft^2
9/10/96	1	Cell 1	Frontier	1st Lift	115.0	15.3%	100.4%	Torvane=1.10 ton/ft^2
9/11/96	1	Cell 1	Frontier	1st Lift	112.0	16.7%	97.8%	Torvane=1.03 ton/ft^2
9/16/96	1	Cell 1	Frontier	1st Lift	116.4	14.6%	101.7%	Torvane=1.30 ton/ft^2
9/16/96	2	Cell 1	Frontier	1st Lift	114.0	15.0%	99.6%	Torvane=1.50 ton/ft^2
9/17/96	1	Cell 1	Frontier	1st Lift	117.2	14.0%	102.4%	Torvane=1.20 ton/ft^2
9/18/96	1	Cell 1	Frontier	1st Lift	107.5	14.6%	93.9%	Torvane=1.03 ton/ft^2
9/18/96	2	Cell 1	Frontier	1st Lift	115.9	14.2%	101.2%	Torvane=1.20 ton/ft^2
9/18/96	3	Retest of No. 1	Frontier	1st Lift	111.5	15.1%	97.4%	Torvane=1.16 ton/ft^2

Table 4.2-5, page 2 of 6

Summary of Soil Compaction Results
Bulkhead

102nd Street Landfill Site

Date	Test No.	Test Location	Material	Depth or Elevation	Dry Density(pcf)	Water Content(%)	% Proctor Density	Remarks
9/18/96	4	Cell 1	Frontier	2nd Lift	114.7	15.9%	100.2%	Torvane=1.25 ton/ft^2
9/18/96	5	Cell 1	Frontier	2nd Lift	113.4	15.6%	99.0%	Torvane=1.10 ton/ft^2
9/18/96	6	Cell 1	Frontier	3rd Lift	116.4	14.9%	101.7%	Torvane=1.30 ton/ft^2
9/18/96	7	Cell 1	Frontier	4th Lift	110.5	14.8%	96.5%	Torvane=1.16 ton/ft^2
9/18/96	8	Cell 1	Frontier	3rd Lift	113.9	15.3%	99.5%	Torvane=1.25 ton/ft^2
9/19/96	1	Cell 1	Frontier	1st Lift	115.6	14.2%	101.0%	Torvane=1.10 ton/ft^2
9/19/96	2	Cell 1	Frontier	2nd Lift	108.8	14.3%	95.0%	Torvane=1.30 ton/ft^2
9/19/96	3	Cell 1	Frontier	3rd Lift	109.5	14.5%	95.6%	Torvane=1.10 ton/ft^2
9/20/96	1	Cell 1	Frontier	1st Lift	115.8	15.5%	101.1%	Torvane=1.00 ton/ft^2
9/20/96	2	Cell 1	Frontier	2nd Lift	111.7	14.8%	97.6%	Torvane=1.10 ton/ft^2
9/24/96	1	Cell 3	Frontier	2nd Lift	114.2	15.4%	99.7%	Torvane=1.02 ton/ft^2
9/24/96	2	Cell 3	Frontier	3rd Lift	104.4	16.2%	91.2%	
9/24/96	3	Retest of No. 2	Frontier	3rd Lift	115.9	14.9%	101.2%	Torvane=1.01 ton/ft^2
9/26/96	1	Cell 3	Frontier	2nd Lift	110.4	15.0%	96.4%	Torvane=1.05 ton/ft^2
9/26/96	2	Cell 3	Frontier	3rd Lift	115.2	16.0%	100.6%	Torvane=1.65 ton/ft^2
9/26/96	3	Cell 3	Frontier	2nd Lift	108.9	15.5%	95.1%	Torvane=1.21 ton/ft^2
9/26/96	4	Cell 3	Frontier	3rd Lift	109.2	16.9%	95.4%	Torvane=1.13 ton/ft^2
9/26/96	5	Cell 3	Frontier	3rd Lift	110.2	15.4%	96.2%	Torvane=1.10 ton/ft^2
9/26/96	6	Cell 3	Frontier	4th Lift	113.3	14.1%	99.0%	Torvane=1.10 ton/ft^2
9/27/96	1	Cell 3	Frontier	2nd Lift	108.8	16.2%	95.0%	Torvane=1.02 ton/ft^2
9/27/96	2	Cell 3	Frontier	5th Lift	104.6	17.0%	91.4%	
9/27/96	3	Retest of No. 2	Frontier	-	112.8	15.4%	98.5%	Torvane=1.05 ton/ft^2
9/27/96	4	Cell 3	Frontier	3rd Lift	113.4	15.6%	99.0%	Torvane=1.05 ton/ft^2
9/27/96	5	Cell 3	Frontier	4th Lift	112.0	16.3%	97.8%	Torvane=1.08 ton/ft^2
9/30/96	1	Cell 3	Frontier	5th Lift	110.1	17.2%	96.2%	Torvane=1.03 ton/ft^2
9/30/96	2	Cell 3	Frontier	6th Lift	109.2	17.1%	95.4%	Torvane=1.03 ton/ft^2
9/30/96	3	Cell 3	Frontier	4th Lift	112.0	16.6%	97.8%	Torvane=1.03 ton/ft^2
9/30/96	4	Cell 3	Frontier	2nd Lift	114.5	15.5%	100.0%	Torvane=.92ton/ft^2
9/30/96	5	Retest of No. 4	Frontier	-	114.6	16.4%	100.1%	Torvane=1.03 ton/ft^2
10/1/96	6	Cell 3	Frontier	2nd Lift	111.8	15.8%	97.6%	Torvane=1.10 ton/ft^2
10/1/96	10	Cell 3	Frontier	5th Lift	108.9	16.0%	95.1%	Torvane=1.10 ton/ft^2
10/1/96	11	Cell 3	Frontier	3rd Lift	107.5	15.6%	93.9%	
10/1/96	12	Retest of No. 11	Frontier	-	111.2	15.2%	97.1%	Torvane=1.00 ton/ft^2
10/1/96	13	Cell 3	Frontier	4th Lift	109.1	17.8%	95.3%	Torvane=1.10 ton/ft^2
10/2/96	10	Cell 3	Frontier	5th Lift	112.9	15.2%	98.6%	Torvane=1.10 ton/ft^2
10/3/96	1	Cell 3	Frontier	6th Lift	114.2	15.2%	99.7%	Torvane=1.00 ton/ft^2
10/3/96	2	Cell 3	Frontier	7th Lift	112.9	16.0%	98.6%	Torvane=1.00 ton/ft^2
10/3/96	3	Cell 3	Frontier	1st Lift	111.9	15.5%	97.7%	Torvane=1.40 ton/ft^2
10/3/96	4	Cell 3	Frontier	1st Lift	111.8	15.0%	97.6%	Torvane=1.10 ton/ft^2
10/3/96	5	Cell 3	Frontier	1st Lift	111.2	15.1%	97.1%	Torvane=1.10 ton/ft^2
10/3/96	6	Cell 3	Frontier	2nd Lift	109.2	16.4%	95.4%	Torvane=1.00 ton/ft^2
10/3/96	10	Cell 3	Frontier	3rd Lift	112.3	14.7%	98.1%	Torvane=1.00 ton/ft^2
10/3/96	11	Cell 3	Frontier	2nd Lift	109.1	14.3%	95.3%	Torvane=1.10 ton/ft^2
10/3/96	25	Cell 3	Frontier	3rd Lift	111.3	14.2%	97.2%	Torvane=1.10 ton/ft^2
10/3/96	31	Cell 3	Frontier	4th Lift	111.8	16.9%	97.6%	Torvane=1.00 ton/ft^2
10/3/96	32	Cell 3	Frontier	5th Lift	111.2	14.0%	97.1%	Torvane=1.10 ton/ft^2
10/4/96	1	Cell 3	Frontier	6th Lift	116.3	14.2%	101.6%	Torvane=1.00 ton/ft^2
10/5/96	2	Cell 3	Frontier	8th Lift	112.0	14.6%	97.8%	Torvane=1.10 ton/ft^2
10/5/96	3	Cell 3	Frontier	8th Lift	118.3	14.5%	103.3%	Torvane=1.10 ton/ft^2
10/5/96	6	Cell 3	Frontier	6th Lift	113.0	14.7%	98.7%	Torvane=1.20 ton/ft^2

Table 4.2-5, page 3 of 6

Summary of Soil Compaction Results
Bulkhead

102nd Street Landfill Site

Date	Test No.	Test Location	Material	Depth or Elevation	Dry Density(pcf)	Water Content(%)	% Proctor Density	Remarks
10/5/96	7	Cell 3	Frontier	9th Lift	111.9	14.2%	97.7%	Torvane=1.10 ton/ft^2
10/5/96	8	Cell 3	Frontier	9th Lift	109.0	14.9%	95.2%	Torvane=1.30 ton/ft^2
10/5/96	9	Cell 3	Frontier	7th Lift	110.9	14.5%	96.9%	Torvane=1.00 ton/ft^2
10/7/96	1	Cell 3	Frontier	8th Lift	110.8	14.3%	96.8%	Torvane=1.00 ton/ft^2
10/7/96	2	Cell 3	Frontier	8th Lift	109.1	14.5%	95.3%	Torvane=1.00 ton/ft^2
10/14/96	9	Cell 2	Frontier	Final Lift	112.9	14.7%	98.6%	Torvane=1.24 ton/ft^2
10/14/96	10	Cell 2	Frontier	Final Lift	116.3	14.2%	101.6%	Torvane=1.14 ton/ft^2
10/16/96	6	Cell 2	Frontier	Shim LIft	118.2	14.6%	103.2%	Torvane=1.20 ton/ft^2
10/16/96	7	Cell 2	Frontier	Shim LIft	109.3	14.1%	95.5%	Torvane=1.10 ton/ft^2
10/17/96	2	Cell 2	Frontier	Shim LIft	120.3	15.2%	105.1%	Torvane=1.30 ton/ft^2
11/1/96	1	Cells 2&3	Frontier	1st Lift	109.4	14.0%	95.5%	Torvane=1.18 ton/ft^2
11/1/96	2	Cells 2&3	Frontier	Slope	112.0	14.8%	97.8%	Torvane=138 ton/ft^2
11/1/96	3	Cells 2&3	Frontier	2nd Lift	111.1	14.6%	97.0%	Torvane=1.25 ton/ft^2
11/7/96	3	Cell 3	Frontier	1st Lift	1112.6	14.7%	971.7%	Torvane=1.20 ton/ft^2
11/7/96	5	Cell 3	Frontier	2nd Lift	115.9	14.2%	101.2%	Torvane=1.10 ton/ft^2
11/7/96	6	Cell 3	Frontier	3rd Lift	114.8	14.0%	100.3%	Torvane=1.20 ton/ft^2
11/7/96	7	Cell 3	Frontier	4th Lift	112.9	16.3%	98.6%	Torvane=1.30 ton/ft^2
11/7/96	8	Cell 3	Frontier	5th Lift	110.8	15.1%	96.8%	Torvane=1.10 ton/ft^2
11/7/96	10	Cell 3	Frontier	6th Lift	110.9	15.5%	96.9%	Torvane=1.40 ton/ft^2
11/7/96	11	Cell 3	Frontier	7th Lift	107.0	-	93.4%	
11/7/96	12	Retest of No. 11	Frontier	7th Lift	112.1	14.0%	97.9%	Torvane=1.20 ton/ft^2
11/11/96	1	Cell 3	Frontier	1st Lift	109.0	16.7%	95.2%	Torvane=1.10 ton/ft^2
11/11/96	2	Cell 3	Frontier	Final Lift	113.4	14.1%	99.0%	
12/6/96	9	Slurry Wall Station 42+50	Frontier	-	112.7	14.3%	98.4%	
12/6/96	17	Slurry Wall Station 40+00	Frontier	-	110.6	14.1%	96.6%	Torvane=1.10 ton/ft^2
12/9/96	14	Slurry Wall Station 31+50	Frontier	-	108.3	18.1%	94.6%	
12/10/96	1	Slurry Wall, near CO#3	Frontier	-	107.3	20.2%	93.7%	Area too wet
1/6/97	1	SW Corner of Site	Frontier	-	113.5	17.1%	99.1%	Torvane=.80 ton/ft^2
5/2/97	1	60' West of WW#1	Frontier	Surface	114.1	12.7%	99.7%	Torvane=1.30 ton/ft^2
5/2/97	2	140' West of WW#1	Frontier	Surface	115.3	13.6%	100.7%	Torvane=1.53 ton/ft^2
5/2/97	3	20' West of CO#3	Frontier	Surface	119.1	12.5%	104.0%	Torvane=2.10 ton/ft^2
5/2/97	4	180' East of CO#3	Frontier	Surface	117.3	13.0%	102.4%	Torvane=1.90 ton/ft^2
5/2/97	5	50' West of WW#1	Frontier	1' Below Surface	116.1	14.8%	101.4%	Torvane=1.55 ton/ft^2
5/2/97	6	140' East of WW#1	Frontier	1' Below Surface	111.4	15.0%	97.3%	Torvane=1.00 ton/ft^2
5/2/97	7	100' East of CO#3	Frontier	1' Below Surface	112.9	12.3%	98.6%	Torvane=1.28 ton/ft^2
5/2/97	8	50' West of WW#1	Frontier	-	119.4	12.5%	104.3%	Torvane=1.63 ton/ft^2
5/2/97	9	140' West of WW#1	Frontier	-	112.7	14.8%	98.4%	Torvane=1.35 ton/ft^2
5/2/97	10	100' East of CO#3	Frontier	-	111.7	12.9%	97.6%	Torvane=1.53 ton/ft^2
6/6/96	1	Near WW#4	Frontier	1st Lift	111.3	14.5%	97.2%	
6/6/96	9	Near WW#4	Frontier	2nd Lift	112.6	13.2%	98.3%	
6/6/96	14	Near WW#4	Frontier	3rd Lift	113.1	14.4%	98.8%	
6/12/97	1	WW#4 Area	Frontier	1st Lift	104.3	15.2%	91.1%	Torvane=1.30 ton/ft^2
6/12/97	2	WW#4 Area	Frontier	2nd Lift	106.6	17.1%	93.1%	Torvane=1.40 ton/ft^2
6/12/97	3	WW#4 Area	Frontier	1st Lift	112.7	14.5%	98.4%	Torvane=1.80 ton/ft^2
6/12/97	4	WW#4 Area	Frontier	2nd Lift	118.9	12.4%	103.8%	Torvane=2.00 ton/ft^2
6/12/97	5	WW#4 Area	Frontier	3rd Lift	109.1	17.8%	95.3%	Torvane=1.30 ton/ft^2
6/12/97	6	WW#4 Area	Frontier	4th Lift	110.5	13.3%	96.5%	Torvane=1.20 ton/ft^2
6/12/97	7	WW#4 Area	Frontier	5th Lift	110.9	13.6%	96.9%	Torvane=1.50 ton/ft^2
6/23/97	1	WW#4 Area	Frontier	1st Lift	109.6	14.8%	95.7%	Torvane=1.50 ton/ft^2
6/23/97	11	WW#4 Area	Frontier	2nd Lift	113.5	12.7%	99.1%	Torvane=2.30 ton/ft^2

Table 4.2-5, page 4 of 6

Summary of Soil Compaction Results
Bulkhead

102nd Street Landfill Site

Date	Test No.	Test Location	Material	Depth or Elevation	Dry Density(pcf)	Water Content(%)	% Proctor Density	Remarks
6/23/97	12	WW#4 Area	Frontier	3rd Lift	110.8	13.3%	96.8%	Torvane=1.70 ton/ft^2
6/26/97	1	WW#4 Area	Frontier	4th Lift	112.3	12.5%	98.1%	Torvane=2.10 ton/ft^2
6/27/97	7	near WW#4	Helmick Farm	1st Lift	108.9	15.0%	101.3%	Torvane=1.40 ton/ft^2
6/27/97	8	near WW#4	Helmick Farm	1st Lift	104.3	15.3%	97.0%	Torvane=1.50 ton/ft^2
6/27/97	9	near WW#4	Helmick Farm	1st Lift	102.1	17.3%	95.0%	Torvane=1.30 ton/ft^2
6/27/97	10	near WW#4	Helmick Farm	1st Lift	104.1	19.3%	96.8%	Torvane=1.30 ton/ft^2
6/27/97	14	near WW#2	Frontier	1st Lift	103.8	15.4%	90.7%	
6/27/97	15	Retest of No. 14	Frontier	1st Lift	110.7	15.2%	96.7%	Torvane=2.00 ton/ft^2
6/27/97	16	near WW#2	Frontier	2nd Lift	116.3	14.0%	101.6%	Torvane=1.70 ton/ft^2
6/27/97	17	near WW#4	Helmick Farm	2nd Lift	107.8	17.2%	100.3%	Torvane=1.60 ton/ft^2
6/27/97	18	near WW#4	Helmick Farm	2nd Lift	103.4	18.6%	96.2%	Torvane=1.60 ton/ft^2
6/30/97	1	near WW#2	Frontier	3rd Lift	115.3	14.6%	100.7%	Torvane=2.00 ton/ft^2
6/30/97	2	near WW#2	Frontier	4th Lift	115.4	13.5%	100.8%	
6/30/97	3	Retest of No. 2	Frontier	4th Lift	115.3	14.2%	100.7%	Torvane=1.50 ton/ft^2
6/30/97	8	near WW#2	Frontier	5th Lift	109.5	18.8%	95.6%	
6/30/97	9	Retest of No. 8	Frontier	5th Lift	110.0	17.8%	96.1%	Torvane=1.20 ton/ft^2
7/1/97	1	near WW#3	Frontier	3rd Lift	108.5	14.8%	94.8%	
7/1/97	2	Retest of No. 1	Frontier	3rd Lift	111.9	14.9%	97.7%	Torvane=1.90 ton/ft^2
7/1/97	9	near WW#3	Frontier	4th Lift	108.9	14.4%	95.1%	Torvane=1.30 ton/ft^2
7/1/97	10	near WW#3	Frontier	5th Lift	108.8	16.9%	95.0%	Torvane=1.30 ton/ft^2
7/2/97	1	near WW#3	Frontier	6th Lift	117.8	15.2%	102.9%	Torvane=2.1 ton/ft^2
7/2/97	4	near WW#3	Helmick Farm	1st Lift	105.2	19.7%	95.6%	Torvane=1.40 ton/ft^2
7/2/97	5	near WW#3	Helmick Farm	1st Lift	109.3	16.3%	99.4%	Torvane=1.50 ton/ft^2
7/2/97	9	near WW#2	Frontier	1st Lift	111.1	15.0%	97.0%	Torvane=1.80 ton/ft^2
7/2/97	10	near WW#3	Frontier	2nd Lift	110.7	14.5%	96.7%	Torvane=1.90 ton/ft^2
7/2/97	11	near WW#4	Frontier	3rd Lift	108.9	17.7%	95.1%	Torvane=1.10 ton/ft^2
7/2/97	12	near WW#5	Frontier	4th Lift	117.6	14.2%	102.7%	Torvane=1.30 ton/ft^2
7/2/97	13	near WW#6	Frontier	5th Lift	114.9	14.3%	100.3%	Torvane=1.40 ton/ft^2
7/2/97	14	near WW#7	Frontier	6th Lift	110.3	14.9%	96.3%	Torvane=1.50 ton/ft^2
7/10/97	1	near WW#2	Frontier	1st Lift	113.5	15.4%	99.1%	Torvane=1.90 ton/ft^2
7/10/97	2	near WW#4	Frontier	1st Lift	112.4	14.7%	98.2%	Torvane=1.90 ton/ft^2
7/10/97	3	near CO#6	Frontier	1st Lift	111.7	14.1%	97.6%	Torvane=2.10 ton/ft^2
7/10/97	4	near WW#2	Frontier	2nd Lift	115.8	14.3%	101.1%	Torvane=2.50 ton/ft^2
7/10/97	5	near WW#2	Frontier	3rd Lift	116.1	14.2%	101.4%	Torvane=2.00 ton/ft^2
7/10/97	6	near CO#6	Frontier	1st Lift	110.7	14.7%	96.7%	Torvane=2.00 ton/ft^2
7/10/97	7	near WW#2	Frontier	4th Lift	110.6	15.1%	96.6%	Torvane=2.20 ton/ft^2
7/10/97	8	near WW#2	Frontier	5th Lift	119.9	15.4%	104.7%	Torvane=1.10 ton/ft^2
7/11/97	5	near WW#1	Frontier	1st Lift	109.8	16.3%	95.9%	
7/11/97	6	near WW#2	Frontier	2nd Lift	116.7	12.6%	101.9%	
7/11/97	7	near WW#2	Frontier	2nd Lift	111.3	10.6%	97.2%	
7/11/97	8	Retest of No. 6	Frontier	1st Lift	119.8	13.5%	104.6%	Torvane=1.10 ton/ft^2
7/11/97	9	Retest of No. 7	Frontier	2nd Lift	109.9	16.9%	96.0%	Torvane=1.60 ton/ft^2
7/11/97	10	near WW#3	Frontier	3rd Lift	115.6	15.6%	101.0%	Torvane=2.10 ton/ft^2
7/11/97	11	near WW#4	Frontier	4th Lift	115.7	14.7%	101.0%	Torvane=1.27 ton/ft^2
7/14/97	2	near CO#6	Frontier	1st Lift	112.3	15.3%	98.1%	Torvane=1.60 ton/ft^2
7/14/97	3	near CO#5	Helmick Farm	1st Lift	106.3	16.7%	96.6%	Torvane=1.30 ton/ft^2
7/15/97	1	Near CO#5	Frontier	1st Lift	119.0	15.1%	103.9%	Torvane=2.00 ton/ft^2
7/15/97	2	Near CO#5	Frontier	2nd Lift	115.3	15.7%	100.7%	Torvane=2.10 ton/ft^2
7/15/97	3	Near CO#5	Frontier	1st Lift	110.8	14.7%	96.8%	Torvane=2.30 ton/ft^2
7/15/97	4	Near CO#6	Frontier	1st Lift	110.3	14.9%	96.3%	Torvane=2.50 ton/ft^2

Table 4.2-5, page 5 of 6

Summary of Soil Compaction Results
Bulkhead

102nd Street Landfill Site

Date	Test No.	Test Location	Material	Depth or Elevation	Dry Density(pcf)	Water Content(%)	% Proctor Density	Remarks
7/15/97	5	Near CO#6	Frontier	1st Lift	109.5	14.2%	95.6%	Torvane=1.80 ton/ft^2
7/15/97	6	Near CO#6	Frontier	1st Lift	111.3	16.7%	97.2%	Torvane=1.70 ton/ft^2
7/15/97	7	Near WW#4	Frontier	1st Lift	102.3	11.5%	89.3%	
7/15/97	8	Near CO#5	Frontier	2nd Lift	112.9	15.4%	98.6%	Torvane=1.50 ton/ft^2
7/15/97	9	Retest of No. 7	Frontier	1st Lift	110.4	14.2%	96.4%	Torvane=1.60 ton/ft^2
7/16/97	1	near WW#1	Frontier	1st Lift	111.4	14.4%	97.3%	Torvane=1.00 ton/ft^2
7/16/97	2	near CO#4	Frontier	1st Lift	114.5	14.7%	100.0%	Torvane=1.60 ton/ft^2
7/16/97	3	near CO#4	Frontier	1st Lift	113.2	11.5%	98.9%	
7/16/97	4	near CO#4	Frontier	2nd Lift	110.3	14.0%	96.3%	Torvane=2.20 ton/ft^2
7/16/97	5	near CO#4	Frontier	3rd Lift	112.3	15.3%	98.1%	Torvane=1.00 ton/ft^2
7/16/97	6	near CO#4	Frontier	4th Lift	115.6	14.7%	101.0%	Torvane=1.60 ton/ft^2
7/16/97	7	near CO#4	Frontier	2nd Lift	114.2	15.1%	99.7%	Torvane=1.80 ton/ft^2
7/16/97	8	Retest of No. 3	Frontier	1st Lift	118.2	14.2%	103.2%	Torvane=2.30 ton/ft^2
7/16/97	9	near CO#4	Frontier	3rd Lift	119.2	14.4%	104.1%	Torvane=2.10 ton/ft^2
7/16/97	10	near WW#1	Frontier	4th Lift	112.1	15.1%	97.9%	Torvane=1.80 ton/ft^2
7/16/97	12	near WW#1	Frontier	5th Lift	109.9	17.2%	96.0%	Torvane=1.20 ton/ft^2
7/17/97	1	near WW#1	Frontier	6th Lift	111.4	16.3%	97.3%	Torvane=1.30 ton/ft^2
7/17/97	2	near WW#1	Frontier	2nd Lift	114.5	15.3%	100.0%	Torvane=1.70 ton/ft^2
7/17/97	3	near WW#1	Frontier	1st Lift	111.9	14.1%	97.7%	Torvane=1.10 ton/ft^2
7/17/97	4	near WW#1	Frontier	1st Lift	114.5	14.7%	100.0%	Torvane=1.30 ton/ft^2
7/17/97	6	near WW#4	Frontier	1st Lift	114.4	14.5%	99.9%	Torvane=1.30 ton/ft^2
7/17/97	7	near WW#4	Frontier	1st Lift	116.6	14.6%	101.8%	Torvane=2.00 ton/ft^2
7/17/97	8	near WW#4	Frontier	1st Lift	110.3	15.3%	96.3%	Torvane=1.50 ton/ft^2
7/18/97	1	near CO#4	Frontier	1st Lift	109.0	14.4%	95.2%	Torvane=1.40 ton/ft^2
7/21/97	1	Bulkhead	Frontier	1st Lift	120.7	14.6%	105.4%	Torvane=1.70 ton/ft^2
7/21/97	2	Bulkhead	Frontier	2nd Lift	112.2	15.7%	98.0%	Torvane=1.50 ton/ft^2
7/21/97	25	near WW#3	Frontier	1st Lift	111.1	14.9%	97.0%	Torvane=1.70 ton/ft^2
7/21/97	26	near WW#3	Frontier	2nd Lift	112.1	15.9%	97.9%	Torvane=1.30 ton/ft^2
7/22/97	1	near WW#2	Frontier	1st Lift	116.4	14.6%	101.7%	Torvane=2.00 ton/ft^2
7/22/97	2	between CO-MH#5 and CO-MH#6	Frontier	1st Lift	111.6	14.1%	97.5%	Torvane=2.00 ton/ft^2
7/22/97	4	near WW#2	Frontier	2nd Lift	109.7	15.1%	95.8%	Torvane=1.30 ton/ft^2
7/22/97	9	near WW#2	Frontier	1st Lift	108.9	14.7%	95.1%	Torvane=1.30 ton/ft^2
7/22/97	11	near WW#2	Frontier	1st Lift	119.0	14.8%	103.9%	Torvane=1.80 ton/ft^2
7/22/97	12	near WW#2	Frontier	1st Lift	113.9	14.3%	99.5%	Torvane=1.30 ton/ft^2
7/23/97	2	near CO#6	Frontier	1st Lift	109.8	14.7%	95.9%	Torvane=1.20 ton/ft^2
7/23/97	3	near CO#6	Frontier	1st Lift	109.5	14.5%	95.6%	Torvane=1.30 ton/ft^2
7/23/97	4	near CO#6	Frontier	2nd Lift	113.7	14.9%	99.3%	Torvane=1.30 ton/ft^2
7/23/97	5	near CO#6	Frontier	2nd Lift	108.8	16.9%	95.0%	Torvane=1.20 ton/ft^2
7/23/97	15	near CO#5	Frontier	2nd Lift	116.8	14.6%	102.0%	Torvane=1.30 ton/ft^2
7/24/97	1	between WW#2 and CO-MH#5	Frontier	1st Lift	113.2	14.9%	98.9%	Torvane=2.20 ton/ft^2
7/24/97	2	near CO-MH#5	Frontier	1st Lift	112.6	15.1%	98.3%	Torvane=1.70 ton/ft^2
7/24/97	3	near CO-MH#5	Frontier	1st Lift	113.1	11.5%	98.8%	
7/24/97	4	Retest of No. 3	Frontier	1st Lift	109.2	15.0%	95.4%	Torvane=1.10 ton/ft^2
7/24/97	5	between WW#2 and CO-MH#5	Frontier	2nd Lift	109.6	12.2%	95.7%	
7/24/97	6	near CO-MH#5	Frontier	2nd Lift	118.2	11.6%	103.2%	
7/25/97	1	Retest of No. 5, 7/24/97	Frontier	2nd Lift	113.4	15.6%	99.0%	Torvane=1.50 ton/ft^2
7/25/97	2	Retest of No. 6, 7/24/98	Frontier	2nd Lift	118.4	15.2%	103.4%	Torvane=2.40 ton/ft^2
7/29/97	1	near CO-MH#6	Frontier	2nd Lift	109.9	15.5%	96.0%	Torvane=1.60 ton/ft^2
7/29/97	2	near CO-MH#6	Frontier	1st Lift	109.5	14.5%	95.6%	Torvane=2.10 ton/ft^2
7/29/97	3	near CO-MH#6	Frontier	1st Lift	108.9	14.4%	95.1%	Torvane=1.80 ton/ft^2

Table 4.2-5, page 6 of 6

Summary of Soil Compaction Results
Bulkhead

102nd Street Landfill Site

Date	Test No.	Test Location	Material	Depth or Elevation	Dry Density(pcf)	Water Content(%)	% Proctor Density	Remarks
7/30/97	6	Bulkhead	Frontier	1st Lift	111.9	14.5%	97.7%	Torvane=2.50 ton/ft^2
7/30/97	7	Bulkhead	Frontier	1st Lift	112.4	14.8%	98.2%	Torvane=2.50 ton/ft^2
8/4/97	1	near CO#3	Frontier	1st Lift	103.1	10.6%	90.0%	
8/4/97	2	near CO#3	Frontier	1st Lift	103.5	16.0%	90.4%	
8/4/97	3	near CO#3	Frontier	1st Lift	114.7	12.4%	100.2%	
8/4/97	4	near CO#3	Frontier	1st Lift	106.4	11.3%	92.9%	
8/5/97	1	near CO-MH#4	Frontier	1st Lift	109.9	17.2%	96.0%	Torvane=1.70 ton/ft^2
8/5/97	2	Retest of No. 4, 8/4/97	Frontier	1st Lift	113.2	15.0%	98.9%	Torvane=2.10 ton/ft^2
8/5/97	3	Retest of No. 3, 8/4/98	Frontier	1st Lift	110.3	15.5%	96.3%	Torvane=1.80 ton/ft^2
8/6/97	1	near WW#2	Frontier	1st Lift	106.1	11.7%	92.7%	
8/6/97	2	near WW#2	Frontier	1st Lift	111.0	8.9%	96.9%	
8/6/97	8	near WW#1	Frontier	1st Lift	109.4	14.4%	95.5%	Torvane=1.20 ton/ft^2
8/6/97	16	Retest of No. 1	Frontier	1st Lift	111.9	15.6%	97.7%	Torvane=1.50 ton/ft^2
8/6/97	17	Retest of No. 2	Frontier	1st Lift	110.6	16.0%	96.6%	Torvane=1.10 ton/ft^2
8/7/97	4	Bulkhead	Frontier	1st Lift	109.3	13.0%	95.5%	Torvane=1.10 ton/ft^2
8/7/97	5	Bulkhead	Frontier	1st Lift	110.6	17.7%	96.6%	Torvane=1.50 ton/ft^2
8/7/97	6	Retest of No. 1, 8/4/97	Frontier	1st Lift	111.5	14.2%	97.4%	Torvane=1.30 ton/ft^2
8/7/97	7	Retest of No. 2, 8/4/97	Frontier	1st Lift	113.4	15.2%	99.0%	Torvane=1.30 ton/ft^2
8/7/97	21	near WW#1	Frontier	1st Lift	113.3	14.8%	99.0%	Torvane=2.40 ton/ft^2
8/7/97	22	near WW#1	Frontier	1st Lift	110.7	16.5%	96.7%	Torvane=1.90 ton/ft^2
8/7/97	27	near WW#1	Frontier	1st Lift	114.2	14.2%	99.7%	Torvane=1.70 ton/ft^2
8/7/97	28	near WW#1	Frontier	1st Lift	112.2	15.4%	98.0%	Torvane=2.00 ton/ft^2
8/8/97	3	Retest of No. 7, 8/5/97	Summit Park	1st Lift	110.2	16.2%	102.0%	
8/8/97	4	Retest of No. 6, 8/5/97	Summit Park	1st Lift	109.3	15.8%	101.2%	
8/8/97	5	Retest of No. 5, 8/5/97	Summit Park	1st Lift	107.6	16.3%	99.6%	
8/8/97	6	Retest of No. 4, 8/5/97	Summit Park	1st Lift	101.3	16.5%	93.8%	
8/8/97	7	near CO-MH#4	Frontier	1st Lift	111.6	14.2%	97.5%	Torvane=1.70 ton/ft^2
8/11/97	5	near WW#1	Frontier	1st Lift	112.6	14.1%	98.3%	Torvane=1.40 ton/ft^2
8/14/97	8	near WW#1	Frontier	1st Lift	108.9	15.9%	95.1%	Torvane=1.60 ton/ft^2
8/15/97	1	near WW#1	Frontier	1st Lift	116.5	14.2%	101.7%	Torvane=1.70 ton/ft^2

Table 4.2-6

Summary of Soil Compaction Results
Bulkhead Granular Fill

102nd Street Landfill Site

Date	Test No.	Test Location	Material	Depth or Elevation	Dry Density(pcf)	Water Content(%	% Proctor Density	Remarks
9/4/97	1	Near WW#4	Sand Pit Road	1st Lift	109.1	8.0%	98.7%	
9/4/97	2	Near WW#4	Sand Pit Road	2nd Lift	110.8	4.1%	100.3%	
9/4/97	5	Retest of No. 1	Sand Pit Road	1st Lift	111.7	10.3%	101.1%	
9/4/97	6	Retest of No. 2	Sand Pit Road	2nd Lift	113.0	9.3%	102.3%	
9/5/97	1	Near WW#4	Sand Pit Road	1st Lift	109.8	11.6%	99.4%	
9/5/97	8	Near WW#4	Sand Pit Road	2nd Lift	108.5	14.0%	98.2%	
9/5/97	9	Near WW#4	Sand Pit Road	3rd Lift	109.4	11.4%	99.0%	
9/9/97	7	near WW#3	Sand Pit Road	1st Lift	114.7	11.7%	103.8%	
9/9/97	12	near WW#3	Sand Pit Road	1st Lift	107.2	12.5%	97.0%	
9/9/97	13	near WW#3	Sand Pit Road	1st Lift	105.9	15.7%	95.8%	
9/16/97	1	near WW#3	Sand Pit Road	3rd Lift	116.7	10.5%	100.6%	
9/16/97	2	near WW#3	Sand Pit Road	3rd Lift	118.7	8.1%	102.3%	
9/16/97	8	near WW#3	Sand Pit Road	1st Lift	107.4	5.0%	92.6%	
9/17/97	1	near WW#3	Sand Pit Road	3rd Lift	114.1	8.5%	98.4%	
9/17/97	2	near WW#3	Sand Pit Road	3rd Lift	106.2	10.9%	91.6%	
9/17/97	3	Retest of No. 2	Sand Pit Road	3rd Lift	109.8	10.2%	94.7%	
9/17/97	4	Retest of No. 2 and 3	Sand Pit Road	3rd Lift	114.2	11.4%	98.4%	
9/18/97	1	near CO#5	Sand Pit Road	1 st Lift	111.4	9.4%	96.0%	
9/18/97	2	near CO#5	Sand Pit Road	3rd Lift	115.4	8.5%	99.5%	
9/18/97	3	near CO#5	Sand Pit Road	3rd Lift	110.3	9.5%	95.1%	
9/19/97	12	Center of Site	Sand Pit Road	1 st Lift	114.4	10.5%	98.6%	
9/19/97	13	Center of Site	Sand Pit Road	3rd Lift	111.0	12.6%	95.7%	
9/23/97	1	near CO#4	Sand Pit Road	1 st Lift	104.7	16.3%	90.3%	
9/23/97	2	near CO#5	Sand Pit Road	1 st Lift	100.6	17.4%	86.7%	
9/23/97	3	near CO#6	Sand Pit Road	1 st Lift	114.4	10.7%	98.6%	
9/23/97	4	near CO#7	Sand Pit Road	1 st Lift	112.1	11.4%	96.6%	
10/2/97	1	Center of Site	Sand Pit Road	3rd Lift	111.2	6.2%	95.9%	
10/2/97	2	Center of Site	Sand Pit Road	3rd Lift	110.7	6.9%	95.4%	
10/3/97	1	Retest of No. 1. 10/2/97	Sand Pit Road	3rd Lift	113.7	10.5%	98.0%	
10/3/97	2	Retest of No. 2. 10/2/97	Sand Pit Road	3rd Lift	112.9	9.5%	97.3%	
10/3/97	3	Center of Site	Sand Pit Road	3rd Lift	108.9	14.0%	93.9%	
10/3/97	4	Retest of No. 3	Sand Pit Road	3rd Lift	110.4	13.8%	95.2%	
10/6/97	1	near WW#2	Sand Pit Road	1st Lift	111.0	8.0%	95.7%	
10/6/97	2	near WW#2	Sand Pit Road	2nd Lift	109.4	8.3%	94.3%	
10/6/97	3	near WW#2	Sand Pit Road	2nd Lift	112.0	11.1%	96.6%	
10/6/97	4	near WW#2	Sand Pit Road	3rd Lift	103.8	14.4%	89.5%	
10/6/97	5	near WW#2	Sand Pit Road	3rd Lift	111.2	12.0%	95.9%	
10/6/97	6	near WW#2	Sand Pit Road	4th Lift	110.9	13.4%	95.6%	
10/6/97	10	near WW#2	Sand Pit Road	1st Lift	103.4	10.8%	89.1%	
10/7/97	2	Retest of No. 10. 10/6/97	Sand Pit Road	1st Lift	110.3	9.6%	95.1%	
10/8/97	1	near WW#2	Sand Pit Road	2nd Lift	107.8	10.7%	92.9%	
10/8/97	2	near WW#2	Sand Pit Road	3rd Lift	106.8	12.6%	92.1%	
10/8/97	3	Retest of No. 1	Sand Pit Road	2nd Lift	111.2	8.7%	95.9%	
10/8/97	4	Retest of No. 2	Sand Pit Road	3rd Lift	112.3	8.5%	96.8%	
10/8/97	5	near WW#2	Sand Pit Road	4th Lift	111.0	8.6%	95.7%	
10/8/97	20	near CO#3	Sand Pit Road	1st Lift	105.1	8.2%	90.6%	
10/8/97	22	Retest of No. 20	Sand Pit Road	1st Lift	111.3	12.7%	95.9%	
10/8/97	23	near CO#3	Sand Pit Road	2nd Lift	110.2	11.6%	95.0%	
10/9/97	1	near WW#2	Sand Pit Road	3rd Lift	112.1	8.0%	96.6%	
10/9/97	2	near CO#3	Sand Pit Road	1st Lift	111.0	12.9%	95.7%	
10/9/97	7	near CO#3	Sand Pit Road	2nd Lift	101.3	12.0%	87.3%	
10/9/97	8	near CO#3	Sand Pit Road	2nd Lift	114.9	12.6%	99.1%	
10/9/97	9	near CO#3	Sand Pit Road	3rd Lift	108.3	12.4%	93.4%	
10/9/97	10	near CO#3	Sand Pit Road	3rd Lift	110.2	10.3%	95.0%	
10/10/97	1	between CO#3 and WW#1	Sand Pit Road	1st Lift	104.5	12.1%	90.1%	
10/10/97	4	between CO#3 and WW#1	Sand Pit Road	1st Lift	112.6	12.4%	97.1%	
10/10/97	5	between CO#3 and WW#1	Sand Pit Road	2nd Lift	111.7	8.2%	96.3%	
10/10/97	6	between CO#3 and WW#1	Sand Pit Road	2nd Lift	111.0	11.3%	95.7%	
10/10/97	7	between CO#3 and WW#1	Sand Pit Road	3rd Lift	115.3	9.1%	99.4%	
10/11/97	1	near WW#1	Sand Pit Road	1st Lift	110.5	9.9%	95.3%	
10/11/97	5	near WW#1	Sand Pit Road	2nd Lift	112.9	8.4%	97.3%	
10/11/97	6	near WW#1	Sand Pit Road	3rd Lift	115.6	11.0%	99.7%	

Table 4.2-7

Summary of Soil Compaction Results
Cofferdam, Subbase Stone, Swales, and Access Road Stone
102nd Street Landfill Site

Date	Test No.	Test Location	Material	Depth or Elevation	Dry Density(pcf)	Water Content(%)	% Proctor Density	Remarks
7/2/96	3	Cofferdam	Frontier	-	114.1	12.8%	99.7%	
7/5/96	5	Cofferdam	Frontier	Final Lift	111.8	13.3%	97.6%	
12/4/96	1	Buffalo Avenue Subbase, 200' East of Middle Gate	2" R.O.C.	1st List	136.7	6.7%	97.3%	
12/4/96	2	Buffalo Avenue Subbase, 200' West of Middle Gate	2" R.O.C.	1st List	137.7	7.4%	98.0%	
12/4/96	3	Buffalo Avenue Subbase, 350' West of Middle Gate	2" R.O.C.	1st List	131.4	6.8%	93.5%	
7/7/97	8	East Swale Underdrain, Olin Side	Helmick Farm	1st Lift	100.1	16.7%	91.0%	
7/7/97	9	East Swale Underdrain, Olin Side	Helmick Farm	1st Lift	102.6	17.3%	93.3%	
10/31/97	1	Access Road Stone	No.2 Crusher Run	1st Lift	116.5	2.1%	82.9%	
10/31/97	2	Access Road Stone	No.2 Crusher Run	1st Lift	117.6	2.2%	83.7%	
10/31/97	3	Access Road Stone	No.2 Crusher Run	1st Lift	120.3	2.6%	85.6%	
10/31/97	4	Access Road Stone	No.2 Crusher Run	1st Lift	127.3	2.3%	90.6%	
10/31/97	5	Access Road Stone	No.2 Crusher Run	1st Lift	117.8	1.9%	83.8%	
10/31/97	6	Access Road Stone	No.2 Crusher Run	1st Lift	123.1	2.7%	87.6%	
10/31/97	7	Access Road Stone	No.2 Crusher Run	1st Lift	122.7	2.7%	87.3%	
10/31/97	8	Access Road Stone	No.2 Crusher Run	1st Lift	126.4	3.4%	90.0%	
10/31/97	9	Access Road Stone	No.2 Crusher Run	1st Lift	135.8	3.2%	96.7%	
10/31/97	10	Access Road Stone	No.2 Crusher Run	1st Lift	126.9	4.6%	90.3%	
10/31/97	11	Access Road Stone	No.2 Crusher Run	1st Lift	134.7	4.0%	95.9%	
10/31/97	12	Access Road Stone	No.2 Crusher Run	1st Lift	126.4	1.7%	90.0%	
10/31/97	13	Access Road Stone	No.2 Crusher Run	1st Lift	127.5	2.8%	90.7%	

Table 4.3-1, page 1 of 18

Summary of Water Treatment System Analytical Results
July 1996

102nd Street Landfill Site

Compound	July 15-16, 1996 Influent	Lead Carbon	Effluent	23-Jul-96 Influent	Lead Carbon	Effluent	30-Jul-96 Influent	Lead Carbon	Effluent
Benzene	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	ND	ND	ND	17 ug/l	ND	ND	ND	ND	ND
2- Monochlorotoluene	ND	ND	ND	ND	ND	ND	ND	ND	ND
4- Monochlorotoluene	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3- Trichlorobenzene	ND	NS	ND	ND	ND	ND	ND	ND	ND
1,2,4- Trichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3,4- Tetraclorobenzene	ND	NS	ND	ND	ND	ND	ND	ND	ND
1,2,3,5- Tetraclorobenzene	ND	NS	ND	ND	ND	ND	ND	ND	ND
Hexachlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND
alpha Hexachlorocyclohexane	ND	NS	ND	1.7 ug/l	ND	ND	3.2 ug/l	ND	ND
beta Hexachlorocyclohexane	ND	NS	ND	.67 ug/l	ND	ND	1.5 ug/l	ND	ND
gamma Hexachlorocyclohexane	ND	NS	ND	.54 ug/l	ND	ND	.58 ug/l	ND	ND
delta Hexachlorocyclohexane	ND	NS	ND	4.8 ug/l	ND	ND	5.3 ug/l	ND	ND
2,5- Dichloroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND
3,4- Dichloroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND
2- Chlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND
4- Chlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4- Dichlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,5- Dichlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4,5- Trichlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4,6- Trichlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND
2- Chlorobenzoic Acid	ND	ND	ND	ND	ND	ND	ND	ND	ND
3- Chlorobenzoic Acid	ND	ND	ND	ND	ND	ND	ND	ND	ND
4- Chlorobenzoic Acid	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trans-1,2- Dichloroethene	ND	ND	ND	ND	ND	ND	ND	10 ug/l	ND
Trichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4- Dimethylphenol	ND	ND	ND	ND	ND	ND	ND	ND	ND
Pentachlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND

Table 4.3-1, page 2 of 18

Summary of Water Treatment System Analytical Results
July 1996

102nd Street Landfill Site

Compound	July 15-16, 1996 Influent	Lead Carbon	Effluent	23-Jul-96 Influent	Lead Carbon	Effluent	30-Jul-96 Influent	Lead Carbon	Effluent
di-n-Butylphthalate	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aniline	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Disulfide	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Suspended Solids	63 mg/l	NS	6.7 mg/l	NS	NS	4 mg/l	NS	NS	2.3 ug/l
Total Recoverable Phenolics	.01 mg/l	NS	ND	NS	NS	ND	NS	NS	ND
Total Antimony	ND	NS	ND	NS	NS	ND	NS	NS	NS
Total Arsenic	ND	NS	ND	NS	NS	ND	NS	NS	ND
Total Cadmium	ND	NS	ND	NS	NS	.006 mg/l	NS	NS	NS
Total Chromium	ND	NS	ND	NS	NS	ND	NS	NS	NS
Total Copper	ND	NS	.1 mg/l	NS	NS	ND	NS	NS	NS
Total Lead	ND	NS	ND	NS	NS	ND	NS	NS	NS
Total Mercury	ND	NS	ND	NS	NS	ND	NS	NS	ND
Total Nickel	ND	NS	ND	NS	NS	ND	NS	NS	NS
Total Thallium	ND	NS	ND	NS	NS	ND	NS	NS	NS
Total Zinc	.13 mg/l	NS	.056 mg/l	NS	NS	ND	NS	NS	NS

Table 4.3-1, page 3 of 18

Summary of Water Treatment System Analytical Results
August 1996

102nd Street Landfill Site

Compound	8-Aug-96			13-Aug-96			20-Aug-96			27-Aug-96		
	Influent	Lead Carbon	Effluent	Influent	Lead Carbon	Effluent	Influent	Lead Carbon	Effluent	Influent	Lead Carbon	Effluent
Benzene	ND	ND	ND	ND	ND	ND	58 ug/l	ND	ND	ND	ND	ND
Toluene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	ND	ND	ND	ND	ND	ND	51 ug/l	ND	ND	ND	ND	ND
2- Monochlorotoluene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4- Monochlorotoluene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3- Trichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4- Trichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3,4- Tetraclorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3,5- Tetraclorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
alpha Hexachlorocyclohexane	18 ug/l	ND	ND	.64 ug/l	ND	ND	.66 ug/l	ND	ND	.41 ug/l	ND	ND
beta Hexachlorocyclohexane	9.9 ug/l	ND	ND	.50 ug/l	ND	ND	.67 ug/l	ND	ND	.30 ug/l	ND	ND
gamma Hexachlorocyclohexane	2.6 ug/l	ND	ND	.12 ug/l	ND	ND	.10 ug/l	ND	ND	.65 ug/l	ND	ND
delta Hexachlorocyclohexane	25 ug/l	ND	ND	.96 ug/l	ND	ND	.66 ug/l	ND	ND	.10 ug/l	ND	ND
2,5- Dichloroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
3,4- Dichloroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2- Chlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4- Chlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4- Dichlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,5- Dichlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4,5- Trichlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4,6- Trichlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2- Chlorobenzoic Acid	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
3- Chlorobenzoic Acid	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4- Chlorobenzoic Acid	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trans-1,2- Dichloroethene	ND	13 ug/l	ND	ND	12 ug/l	ND	16 ug/l	13 ug/l	ND	ND	13 ug/l	ND
Trichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	11 ug/l	ND
2,4- Dimethylphenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Pentachlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	ND	ND	ND	ND	ND	ND	7.3 ug/l	ND	ND	ND	ND	ND
di-n-Butylphthalate	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Table 4.3-1, page 4 of 18

Summary of Water Treatment System Analytical Results
August 1996

102nd Street Landfill Site

Compound	8-Aug-96 Influent	8-Aug-96 Lead Carbon	8-Aug-96 Effluent	13-Aug-96 Influent	13-Aug-96 Lead Carbon	13-Aug-96 Effluent	20-Aug-96 Influent	20-Aug-96 Lead Carbon	20-Aug-96 Effluent	27-Aug-96 Influent	27-Aug-96 Lead Carbon	27-Aug-96 Effluent
Aniline	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Disulfide	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Suspended Solids	NS	NS	2.0 mg/l	NS	NS	2.3 mg/l	NS	NS	8.5 mg/l	NS	NS	10 mg/l
Total Recoverable Phenolics	NS	NS	ND	NS	NS	ND	NS	NS	ND	NS	NS	ND
Total Antimony	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	ND
Total Arsenic	NS	NS	ND	NS	NS	ND	NS	NS	ND	NS	NS	ND
Total Cadmium	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	ND
Total Chromium	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	ND
Total Copper	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	ND
Total Lead	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	ND
Total Mercury	NS	NS	ND	NS	NS	ND	NS	NS	ND	NS	NS	ND
Total Nickel	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	ND
Total Thallium	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	ND
Total Zinc	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	ND

Table 4.3-1, page 5 of 18

Summary of Water Treatment System Analytical Results
September 1996

102nd Street Landfill Site

Compound	3-Sep-96			10-Sep-96			17-Sep-96			24-Sep-96		
	Influent	Lead Carbon	Effluent	Influent	Lead Carbon	Effluent	Influent	Lead Carbon	Effluent	Influent	Lead Carbon	Effluent
Benzene	26 ug/l	ND	ND	18 ug/l	ND	ND	ND	ND	ND	11 ug/l	ND	ND
Toluene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2- Monochlorotoluene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4- Monochlorotoluene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3- Trichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4- Trichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3,4- Tetraclorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3,5- Tetraclorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
alpha Hexachlorocyclohexane	.19 ug/l	ND	ND	ND	ND	1.8 ug/l	.28 ug/l	ND	ND	8.8 ug/l	ND	ND
beta Hexachlorocyclohexane	.21 ug/l	ND	ND	ND	ND	.98 ug/l	.09 ug/l	ND	ND	2.0 ug/l	ND	ND
gamma Hexachlorocyclohexane	ND	ND	ND	ND	ND	.24 ug/l	.07 ug/l	ND	ND	3.6 ug/l	ND	ND
delta Hexachlorocyclohexane	.32 ug/l	ND	ND	ND	ND	2.4 ug/l	.21 ug/l	ND	ND	15 ug/l	ND	ND
2,5- Dichloroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
3,4- Dichloroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2- Chlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4- Chlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4- Dichlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,5- Dichlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4,5- Trichlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4,6- Trichlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2- Chlorobenzoic Acid	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
3- Chlorobenzoic Acid	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4- Chlorobenzoic Acid	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trans-1,2- Dichloroethene	ND	14 ug/l	ND	ND	11 ug/l	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	ND	13 ug/l	ND	ND	ND	ND	ND	12 ug/l	ND	ND	ND	ND
2,4- Dimethylphenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Pentachlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
di-n-Butylphthalate	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Table 4.3-1, page 6 of 18

Summary of Water Treatment System Analytical Results
September 1996

102nd Street Landfill Site

Compound	3-Sep-96 Influent	3-Sep-96 Lead Carbon	3-Sep-96 Effluent	10-Sep-96 Influent	10-Sep-96 Lead Carbon	10-Sep-96 Effluent	17-Sep-96 Influent	17-Sep-96 Lead Carbon	17-Sep-96 Effluent	24-Sep-96 Influent	24-Sep-96 Lead Carbon	24-Sep-96 Effluent
Aniline	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Disulfide	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Suspended Solids	NS	NS	23 mg/l	NS	NS	11 mg/l	NS	NS	4.0 mg/l	NS	NS	ND
Total Recoverable Phenolics	NS	NS	ND	NS	NS	.005 mg/l	NS	NS	ND	NS	NS	ND
Total Antimony	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Total Arsenic	NS	NS	ND	NS	NS	ND	NS	NS	ND	NS	NS	ND
Total Cadmium	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Total Chromium	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Total Copper	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Total Lead	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Total Mercury	NS	NS	ND	NS	NS	ND	NS	NS	ND	NS	NS	ND
Total Nickel	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Total Thallium	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Total Zinc	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

Table 4.3-1, page 7 of 18

Summary of Water Treatment System Analytical Results
October 1996

102nd Street Landfill Site

Compound	1-Oct-96 Influent	1-Oct-96 Lead Carbon	1-Oct-96 Effluent	8-Oct-96 Influent	8-Oct-96 Lead Carbon	8-Oct-96 Effluent	15-Oct-96 Influent	15-Oct-96 Lead Carbon	15-Oct-96 Effluent	22-Oct-96 Influent	22-Oct-96 Lead Carbon	22-Oct-96 Effluent	29-Oct-96 Influent	29-Oct-96 Lead Carbon	29-Oct-96 Effluent
Benzene	33 ug/l	ND	ND	ND	ND	ND	ND	ND	ND	76 ug/l	ND	ND	11 ug/l	ND	ND
Toluene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	120 ug/l	ND	ND	20 ug/l	ND	ND	ND	ND	ND	10 ug/l	ND	ND	ND	ND	ND
2- Monochlorotoluene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4- Monochlorotoluene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	14 ug/l	ND	ND	5.8 ug/l	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	12 ug/l	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3- Trichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4- Trichlorobenzene	30 ug/l	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3,4- Tetraclorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3,5- Tetraclorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
alpha Hexachlorocyclohexane	91 ug/l	1.0 ug/l	ND	140 ug/l	14 ug/l	.06 ug/l	58 ug/l	8.5 ug/l	ND	18 ug/l	1.8 ug/l	ND	29 ug/l	3.4 ug/l	ND
beta Hexachlorocyclohexane	13 ug/l	.09 ug/l	ND	14 ug/l	1.9 ug/l	ND	7.4 ug/l	1.2 ug/l	ND	2.9 ug/l	.30 ug/l	ND	4.9 ug/l	.51 ug/l	ND
gamma Hexachlorocyclohexane	67 ug/l	.22 ug/l	ND	49 ug/l	4.6 ug/l	ND	12 ug/l	2.2 ug/l	ND	2.1 ug/l	.16 ug/l	ND	2.1 ug/l	.27 ug/l	ND
delta Hexachlorocyclohexane	110 ug/l	.47 ug/l	ND	73 ug/l	8.9 ug/l	ND	19 ug/l	4.0 ug/l	ND	4.0 ug/l	.34 ug/l	ND	3.7 ug/l	.44 ug/l	ND
2,5- Dichloroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
3,4- Dichloroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2- Chlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4- Chlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4- Dichlorophenol	7.6 ug/l	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,5- Dichlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4,5- Trichlorophenol	19 ug/l	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4,6- Trichlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2- Chlorobenzoic Acid	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
3- Chlorobenzoic Acid	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4- Chlorobenzoic Acid	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	ND	ND	ND	ND	ND	ND	24 ug/l	23 ug/l	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trans-1,2- Dichloroethene	ND	11 ug/l	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	ND	ND	ND	ND	11 ug/l	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4- Dimethylphenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Pentachlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	55 ug/l	ND	ND	12 ug/l	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
di-n-Butylphthalate	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Table 4.3-1, page 8 of 18

Summary of Water Treatment System Analytical Results
October 1996

102nd Street Landfill Site

Compound	1-Oct-96 Influent	1-Oct-96 Lead Carbon	1-Oct-96 Effluent	8-Oct-96 Influent	8-Oct-96 Lead Carbon	8-Oct-96 Effluent	15-Oct-96 Influent	15-Oct-96 Lead Carbon	15-Oct-96 Effluent	22-Oct-96 Influent	22-Oct-96 Lead Carbon	22-Oct-96 Effluent	29-Oct-96 Influent	29-Oct-96 Lead Carbon	29-Oct-96 Effluent
Aniline	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	7.6 ug/l	ND	ND
Carbon Disulfide	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Suspended Solids	NS	NS	2.0 mg/l	NS	NS	3.3 mg/l	NS	NS	2.3 mg/l	NS	NS	5.0 mg/l	NS	NS	7.0 ug/l
Total Recoverable Phenolics	NS	NS	ND	NS	NS	ND	NS	NS	ND	NS	NS	ND	NS	NS	ND
Total Antimony	NS	NS	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Total Arsenic	NS	NS	ND	NS	NS	ND	NS	NS	ND	NS	NS	.007 mg/l	NS	NS	NS
Total Cadmium	NS	NS	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Total Chromium	NS	NS	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Total Copper	NS	NS	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Total Lead	NS	NS	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Total Mercury	NS	NS	ND	NS	NS	ND	NS	NS	ND	NS	NS	NS	NS	NS	NS
Total Nickel	NS	NS	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Total Thallium	NS	NS	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Total Zinc	NS	NS	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

Table 4.3-1, page 9 of 18

Summary of Water Treatment System Analytical Results
November 1996 – March 1997

102nd Street Landfill Site

Compound	5-Nov-96 Influent	5-Nov-96 Lead Carbon	5-Nov-96 Effluent	6-Dec-96 Influent	6-Dec-96 Lead Carbon	6-Dec-96 Effluent	6-Jan-97 Influent	6-Jan-97 Lead Carbon	6-Jan-97 Effluent	12-Feb-97 Influent	12-Feb-97 Lead Carbon	12-Feb-97 Effluent	28-Feb-97 Effluent	18-Mar-97 Effluent	25-Mar-97 Effluent
Benzene	85 ug/l	22 ug/l	ND	150 ug/l	22 ug/l	ND	ND	ND	ND	30 ug/l	18 ug/l	ND	ND	ND	ND
Toluene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	11 ug/l	ND	ND	400 ug/l	33 ug/l	ND	ND	ND	ND	30 ug/l	15 ug/l	ND	ND	ND	ND
2- Monochlorotoluene	ND	ND	ND	8 ug/l	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4- Monochlorotoluene	ND	ND	ND	7.8 ug/l	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	ND	ND	ND	11 ug/l	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3- Trichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4- Trichlorobenzene	ND	ND	ND	6.6 ug/l	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3,4- Tetraclorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3,5- Tetraclorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
alpha Hexachlorocyclohexane	5.3 ug/l	1.6 ug/l	.05 ug/l	5.3 ug/l	1.93 ug/l	ND	11 ug/l	5.7 ug/l	.58 ug/l	.67 ug/l	.39 ug/l	.21 ug/l	ND	ND	ND
beta Hexachlorocyclohexane	1.8 ug/l	.54 ug/l	.14 ug/l	ND	ND	ND	8.4 ug/l	4.4 ug/l	.44 ug/l	1.6 ug/l	.89 ug/l	.33 ug/l	ND	ND	ND
gamma Hexachlorocyclohexane	.58 ug/l	.18 ug/l	ND	ND	ND	ND	4.4 ug/l	2.2 ug/l	.19 ug/l	.25 ug/l	.18 ug/l	.13 ug/l	ND	ND	ND
delta Hexachlorocyclohexane	1.4 ug/l	.40 ug/l	ND	1.4 ug/l	.37 ug/l	ND	.43 ug/l	3.5 ug/l	ND	.16 ug/l	.15 ug/l	.12 ug/l	ND	ND	ND
2,5- Dichloroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
3,4- Dichloroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2- Chlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4- Chlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4- Dichlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,5- Dichlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4,5- Trichlorophenol	ND	ND	ND	ND	ND	ND	23 ug/l	12 ug/l	ND	ND	ND	ND	ND	ND	ND
2,4,6- Trichlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2- Chlorobenzoic Acid	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
3- Chlorobenzoic Acid	ND	ND	ND	32 ug/l	14 ug/l	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4- Chlorobenzoic Acid	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trans-1,2- Dichloroethene	ND	ND	ND	13 ug/l	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4- Dimethylphenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Pentachlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
di-n-Butylphthalate	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Table 4.3-1, page 10 of 18

Summary of Water Treatment System Analytical Results
November 1996 – March 1997

102nd Street Landfill Site

Compound	5-Nov-96 Influent	5-Nov-96 Lead Carbon	5-Nov-96 Effluent	6-Dec-96 Influent	6-Dec-96 Lead Carbon	6-Dec-96 Effluent	6-Jan-97 Influent	6-Jan-97 Lead Carbon	6-Jan-97 Effluent	12-Feb-97 Influent	12-Feb-97 Lead Carbon	12-Feb-97 Effluent	28-Feb-97 Effluent	18-Mar-97 Effluent	25-Mar-97 Effluent
Aniline	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Disulfide	ND	ND	ND	28 ug/l	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Suspended Solids	NS	NS	10 mg/l	20 mg/l	NS	41 mg/l	NS	NS	1.7 mg/l	NS	NS	3.0 mg/l	55 mg/l	1.0 mg/l	ND
Total Recoverable Phenolics	NS	NS	ND	.11 mg/l	NS	.03 mg/l	NS	NS	.007 mg/l	NS	NS	ND	ND	ND	ND
Total Antimony	NS	NS	NS	ND	NS	ND	NS	NS	ND	NS	NS	ND	ND	ND	ND
Total Arsenic	NS	NS	ND	.005 mg/l	NS	ND	NS	NS	ND	NS	NS	ND	ND	ND	ND
Total Cadmium	NS	NS	NS	ND	NS	ND	NS	NS	ND	NS	NS	ND	ND	ND	ND
Total Chromium	NS	NS	NS	ND	NS	ND	NS	NS	.12 mg/l	NS	NS	.21 mg/l	.08 mg/l	.10 mg/l	.11 mg/l
Total Copper	NS	NS	NS	.03 mg/l	NS	.01 mg/l	NS	NS	.03 mg/l	NS	NS	ND	.01 mg/l	ND	ND
Total Lead	NS	NS	NS	ND	NS	ND	NS	NS	ND	NS	NS	ND	ND	ND	ND
Total Mercury	NS	NS	ND	ND	NS	ND	NS	NS	ND	NS	NS	ND	ND	ND	ND
Total Nickel	NS	NS	NS	ND	NS	ND	NS	NS	ND	NS	NS	ND	ND	ND	ND
Total Thallium	NS	NS	NS	ND	NS	ND	NS	NS	ND	NS	NS	ND	ND	ND	ND
Total Zinc	NS	NS	NS	.08 mg/l	NS	.04 mg/l	NS	NS	ND	NS	NS	ND	.03 mg/l	.03 mg/l	ND

Table 4.3-1, page 11 of 18

Summary of Water Treatment System Analytical Results
April 1997

102nd Street Landfill Site

Compound	1-Apr-97 Influent	1-Apr-97 Lead Carbon	1-Apr-97 Effluent	8-Apr-97 Effluent	15-Apr-97 Effluent	23-Apr-97 Influent	23-Apr-97 Lead Carbon	23-Apr-97 Effluent	30-Apr-97 Effluent
Benzene	ND	ND	ND	ND	ND	370 ug/l	390 ug/l	ND	ND
Toluene	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	16 ug/l	ND	ND	ND	ND	650 ug/l	650 ug/l	ND	ND
2- Monochlorotoluene	ND	ND	ND	ND	ND	ND	ND	ND	ND
4- Monochlorotoluene	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3- Trichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4- Trichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3,4- Tetraclorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3,5- Tetraclorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND
alpha Hexachlorocyclohexane	.62 ug/l	.24 ug/l	ND	ND	ND	9.3 ug/l	ND	.26 ug/l	ND
beta Hexachlorocyclohexane	.86 ug/l	ND	ND	ND	ND	8.0 ug/l	ND	.46 ug/l	ND
gamma Hexachlorocyclohexane	.32 ug/l	ND	ND	ND	ND	8.2 ug/l	28 ug/l	ND	ND
delta Hexachlorocyclohexane	.34 ug/l	.17 ug/l	ND	ND	ND	ND	ND	ND	ND
2,5- Dichloroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND
3,4- Dichloroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND
2- Chlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND
4- Chlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4- Dichlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,5- Dichlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4,5- Trichlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4,6- Trichlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND
2- Chlorobenzoic Acid	ND	ND	ND	ND	ND	ND	ND	ND	ND
3- Chlorobenzoic Acid	ND	ND	ND	ND	ND	ND	ND	ND	ND
4- Chlorobenzoic Acid	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trans-1,2- Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4- Dimethylphenol	ND	ND	ND	ND	ND	ND	ND	ND	ND
Pentachlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND
di-n-Butylphthalate	ND	ND	ND	ND	ND	ND	ND	ND	ND

Table 4.3-1, page 12 of 18

Summary of Water Treatment System Analytical Results
April 1997

102nd Street Landfill Site

Compound	1-Apr-97 Influent	1-Apr-97 Lead Carbon	1-Apr-97 Effluent	8-Apr-97 Effluent	15-Apr-97 Effluent	23-Apr-97 Influent	23-Apr-97 Lead Carbon	23-Apr-97 Effluent	30-Apr-97 Effluent
Aniline	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Disulfide	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Suspended Solids	NS	NS	4.7 mg/l	21 mg/l	3.3 mg/l	ND	ND	2.7 mg/l	11 mg/l
Total Recoverable Phenolics	NS	NS	ND	ND	ND	.04 mg/l	.05 mg/l	ND	ND
Total Antimony	NS	NS	ND	ND	ND	ND	ND	ND	.10 mg/l
Total Arsenic	NS	NS	ND	ND	ND	.007 mg/l	ND	ND	ND
Total Cadmium	NS	NS	ND	ND	ND	.014 mg/l	ND	ND	ND
Total Chromium	NS	NS	.13 mg/l	.06 mg/l	.03 mg/l	.01 mg/l	.01 mg/l	.02 mg/l	ND
Total Copper	NS	NS	ND	ND	ND	ND	.04 mg/l	.01 mg/l	ND
Total Lead	NS	NS	ND	ND	ND	ND	ND	ND	ND
Total Mercury	NS	NS	ND	ND	ND	.0005 mg/l	.0005 mg/l	ND	ND
Total Nickel	NS	NS	ND	ND	.03 mg/l	ND	ND	ND	ND
Total Thallium	NS	NS	ND	ND	ND	ND	ND	ND	ND
Total Zinc	NS	NS	.19 mg/l	ND	ND	.02 mg/l	.05 mg/l	ND	ND

Table 4.3-1, page 13 of 18

Summary of Water Treatment System Analytical Results
May 1997 – June 1997

102nd Street Landfill Site

Compound	7-May-97 Influent	7-May-97 Lead Carbon	7-May-97 Effluent	14-May-97 Effluent	22-May-97 Effluent	30-May-97 Effluent	6-Jun-97 Influent	6-Jun-97 Lead Carbon	6-Jun-97 Effluent	13-Jun-97 Effluent	20-Jun-97 Effluent	27-Jun-97 Effluent
Benzene	ND	ND	ND	ND	ND	ND	2700 ug/l	ND	ND	ND	ND	ND
Toluene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	ND	12 ug/l	ND	ND	ND	ND	5300 ug/l	ND	ND	ND	ND	ND
2- Monochlorotoluene	ND	ND	ND	ND	ND	ND	43 ug/l	ND	ND	ND	ND	ND
4- Monochlorotoluene	ND	ND	ND	ND	ND	ND	24 ug/l	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	ND	ND	ND	ND	ND	ND	130 ug/l	21 ug/l	ND	ND	ND	ND
1,4-Dichlorobenzene	ND	ND	ND	ND	ND	ND	320 ug/l	12 ug/l	ND	ND	ND	ND
1,2,3- Trichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4- Trichlorobenzene	ND	ND	ND	ND	ND	ND	135 ug/l	20 ug/l	ND	ND	ND	ND
1,2,3,4- Tetraclorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3,5- Tetraclorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
alpha Hexachlorocyclohexane	30 ug/l	17 ug/l	.09 ug/l	.35 ug/l	ND	ND	15 ug/l	6.2 ug/l	ND	ND	ND	ND
beta Hexachlorocyclohexane	41 ug/l	20 ug/l	ND	.15 ug/l	ND	ND	5.1 ug/l	1.4 ug/l	ND	ND	ND	ND
gamma Hexachlorocyclohexane	15 ug/l	10 ug/l	ND	.10 ug/l	ND	ND	14 ug/l	4.4 ug/l	ND	ND	ND	ND
delta Hexachlorocyclohexane	55 ug/l	27 ug/l	.22 ug/l	.31 ug/l	ND	ND	27 ug/l	9.1 ug/l	.11 ug/l	ND	ND	ND
2,5- Dichloroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
3,4- Dichloroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2- Chlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4- Chlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4- Dichlorophenol	ND	ND	ND	ND	ND	ND	23 ug/l	ND	ND	ND	ND	ND
2,5- Dichlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4,5- Trichlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4,6- Trichlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2- Chlorobenzoic Acid	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
3- Chlorobenzoic Acid	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4- Chlorobenzoic Acid	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trans-1,2- Dichloroethene	ND	ND	ND	ND	ND	ND	34 ug/l	ND	ND	ND	ND	ND
Trichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4- Dimethylphenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Pentachlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	ND	ND	ND	ND	ND	ND	420 ug/l	60 ug/l	ND	ND	ND	ND
di-n-Butylphthalate	ND	ND	13 ug/l	ND	ND	ND	ND	ND	ND	ND	ND	ND

Table 4.3-1, page 14 of 18

Summary of Water Treatment System Analytical Results
May 1997 – June 1997

102nd Street Landfill Site

Compound	7-May-97 Influent	7-May-97 Lead Carbon	7-May-97 Effluent	14-May-97 Effluent	22-May-97 Effluent	30-May-97 Effluent	6-Jun-97 Influent	6-Jun-97 Lead Carbon	6-Jun-97 Effluent	13-Jun-97 Effluent	20-Jun-97 Effluent	27-Jun-97 Effluent
Aniline	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Disulfide	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Suspended Solids	NS	NS	4.7 mg/l	10 mg/l	3.3 mg/l	7.0 mg/l	NS	NS	5.7 mg/l	14 mg/l	2.7 mg/l	6.3 mg/l
Total Recoverable Phenolics	NS	NS	ND	.005 mg/l	ND	.008 mg/l	NS	NS	.005 mg/l	.008 mg/l	ND	.006 mg/l
Total Antimony	NS	NS	ND	ND	ND	ND	NS	NS	ND	ND	ND	ND
Total Arsenic	NS	NS	ND	ND	ND	ND	NS	NS	ND	ND	ND	ND
Total Cadmium	NS	NS	ND	ND	ND	ND	NS	NS	.007 mg/l	ND	ND	ND
Total Chromium	NS	NS	ND	ND	.01 mg/l	ND	NS	NS	ND	ND	ND	ND
Total Copper	NS	NS	ND	ND	ND	ND	NS	NS	ND	ND	ND	ND
Total Lead	NS	NS	ND	ND	ND	ND	NS	NS	ND	ND	ND	ND
Total Mercury	NS	NS	ND	ND	ND	ND	NS	NS	ND	ND	ND	ND
Total Nickel	NS	NS	ND	ND	ND	.02 mg/l	NS	NS	ND	ND	ND	ND
Total Thallium	NS	NS	ND	ND	ND	ND	NS	NS	ND	ND	ND	ND
Total Zinc	NS	NS	ND	.02 mg/l	ND	ND	NS	NS	ND	ND	ND	.03 mg/l

Table 4.3-1, page 15 of 18

Summary of Water Treatment System Analytical Results
July 1997 – August 1997

102nd Street Landfill Site

Compound	8-Jul-97 Influent	8-Jul-97 Lead Carbon	8-Jul-97 Effluent	12-Aug-97 Influent	12-Aug-97 Lead Carbon	12-Aug-97 Effluent	19-Aug-97 Effluent	26-Aug-97 Effluent
Benzene	ND	ND	ND	1600 ug/l	ND	1400 ug/l	ND	ND
Toluene	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	350 ug/l	ND	ND	2600 ug/l	ND	2200 ug/l	ND	ND
2- Monochlorotoluene	ND	ND	ND	ND	ND	ND	ND	ND
4- Monochlorotoluene	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	11 ug/l	ND	ND	ND	ND	31 ug/l	ND	ND
1,4-Dichlorobenzene	28 ug/l	ND	ND	65 ug/l	ND	97 ug/l	ND	ND
1,2,3- Trichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4- Trichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3,4- Tetraclorobenzene	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3,5- Tetraclorobenzene	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND
alpha Hexachlorocyclohexane	18 ug/l	.59 ug/l	ND	3.7 ug/l	.54 ug/l	3.61 ug/l	ND	.004 ug/l
beta Hexachlorocyclohexane	13 ug/l	.44 ug/l	ND	.80 ug/l	.07 ug/l	.75 ug/l	ND	ND
gamma Hexachlorocyclohexane	8.6 ug/l	.21 ug/l	ND	.32 ug/l	.10 ug/l	.30 ug/l	ND	ND
delta Hexachlorocyclohexane	9.7 ug/l	.29 ug/l	ND	11.4 ug/l	.37 ug/l	10.3 ug/l	ND	ND
2,5- Dichloroaniline	ND	ND	ND	ND	ND	ND	ND	ND
3,4- Dichloroaniline	NS	ND	ND	ND	ND	ND	ND	ND
2- Chlorophenol	26 ug/l	ND	ND	ND	ND	22 ug/l	ND	ND
4- Chlorophenol	ND	ND	ND	ND	ND	ND	ND	ND
2,4- Dichlorophenol	ND	ND	ND	ND	ND	ND	ND	ND
2,5- Dichlorophenol	ND	ND	ND	ND	ND	ND	ND	ND
2,4,5- Trichlorophenol	ND	ND	ND	ND	ND	ND	ND	ND
2,4,6- Trichlorophenol	ND	ND	ND	ND	ND	ND	ND	ND
2- Chlorobenzoic Acid	ND	ND	ND	ND	ND	ND	ND	ND
3- Chlorobenzoic Acid	ND	ND	ND	ND	ND	ND	ND	ND
4- Chlorobenzoic Acid	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	ND	ND	ND	ND	ND	ND	ND	ND
Trans-1,2- Dichloroethene	15 ug/l	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	ND	ND	ND	ND	ND	ND	ND	ND
2,4- Dimethylphenol	ND	ND	ND	ND	ND	ND	ND	ND
Pentachlorophenol	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	39 ug/l	ND	ND	79 ug/l	ND	116 ug/l	ND	ND
di-n-Butylphthalate	ND	ND	ND	ND	ND	ND	ND	ND

Table 4.3-1, page 16 of 18

Summary of Water Treatment System Analytical Results
July 1997 – August 1997

102nd Street Landfill Site

Compound	8-Jul-97 Influent	8-Jul-97 Lead Carbon	8-Jul-97 Effluent	12-Aug-97 Influent	12-Aug-97 Lead Carbon	12-Aug-97 Effluent	19-Aug-97 Effluent	26-Aug-97 Effluent
Aniline	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Disulfide	ND	ND	ND	ND	ND	ND	ND	ND
Total Suspended Solids	NS	NS	4.0 mg/l	NS	NS	101 mg/l	43 mg/l	21 mg/l
Total Recoverable Phenolics	NS	NS	.005 mg/l	NS	NS	.046 mg/l	ND	ND
Total Antimony	NS	NS	ND	NS	NS	ND	ND	ND
Total Arsenic	NS	NS	ND	NS	NS	ND	ND	ND
Total Cadmium	NS	NS	ND	NS	NS	ND	ND	.019 mg/l
Total Chromium	NS	NS	ND	NS	NS	ND	ND	ND
Total Copper	NS	NS	ND	NS	NS	ND	ND	ND
Total Lead	NS	NS	ND	NS	NS	ND	ND	ND
Total Mercury	NS	NS	ND	NS	NS	ND	ND	ND
Total Nickel	NS	NS	ND	NS	NS	ND	ND	ND
Total Thallium	NS	NS	ND	NS	NS	.33 mg/l	ND	ND
Total Zinc	NS	NS	ND	NS	NS	.02 mg/l	ND	ND

Table 4.3-1, page 17 of 18

Summary of Water Treatment System Analytical Results
September 1997 – November 1997

102nd Street Landfill Site

Compound	2-Sep-97	9-Sep-97			16-Sep-97	23-Sep-97	16-Oct-97			23-Oct-97	30-Oct-97	6-Nov-97	18-Nov-97		
			Lead					Lead						Lead	
	Effluent	Influent	Carbon	Effluent	Effluent	Effluent	Influent	Carbon	Effluent	Effluent	Effluent	Effluent	Influent	Carbon	Effluent
Benzene	ND	ND	ND	ND	ND	ND	1100 ug/l	ND	ND	ND	ND	ND	470 ug/l	ND	ND
Toluene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	ND	640 ug/l	18 ug/l	ND	ND	ND	1900 ug/l	ND	ND	ND	ND	ND	1500 ug/l	ND	ND
2- Monochlorotoluene	ND	24 ug/l	ND	ND	ND	ND	10 ug/l	ND	ND	ND	ND	ND	16 ug/l	ND	ND
4- Monochlorotoluene	ND	17 ug/l	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	24 ug/l	ND	ND
1,2-Dichlorobenzene	ND	36 ug/l	ND	ND	ND	ND	43 ug/l	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	ND	104 ug/l	ND	ND	ND	ND	160 ug/l	ND	ND	ND	ND	ND	160 ug/l	ND	ND
1,2,3- Trichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4- Trichlorobenzene	ND	33 ug/l	ND	ND	ND	ND	23 ug/l	ND	ND	ND	ND	ND	24 ug/l	ND	ND
1,2,3,4- Tetraclorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3,5- Tetraclorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
alpha Hexachlorocyclohexane	ND	18.6 ug/l	.291 ug/l	ND	ND	ND	2.1 ug/l	ND	.005 ug/l	.004 ug/l	.005 ug/l	.003 ug/l	4.2 ug/l	.002 ug/l	.006 ug/l
beta Hexachlorocyclohexane	ND	2.88 ug/l	.057 ug/l	ND	ND	ND	.20 ug/l	ND	ND	ND	ND	ND	ND	ND	ND
gamma Hexachlorocyclohexane	ND	1.60 ug.l	.050 ug/l	ND	ND	ND	.14 ug/l	ND	.002 ug/l	.001 ug/l	.002 ug/l	ND	.48 ug/l	ND	ND
delta Hexachlorocyclohexane	ND	15.5 ug/l	.372 ug/l	ND	ND	ND	5.2 ug/l	ND	ND	.004 ug/l	.003 ug/l	ND	12 ug/l	.003 ug/l	0.007
2,5- Dichloroaniline	ND	ND	ND	ND	ND	ND	73 ug/l	ND	ND	ND	ND	ND	150 ug/l	ND	ND
3,4- Dichloroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2- Chlorophenol	ND	ND	ND	ND	ND	ND	26 ug/l	ND	ND	ND	ND	ND	23 ug/l	ND	ND
4- Chlorophenol	ND	ND	ND	ND	ND	ND	54 ug/l	ND	ND	ND	ND	ND	41 ug/l	ND	ND
2,4- Dichlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	46 ug/l	ND	ND
2,5- Dichlorophenol	ND	ND	ND	ND	ND	ND	14 ug/l	ND	ND	ND	ND	ND	46 ug/l	ND	ND
2,4,5- Trichlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4,6- Trichlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2- Chlorobenzoic Acid	ND	ND	ND	ND	ND	ND	79 ug/l	ND	ND	ND	ND	ND	110 ug/l	ND	ND
3- Chlorobenzoic Acid	ND	ND	ND	ND	ND	ND	160 ug/l	ND	ND	ND	ND	ND	64 ug/l	ND	ND
4- Chlorobenzoic Acid	ND	ND	ND	ND	ND	ND	160 ug/l	ND	ND	ND	ND	ND	42 ug/l	ND	ND
Chloroform	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trans-1,2- Dichloroethene	ND	21 ug/l	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4- Dimethylphenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Pentachlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	ND	104 ug/l	ND	ND	ND	ND	230 ug/l	ND	ND	ND	ND	ND	220 ug/l	ND	ND
di-n-Butylphthalate	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Table 4.3-1, page 18 of 18

Summary of Water Treatment System Analytical Results
September 1997 – November 1997

102nd Street Landfill Site

Compound	2-Sep-97	9-Sep-97			16-Sep-97	23-Sep-97	16-Oct-97			23-Oct-97	30-Oct-97	6-Nov-97	18-Nov-97		
	Effluent	Influent	Lead Carbon	Effluent	Effluent	Effluent	Influent	Lead Carbon	Effluent	Effluent	Effluent	Effluent	Influent	Lead Carbon	Effluent
Aniline	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	19 ug/l	ND	ND
Carbon Disulfide	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Suspended Solids	56 mg/l	NS	NS	28 mg/l	16 mg/l	ND	NS	NS	93 mg/l	64 mg/l	51 mg/l	63 mg/l	NS	NS	43 mg/l
Total Recoverable Phenolics	ND	NS	NS	ND	ND	ND	NS	NS	ND	ND	ND	ND	NS	NS	ND
Total Antimony	ND	NS	NS	ND	ND	ND	NS	NS	ND	ND	ND	ND	NS	NS	ND
Total Arsenic	ND	NS	NS	ND	ND	ND	NS	NS	ND	ND	ND	ND	NS	NS	ND
Total Cadmium	ND	NS	NS	ND	ND	ND	NS	NS	ND	ND	ND	ND	NS	NS	ND
Total Chromium	ND	NS	NS	ND	ND	ND	NS	NS	ND	ND	ND	ND	NS	NS	ND
Total Copper	ND	NS	NS	ND	ND	ND	NS	NS	ND	ND	ND	ND	NS	NS	ND
Total Lead	ND	NS	NS	ND	ND	ND	NS	NS	ND	.006 mg/l	.012 mg/l	ND	NS	NS	.013 mg/l
Total Mercury	ND	NS	NS	ND	ND	ND	NS	NS	ND	ND	ND	ND	NS	NS	ND
Total Nickel	ND	NS	NS	.05 mg/l	ND	ND	NS	NS	ND	ND	ND	ND	NS	NS	ND
Total Thallium	ND	NS	NS	ND	ND	ND	NS	NS	ND	ND	ND	ND	NS	NS	ND
Total Zinc	ND	NS	NS	ND	.07 mg/l	ND	NS	NS	ND	ND	ND	ND	NS	NS	.069 mg/l

Table 4.4-1, page 1 of 3

Summary of Slurry Wall Field Tests
Batch Plant Slurry and In-trench Slurry
102nd Street Landfill Site

Date	Station	Batch Slurry (1 per 50 LF)				In-trench Slurry(1 per 50LF)			
		Time	Density	Viscosity	Filtrate	Time	Density	Viscosity	Filtrate
8/26/96	250	14:10	64.0	31	-	15:58	-	34	-
8/26/96	250	14:25	-	32	-	16:04	64.0	-	-
8/26/96	250	15:05	-	-	15.0	16:50	-	-	18.5
8/27/96	270	11:56	64.0	65	16.5	11:37	64.0	43	18.0
8/27/96	300	15:49	64.0	43	18.0	15:53	66.0	47	20.0
8/28/96	340	7:45	64.0	45	15.5	-	-	-	-
8/28/96	340	10:49	64.3	45	18.0	-	-	-	-
8/28/96	340	10:54	64.3	-	-	-	-	-	-
8/28/96	350	-	-	-	-	9:17	67.5	46	16.0
8/28/96	400	-	-	-	-	11:30	67.0	43	18.5
8/28/96	450	-	-	-	-	14:00	69.5	43	15.5
8/28/96	470	15:45	64.3	40	17.5	15:30	69.5	43	15.5
8/29/96	500	8:15	64.5	40	19.5	9:15	66.5	43	14.5
8/29/96	550	13.:15	60.0	32	-	11:05	67.0	42	14.5
8/29/96	550	15:30	63.0	37	-	-	-	-	-
8/29/96	550	15:45	65.0	60	13.5	-	-	-	-
8/29/96	600	16:50	64.5	58	14.0	13:50	64.3	40	14.5
8/30/96	650	8:30	64.5	49	15.5	8:59	65.0	44	16.0
8/30/96	700	10:00	65.0	47	14.0	10:00	69.0	44	14.5
8/30/96	750	10:30	66.0	41	16.0	10:30	68.0	43	16.0
8/30/96	800	12:30	69.0	50	14.5	12:30	70.0	50	14.0
8/30/96	850	14:10	65.0	41	17.0	14:10	71.0	45	14.5
9/4/96	900	10:20	64.5	40	12.5	9:07	65.0	48	13.5
9/4/96	950	11:10	65.0	42	16.0	10:46	70.0	59	18.0
9/4/96	1000	13:10	66.7	40	15.0	11:15	72.0	62	16.0
9/4/96	1050	13:51	71.0	54	17.0	13:20	72.0	53	10.5
9/4/96	1100	14:15	65.0	42	12.5	13:30	72.0	65	17.0
9/4/96	1150	15:47	67.0	41	14.0	14:20	72.0	64	20.0
9/4/96	1200	16:09	64.0	41	16.0	15:59	70.0	60	15.0
9/4/96	1250	-	-	-	-	16:40	77.0	63	14.0
9/5/96	1250	8:45	66.0	42	11.0	-	-	-	-
9/5/96	1300	9:36	65.0	47	14.5	9:15	67.0	48	14.0
9/5/96	1350	10:42	67.0	46	13.5	8:36	73.0	51	16.0
9/5/96	1400	10:59	67.0	45	14.0	8:45	73.0	51	15.5
9/5/96	1450	13:58	65.0	45	15.5	14:00	75.0	53	12.0
9/5/96	1500	15:00	66.5	40	15.0	15:00	74.2	62	15.0
9/5/96	1540	-	-	-	-	15:49	73.5	51	15.5
9/6/96	1550	9:08	64.5	40	15.5	-	-	-	-
9/6/96	1600	9:10	65.0	41	16.0	9:40	68.0	40	17.0
9/6/96	1650	13:04	67.0	50	12.0	10:50	66.0	42	17.0
9/6/96	1700	13:30	65.0	42	16.5	13:32	70.0	41	21.0
9/6/96	1750	14:45	65.0	40	18.0	14:47	70.5	44	17.0
9/6/96	1800	16:30	64.0	40	18.0	15:55	71.0	47	16.5
9/9/96	1830	-	-	-	-	10:15	70.5	50	16.0
9/9/96	1850	14:43	65.0	42	15.5	13:50	71.0	51	16.0
9/9/96	1900	-	-	-	-	14:47	73.0	51	16.5
9/10/96	2000	10:40	65.5	49	12.5	9:35	72.0	52	17.0
9/10/96	2050	12:00	65.0	50	12.0	12:10	74.0	65	18.5
9/10/96	2100	13:13	66.0	41	16.0	13:20	75.0	67	20.0
9/10/96	2150	4:05	64.5	55	16.0	16:14	73.0	64	17.5
9/11//96	2200	8:01	64.5	41	15.5	8:06	72.0	78	18.0
9/11//96	2250	12:50	66.0	42	15.0	10:22	71.0	100	17.5

Table 4.4-1, page 2 of 3

Summary of Slurry Wall Field Tests
Batch Plant Slurry and In-trench Slurry

102nd Street Landfill Site

Date	Station	Batch Slurry (1 per 50 LF)				In-trench Slurry(1 per 50LF)			
		Time	Density	Viscosity	Filtrate	Time	Density	Viscosity	Filtrate
9/11//96	2300	12:53	65.5	41	14.0	11:00	73.5	82	18.5
9/11//96	2350	14:10	66.0	65	13.5	14:15	69.0	58	16.0
9/11//96	2400	15:39	64.5	42	16.5	15:31	70.5	56	15.5
9/12/96	2450	9:00	64.5	46	15.0	9:08	72.5	54	18.5
9/12/96	2500	13:01	65.0	40	16.5	13:07	72.0	55	19.0
9/12/96	2550	-	-	-	-	14:25	71.0	50	-
10/15/96	2600	13:12	65.0	42	16.5	16:15	67.0	47	17.0
10/16/96	2650	8:33	64.5	72	11.5	8:45	72.0	68	18.0
10/17/96	2700	9:20	66.0	45	14.0	8:01	84.0	49	17.0
10/17/96	2750	11:00	65.0	43	16.0	10:15	84.5	58	17.5
10/17/96	2800	13:02	65.0	49	16.0	12:57	83.0	92	18.0
10/17/96	2850	14:10	64.5	40	15.5	15:48	83.0	102	18.0
10/18/96	2900	9:15	65.0	41	14.0	9:05	80.0	50	19.0
10/18/96	2950	10:22	65.0	42	14.5	10:12	78.0	52	18.0
10/18/96	3000	15:34	64.5	45	14.0	13:50	79.0	47	18.5
10/22/96	3050	-	-	-	-	14:47	71.5	39	-
10/23/96	3050	11:35	66.0	75	14.5	10:22	74.0	41	19.0
10/23/96	3100	13:05	65.0	72	13.0	13:20	73.5	40	18.0
10/23/96	3150	15:30	66.0	68	13.0	15:58	80.0	48	18.0
10/24/96	3200	16:01	65.5	85	12.0	15:42	80.0	47	17.5
10/25/96	3250	10:17	65.0	44	13.0	10:09	81.5	49	17.5
10/25/96	3300	13:04	65.5	89	12.5	12:42	81.0	48	18.0
10/26/96	3350	9:18	66.0	45	14.0	8:26	78.0	42	19.0
10/26/96	3400	10:45	65.0	42	12.0	10:31	78.5	45	17.5
10/26/96	3450	14:35	66.0	44	12.5	14:40	77.0	47	17.5
10/28/96	3500	8:40	64.5	77	11.5	9:05	76.0	48	18.0
10/28/96	3550	13:51	65.0	45	14.5	12:51	80.0	49	19.0
10/29/96	3600	10:12	65.0	49	13.0	10:58	75.0	47	18.5
10/29/96	3650	16:01	64.5	62	12.5	15:27	76.0	49	18.0
10/30/96	3700	9:02	65.0	42	13.0	8:51	80.5	47	19.0
10/30/96	3750	16:01	64.5	47	12.0	15:42	80.0	48	18.5
10/31/96	3800	10:50	65.5	53	12.5	8:40	76.0	56	19.5
10/31/96	3850	-	-	-	-	14:38	77.0	59	18.5
11/1/96	3800	-	-	-	-	10:00	75.0	70	-
11/2/96	3800	-	-	-	-	11:00	82.0	75	-
11/4/96	3850	8:20	65.0	52	13.0	10:41	82.5	103	17.5
11/4/96	3900	11:21	64.5	48	14.0	-	-	-	-
11/5/96	3950	8:09	65.0	47	12.5	7:50	84.0	103	19.5
11/5/96	4000	13:36	65.5	59	13.0	13:00	84.5	110	18.0
11/5/96	4050	14:20	65.0	36	14.0	14:21	86.0	86	18.0
11/6/96	4100	12:56	65.5	45	15.0	10:43	82.5	71	19.0
11/6/96	4150	15:23	65.0	43	12.0	15:17	84.0	83	18.0
11/7/96	4200	8:10	65.0	41	14.5	11:26	83.5	63	17.5
11/12/96	4600	8:42	65.0	62	12.0	-	-	-	-
11/12/96	4650	9:02	65.5	58	12.5	8:22	84.5	42	18.0
11/12/96	4700	11:02	65.5	61	12.0	9:58	82.0	44	17.0
11/13/96	4750	10:52	65.0	46	13.5	10:25	82.0	52	18.5
11/13/96	4800	11:02	65.0	44	13.5	10:33	83.0	54	18.0
11/13/96	4850	15:01	64.5	49	13.0	13:28	82.0	56	18.0
11/13/96	4900	-	-	-	-	14:45	83.5	55	19.0
11/14/96	4900	8:20	66.0	51	14.0	-	-	-	-
11/14/96	0	10:31	65.5	54	12.5	9:02	83.5	64	18.5

Table 4.4-1, page 3 of 3

Summary of Slurry Wall Field Tests
Batch Plant Slurry and In-trench Slurry

102nd Street Landfill Site

Date	Station	Batch Slurry (1 per 50 LF)				In-trench Slurry(1 per 50LF)			
		Time	Density	Viscosity	Filtrate	Time	Density	Viscosity	Filtrate
11/14/96	50	13:58	64.5	47	13.0	11:10	84.0	61	18.0
11/14/96	100	-	-	-	-	14:15	85.0	67	19.0
11/15/96	100	10:07	65.0	51	12.0	-	-	-	-
11/15/96	150	10:57	65.5	57	13.0	11:01	83.5	64	17.5
11/15/96	200	13:51	65.5	49	12.0	13:31	83.0	67	19.0
11/15/96	250	14:09	66.0	59	12.5	15:03	84.0	61	18.5

Table 4.4-2, page 1 of 3

Summary of Slurry Wall Field Tests
Trench Backfill and Soils

102nd Street Landfill Site

			Trench Backfill(1 per 150 cubic yards)					Soil for Backfill(1 per 100LF)				
					Water	Unit Dry			Water	Atterburg Limits		
Date	Station	Time	Density	Slump	Content	Weight(pcf)	Permeability	Grain Size	Content	LL%	PL%	PI%
8/28/96	250	8:52	103	2.125	-	-	-	-	-	-	-	-
8/28/96	250	10:25	-	3.5	57.2	67.5	5.90E-08	-	-	-	-	-
8/28/96	300	13:36	105	6	-	-	-	100	40.2	46	21	25
8/29/96	350	8:50	103	5	52.5	69.5	2.00E-08	-	-	-	-	-
8/29/96	400	13:12	106	5.5	57.4	67.2	3.50E-08	99	42	45	21	24
8/29/96	450	16:30	103	3.75	55.6	68.3	3.00E-08	-	-	-	-	-
8/30/96	450	8:12	103	5	55.6	68.3	3.00E-08	-	-	-	-	-
8/30/96	500	10:54	106	4.5	68.9	59.9	3.20E-08	100	39.8	46	21	25
8/30/96	550	14:10	103	5	69.3	60.2	2.90E-08	-	-	-	-	-
9/3/96	550	10:41	105	4.5	69.3	60.2	2.90E-08	-	-	-	-	-
9/3/96	600	14:50	103	5.5	57.5	65.1	2.80E-08	100	40.7	45	21	24
9/3/96	650	16:30	107	4.25	51	71.8	2.90E-08	-	-	-	-	-
9/4/96	700	8:50	102	5.5	60.6	63.7	4.30E-08	99	42.9	35	20	15
9/4/96	750	8:35	105	6	59.6	62.3	4.40E-08	-	-	-	-	-
9/4/96	800	10:11	105.6	4	53.6	65.8	1.70E-08	100	42.6	46	17	29
9/4/96	850	10:45	105	4	54.9	66.9	3.50E-08	-	-	-	-	-
9/4/96	900	11:30	105.7	3.5	54	66	3.60E-08	99	38	46	21	25
9/4/96	950	13:40	-	1.5	-	-	-	-	-	-	-	-
9/4/96	950	15:55	103	4.5	59.2	64.5	2.90E-08	-	-	-	-	-
9/4/96	1000	16:10	103	3.5	53.5	67.2	3.00E-08	100	40.9	45	20	25
9/5/96	1050	8:40	104	3.5	48.4	70.8	3.30E-08	-	-	-	-	-
9/5/96	1100	8:45	103	3.5	48.5	71.4	3.30E-08	99	41.2	42	19	23
9/5/96	1150	9:05	103	4.5	55.8	68.7	3.30E-08	-	-	-	-	-
9/5/96	1200	11:11	105	4	58.1	65.3	3.80E-08	95	41.3	43	18	25
9/5/96	1250	11:18	106	4.5	54.1	69	3.80E-08	-	-	-	-	-
9/5/96	1300	14:15	104.5	4	54.9	65.4	3.30E-08	99	44	44	20	24
9/5/96	1350	14:55	106	4.5	54.4	67.4	3.30E-08	-	-	-	-	-
9/6/96	1400	8:39	103	5	56.6	65.2	3.40E-08	99	40.6	43	19	24
9/6/96	1450	10:25	105	3.5	52.3	68.1	3.30E-08	-	-	-	-	-
9/6/96	1500	13:26	105	4	51.5	69.2	3.20E-08	100	35	47	21	26
9/6/96	1550	14:10	104.5	4	48.9	70.1	3.40E-08	-	-	-	-	-
9/6/96	1600	16:30	104	3.5	55	67.5	2.90E-08	100	40	43	20	23
9/9/96	1650	-	105	4	45.1	73.5	3.00E-08	-	-	-	-	-
9/9/96	1700	-	104.5	5	54.6	68.8	4.00E-08	99	42.9	43	19	24
9/10/96	1750	8:03	104	5	54	68.3	4.10E-08	-	-	-	-	-
9/10/96	1800	9:25	103	5	51	69.4	4.80E-08	100	40.5	44	20	24
9/10/96	1850	11:20	103	5	55.4	67.5	5.50E-08	-	-	-	-	-
9/10/96	1900	11:35	104	5.25	51.4	69.6	4.90E-08	99	39.6	43	19	24
9/10/96	1950	13:25	101	5.5	58	65.8	3.30E-08	-	-	-	-	-
9/10/96	2000	14:40	103.5	4.5	53.7	67.7	3.20E-08	100	39.4	44	20	24
9/11//96	2050	8:12	103	5.5	53.4	69.1	3.00E-08	-	-	-	-	-
9/11//96	2100	8:38	104	4.25	54.6	67.5	3.20E-08	100	38.6	45	20	25
9/11//96	2150	9:20	104.5	4.5	51.8	68.5	3.60E-08	-	-	-	-	-
9/11//96	2200	10:00	105	4				100	43.6	42	20	22
9/11//96	2250	13:32	102.5	3.75				-	-	-	-	-
9/11//96	2300	14:45	104	4				100	37.1	44	20	24
9/11//96	2350	15:58	102	4.25				-	-	-	-	-
9/12/96	2400	9:22	103.5	4				100	33.9	41	20	21
9/12/96	2500	-	-	-	-	-	-	100	34.6	44	20	24
10/16/96	2600	9:02	102	3.25	57	65	3.60E-08	100	41.4	46	20	26
10/16/96	2650	10:45	101.5	3.5	51.3	70.6	3.20E-08	-	-	-	-	-
10/17/96	2700	10:45	98	3.5	56	65.8	3.50E-08	99	32.6	43	19	24

Table 4.4-2, page 2 of 3

Summary of Slurry Wall Field Tests
Trench Backfill and Soils

102nd Street Landfill Site

			Trench Backfill(1 per 150 cubic yards)					Soil for Backfill(1 per 100LF)				
					Water	Unit Dry			Water	Atterburg Limits		
Date	Station	Time	Density	Slump	Content	Weight(pcf)	Permeability	Grain Size	Content	LL%	PL%	PI%
10/17/96	2750	13:40	96	5.5	62.4	62.6	3.10E-08	-	-	-	-	-
10/17/96	2800	15:30	98.5	5.75	57.1	65.2	3.30E-08	99	37.1	42	19	23
10/18/96	2850	8:48	102	5.5	54.4	67.6	3.60E-08	-	-	-	-	-
10/18/96	2900	11:27	101.5	5.25	59.2	64.7	3.60E-08	99	44.8	45	20	25
10/18/96	2950	15:52	102	5.5	57.3	64.5	3.50E-08	-	-	-	-	-
10/23/96	2950	13:15	102	5	57.3	64.5	3.50E-08	-	-	-	-	-
10/23/96	2970	15:38	102.5	3.25	64.3	59.5	3.40E-08	-	-	-	-	-
10/24/96	2980	14:07	103	4.75	55.2	63.5	3.70E-08	-	-	-	-	-
10/24/96	2990	16:23	102.5	4.5	-	-	-	-	-	-	-	-
10/25/96	3000	10:35	102	5	54.5	66.8	3.80E-08	100	33.1	45	20	25
10/25/96	3040	13:22	101.5	5.25	51.9	68.5	4.30E-08	-	-	-	-	-
10/26/96	3080	8:00	103	5.5	51.9	69.4	4.40E-08	-	-	-	-	-
10/26/96	3100	-	-	-	-	-	-	100	32	45	20	25
10/26/96	3120	10:10	105	4.75	51.3	68.2	4.70E-08	-	-	-	-	-
10/26/96	3160	13:30	103.5	3.75	60.6	62.8	3.80E-08	-	-	-	-	-
10/26/96	3200	16:00	104	4	56.7	66.2	4.30E-08	99	37.7	47	20	27
10/28/96	3240	8:30	100	4	57.8	65.6	3.80E-08	-	-	-	-	-
10/28/96	3280	8:35	99.5	5.5	78.2	54.2	2.70E-08	-	-	-	-	-
10/28/96	3320	13:13	100	5	-	-	-	-	-	-	-	-
10/28/96	3200	9:25	98.5	5.5	-	-	-	-	-	-	-	-
10/28/96	3200	9:30	99	5.5	-	-	-	-	-	-	-	-
10/28/96	3280	10:48	100	6	78.2	54.2	2.70E-08	-	-	-	-	-
10/28/96	3290	13:45	99	6	63.8	62	4.50E-08	-	-	-	-	-
10/28/96	3300	16:10	99	6	59.5	63.5	3.80E-08	99	41.1	48	20	28
10/30/96	3300	8:25	102	5.25	59.5	63.5	3.80E-08	-	-	-	-	-
10/30/96	3320				64.7	59.8	4.10E-08					
10/30/96	3340	10:28	101.5	5.5	59.9	63.9	4.30E-08	-	-	-	-	-
10/30/96	3360				62.4	62	4.10E-08					
10/30/96	3380	14:22	102.5	5.5	61.1	62.4	3.50E-08	-	-	-	-	-
10/30/96	3400	-	-	-	-	-	-	100	41.2	47	20	27
10/31/96	3380	8:17	101	4.75	61.1	62.4	3.50E-08	-	-	-	-	-
10/31/96	3410	10:15	102.5	5				-	-	-	-	-
10/31/96	3420				59.5	63.3	4.50E-08					
10/31/96	3450	13:28	102	5.5				-	-	-	-	-
10/31/96	3460				57.7	66.3	4.00E-08					
10/31/96	3480	15:42	102	5.5				-	-	-	-	-
10/31/96	3500	-	-	-	-	-	-	100	38.3	46	20	26
11/1/96	3480	12:56	102.5	5.75				-	-	-	-	-
11/1/96	3520	15:40	102	5.25	60	65	3.40E-08	-	-	-	-	-
11/2/96	3540	8:15	109	5				-	-	-	-	-
11/2/96	3560	11:30	108	4.5	59.8	65.9	3.60E-08	-	-	-	-	-
11/2/96	3580	14:00	106	6				-	-	-	-	-
11/4/96	3590	8:42	-	7.5	-	-	-	-	-	-	-	-
11/4/96	3600	9:14	105	5	60.6	59.6	3.00E-08	100	38.2	46	20	26
11/4/96	3640	11:09	106.5	5.75	60.6	63.5	3.50E-08	-	-	-	-	-
11/4/96	3680	11:12	107	6	58.7	64.3	3.40E-08	-	-	-	-	-
11/4/96	3700	13:42	106.5	5.5	-	-	-	98	38.1	46	20	26
11/5/96	3700	7:25	106.5	4.5	-	-	-	-	-	-	-	-
11/5/96	3720	10:12	105	6	60	63.5	3.50E-08	-	-	-	-	-
11/5/96	3760	11:10	105.5	6	61.1	61.5	3.40E-08	-	-	-	-	-
11/5/96	3800	14:40	106	4.5	56.9	64.7	3.30E-08	100	44	48	21	27
11/5/96	3880	15:48	104.5	5	56.7	64.3	3.30E-08	-	-	-	-	-

Table 4.4-2, page 3 of 3

Summary of Slurry Wall Field Tests
Trench Backfill and Soils

102nd Street Landfill Site

			Trench Backfill(1 per 150 cubic yards)					Soil for Backfill(1 per 100LF)				
					Water	Unit Dry			Water	Atterburg Limits		
Date	Station	Time	Density	Slump	Content	Weight(pcf)	Permeability	Grain Size	Content	LL%	PL%	PI%
11/6/96	3880	7:42	105	4.75	56.7	64.3	3.30E-08	-	-	-	-	-
11/6/96	3900	-	-	-	-	-	-	100	44.8	47	21	26
11/6/96	3920	11:22	106	4.25	60.6	62.8	3.30E-08	-	-	-	-	-
11/6/96	3960	14:21	107	5	54.4	66.3	3.50E-08	-	-	-	-	-
11/7/96	3960	8:00	106.5	5	54.4	66.3	3.50E-08	-	-	-	-	-
11/7/96	4000	12:48	106	4.75	65.1	61.1	4.00E-08	100	42.3	46	20	26
11/7/96	4060	14:32	106	5	67.7	59.3	2.90E-08	-	-	-	-	-
11/8/96	4060	8:25	105	4.5	67.7	59.3	2.90E-08	-	-	-	-	-
11/8/96	4100	13:02	107	6	46.1	71	2.30E-08	100	45	46	20	26
11/9/96	4120	7:54	104.5	5.5	-	-	-	-	-	-	-	-
11/9/96	4160	10:35	105	5.75	51.2	66.7	3.20E-08	-	-	-	-	-
11/9/96	4200	13:43	105	5	60.5	60.6	3.50E-08	99	33.2	42	19	23
11/11/96	4220	7:41	105	4.5	-	-	-	-	-	-	-	-
11/11/96	4260	12:54	105	5.25	51	68.7	2.40E-08	-	-	-	-	-
11/11/96	4300	15:08	106	5.75	43.8	74.8	2.60E-08	99	33.5	45	20	25
11/12/96	4340	8:20	106	5.25	-	-	-	-	-	-	-	-
11/12/96	4380	10:13	105.5	5	50.2	69.9	2.50E-08	-	-	-	-	-
11/12/96	4400	-	-	-	-	-	-	99	40.3	52	21	31
11/12/96	4420	13:03	105	5.25	-	-	-	-	-	-	-	-
11/12/96	4460	14:40	102.5	4.75	51.9	68.5	2.30E-08	-	-	-	-	-
11/12/96	4500	-	-	-	-	-	-	99	35.1	34	18	16
11/13/96	4520	9:02	103	4.5	-	-	-	-	-	-	-	-
11/13/96	4540	12:52	102.5	5.5	46.7	72	2.30E-08	-	-	-	-	-
11/13/96	4590	14:03	105	4.75	-	-	-	-	-	-	-	-
11/13/96	4600	-	-	-	-	-	-	99	37.5	50	21	29
11/13/96	4620	15:15	103	5.25	40.7	76.5	1.50E-08	-	-	-	-	-
11/14/96	4660	8:07	104	4.5	41.9	74.7	1.90E-08	-	-	-	-	-
11/14/96	4700	10:17	105.5	4.75	-	-	-	99	28.8	50	21	29
11/14/96	4740	11:20	104.5	5.25	46.1	68.5	2.00E-08	-	-	-	-	-
11/14/96	4780	12:57	104	5.5	-	-	-	-	-	-	-	-
11/14/96	4800	-	-	-	-	-	-	99	39.7	57	21	36
11/14/96	4820	14:57	105	4.75	45.5	71	1.80E-08	-	-	-	-	-
11/15/96	4860	8:12	106	5	-	-	-	-	-	-	-	-
11/15/96	4900	10:17	105	4.75	52.7	68.2	2.90E-08	97	41.4	53	21	32
11/15/96	10	12:52	106	4.25	-	-	-	-	-	-	-	-
11/15/96	60	14:07	104.5	5.25	50.1	70.1	3.60E-08	-	-	-	-	-
11/15/96	90	15:23	105	4.5	-	-	-	-	-	-	-	-
11/15/96	100	-	-	-	-	-	-	99	39.9	39	18	21
11/16/96	120	8:25	105.5	4.25	49.8	69.8	3.40E-08	-	-	-	-	-
11/16/96	170	10:18	106	5	-	-	-	-	-	-	-	-
11/16/96	200	-	-	-	-	-	-	100	40.2	45	20	25
11/16/96	250	12:52	105.5	5	53	67.1	3.20E-08	-	-	-	-	-
11/16/96	300	-	-	-	-	-	-	100	38.6	44	20	24

Table 4.4-3, page 1 of 4

Summary of Soil Compaction Results
Slurry Wall Cap

102nd Street Landfill Site

Date	Test No.	Test Location	Material	Depth or Elevation	Dry Density(pcf)	Water Content(%)	% Proctor Density	Remarks
10/1/96	1	Station 2180	Frontier	1st Lift	113.2	16.1	98.8	
10/1/96	2	Station 2230	Frontier	1st Lift	107.7	16.3	94.1	
10/1/96	3	Station 2130	Frontier	1st Lift	112.3	16.4	98	
10/1/96	4	Station 2080	Frontier	1st Lift	107.3	16.1	93.7	
10/1/96	5	Station 2030	Frontier	1st Lift	107.4	17.5	93.8	
10/1/96	7	Station 1980	Frontier	1st Lift	108.3	16.8	94.6	
10/1/96	8	Station 1930	Frontier	1st Lift	103.1	19.9	90	
10/1/96	9	Station 1900	Frontier	1st Lift	109.6	16.4	95.7	
10/1/96	14	Station 1850	Frontier	1st Lift	114.6	14.6	100.1	
10/1/96	15	Station 1800	Frontier	1st Lift	107.2	16	93.6	
10/1/96	16	Station 1750	Frontier	1st Lift	108.9	17	95.1	
10/1/96	17	Station 1700	Frontier	1st Lift	109.4	15.9	95.6	
10/2/96	1	Station 2250	Frontier	2nd Lift	115.5	13.6	100.9	
10/2/96	2	Station 2200	Frontier	2nd Lift	114.7	13.1	100.2	
10/2/96	3	Station 2150	Frontier	2nd Lift	113.8	14.3	99.4	
10/2/96	4	Station 2100	Frontier	2nd Lift	107.5	17.3	93.9	
10/2/96	5	Station 2050	Frontier	2nd Lift	107.8	16.8	94.1	
10/2/96	6	Station 2000	Frontier	2nd Lift	111.8	15.3	97.6	
10/2/96	7	Station 1950	Frontier	2nd Lift	110.9	16.6	96.8	
10/2/96	8	Station 1900	Frontier	2nd Lift	113.1	15.2	98.8	
10/2/96	9	Station 1850	Frontier	2nd Lift	110.5	16	96.5	
10/2/96	11	Station 1800	Frontier	2nd Lift	110.5	16.7	96.5	
10/2/96	12	Station 1750	Frontier	2nd Lift	113.1	15.2	98.8	
10/2/96	13	Station 1700	Frontier	2nd Lift	103.5	18.3	90.4	
10/2/96	14	Station 1650	Frontier	1st Lift	108.8	15.1	95.1	
10/2/96	15	Station 1600	Frontier	1st Lift	105.2	17.1	91.9	
10/2/96	16	Station 1550	Frontier	1st Lift	103.4	14.9	90.3	
10/2/96	17	Station 1500	Frontier	1st Lift	106.3	15.8	92.9	
10/2/96	18	Station 1450	Frontier	1st Lift	104.6	15.8	91.4	
10/3/96	7	Station 1400	Frontier	1st Lift	110.8	15.8	96.7	
10/3/96	8	Station 1350	Frontier	1st Lift	104.3	18.3	91.1	
10/3/96	9	Station 1300	Frontier	1st Lift	105.2	16.6	91.9	
10/3/96	12	Station 1250	Frontier	1st Lift	109.5	16.4	95.6	
10/3/96	13	Station 1200	Frontier	1st Lift	105.3	16.6	92	
10/3/96	14	Station 1275	Frontier	2nd Lift	108.9	17.9	95.2	
10/3/96	15	Station 1325	Frontier	2nd Lift	107.9	17.1	94.3	
10/3/96	16	Station 1375	Frontier	2nd Lift	107.2	16	93.6	
10/3/96	17	Station 1425	Frontier	2nd Lift	113.1	14	98.8	
10/3/96	18	Station 1475	Frontier	2nd Lift	112.8	15.5	98.5	
10/3/96	19	Station 1525	Frontier	2nd Lift	106.9	15.9	93.4	
10/3/96	20	Station 1575	Frontier	2nd Lift	111.9	16.7	97.8	
10/3/96	21	Station 1625	Frontier	2nd Lift	112	15.7	97.8	
10/3/96	22	Station 1675	Frontier	2nd Lift	112.5	14.2	98.2	
10/3/96	23	Station 1725	Frontier	2nd Lift	109.6	16.3	95.8	
10/3/96	24	Station 1775	Frontier	2nd Lift	114.1	15.8	99.6	
10/3/96	26	Station 1150	Frontier	1st Lift	111.3	16.2	97.2	
10/3/96	27	Station 1100	Frontier	1st Lift	106.2	16.6	92.7	
10/3/96	28	Station 1050	Frontier	1st Lift	101.6	14.7	88.8	
10/3/96	29	Station 1050	Frontier	1st Lift	108.8	16	95	
10/3/96	30	Station 1050	Frontier	2nd Lift	106.2	16.1	92.7	
10/4/96	2	Station 1000	Frontier	1st Lift	110.8	14.9	96.8	
10/4/96	3	Station 1725	Frontier	2nd Lift	110.8	14.4	96.8	

Table 4.4-3, page 2 of 4

Summary of Soil Compaction Results
Slurry Wall Cap

102nd Street Landfill Site

Date	Test No.	Test Location	Material	Depth or Elevation	Dry Density(pcf)	Water Content(%)	% Proctor Density	Remarks
10/4/96	4	Station 1175	Frontier	2nd Lift	109.6	16.2	95.8	
10/4/96	5	Station 1125	Frontier	2nd Lift	108.8	16.4	95	
10/4/96	6	Station 1075	Frontier	2nd Lift	106.2	14.5	92.7	
10/4/96	7	Station 975	Frontier	1st Lift	110.3	14.9	96.3	
10/4/96	8	Station 975	Frontier	2nd Lift	113.8	13.8	99.4	
10/4/96	9	Station 975	Frontier	3rd Lift	111.8	13.3	97.7	
10/4/96	10	Station 975	Frontier	4th Lift	109.8	13.2	95.9	
10/4/96	11	Station 975	Frontier	5th Lift	103.1	13.1	90	
10/5/96	1	Station 1000	Frontier	2nd Lift	110.9	12.8	96.9	
10/5/96	4	Station 925	Frontier	1st Lift	109.1	13.8	95.3	
10/5/96	5	Station 925	Frontier	2nd Lift	113.8	13.6	99.4	
10/7/96	3	Station 925	Frontier	3rd Lift	110.9	14.5	96.9	
10/9/96	9	Station 510	Frontier	1st Lift	101.1	13.4	95.3	
10/9/96	10	Station 560	Frontier	1st Lift	103.4	15.6	90.3	
10/9/96	15	Station 505	Frontier	2nd Lift	112	12.4	97.8	
10/9/96	16	Station 500	Frontier	1st Lift	110.1	15.4	96.2	
10/9/96	17	Station 600	Frontier	2nd Lift	110.9	13.5	96.8	
10/9/96	18	Station 550	Frontier	2nd Lift	113.5	13.8	99.2	
10/9/96	19	Station 650	Frontier	1st Lift	110.5	14.9	96.5	
10/9/96	20	Station 650	Frontier	2nd Lift	107.9	14.5	94.3	
10/9/96	21	Station 700	Frontier	1st Lift	110.3	14.5	96.3	
10/9/96	22	Station 750	Frontier	1st Lift	105.3	14.7	92	
10/9/96	23	Station 700	Frontier	2nd Lift	111.9	13.2	97.7	
10/9/96	24	Station 750	Frontier	2nd Lift	111.7	14.2	97.5	
10/11/96	1	Station 895	Frontier	1st Lift	103.2	15	90.1	
10/11/96	2	Station 845	Frontier	1st Lift	111.5	14.3	97.4	
10/11/96	3	Station 790	Frontier	1st Lift	112.1	16.1	97.9	
10/11/96	4	Station 890	Frontier	2nd Lift	109.7	14.1	95.8	
10/11/96	5	Station 850	Frontier	2nd Lift	112.9	12.6	98.6	
10/11/96	6	Station 800	Frontier	2nd Lift	104.9	14.5	91.6	
10/15/96	4	Station 440	Frontier	1st Lift	106.4	15.9	92.9	
11/4/96	1	Station 2350	Frontier	1st Lift	113.3	15.4	98.9	
11/4/96	2	Station 2400	Frontier	1st Lift	107.4	15.3	93.8	
11/4/96	3	Station 2450	Frontier	1st Lift	112.7	12.6	98.4	
11/4/96	4	Station 2500	Frontier	1st Lift	106.1	14.7	92.7	
11/4/96	5	Station 2530	Frontier	1st Lift	101.5	14.9	88.6	
11/4/96	6	Station 2530	Frontier	1st Lift	111.2	16.4	97.1	
11/4/96	7	Station 2450	Frontier	2nd Lift	103.1	16.7	90	
11/4/96	8	Station 2400	Frontier	2nd Lift	110	17	96.1	
11/4/96	9	Station 2350	Frontier	2nd Lift	108.1	14.6	94.4	
11/4/96	10	Station 2315	Frontier	2nd Lift	114.5	15.3	100	
11/4/96	11	Station 2500	Frontier	2nd Lift	106.5	15.3	93	
11/4/96	12	Station 2530	Frontier	2nd Lift	106.7	16.6	93.2	
11/4/96	13	Station 2550	Frontier	1st Lift	106.4	14.8	92.9	
11/4/96	14	Station 2600	Frontier	1st Lift	105.4	16.4	92	
11/5/96	1	Station 2320	Frontier	2nd Lift	114.5	15.5	100	
11/5/96	2	Station 2350	Frontier	2nd Lift	113.2	14.4	98.9	
11/5/96	3	Station 2400	Frontier	2nd Lift	108.3	16.2	94.5	
11/5/96	4	Station 2450	Frontier	2nd Lift	111.2	15.6	97.1	
11/5/96	5	Station 2500	Frontier	2nd Lift	112.2	15.3	98	
11/5/96	6	Station 2550	Frontier	2nd Lift	110.4	17.5	96.4	
11/5/96	7	Station 2600	Frontier	2nd Lift	112.2	16.1	98	

Table 4.4-3, page 3 of 4

Summary of Soil Compaction Results
Slurry Wall Cap
102nd Street Landfill Site

Date	Test No.	Test Location	Material	Depth or Elevation	Dry Density(pcf)	Water Content(%)	% Proctor Density	Remarks
11/5/96	8	Station 2650	Frontier	1st Lift	109.3	16.2	95.4	
11/6/96	1	Station 2700	Frontier	1st Lift	113.2	15.5	98.9	
11/6/96	2	Station 2750	Frontier	1st Lift	117.1	14.5	102.3	
11/6/96	3	Station 2800	Frontier	1st Lift	112.5	16.4	98.3	
11/6/96	4	Station 2850	Frontier	1st Lift	112.8	15.5	98.5	
11/6/96	5	Station 2900	Frontier	1st Lift	110.1	16.8	96.2	
11/6/96	6	Station 2950	Frontier	1st Lift	112.7	15.4	98.4	
11/6/96	7	Station 3000	Frontier	1st Lift	102.6	15.4	89.6	
11/6/96	8	Station 2650	Frontier	2nd Lift	114.5	15.8	100	
11/6/96	9	Station 2700	Frontier	2nd Lift	113.2	16	98.9	
11/6/96	10	Retest of Test #7	Frontier	1st Lift	107.3	14.8	93.7	
11/6/96	11	Station 2750	Frontier	2nd Lift	113.6	13.9	99.2	
11/6/96	12	Station 2800	Frontier	2nd Lift	112.8	15.8	98.5	
11/6/96	13	Station 2850	Frontier	2nd Lift	112.8	15	98.5	
11/6/96	14	Station 2900	Frontier	2nd Lift	110	16.2	96	
11/6/96	15	Station 2950	Frontier	2nd Lift	113.4	14.7	99	
11/6/96	16	Station 3000	Frontier	2nd Lift	110.7	14.8	96.7	
11/6/96	17	Station 3050	Frontier	1st Lift	115.6	14.7	101	
11/6/96	18	Station 3100	Frontier	1st Lift	114.4	15	99.9	
11/6/96	19	Station 3150	Frontier	1st Lift	102.2	15.2	89.3	
11/6/96	20	Retest of Test #19	Frontier	1st Lift	110.3	14	96.3	
11/6/96	21	Station 3050	Frontier	2nd Lift	116.4	14.7	101.6	
11/6/96	22	Station 3100	Frontier	2nd Lift	113.3	16.1	98.9	
11/6/96	23	Station 3200	Frontier	1st Lift	104.3	15.9	91.1	
11/6/96	24	Station 3150	Frontier	2nd Lift	111.6	15.6	97.5	
11/7/96	1	Station 3200	Frontier	2nd Lift	112	17.4	97.8	
11/7/96	2	Station 3250	Frontier	1st Lift	109.4	16.4	95.5	Torvane=1.20 ton/ft^2
11/7/96	4	Station 3300	Frontier	1st Lift	114.9	15.1	100.4	
11/7/96	9	Station 3350	Frontier	1st Lift	113.5	15.1	99.2	Torvane=1.20 ton/ft^2
11/7/96	13	Station 3400	Frontier	1st Lift	110.3	15.3	96.4	
11/7/96	14	Station 3435	Frontier	1st Lift	113.6	15.7	99.2	Torvane=1.05 ton/ft^2
11/7/96	15	Station 3400	Frontier	2nd Lift	109.2	15.9	95.3	
11/7/96	16	Station 3350	Frontier	2nd Lift	116.4	14.2	101.6	Torvane=1.10 ton/ft^2
11/7/96	17	Station 3300	Frontier	2nd Lift	116.2	15	101.5	
11/7/96	18	Station 3250	Frontier	2nd Lift	115	14	100.5	Torvane=1.30 ton/ft^2
11/14/96	1	Station 3550	Frontier	1st Lift	109.1	14.7	95.3	Torvane=1.03 ton/ft^2
11/14/96	2	Station 3450	Frontier	1st Lift	113.6	16	99.2	
11/14/96	3	Station 3500	Frontier	1st Lift	114.5	14.5	100	Torvane=1.27 ton/ft^2
11/14/96	4	Station 3400	Frontier	2nd Lift	113.7	15.3	99.3	
11/14/96	5	Station 3350	Frontier	2nd Lift	112.3	15.5	98.1	Torvane=1.17 ton/ft^2
11/14/96	6	Station 3600	Frontier	1st Lift	109.9	14.2	96	
11/14/96	7	Station 3650	Frontier	1st Lift	109	15.3	95.2	Torvane=1.14 ton/ft^2
11/14/96	8	Station 3600	Frontier	2nd Lift	109.4	14.5	96	
11/14/96	9	Station 3550	Frontier	2nd Lift	118.4	14	103.4	Torvane=1.10 ton/ft^2
11/14/96	10	Station 3500	Frontier	2nd Lift	113.5	14.7	99.2	
11/14/96	11	Station 3450	Frontier	2nd Lift	110.4	16	96.4	Torvane=1.38 ton/ft^2
11/14/96	12	Station 3700	Frontier	1st Lift	111	14	97	
11/15/96	1	Station 3800	Frontier	1st Lift	111.6	15.2	97.4	
11/15/96	2	Station 3850	Frontier	1st Lift	114.5	14.4	100	Torvane=1.04 ton/ft^2
11/15/96	3	Station 3900	Frontier	1st Lift	109.1	15.9	95.3	
11/15/96	4	Station 3800	Frontier	2nd Lift	111.5	15.7	97.4	Torvane=1.31 ton/ft^2
11/15/96	5	Station 3850	Frontier	2nd Lift	111	14.1	96.9	

Table 4.4-3, page 4 of 4

Summary of Soil Compaction Results
Slurry Wall Cap

102nd Street Landfill Site

Date	Test No.	Test Location	Material	Depth or Elevation	Dry Density(pcf)	Water Content(%)	% Proctor Density	Remarks
11/15/96	6	Station 3900	Frontier	2nd Lift	109.9	15.1	96	Torvane=1.02 ton/ft^2
11/22/96	1	Station 4840	Frontier	1st Lift	113.6	15.2	99.3	Torvane=1.03 ton/ft^2
11/22/96	2	Station 4890	Frontier	1st Lift	114.1	15.4	99.6	
11/22/96	5	Station 4800	Frontier	1st Lift	108.9	15.8	95.1	
11/23/96	1	Station 4900	Frontier	2nd Lift	113.9	15.7	99.5	Torvane=1.21 ton/ft^2
11/23/96	2	Station 4850	Frontier	2nd Lift	110.4	16.2	96.4	
11/23/96	3	Station 4800	Frontier	2nd Lift	110.1	14.8	96.2	Torvane=1.18 ton/ft^2

Table 4.4-4
Permeability Test Results
102nd Street Landfill Site

Station	Depth(s)	Permeability(cm/sec)
3+00	10', 15', 20'	See below
5+90	18'	3.6×10^{-8}
8+50	2', 4', 6'	3.5×10^{-8}
22+40	7'	4.0×10^{-8}
26+00	23'	3.4×10^{-8}
30+90	10'	2.3×10^{-8}
42+00	14', 20', 28'	2.5×10^{-8}
46+20	16'	2.9×10^{-8}
0+00	10'	2.9×10^{-8}
2+80	10'	3.4×10^{-8}

Table 4.4-5

Additional Slurry Wall Sampling Locations

102nd Street Landfill Site

Station	Depth(s)	Type of Sample
2+50	18'	30" Split Spoon
5+85	17'	Shelby Tube to Lab
9+80	6'	30" Split Spoon
23+40	6'	30" Split Spoon
27+90	23'	30" Split Spoon
38+00	24'	30" Split Spoon
39+45	24'	30" Split Spoon

Table 4.4-6
Repair Soil Testing Data
102nd Street Landfill Site

Bentonite Slurry Testing

Date	Time	Weight	Filtrate	Viscosity	Location
5/22/97	11:20	65 pcf	11.8cc	46 sec	Plant
5/22/97	14:40	65 pcf	-	82 sec	Plant
5/22/97	15:30	65 pcf	11.3cc	65 sec	Trench
5/22/97	16:20	65 pcf	-	64 sec	Plant
5/22/97	17:15	64 pcf	-	58 sec	Plant
5/22/97	17:40	68 pcf	-	74 sec	Trench

Backfill Testing

Date	Time	Weight	Slump	Comments
5/22/97	19:45	101 pcf	4 inches	1st Batch
5/23/97	8:30	92.5 pcf	5.75 inches	2nd Batch
5/23/97	10:00	93.5 pcf	6 inches	3rd Batch
5/23/97	11:50	95.0 pcf	5 inches	4th Batch
5/23/97	14:10	83.5 pcf	6 inches	5th Batch

Backfill Soil

Date	Water %	LL%	PL%	PI%	% > 200 Sieve
5/22/97	30.3	53	22	31	94
5/22/97	27.2	51	22	29	97

Table 4.5-1

Summary of Geotechnical Results
Subbase Layer

102nd Street Landfill Site

Date	Sample No.	Borrow Source	Water Content	Atterburg Limits LL	PL	PI	Soil Classification	Gradation < 200 Sieve	Hydrometer	Standard Proctor	Permeability (cm/sec)
11/27/96	11276-1	Frontier Stone	16.5%	30	16	14	CL	81	27	115.0 pcf @16.0%	-
12/3/96	12036-1	Frontier Stone	16.3%	-	-	-	CL	75	25	-	-
5/28/97	05287-1	Frontier Stone	15.9%	-	-	-	CL	78	26	-	-
6/6/97	06067-1	Helmick Farm	20.2%	41	19	22	CL	90	46	110.0 pcf @18.0%	9.00E-08
6/10/97	06107-1	Helmick Farm	18.9%	-	-	-	CL	80	30	-	-
6/26/97	06267-1	Helmick Farm	21.8%	45	20	25	CL	91	50	107.0 pcf @19.5%	2.00E-08
7/2/97	07027-1	Helmick Farm	19.1%	-	-	-	CL	82	35	-	-
7/11/97	07117-1	Helmick Farm	19.4%	43	20	23	CL	91	51	109.0 pcf @ 19.0%	1.60E-07
7/22/97	07227-1	Summit Park	20.0%	41	21	20	CL	98	52	108.5 pcf @ 19.5%	3.00E-08
7/24/97	07247-1	Summit Park	15.5%	-	-	-	CL	98	54	-	-
7/25/97	07257-1	Summit Park	25.4%	42	21	21	CL	99	54	109.5 pcf @ 18.0%	2.30E-08
7/25/97	07257-2	Summit Park	21.6%	-	-	-	CL	98	49	-	-
7/29/97	07297-2	Summit Park	16.7%	43	20	23	CL	94	-	108.5 pcf @ 19.0%	3.90E-08
8/1/97	08017-1	Summit Park	22.3%	-	-	-	CL	97	50	-	-
8/6/97	08067-2	Summit Park	19.6%	-	-	-	CL	99	56	-	-
8/7/97	08077-1	Summit Park	21.0%	43	19	24	CL	98	56	107.5 pcf @ 19.5%	1.50E-08
8/8/97	08087-1	Summit Park	27.4%	42	20	22	CL	98	54	-	-

Table 4.5-2, page 1 of 10

Summary of Soil Compaction Results
Subbase Layer

102nd Street Landfill Site

Date	Test No.	Test Location	Material	Depth or Elevation	Dry Density(pcf)	Water Content(%)	% Proctor Density	Remarks
11/26/96	1	Northeast Oxy Corner	Frontier	1st List	104.9	16.9%	91.6%	
11/27/96	1	Northeast Oxy Corner	Frontier	1st List	106.9	20.0%	93.4%	
11/27/96	2	Northeast Oxy Corner	Frontier	1st List	114.1	15.0%	99.7%	
5/28/96	1	North Side Olin	Frontier	1st Lift	116.9	12.8%	102.1%	
5/28/96	2	North Side Olin	Frontier	1st Lift	118.2	12.7%	103.2%	
5/28/96	3	North Side Olin	Frontier	1st Lift	103.9	12.1%	90.7%	
6/6/96	2	North Side Olin	Helmick Farm	1st Lift	108.9	15.2%	101.3%	
6/6/96	3	North Side Olin	Helmick Farm	1st Lift	116.1	13.0%	108.0%	
6/6/96	4	North Side Olin	Helmick Farm	1st Lift	117.2	13.2%	109.0%	
6/6/96	5	North Side Olin	Helmick Farm	1st Lift	113.0	13.1%	105.1%	
6/6/96	6	North Side Olin	Helmick Farm	1st Lift	112.3	13.2%	104.5%	
6/6/96	7	North Side Olin	Helmick Farm	1st Lift	111.1	12.4%	103.3%	
6/6/96	8	North Side Olin	Helmick Farm	1st Lift	102.6	15.5%	95.4%	
6/6/96	10	North Side Olin	Helmick Farm	1st Lift	115.7	11.4%	107.6%	
6/6/96	11	North Side Olin	Helmick Farm	1st Lift	111.3	14.3%	103.5%	
6/6/96	12	North Side Olin	Helmick Farm	1st Lift	113.4	12.5%	105.5%	
6/6/96	13	North Side Olin	Helmick Farm	1st Lift	107.8	14.8%	100.3%	
6/9/97	1	Retest of Subbase Tests from 6/6/97	Helmick Farm	1st Lift	111.2	15.3%	103.4%	
6/9/97	2	Retest of Subbase Tests from 6/6/97	Helmick Farm	1st Lift	114.7	15.4%	106.7%	
6/9/97	3	Retest of Subbase Tests from 6/6/97	Helmick Farm	1st Lift	109.0	15.6%	101.4%	
6/9/97	4	Retest of Subbase Tests from 6/6/97	Helmick Farm	1st Lift	111.2	15.5%	103.4%	
6/9/97	5	Retest of Subbase Tests from 6/6/97	Helmick Farm	1st Lift	107.5	15.7%	100.0%	
6/10/97	1	Retest of Subbase Tests from 6/6/97	Helmick Farm	1st Lift	112.9	15.9%	105.0%	
6/10/97	2	Retest of Subbase Tests from 6/6/97	Helmick Farm	1st Lift	99.7	15.3%	92.7%	
6/10/97	3	Retest of Subbase Tests from 6/6/97	Helmick Farm	1st Lift	108.7	15.1%	101.1%	
6/10/97	4	Retest of Subbase Tests from 6/6/97	Helmick Farm	1st Lift	113.3	15.4%	105.4%	
6/10/97	5	North Side Olin	Helmick Farm	1st Lift	111.9	16.0%	104.1%	
6/10/97	6	North Side Olin	Helmick Farm	1st Lift	108.2	15.9%	100.7%	
6/10/97	7	North Side Olin	Helmick Farm	1st Lift	106.7	16.3%	99.3%	
6/10/97	8	North Side Olin	Helmick Farm	1st Lift	109.3	161.0%	101.7%	
6/23/97	2	Top Olin	Helmick Farm	1st Lift	110.6	13.7%	102.9%	
6/23/97	3	Top Olin	Helmick Farm	1st Lift	93.5	17.9%	87.0%	
6/23/97	4	Top Olin	Helmick Farm	1st Lift	94.8	14.5%	88.2%	
6/23/97	5	Top Olin	Helmick Farm	1st Lift	105.6	14.8%	98.2%	
6/23/97	6	Top Olin	Helmick Farm	1st Lift	106.5	14.7%	99.1%	
6/23/97	7	Top Olin	Helmick Farm	1st Lift	102.5	17.4%	95.3%	

Table 4.5-2, page 2 of 10

Summary of Soil Compaction Results
Subbase Layer

102nd Street Landfill Site

Date	Test No.	Test Location	Material	Depth or Elevation	Dry Density(pcf)	Water Content(%)	% Proctor Density	Remarks
6/23/97	8	Top Olin	Helmick Farm	1st Lift	105.2	9.3%	97.9%	
6/23/97	9	Top Olin	Helmick Farm	1st Lift	96.4	13.6%	89.7%	
6/23/97	10	Top Olin	Helmick Farm	1st Lift	97.4	15.8%	90.6%	
6/26/97	2	Retest of No.8, 6/23/97	Helmick Farm	1st Lift	114.3	11.9%	106.3%	
6/26/97	3	Southeast Corner Olin	Helmick Farm	1st Lift	106.3	15.0%	98.9%	
6/26/97	4	South Side Olin	Helmick Farm	1st Lift	106.3	15.0%	98.9%	
6/26/97	5	South Side Olin	Helmick Farm	1st Lift	92.3	15.9%	85.9%	
6/27/97	2	South Side Olin	Helmick Farm	1st Lift	102.1	15.2%	95.0%	
6/27/97	3	South Side Olin	Helmick Farm	1st Lift	104.1	16.1%	96.8%	
6/27/97	4	South Side Olin	Helmick Farm	1st Lift	110.3	15.5%	102.6%	
6/27/97	5	South Side Olin	Helmick Farm	1st Lift	112.1	15.8%	104.3%	
6/27/97	6	South Side Olin	Helmick Farm	1st Lift	109.0	15.9%	101.4%	
6/27/97	11	North Slope Oxy	Helmick Farm	1st Lift	107.9	16.0%	100.4%	
6/27/97	12	North Slope Oxy	Helmick Farm	1st Lift	106.7	15.7%	99.3%	
6/27/97	13	North Slope Oxy	Helmick Farm	1st Lift	108.7	15.2%	101.1%	
6/30/97	4	Northwest corner of Oxy	Helmick Farm	1st Lift	110.2	16.8%	102.5%	
6/30/97	5	Northwest corner of Oxy	Helmick Farm	1st Lift	113.3	15.0%	105.4%	
6/30/97	6	Northwest corner of Oxy	Helmick Farm	1st Lift	108.1	16.6%	100.6%	
6/30/97	7	Northwest corner of Oxy	Helmick Farm	1st Lift	106.3	19.5%	98.9%	
6/30/97	10	Northwest corner of Oxy	Helmick Farm	1st Lift	107.3	17.5%	99.8%	
6/30/97	11	Northwest corner of Oxy	Helmick Farm	1st Lift	106.5	16.2%	99.1%	
6/30/97	12	Northwest corner of Oxy	Helmick Farm	1st Lift	105.3	17.1%	98.0%	
6/30/97	13	Northwest corner of Oxy	Helmick Farm	1st Lift	103.4	15.3%	96.2%	
6/30/97	14	Northwest corner of Oxy	Frontier	1st Lift	109.7	14.7%	95.8%	Torvane=1.70 ton/ft^2
6/30/97	15	Northwest corner of Oxy	Frontier	2nd Lift	110.6	17.2%	96.6%	Torvane=1.90 ton/ft^2
7/1/97	3	North Slope Oxy	Helmick Farm	1st Lift	106.4	15.8%	96.7%	
7/1/97	4	North Slope Oxy	Helmick Farm	1st Lift	99.2	16.8%	90.2%	
7/1/97	5	North Slope Oxy	Helmick Farm	1st Lift	103.9	17.4%	94.5%	
7/1/97	6	North Slope Oxy	Helmick Farm	1st Lift	105.9	16.2%	96.3%	
7/1/97	7	North Slope Oxy	Helmick Farm	1st Lift	108.2	18.1%	98.4%	
7/1/97	8	North Slope Oxy	Helmick Farm	1st Lift	107.3	17.9%	97.5%	
7/1/97	11	North Slope Oxy	Helmick Farm	1st Lift	109.3	17.5%	99.4%	
7/2/97	2	North Slope Oxy	Helmick Farm	1st Lift	111.1	15.1%	101.0%	
7/2/97	3	North Slope Oxy	Helmick Farm	1st Lift	112.7	15.1%	102.5%	
7/2/97	6	North Slope Oxy	Helmick Farm	1st Lift	103.7	17.5%	94.3%	
7/2/97	7	North Slope Oxy	Helmick Farm	1st Lift	99.5	17.0%	90.5%	

Table 4.5-2, page 3 of 10

Summary of Soil Compaction Results
Subbase Layer

102nd Street Landfill Site

Date	Test No.	Test Location	Material	Depth or Elevation	Dry Density(pcf)	Water Content(%)	% Proctor Density	Remarks
7/2/97	8	North Slope Oxy	Helmick Farm	1st Lift	103.1	14.6%	93.7%	
7/2/97	15	North Slope Oxy	Helmick Farm	1st Lift	104.3	18.1%	94.8%	
7/3/97	1	North Slope Oxy	Helmick Farm	1st Lift	110.0	100.9%	100.0%	
7/3/97	2	North Slope Oxy	Helmick Farm	1st Lift	101.9	92.7%	92.6%	
7/3/97	3	North Slope Oxy	Helmick Farm	1st Lift	108.8	98.9%	98.9%	
7/3/97	4	North Slope Oxy	Helmick Farm	1st Lift	102.9	93.6%	93.5%	
7/3/97	5	North Slope Oxy	Helmick Farm	1st Lift	109.6	99.6%	99.6%	
7/3/97	6	North Slope Oxy	Helmick Farm	1st Lift	102.3	93.0%	93.0%	
7/7/97	1	Northwest corner of Oxy	Helmick Farm	1st Lift	105.0	14.2%	95.5%	
7/7/97	2	Northwest corner of Oxy	Helmick Farm	1st Lift	104.2	16.5%	94.7%	
7/7/97	3	Northwest corner of Oxy	Helmick Farm	1st Lift	106.0	14.6%	96.4%	
7/7/97	4	Northwest corner of Oxy	Helmick Farm	1st Lift	103.7	16.9%	94.3%	
7/7/97	5	Northwest corner of Oxy	Helmick Farm	1st Lift	101.9	18.8%	92.6%	
7/7/97	6	Northwest corner of Oxy	Helmick Farm	1st Lift	107.0	15.7%	97.3%	
7/7/97	7	Northwest corner of Oxy	Helmick Farm	1st Lift	110.9	14.9%	100.8%	
7/8/97	1	South Side Olin	Helmick Farm	1st Lift	101.5	14.7%	92.3%	
7/8/97	2	South Side Olin	Helmick Farm	1st Lift	100.6	16.0%	91.5%	
7/8/97	3	South Side Olin	Helmick Farm	1st Lift	105.1	15.2%	95.5%	
7/8/97	4	Southwest Corner Olin	Helmick Farm	1st Lift	102.2	14.1%	92.9%	
7/8/97	5	Southwest Corner Olin	Helmick Farm	1st Lift	101.7	14.3%	92.5%	
7/8/97	6	Retests of Top Olin	Helmick Farm	1st Lift	114.5	15.8%	106.5%	Used old Proctor
7/8/97	7	Retests of Top Olin	Helmick Farm	1st Lift	113.4	16.9%	105.5%	
7/8/97	8	Retests of Top Olin	Helmick Farm	1st Lift	118.1	16.0%	109.9%	
7/8/97	9	Retests of Top Olin	Helmick Farm	1st Lift	113.5	15.6%	105.6%	
7/8/97	10	Retests of Top Olin	Helmick Farm	1st Lift	106.5	16.5%	99.1%	
7/8/97	11	South Side Olin	Helmick Farm	1st Lift	102.1	15.5%	92.8%	
7/8/97	12	East Side Olin	Helmick Farm	1st Lift	103.1	15.8%	93.7%	
7/8/97	13	East Side Olin	Helmick Farm	1st Lift	106.4	16.1%	96.7%	
7/11/97	1	Northeast Corner Oxy	Helmick Farm	1st Lift	109.8	14.2%	99.8%	
7/11/97	2	Northeast Corner Oxy	Helmick Farm	1st Lift	107.1	17.8%	97.4%	
7/11/97	3	Northeast Corner Oxy	Helmick Farm	1st Lift	102.6	16.5%	93.3%	
7/11/97	4	Northeast Corner Oxy	Helmick Farm	1st Lift	103.2	15.7%	93.8%	
7/11/97	12	Northeast Corner Oxy	Helmick Farm	1st Lift	107.3	15.3%	97.5%	
7/11/97	13	Northeast Corner Oxy	Helmick Farm	1st Lift	105.6	16.2%	96.0%	
7/11/97	14	Northeast Corner Oxy	Helmick Farm	1st Lift	102.1	15.7%	92.8%	
7/11/97	15	Northeast Corner Oxy	Helmick Farm	1st Lift	106.3	15.5%	96.6%	

Table 4.5-2, page 4 of 10

Summary of Soil Compaction Results
Subbase Layer

102nd Street Landfill Site

Date	Test No.	Test Location	Material	Depth or Elevation	Dry Density(pcf)	Water Content(%)	% Proctor Density	Remarks
7/15/97	14	Top of Olin	Helmick Farm	1st Lift	106.5	15.4%	99.1%	
7/18/97	2	Southeast Olin	Frontier	1st Lift	112.3	12.4%	98.1%	
7/21/97	3	Top of Oxy	Helmick Farm	1st Lift	104.1	14.9%	94.6%	
7/21/97	4	Top of Oxy	Helmick Farm	1st Lift	111.3	15.3%	101.2%	
7/21/97	5	Top of Oxy	Helmick Farm	1st Lift	115.7	14.7%	105.2%	
7/21/97	6	Top of Oxy	Helmick Farm	1st Lift	109.3	15.3%	99.4%	
7/21/97	7	Top of Oxy	Helmick Farm	1st Lift	107.6	14.6%	97.8%	
7/21/97	8	Top of Oxy	Helmick Farm	1st Lift	111.3	15.2%	101.2%	
7/21/97	9	Top of Oxy	Helmick Farm	1st Lift	108.7	15.4%	98.8%	
7/21/97	10	Top of Oxy	Frontier	1st Lift	107.3	13.7%	93.7%	
7/21/97	11	Top of Oxy	Frontier	1st Lift	109.7	14.2%	95.8%	
7/21/97	12	Top of Oxy	Frontier	1st Lift	110.6	13.3%	96.6%	
7/21/97	13	Top of Oxy	Frontier	1st Lift	109.3	13.6%	95.5%	
7/21/97	14	Top of Oxy	Frontier	1st Lift	106.5	14.8%	93.0%	
7/21/97	15	Top of Oxy	Frontier	1st Lift	105.3	15.3%	92.0%	
7/21/97	16	Top of Oxy	Frontier	1st Lift	109.7	14.7%	95.8%	
7/21/97	17	Top of Oxy	Frontier	1st Lift	108.5	13.2%	94.8%	
7/21/97	18	Top of Oxy	Frontier	1st Lift	106.7	14.3%	93.2%	
7/21/97	19	Top of Oxy	Frontier	1st Lift	108.3	15.1%	94.6%	
7/21/97	20	Top of Oxy	Summit Park	1st Lift	97.2	16.0%	90.0%	
7/21/97	21	Top of Oxy	Summit Park	1st Lift	101.0	15.8%	93.5%	
7/21/97	22	Top of Oxy	Summit Park	1st Lift	101.3	17.7%	93.8%	
7/21/97	23	Top of Oxy	Summit Park	1st Lift	98.7	16.3%	91.4%	
7/21/97	24	Top of Oxy	Summit Park	1st Lift	100.3	19.1%	92.9%	
7/22/97	3	Center of Site	Summit Park	1st Lift	105.4	18.4%	97.6%	
7/22/97	5	Center of Site	Summit Park	1st Lift	103.1	17.4%	95.5%	
7/22/97	6	Center of Site	Summit Park	1st Lift	106.4	16.2%	98.5%	
7/22/97	7	Center of Site	Summit Park	1st Lift	100.0	16.2%	92.6%	
7/22/97	8	Center of Site	Summit Park	1st Lift	98.1	16.1%	90.8%	
7/22/97	10	Center of Site	Summit Park	1st Lift	104.9	16.6%	97.1%	
7/22/97	13	Center of Site	Summit Park	1st Lift	107.1	16.2%	99.2%	
7/22/97	14	Center of Site	Summit Park	1st Lift	99.5	16.3%	92.1%	
7/23/97	1	Southeast Corner Olin	Summit Park	1st Lift	108.2	15.5%	100.2%	
7/23/97	6	Southeast Corner Olin	Frontier	1st Lift	107.6	13.1%	94.0%	
7/23/97	7	Southeast Corner Oxy	Summit Park	1st Lift	105.3	15.7%	97.5%	
7/23/97	8	Southeast Corner Oxy	Summit Park	1st Lift	106.0	18.6%	98.1%	

Table 4.5-2, page 5 of 10

Summary of Soil Compaction Results
Subbase Layer

102nd Street Landfill Site

Date	Test No.	Test Location	Material	Depth or Elevation	Dry Density(pcf)	Water Content(%)	% Proctor Density	Remarks
7/23/97	9	Southeast Corner Oxy	Summit Park	1st Lift	107.2	16.3%	99.3%	
7/23/97	10	Southeast Corner Oxy	Summit Park	1st Lift	104.2	19.4%	96.5%	
7/23/97	11	Southeast Corner Oxy	Summit Park	1st Lift	104.8	17.9%	97.0%	
7/23/97	12	Southeast Corner Oxy	Summit Park	1st Lift	103.3	16.4%	95.6%	
7/23/97	13	Southeast Corner Oxy	Summit Park	1st Lift	101.1	17.3%	93.6%	
7/23/97	14	Southeast Corner Oxy	Summit Park	1st Lift	104.2	16.2%	96.5%	
7/25/97	3	Southeast Corner of Oxy	Summit Park	1st Lift	97.7	19.1%	90.5%	
7/25/97	4	Southeast Corner of Oxy	Summit Park	1st Lift	103.0	19.2%	95.4%	
7/25/97	5	Southeast Corner of Oxy	Summit Park	1st Lift	98.0	17.1%	90.7%	
7/25/97	6	Southeast Corner of Oxy	Summit Park	1st Lift	99.7	17.8%	92.3%	
7/25/97	7	Southeast Corner of Oxy	Summit Park	1st Lift	98.6	15.9%	91.3%	
7/25/97	8	Center of Site	Summit Park	1st Lift	102.9	19.2%	95.3%	
7/29/97	4	Southeast Corner of Oxy	Summit Park	1st Lift	103.8	15.7%	96.1%	
7/29/97	5	Southeast Corner of Oxy	Summit Park	1st Lift	107.3	15.6%	99.4%	
7/29/97	6	Southeast Corner of Oxy	Summit Park	1st Lift	108.9	15.9%	100.8%	
7/29/97	7	Southeast Corner of Oxy	Summit Park	1st Lift	106.0	14.3%	98.1%	
7/29/97	8	Southeast Corner of Oxy	Summit Park	1st Lift	104.8	16.3%	97.0%	
7/29/97	9	Southeast Corner of Oxy	Summit Park	1st Lift	109.9	15.6%	101.8%	
7/29/97	10	Southeast Corner of Oxy	Summit Park	1st Lift	99.9	16.3%	92.5%	
7/29/97	11	Retest of No. 7	Summit Park	1st Lift	107.6	16.3%	99.6%	
7/29/97	12	Southeast Corner of Oxy	Summit Park	1st Lift	102.4	18.6%	94.8%	
7/29/97	13	Southeast Corner of Oxy	Summit Park	1st Lift	97.2	15.7%	90.0%	
7/30/97	1	Southeast Corner of Oxy	Summit Park	1st Lift	109.7	16.0%	101.6%	
7/30/97	2	Southeast Corner of Oxy	Summit Park	1st Lift	101.9	17.4%	94.4%	
7/30/97	3	Southeast Corner of Oxy	Summit Park	1st Lift	102.3	16.2%	94.7%	
7/30/97	4	Southeast Corner of Oxy	Summit Park	1st Lift	101.7	16.0%	94.2%	
7/30/97	5	Southeast Corner of Oxy	Summit Park	1st Lift	106.3	15.8%	98.4%	
7/30/97	8	Southeast Corner of Oxy	Summit Park	1st Lift	99.1	18.2%	91.8%	
7/30/97	9	Southeast Corner of Oxy	Summit Park	1st Lift	101.3	15.8%	93.8%	
7/31/97	8	South Slope of Oxy	Summit Park	1st Lift	100.0	15.5%	92.6%	
7/31/97	9	South Slope of Oxy	Summit Park	1st Lift	98.2	16.2%	90.9%	
7/31/97	10	South Slope of Oxy	Summit Park	1st Lift	99.9	17.1%	92.5%	
7/31/97	11	South Slope of Oxy	Summit Park	1st Lift	105.8	16.5%	98.0%	
8/1/197	1	South Slope of Oxy	Summit Park	1st Lift	101.9	20.9%	94.4%	
8/1/197	2	South Slope of Oxy	Summit Park	1st Lift	105.3	17.3%	97.5%	
8/1/197	3	South Slope of Oxy	Summit Park	1st Lift	97.8	19.4%	90.6%	

Table 4.5-2, page 6 of 10

Summary of Soil Compaction Results
Subbase Layer

102nd Street Landfill Site

Date	Test No.	Test Location	Material	Depth or Elevation	Dry Density(pcf)	Water Content(%)	% Proctor Density	Remarks
8/1/197	4	South Slope of Oxy	Summit Park	1st Lift	108.1	15.6%	100.1%	
8/1/197	5	South Slope of Oxy	Summit Park	1st Lift	107.6	16.3%	99.6%	
8/1/197	6	South Slope of Oxy	Summit Park	1st Lift	98.1	15.9%	90.8%	
8/1/197	7	South Slope of Oxy	Summit Park	1st Lift	101.6	16.2%	94.1%	
8/1/197	8	near Catch Basin #8	Frontier	1st Lift	105.6	16.8%	92.2%	
8/1/197	11	Center of Site	Summit Park	1st Lift	117.5	11.4%	108.8%	
8/1/197	12	Center of Site	Summit Park	1st Lift	98.7	16.2%	91.4%	
8/4/97	5	Retest of No. 11, 8/1/97	Summit Park	1st Lift	113.1	12.4%	104.7%	
8/4/97	12	Retest of No. 5	Summit Park	1st Lift	104.3	16.3%	96.6%	
8/5/97	11	West Slope of Oxy	Frontier	1st Lift	113.2	12.3%	98.9%	
8/5/97	12	West Slope of Oxy	Frontier	1st Lift	110.6	13.7%	96.6%	
8/5/97	13	West Slope of Oxy	Frontier	1st Lift	109.3	13.9%	95.5%	
8/5/97	14	West Slope of Oxy	Frontier	1st Lift	111.4	13.5%	97.3%	
8/5/97	15	West Slope of Oxy	Frontier	1st Lift	107.6	13.9%	94.0%	
8/6/97	9	Top of Oxy	Frontier	1st Lift	129.1	8.1%	112.8%	
8/6/97	13	Northeast Corner Oxy	Summit Park	1st Lift	102.7	11.2%	95.1%	
8/6/97	14	Northeast Corner Oxy	Summit Park	1st Lift	101.3	14.0%	93.8%	
8/6/97	15	Northeast Corner Oxy	Summit Park	1st Lift	99.7	13.7%	92.3%	
8/7/97	1	Subbase Re-work, Center of Site	Summit Park	-	104.4	15.5%	96.7%	
8/7/97	2	Subbase Re-work, Center of Site	Helmick Farm	-	112.8	11.3%	102.5%	
8/7/97	3	Retest of No. 2	Helmick Farm	-	108.4	13.2%	98.5%	
8/7/97	15	Retest of No. 13, 8/6/97	Summit Park	1st Lift	100.3	16.2%	92.9%	
8/7/97	16	Retest of No. 14, 8/6/97	Summit Park	1st Lift	101.2	15.8%	93.7%	
8/7/97	17	Retest of No. 15, 8/6/97	Summit Park	1st Lift	102.3	16.3%	94.7%	
8/7/97	18	South Slope of Oxy	Summit Park	1st Lift	101.5	17.6%	94.0%	
8/7/97	19	South Slope of Oxy	Summit Park	1st Lift	99.1	16.0%	91.8%	
8/7/97	20	South Slope of Oxy	Summit Park	1st Lift	95.9	13.5%	88.8%	
8/7/97	26	South Slope of Oxy	Summit Park	1st Lift	95.2	13.2%	88.1%	
8/8/97	1	Retest of No. 20, 8/7/97	Summit Park	1st Lift	105.3	16.3%	97.5%	
8/8/97	2	Retest of No. 26, 8/7/97	Summit Park	1st Lift	107.7	15.9%	99.7%	
8/8/97	3	Retest of No. 7, 8/5/97	Summit Park	1st Lift	110.2	16.2%	102.0%	
8/8/97	8	Subbase Rework, Northeast Corner of Oxy	Helmick Farm	1st Lift	111.5	16.5%	101.4%	
8/8/97	14	Subbase Rework, Southeast Corner of Oxy	Summit Park	1st Lift	104.7	19.0%	96.9%	
8/8/97	15	Southwest Corner of Oxy	Summit Park	1st Lift	102.7	15.9%	95.1%	
8/8/97	16	Southwest Corner of Oxy	Summit Park	1st Lift	105.3	16.2%	97.5%	
8/8/97	17	Southwest Corner of Oxy	Summit Park	1st Lift	108.9	17.4%	100.8%	

Table 4.5-2, page 7 of 10

Summary of Soil Compaction Results
Subbase Layer

102nd Street Landfill Site

Date	Test No.	Test Location	Material	Depth or Elevation	Dry Density(pcf)	Water Content(%)	% Proctor Density	Remarks
8/8/97	18	Southwest Corner of Oxy	Summit Park	1st Lift	109.0	16.2%	100.9%	
8/8/97	19	Southwest Corner of Oxy	Summit Park	1st Lift	103.6	16.1%	95.9%	
8/8/97	20	Southwest Corner of Oxy	Summit Park	1st Lift	102.9	16.9%	95.3%	
8/8/97	21	Southwest Corner of Oxy	Summit Park	1st Lift	105.7	17.1%	97.9%	
8/8/97	22	Southwest Corner of Oxy	Summit Park	1st Lift	101.4	15.9%	93.9%	
8/8/97	23	Southwest Corner of Oxy	Summit Park	1st Lift	104.8	16.1%	97.0%	
8/8/97	24	Southwest Corner of Oxy	Summit Park	1st Lift	102.6	18.3%	95.0%	
8/8/97	33	South Slope of Oxy	Summit Park	1st Lift	98.8	16.1%	91.5%	
8/8/97	34	South Slope of Oxy	Summit Park	1st Lift	98.6	16.3%	91.3%	
8/8/97	39	Subbase Rework, Northeast Corner of Oxy	Helmick Farm	1st Lift	105.2	14.3%	95.6%	
8/8/97	40	West Slope of Oxy	Summit Park	1st Lift	99.3	20.6%	91.9%	
8/8/97	41	West Slope of Oxy	Summit Park	1st Lift	98.9	20.2%	91.6%	
8/11/97	6	Northwest Corner of Oxy	Helmick Farm	1st Lift	99.3	15.2%	90.3%	
8/11/97	8	Northwest Corner of Oxy	Helmick Farm	1st Lift	1102.0	16.4%	1001.8%	
8/11/97	9	Northwest Corner of Oxy	Helmick Farm	1st Lift	103.6	16.3%	94.2%	
8/12/97	1	Rework Center of Oxy	Summit Park	1st Lift	114.3	13.7%	105.8%	
8/12/97	6	Rework Center of Oxy	Summit Park	1st Lift	104.1	15.8%	96.4%	
8/12/97	7	Rework Center of Oxy	Summit Park	1st Lift	110.5	13.8%	102.3%	
8/12/97	8	Rework Center of Oxy	Summit Park	1st Lift	102.6	13.5%	95.0%	
8/12/97	9	Rework Center of Oxy	Helmick Farm	1st Lift	103.6	12.9%	94.2%	
8/14/97	10	West Slope of Oxy	Summit Park	1st Lift	108.7	15.8%	100.6%	
8/14/97	11	West Slope of Oxy	Summit Park	1st Lift	111.9	12.3%	103.6%	
8/14/97	12	West Slope of Oxy	Summit Park	1st Lift	100.4	12.6%	93.0%	
8/14/97	13	West Slope of Oxy	Summit Park	1st Lift	106.6	12.6%	98.7%	
8/14/97	14	West Slope of Oxy	Summit Park	1st Lift	112.9	9.5%	104.5%	
8/14/97	15	West Slope of Oxy	Summit Park	1st Lift	105.8	17.4%	98.0%	
8/14/97	16	West Slope of Oxy	Summit Park	1st Lift	101.7	13.2%	94.2%	
8/15/97	2	West Slope of Oxy	Helmick Farm	1st Lift	106.7	12.0%	97.0%	
8/15/97	7	East Slope of Oxy	Helmick Farm	1st Lift	119.6	11.9%	108.7%	
8/15/97	8	East Slope of Oxy	Summit Park	1st Lift	115.7	10.5%	107.1%	
8/15/97	9	East Slope of Oxy	Summit Park	1st Lift	112.7	10.7%	104.4%	
8/15/97	10	East Slope of Oxy	Summit Park	1st Lift	113.2	10.0%	104.8%	
8/15/97	11	East Slope of Oxy	Helmick Farm	1st Lift	120.1	11.7%	109.2%	
8/15/97	12	East Slope of Oxy	Helmick Farm	1st Lift	108.5	10.8%	98.6%	
8/18/97	1	Retest of No. 8, 8/15/97	Summit Park	1st Lift	110.6	11.9%	102.4%	
8/18/97	2	Retest of No. 9, 8/15/97	Summit Park	1st Lift	115.1	11.3%	106.6%	

Table 4.5-2, page 8 of 10

Summary of Soil Compaction Results
Subbase Layer

102nd Street Landfill Site

Date	Test No.	Test Location	Material	Depth or Elevation	Dry Density(pcf)	Water Content(%)	% Proctor Density	Remarks
8/18/97	3	Retest of No. 10, 8/15/97	Summit Park	1st Lift	111.7	11.4%	103.4%	
8/18/97	4	Retest of No. 12, 8/15/97	Helmick Farm	1st Lift	112.9	14.9%	102.6%	
8/18/97	5	Retest of No. 11, 8/15/97	Helmick Farm	1st Lift	110.2	11.3%	100.2%	
8/18/97	6	Retest of No. 7, 8/15/97	Helmick Farm	1st Lift	122.2	10.5%	111.1%	
8/18/97	7	Northeast Corner of Oxy	Helmick Farm	1st Lift	111.1	10.1%	101.0%	
8/18/97	8	Northeast Corner of Oxy	Helmick Farm	1st Lift	109.4	8.4%	99.5%	
8/18/97	9	Northeast Corner of Oxy	Helmick Farm	1st Lift	112.2	8.4%	102.0%	
8/18/97	10	Northeast Corner of Oxy	Helmick Farm	1st Lift	120.7	9.6%	109.7%	
8/18/97	11	East Slope of Oxy	Summit Park	1st Lift	115.4	11.6%	106.9%	
8/18/97	12	East Slope of Oxy	Summit Park	1st Lift	106.9	11.7%	99.0%	
8/18/97	13	East Slope of Oxy	Summit Park	1st Lift	111.2	11.6%	103.0%	
8/18/97	14	Southwest Corner of Oxy	Summit Park	1st Lift	114.1	10.7%	105.6%	
8/18/97	15	Southwest Corner of Oxy	Summit Park	1st Lift	114.6	11.1%	106.1%	
8/18/97	16	Southwest Corner of Oxy	Summit Park	1st Lift	114.4	13.7%	105.9%	
8/18/97	17	Southwest Corner of Oxy	Summit Park	1st Lift	115.7	14.0%	107.1%	
8/18/97	18	Center of Oxy	Frontier	1st Lift	118.3	7.1%	103.3%	
8/18/97	19	Center of Oxy	Frontier	1st Lift	128.0	7.1%	111.8%	
8/18/97	20	Center of Oxy	Frontier	1st Lift	128.6	8.2%	112.3%	
8/18/97	23	Retest of No. 15	Summit Park	1st Lift	109.0	18.0%	100.9%	
8/18/97	24	Retest of No. 16	Summit Park	1st Lift	108.7	14.4%	100.6%	
8/19/97	1	Retest of No. 7, 8/18/97	Helmick Farm	1st Lift	111.4	17.6%	101.3%	
8/19/97	2	Retest of No. 6, 8/18/97	Helmick Farm	1st Lift	119.7	14.8%	108.8%	
8/19/97	3	Retest of No. 1, 8/18/97	Summit Park	1st Lift	119.4	14.8%	110.6%	
8/19/97	4	Retest of No. 2, 8/18/97	Summit Park	1st Lift	109.2	15.8%	101.1%	
8/19/97	5	Retest of No. 3, 8/18/97	Summit Park	1st Lift	113.6	15.6%	105.2%	
8/19/97	6	Retest of No. 5, 8/18/97	Helmick Farm	1st Lift	110.1	14.2%	100.1%	
8/19/97	7	Retest of No. 4, 8/18/97	Helmick Farm	1st Lift	108.6	14.9%	98.7%	
8/19/97	8	Retest of No. 24, 8/18/97	Summit Park	1st Lift	107.3	17.0%	99.4%	
8/19/97	9	Retest of No. 13, 8/18/97	Summit Park	1st Lift	106.5	15.6%	98.6%	
8/19/97	10	Retest of No. 17, 8/18/97	Summit Park	1st Lift	110.1	15.7%	101.9%	
8/19/97	11	Southwest Corner of Oxy	Helmick Farm	1st Lift	111.0	16.7%	100.9%	
8/19/97	12	Southwest Corner of Oxy	Helmick Farm	1st Lift	109.4	17.1%	99.5%	
8/19/97	13	Southwest Corner of Oxy	Helmick Farm	1st Lift	108.1	16.3%	98.3%	
8/19/97	14	Retest of No. 14, 8/18/97	Summit Park	1st Lift	113.4	15.7%	105.0%	
8/20/97	1	Retest of No. 9, 8/18/97	Helmick Farm	1st Lift	111.2	15.8%	101.1%	
8/20/97	2	Retest of No. 10, 8/18/97	Helmick Farm	1st Lift	106.1	17.2%	96.5%	

Table 4.5-2, page 9 of 10

Summary of Soil Compaction Results
Subbase Layer

102nd Street Landfill Site

Date	Test No.	Test Location	Material	Depth or Elevation	Dry Density(pcf)	Water Content(%)	% Proctor Density	Remarks
8/20/97	3	Retest of No. 4, 8/18/97	Helmick Farm	1st Lift	114.4	14.4%	104.0%	
8/20/97	4	Retest of No. 11, 8/18/97	Summit Park	1st Lift	113.0	16.8%	104.6%	
8/20/97	5	Subbase Reworked, Top of Oxy	Frontier	1st Lift	122.2	10.4%	106.7%	
8/20/97	6	Subbase Reworked, Top of Oxy	Frontier	1st Lift	120.3	8.7%	105.1%	
8/20/97	7	Subbase Reworked, Top of Oxy	Helmick Farm	1st Lift	108.9	12.6%	99.0%	
8/20/97	8	Subbase Reworked, Top of Oxy	Helmick Farm	1st Lift	106.7	10.6%	97.0%	
8/25/97	1	Retest of No. 8, 8/20/97	Helmick Farm	1st Lift	104.2	20.0%	94.7%	
8/25/97	2	Retest of No. 7, 8/20/97	Helmick Farm	1st Lift	106.7	14.3%	97.0%	
8/25/97	3	Retest of No. 6, 8/20/97	Frontier	1st Lift	108.1	16.1%	94.4%	
8/25/97	4	Retest of No. 5, 8/20/97	Frontier	1st Lift	110.6	15.3%	96.6%	
8/26/97	5	Rework top of Oxy	Summit Park	1st Lift	108.6	19.1%	100.6%	
8/26/97	6	Rework top of Oxy	Summit Park	1st Lift	101.4	17.8%	93.9%	
8/26/97	9	Rework top of Oxy	Frontier	1st Lift	113.1	16.0%	98.8%	
8/26/97	10	Rework top of Oxy	Frontier	1st Lift	118.0	13.6%	103.1%	
8/26/97	11	Rework top of Oxy	Helmick Farm	1st Lift	105.4	17.0%	95.8%	
8/26/97	12	Rework top of Oxy	Helmick Farm	1st Lift	100.5	17.0%	91.4%	
8/26/97	14	Rework top of Oxy	Summit Park	1st Lift	100.3	17.5%	92.9%	
8/26/97	15	Rework top of Oxy	Summit Park	1st Lift	108.9	16.2%	100.8%	
8/27/96	2	Rework top of Oxy	Helmick Farm	1st Lift	115.7	15.7%	105.2%	
8/27/96	3	Rework top of Oxy	Helmick Farm	1st Lift	113.7	14.7%	103.4%	
8/27/96	4	Retest of No. 18, 8/18/97	Frontier	1st Lift	115.1	13.1%	100.5%	
8/27/96	5	Rework top of Oxy	Frontier	1st Lift	116.6	15.3%	101.8%	
8/27/96	7	Select Cover Fill, East Slope of Oxy	Summit Park	1st Lift	104.3	17.1%	96.6%	
8/27/96	9	Retest of No. 14, 8/14/97	Helmick Farm	1st Lift	105.7	15.2%	96.1%	
8/27/96	10	Retest of No. 13, 8/14/97	Helmick Farm	1st Lift	109.5	15.2%	99.5%	
8/27/96	11	Rework Southwest Corner of Oxy	Helmick Farm	1st Lift	105.8	16.9%	96.2%	
8/27/96	12	Rework Southwest Corner of Oxy	Helmick Farm	1st Lift	100.3	16.8%	91.2%	
8/28/97	1	Rework Northwest Corner of Oxy	Frontier	1st Lift	109.5	12.7%	95.6%	
8/28/97	2	Rework Northwest Corner of Oxy	Frontier	1st Lift	110.6	13.2%	96.6%	
8/28/97	3	Rework Northwest Corner of Oxy	Helmick Farm	1st Lift	122.7	11.1%	111.5%	
8/28/97	4	Rework Northwest Corner of Oxy	Helmick Farm	1st Lift	104.2	10.7%	94.7%	
8/28/97	5	Retest of No. 3	Helmick Farm	1st Lift	113.6	14.6%	103.3%	
8/28/97	6	Retest of No. 4	Helmick Farm	1st Lift	103.8	15.6%	94.4%	
8/29/97	1	Rework Top of Oxy	Frontier	1st Lift	113.6	10.8%	99.2%	
8/29/97	2	Rework Top of Oxy	Frontier	1st Lift	116.4	10.4%	101.7%	
9/2/97	2	Northwest Corner of Oxy	Frontier	1st Lift	108.4	11.5%	94.7%	

Table 4.5-2, page 10 of 10

Summary of Soil Compaction Results
Subbase Layer

102nd Street Landfill Site

Date	Test No.	Test Location	Material	Depth or Elevation	Dry Density(pcf)	Water Content(%)	% Proctor Density	Remarks
9/2/97	3	Northwest Corner of Oxy	Frontier	1st Lift	110.5	10.5%	96.5%	
9/2/97	4	Northwest Corner of Oxy	Helmick Farm	1st Lift	109.9	13.8%	99.9%	
9/2/97	5	Northwest Corner of Oxy	Helmick Farm	1st Lift	108.4	9.7%	98.5%	
9/2/97	6	Retest of No. 2	Frontier	1st Lift	108.1	12.7%	94.4%	
9/2/97	7	Retest of No. 3	Frontier	1st Lift	108.4	12.1%	94.7%	
9/2/97	8	Retest of No. 4	Helmick Farm	1st Lift	108.3	15.6%	98.5%	
9/2/97	9	Retest of No. 5	Helmick Farm	1st Lift	111.3	14.6%	101.2%	
9/5/97	2	Retest of No. 11, 8/14/97	Summit Park	1st Lift	113.7	14.7%	103.4%	
9/5/97	3	Retest of No. 12, 8/14/97	Helmick Farm	1st Lift	111.7	16.1%	101.5%	
9/5/97	4	Subbase Rework, West Slope of Oxy	Helmick Farm	1st Lift	110.7	16.4%	100.6%	
9/5/97	5	Subbase Rework, West Slope of Oxy	Helmick Farm	1st Lift	113.4	15.2%	103.1%	
9/5/97	6	West Slope of Oxy	Helmick Farm	1st Lift	104.9	14.9%	95.4%	
9/8/97	3	Subbase Rework, Northwest Corner of Oxy	Frontier	1st Lift	107.0	12.0%	93.4%	
9/8/97	4	Subbase Rework, Northwest Corner of Oxy	Helmick Farm	1st Lift	99.5	15.2%	90.5%	
9/9/97	10	West Side of Oxy	Summit Park	1st Lift	111.9	16.0%	103.6%	
9/9/97	11	West Side of Oxy	Summit Park	1st Lift	111.3	16.4%	103.1%	

Table 4.5-3, page 1 of 18

Summary of Geosynthetic Results
Geosynthetic Clay Layer

102nd Street Landfill Site

Roll Number	Log Number	Order Number	Material	Bentonite Properties					Roll Properties				
				Ret 10 Mesh	Free Swell	Fluid Loss	Moisture	Passing 200	Bentonite Mass/Area	Grab Elongation	Grab Strength	Peel Strength	Moisture
220	199718020	59344	Claymax 200R	0	27.0	14.8	7.2	0.5	1.05	30.1	216.0	NA	43.3
223	199718020	59344	Claymax 200R	0	27.0	14.8	7.2	0.5	1.05	30.1	216.0	NA	43.3
226	199718020	59343	Claymax 200R	0	27.0	14.8	7.2	0.5	1.07	30.1	216.0	NA	40.9
236	199718020	59343	Claymax 200R	0	27.0	14.8	7.2	0.5	1.07	30.1	216.0	NA	40.9
237	199718020	59343	Claymax 200R	0	27.0	14.8	7.2	0.5	1.07	30.1	216.0	NA	40.9
241	199718020	59344	Claymax 200R	0	30.0	14.0	7.2	0.8	0.92	32.6	231.9	NA	42.4
242	199718020	59344	Claymax 200R	0	30.0	14.0	7.2	0.8	0.95	32.6	231.9	NA	41.2
243	199718020	59344	Claymax 200R	0	30.0	14.0	7.2	0.8	0.95	32.6	231.9	NA	41.2
279	199722020	59351	Claymax 200R	0	30.0	14.0	7.2	0.8	0.93	32.6	231.9	NA	54.9
297	199723020	59344	Claymax 200R	0	24.0	14.2	7.6	0.8	0.92	19.8	256.5	NA	47.0
304	199723020	59344	Claymax 200R	0	24.0	14.2	7.6	0.8	0.92	19.8	256.5	NA	47.0
305	199723020	59343	Claymax 200R	0	24.0	14.2	7.6	0.8	0.92	19.8	268.3	NA	47.0
339	199725020	59344	Claymax 200R	0	24.0	14.2	7.6	0.8	0.92	19.8	256.5	NA	48.8
340	199725020	59344	Claymax 200R	0	24.0	14.2	7.6	0.8	0.92	19.8	256.5	NA	48.8
341	199725020	59344	Claymax 200R	0	24.0	14.2	7.6	0.8	0.92	19.8	256.5	NA	48.8
342	199725020	59342	Claymax 200R	0	24.0	14.2	7.6	0.8	0.92	37.5	268.3	NA	42.9
343	199725020	59344	Claymax 200R	0	24.0	14.2	7.6	0.8	0.92	19.8	256.5	NA	48.8
344	199725020	59344	Claymax 200R	0	24.0	14.2	7.6	0.8	0.92	19.8	256.5	NA	48.8
345	199725020	59344	Claymax 200R	0	24.0	14.2	7.6	0.8	0.92	37.5	268.3	NA	47.0
346	199725020	59344	Claymax 200R	0	24.0	14.2	7.6	0.8	0.92	37.5	268.3	NA	47.0
347	199725020	59344	Claymax 200R	0	24.0	14.2	7.6	0.8	0.92	37.5	268.3	NA	47.0
348	199725020	59344	Claymax 200R	0	24.0	14.2	7.6	0.8	0.92	37.5	268.3	NA	47.0
349	199725020	59343	Claymax 200R	0	24.0	14.2	7.6	0.8	0.92	37.5	268.3	NA	47.0
350	199725020	59343	Claymax 200R	0	24.0	14.2	7.6	0.8	0.92	37.5	268.3	NA	47.0
351	199725020	59343	Claymax 200R	0	24.0	14.2	7.6	0.8	0.92	37.5	268.3	NA	47.0
352	199725020	59343	Claymax 200R	0	24.0	14.2	7.6	0.8	0.92	37.5	268.3	NA	47.0
353	199725020	59343	Claymax 200R	0	24.0	14.2	7.6	0.8	0.92	37.5	268.3	NA	47.0
354	199725020	59343	Claymax 200R	0	24.0	14.2	7.6	0.8	0.92	37.5	268.3	NA	47.0
355	199725020	59343	Claymax 200R	0	24.0	14.2	7.6	0.8	0.92	37.5	268.3	NA	47.0
356	199725020	59343	Claymax 200R	0	24.0	14.2	7.6	0.8	0.92	37.5	268.3	NA	47.0
357	199725020	59343	Claymax 200R	0	24.0	14.2	7.6	0.8	0.92	37.5	268.3	NA	47.0
358	199725020	59343	Claymax 200R	0	24.0	14.2	7.6	0.8	0.93	37.5	268.3	NA	42.9
359	199725020	59342	Claymax 200R	0	24.0	14.2	7.6	0.8	0.93	37.5	268.3	NA	42.9
360	199725020	59343	Claymax 200R	0	24.0	14.2	7.6	0.8	0.93	37.5	268.3	NA	42.9
361	199725020	59343	Claymax 200R	0	24.0	14.2	7.6	0.8	0.93	37.5	268.3	NA	42.9
362	199725020	59343	Claymax 200R	0	24.0	14.2	7.6	0.8	0.93	37.5	268.3	NA	42.9

Table 4.5-3, page 2 of 18

Summary of Geosynthetic Results
Geosynthetic Clay Layer

102nd Street Landfill Site

Roll Number	Log Number	Order Number	Material	Bentonite Properties					Roll Properties				
				Ret 10 Mesh	Free Swell	Fluid Loss	Moisture	Passing 200	Bentonite Mass/Area	Grab Elongation	Grab Strength	Peel Strength	Moisture
363	199725020	59342	Claymax 200R	0	24.0	14.2	7.6	0.8	0.93	37.5	268.3	NA	42.9
364	199725020	59342	Claymax 200R	0	24.0	14.2	7.6	0.8	0.93	37.5	268.3	NA	42.9
365	199725020	59342	Claymax 200R	0	24.0	14.2	7.6	0.8	0.93	37.5	268.3	NA	42.9
366	199725020	59342	Claymax 200R	0	24.0	14.2	7.6	0.8	0.93	37.5	268.3	NA	42.9
367	199725020	59342	Claymax 200R	0	24.0	14.2	7.6	0.8	0.93	37.5	268.3	NA	42.9
368	199725020	59342	Claymax 200R	0	24.0	14.2	7.6	0.8	0.93	37.5	268.3	NA	42.9
369	199725020	59342	Claymax 200R	0	24.0	14.2	7.6	0.8	0.93	37.5	268.3	NA	42.9
370	199725020	59342	Claymax 200R	0	24.0	14.2	7.6	0.8	0.93	37.5	268.3	NA	42.9
371	199725020	59342	Claymax 200R	0	24.0	14.2	7.6	0.8	0.93	37.5	268.3	NA	42.9
372	199725020	59342	Claymax 200R	0	24.0	14.2	7.6	0.8	0.93	37.5	268.3	NA	42.9
373	199725020	59342	Claymax 200R	0	24.0	14.2	7.6	0.8	0.93	37.5	268.3	NA	42.9
374	199725020	59342	Claymax 200R	0	24.0	14.2	7.6	0.8	0.93	37.5	268.3	NA	42.9
375	199725020	59342	Claymax 200R	0	24.0	14.2	7.6	0.8	0.93	37.5	268.3	NA	42.9
376	199725020	59342	Claymax 200R	0	24.0	14.2	7.6	0.8	0.93	37.5	268.3	NA	42.9
377	199725020	59351	Claymax 200R	0	24.0	11.2	7.4	0.7	0.93	37.5	268.3	NA	42.9
378	199726020	59661	Claymax 200R	0	24.0	11.2	7.4	0.7	1.00	40.5	299.5	NA	41.2
379	199725020	59351	Claymax 200R	0	24.0	11.2	7.4	0.7	1.00	40.5	299.5	NA	41.2
380	199726020	59661	Claymax 200R	0	24.0	11.2	7.4	0.7	1.00	40.5	299.5	NA	41.2
381	199726020	59661	Claymax 200R	0	24.0	11.2	7.4	0.7	1.00	40.5	299.5	NA	41.2
382	199726020	59661	Claymax 200R	0	24.0	11.2	7.4	0.7	1.00	40.5	299.5	NA	41.2
384	199726020	59661	Claymax 200R	0	24.0	11.2	7.4	0.7	1.00	40.5	299.5	NA	41.2
387	199726020	59661	Claymax 200R	0	24.0	11.2	7.4	0.7	1.00	40.5	299.5	NA	41.2
388	199726020	59661	Claymax 200R	0	24.0	11.2	7.4	0.7	1.00	40.5	299.5	NA	41.2
389	199726020	59661	Claymax 200R	0	24.0	11.2	7.4	0.7	1.00	40.5	299.5	NA	41.2
390	199726020	59661	Claymax 200R	0	24.0	11.2	7.4	0.7	1.00	40.5	299.5	NA	41.2
391	199725020	59351	Claymax 200R	0	24.0	11.2	7.4	0.7	1.00	40.5	299.5	NA	41.2
392	199725020	59351	Claymax 200R	0	24.0	11.2	7.4	0.7	1.00	40.5	299.5	NA	41.2
393	199725020	59353	Claymax 200R	0	24.0	11.2	7.4	0.7	0.91	40.5	299.5	NA	44.4
394	199725020	59352	Claymax 200R	0	24.0	11.2	7.4	0.7	0.91	40.5	299.5	NA	44.4
395	199725020	59352	Claymax 200R	0	24.0	11.2	7.4	0.7	0.91	40.5	299.5	NA	44.4
396	199725020	59353	Claymax 200R	0	24.0	11.2	7.4	0.7	0.91	40.5	299.5	NA	44.4
397	199725020	59352	Claymax 200R	0	24.0	11.2	7.4	0.7	0.91	40.5	299.5	NA	44.4
398	199725020	59352	Claymax 200R	0	24.0	11.2	7.4	0.7	0.91	40.5	299.5	NA	44.4
399	199725020	59352	Claymax 200R	0	24.0	11.2	7.4	0.7	0.91	40.5	299.5	NA	44.4
400	199725020	59352	Claymax 200R	0	24.0	11.2	7.4	0.7	0.91	40.5	299.5	NA	44.4
401	199725020	59352	Claymax 200R	0	24.0	11.2	7.4	0.7	0.91	40.5	299.5	NA	44.4

Table 4.5-3, page 3 of 18

Summary of Geosynthetic Results
Geosynthetic Clay Layer

102nd Street Landfill Site

Roll Number	Log Number	Order Number	Material	Bentonite Properties					Roll Properties				
				Ret 10 Mesh	Free Swell	Fluid Loss	Moisture	Passing 200	Bentonite Mass/Area	Grab Elongation	Grab Strength	Peel Strength	Moisture
402	199725020	59352	Claymax 200R	0	24.0	11.2	7.4	0.7	0.91	40.5	299.5	NA	44.4
403	199725020	59349	Claymax 200R	0	24.0	11.2	7.4	0.7	0.91	40.5	299.5	NA	42.4
404	199725020	59353	Claymax 200R	0	24.0	11.2	7.4	0.7	0.91	40.5	299.5	NA	44.4
405	199725020	59353	Claymax 200R	0	24.0	11.2	7.4	0.7	0.91	40.5	299.5	NA	44.4
406	199725020	59353	Claymax 200R	0	24.0	11.2	7.4	0.7	0.91	40.5	299.5	NA	44.4
407	199725020	59353	Claymax 200R	0	24.0	11.2	7.4	0.7	0.91	40.5	299.5	NA	44.4
408	199725020	59353	Claymax 200R	0	24.0	11.2	7.4	0.7	0.91	40.5	299.5	NA	44.4
409	199725020	59347	Claymax 200R	0	24.0	11.2	7.4	0.7	0.97	40.5	299.5	NA	42.4
410	199725020	59353	Claymax 200R	0	24.0	11.2	7.4	0.7	0.97	40.5	299.5	NA	42.4
411	199725020	59347	Claymax 200R	0	24.0	11.2	7.4	0.7	0.97	40.5	299.5	NA	42.4
412	199725020	59347	Claymax 200R	0	24.0	11.2	7.4	0.7	0.97	40.5	299.5	NA	42.4
413	199725020	59347	Claymax 200R	0	24.0	11.2	7.4	0.7	0.97	40.5	299.5	NA	42.4
414	199725020	59347	Claymax 200R	0	24.0	11.2	7.4	0.7	0.97	40.5	299.5	NA	42.4
415	199725020	59349	Claymax 200R	0	24.0	11.2	7.4	0.7	0.97	40.5	299.5	NA	42.4
416	199725020	59349	Claymax 200R	0	24.0	11.2	7.4	0.7	0.97	40.5	299.5	NA	42.4
417	199725020	59347	Claymax 200R	0	24.0	11.2	7.4	0.7	0.97	40.5	299.5	NA	42.4
418	199725020	59347	Claymax 200R	0	24.0	11.2	7.4	0.7	0.97	40.5	299.5	NA	42.4
419	199725020	59347	Claymax 200R	0	24.0	11.2	7.4	0.7	0.97	40.5	299.5	NA	42.4
420	199725020	59347	Claymax 200R	0	24.0	11.2	7.4	0.7	0.97	40.5	299.5	NA	42.4
421	199725020	59347	Claymax 200R	0	24.0	11.2	7.4	0.7	0.97	40.5	299.5	NA	42.4
422	199725020	59347	Claymax 200R	0	24.0	11.2	7.4	0.7	0.97	40.5	299.5	NA	42.4
423	199725020	59347	Claymax 200R	0	24.0	11.2	7.4	0.7	0.97	40.5	299.5	NA	42.4
424	199725020	59347	Claymax 200R	0	24.0	11.2	7.4	0.7	0.97	40.5	299.5	NA	42.4
425	199725020	59346	Claymax 200R	0	24.0	11.2	7.4	0.7	0.93	40.5	299.5	NA	47.6
428	199725020	59347	Claymax 200R	0	24.0	11.2	7.4	0.7	0.93	40.5	299.5	NA	47.6
429	199725020	59347	Claymax 200R	0	24.0	11.2	7.4	0.7	0.93	40.5	299.5	NA	47.6
430	199725020	59346	Claymax 200R	0	24.0	11.2	7.4	0.7	0.93	40.5	299.5	NA	47.6
431	199725020	59346	Claymax 200R	0	24.0	11.2	7.4	0.7	0.93	40.5	299.5	NA	47.6
432	199725020	59346	Claymax 200R	0	24.0	11.2	7.4	0.7	0.93	40.5	299.5	NA	47.6
433	199725020	59346	Claymax 200R	0	24.0	11.2	7.4	0.7	0.93	40.5	299.5	NA	47.6
434	199725020	59346	Claymax 200R	0	24.0	11.2	7.4	0.7	0.93	40.5	299.5	NA	47.6
435	199725020	59346	Claymax 200R	0	24.0	11.2	7.4	0.7	0.93	40.5	299.5	NA	47.6
436	199725020	59346	Claymax 200R	0	24.0	11.2	7.4	0.7	0.93	40.5	299.5	NA	47.6
437	199725020	59346	Claymax 200R	0	24.0	11.2	7.4	0.7	0.93	40.5	299.5	NA	47.6
438	199725020	59346	Claymax 200R	0	24.0	11.2	7.4	0.7	0.93	40.5	299.5	NA	47.6
439	199725020	59346	Claymax 200R	0	24.0	11.2	7.4	0.7	0.93	40.5	299.5	NA	47.6

Table 4.5-3, page 4 of 18

Summary of Geosynthetic Results
Geosynthetic Clay Layer

102nd Street Landfill Site

Roll Number	Log Number	Order Number	Material	Bentonite Properties					Roll Properties				
				Ret 10 Mesh	Free Swell	Fluid Loss	Moisture	Passing 200	Bentonite Mass/Area	Grab Elongation	Grab Strength	Peel Strength	Moisture
440	199725020	59346	Claymax 200R	0	24.0	11.2	7.4	0.7	0.93	40.5	299.5	NA	47.6
441	199725020	59345	Claymax 200R	0	24.0	11.2	7.4	0.7	1.00	40.5	299.5	NA	37.6
442	199725020	59346	Claymax 200R	0	24.0	11.2	7.4	0.7	1.00	40.5	299.5	NA	37.6
443	199725020	59346	Claymax 200R	0	24.0	11.2	7.4	0.7	1.00	40.5	299.5	NA	37.6
444	199725020	59346	Claymax 200R	0	24.0	11.2	7.4	0.7	1.00	40.5	299.5	NA	37.6
445	199725020	59345	Claymax 200R	0	24.0	11.2	7.4	0.7	1.00	40.5	299.5	NA	37.6
446	199725020	59345	Claymax 200R	0	24.0	11.2	7.4	0.7	1.00	40.5	299.5	NA	37.6
447	199725020	59345	Claymax 200R	0	24.0	11.2	7.4	0.7	1.00	40.5	299.5	NA	37.6
448	199725020	59345	Claymax 200R	0	24.0	11.2	7.4	0.7	1.00	40.5	299.5	NA	37.6
449	199725020	59345	Claymax 200R	0	24.0	11.2	7.4	0.7	1.00	40.5	299.5	NA	37.6
450	199725020	59345	Claymax 200R	0	24.0	11.2	7.4	0.7	1.00	40.5	299.5	NA	37.6
451	199725020	59345	Claymax 200R	0	24.0	11.2	7.4	0.7	1.00	40.5	299.5	NA	37.6
452	199725020	59345	Claymax 200R	0	24.0	11.2	7.4	0.7	1.00	40.5	299.5	NA	37.6
453	199725020	59345	Claymax 200R	0	24.0	11.2	7.4	0.7	1.00	40.5	299.5	NA	37.6
454	199725020	59345	Claymax 200R	0	24.0	11.2	7.4	0.7	1.00	40.5	299.5	NA	37.6
455	199725020	59345	Claymax 200R	0	24.0	11.2	7.4	0.7	1.00	40.5	299.5	NA	37.6
456	199725020	59345	Claymax 200R	0	24.0	11.2	7.4	0.7	1.00	40.5	299.5	NA	37.6
457	199725020	59345	Claymax 200R	0	24.0	11.2	7.4	0.7	1.00	40.5	299.5	NA	37.6
458	199725020	59345	Claymax 200R	0	24.0	11.2	7.4	0.7	1.00	40.5	299.5	NA	37.6
459	199725020	59349	Claymax 200R	0	24.0	11.2	7.4	0.7	1.00	40.5	299.5	NA	37.6
460	199725020	59352	Claymax 200R	0	24.0	11.2	7.4	0.7	0.96	47.8	313.0	NA	42.7
461	199725020	59349	Claymax 200R	0	24.0	11.2	7.4	0.7	0.96	47.8	313.0	NA	42.7
462	199725020	59349	Claymax 200R	0	24.0	11.2	7.4	0.7	0.96	47.8	313.0	NA	42.7
463	199725020	59351	Claymax 200R	0	27.0	11.8	6.8	0.6	0.96	47.8	313.0	NA	42.7
464	199725020	59351	Claymax 200R	0	27.0	11.8	6.8	0.6	0.96	47.8	313.0	NA	42.7
465	199725020	59351	Claymax 200R	0	27.0	11.8	6.8	0.6	0.96	47.8	313.0	NA	42.7
466	199725020	59351	Claymax 200R	0	27.0	11.8	6.8	0.6	0.96	47.8	313.0	NA	42.7
467	199725020	59351	Claymax 200R	0	27.0	11.8	6.8	0.6	0.96	47.8	313.0	NA	42.7
468	199725020	59351	Claymax 200R	0	27.0	11.8	6.8	0.6	0.96	47.8	313.0	NA	42.7
469	199725020	59351	Claymax 200R	0	27.0	11.8	6.8	0.6	0.96	47.8	313.0	NA	42.7
470	199725020	59351	Claymax 200R	0	27.0	11.8	6.8	0.6	0.96	47.8	313.0	NA	42.7
471	199725020	59352	Claymax 200R	0	27.0	11.8	6.8	0.6	0.96	47.8	313.0	NA	42.7
472	199725020	59352	Claymax 200R	0	27.0	11.8	6.8	0.6	0.96	47.8	313.0	NA	42.7
473	199725020	59352	Claymax 200R	0	27.0	11.8	6.8	0.6	0.96	47.8	313.0	NA	42.7
474	199725020	59352	Claymax 200R	0	27.0	11.8	6.8	0.6	0.96	47.8	313.0	NA	42.7
475	199725020	59352	Claymax 200R	0	27.0	11.8	6.8	0.6	0.96	47.8	313.0	NA	42.7

Table 4.5-3, page 5 of 18

Summary of Geosynthetic Results
Geosynthetic Clay Layer

102nd Street Landfill Site

Roll Number	Log Number	Order Number	Material	Bentonite Properties					Roll Properties				
				Ret 10 Mesh	Free Swell	Fluid Loss	Moisture	Passing 200	Bentonite Mass/Area	Grab Elongation	Grab Strength	Peel Strength	Moisture
476	199725020	59352	Claymax 200R	0	27.0	11.8	6.8	0.6	0.95	47.8	313.0	NA	41.2
477	199725020	59353	Claymax 200R	0	27.0	11.8	6.8	0.6	0.95	47.8	313.0	NA	41.2
478	199725020	59353	Claymax 200R	0	27.0	11.8	6.8	0.6	0.95	47.8	313.0	NA	41.2
479	199725020	59353	Claymax 200R	0	27.0	11.8	6.8	0.6	0.95	47.8	313.0	NA	41.2
480	199725020	59353	Claymax 200R	0	27.0	11.8	6.8	0.6	0.95	47.8	313.0	NA	41.2
481	199725020	59349	Claymax 200R	0	27.0	11.8	6.8	0.6	0.95	47.8	313.0	NA	41.2
482	199725020	59353	Claymax 200R	0	27.0	11.8	6.8	0.6	0.95	47.8	313.0	NA	41.2
483	199725020	59353	Claymax 200R	0	27.0	11.8	6.8	0.6	0.95	47.8	313.0	NA	41.2
484	199725020	59353	Claymax 200R	0	27.0	11.8	6.8	0.6	0.95	47.8	313.0	NA	41.2
485	199725020	59349	Claymax 200R	0	27.0	11.8	6.8	0.6	0.95	47.8	313.0	NA	41.2
486	199725020	59349	Claymax 200R	0	27.0	11.8	6.8	0.6	0.95	47.8	313.0	NA	41.2
487	199725020	59349	Claymax 200R	0	27.0	11.8	6.8	0.6	0.95	47.8	313.0	NA	41.2
488	199725020	59349	Claymax 200R	0	27.0	11.8	6.8	0.6	0.95	47.8	313.0	NA	41.2
489	199725020	59349	Claymax 200R	0	27.0	11.8	6.8	0.6	0.95	47.8	313.0	NA	41.2
490	199725020	59349	Claymax 200R	0	27.0	11.8	6.8	0.6	0.95	47.8	313.0	NA	41.2
491	199725020	59349	Claymax 200R	0	27.0	11.8	6.8	0.6	0.95	47.8	313.0	NA	41.2
492	199725020	59350	Claymax 200R	0	27.0	11.8	6.8	0.6	0.92	47.8	313.0	NA	48.1
493	199725020	59349	Claymax 200R	0	27.0	11.8	6.8	0.6	0.92	47.8	313.0	NA	48.1
494	199725020	59350	Claymax 200R	0	27.0	11.8	6.8	0.6	0.92	47.8	313.0	NA	48.1
495	199725020	59350	Claymax 200R	0	27.0	11.8	6.8	0.6	0.92	47.8	313.0	NA	48.1
496	199725020	59350	Claymax 200R	0	27.0	11.8	6.8	0.6	0.92	47.8	313.0	NA	48.1
497	199725020	59350	Claymax 200R	0	27.0	11.8	6.8	0.6	0.92	47.8	313.0	NA	48.1
498	199725020	59350	Claymax 200R	0	27.0	11.8	6.8	0.6	0.92	47.8	313.0	NA	48.1
499	199725020	59350	Claymax 200R	0	27.0	11.8	6.8	0.6	0.92	47.8	313.0	NA	48.1
500	199725020	59350	Claymax 200R	0	27.0	11.8	6.8	0.6	0.92	47.8	313.0	NA	48.1
501	199725020	59350	Claymax 200R	0	27.0	11.8	6.8	0.6	0.92	47.8	313.0	NA	48.1
502	199725020	59350	Claymax 200R	0	27.0	11.8	6.8	0.6	0.92	47.8	313.0	NA	48.1
503	199725020	59350	Claymax 200R	0	27.0	11.8	6.8	0.6	0.92	47.8	313.0	NA	48.1
504	199725020	59350	Claymax 200R	0	27.0	11.8	6.8	0.6	0.92	47.8	313.0	NA	48.1
505	199725020	59350	Claymax 200R	0	27.0	11.8	6.8	0.6	0.92	47.8	313.0	NA	48.1
506	199725020	59350	Claymax 200R	0	27.0	11.8	6.8	0.6	0.92	47.8	313.0	NA	48.1
507	199725020	59348	Claymax 200R	0	27.0	11.8	6.8	0.6	0.92	47.8	313.0	NA	48.2
508	199725020	59348	Claymax 200R	0	27.0	11.8	6.8	0.6	0.90	47.8	313.0	NA	48.2
509	199725020	59348	Claymax 200R	0	27.0	11.8	6.8	0.6	0.90	47.8	313.0	NA	48.2
510	199725020	59348	Claymax 200R	0	27.0	11.8	6.8	0.6	0.90	47.8	313.0	NA	48.2
511	199725020	59348	Claymax 200R	0	27.0	11.8	6.8	0.6	0.90	47.8	313.0	NA	48.2

Table 4.5-3, page 6 of 18

Summary of Geosynthetic Results
Geosynthetic Clay Layer

102nd Street Landfill Site

Roll Number	Log Number	Order Number	Material	Bentonite Properties					Roll Properties				
				Ret 10 Mesh	Free Swell	Fluid Loss	Moisture	Passing 200	Bentonite Mass/Area	Grab Elongation	Grab Strength	Peel Strength	Moisture
512	199725020	59348	Claymax 200R	0	27.0	11.8	6.8	0.6	0.90	47.8	313.0	NA	48.2
513	199725020	59348	Claymax 200R	0	27.0	11.8	6.8	0.6	0.90	47.8	313.0	NA	48.2
514	199725020	59348	Claymax 200R	0	27.0	11.8	6.8	0.6	0.90	47.8	313.0	NA	48.2
515	199725020	59350	Claymax 200R	0	27.0	11.8	6.8	0.6	0.90	47.8	313.0	NA	48.2
516	199725020	59348	Claymax 200R	0	27.0	11.8	6.8	0.6	0.90	47.8	313.0	NA	48.2
517	199725020	59348	Claymax 200R	0	27.0	11.8	6.8	0.6	0.90	47.8	313.0	NA	48.2
518	199725020	59348	Claymax 200R	0	27.0	11.8	6.8	0.6	0.90	47.8	313.0	NA	48.2
519	199725020	59348	Claymax 200R	0	27.0	11.8	6.8	0.6	0.90	47.8	313.0	NA	48.2
520	199725020	59348	Claymax 200R	0	27.0	11.8	6.8	0.6	0.90	47.8	313.0	NA	48.2
521	199725020	59348	Claymax 200R	0	27.0	11.8	6.8	0.6	0.90	47.8	313.0	NA	48.2
522	199725020	59351	Claymax 200R	0	27.0	11.8	6.8	0.6	0.90	47.8	313.0	NA	48.2
523	199725020	59348	Claymax 200R	0	27.0	11.8	6.8	0.6	0.90	47.8	313.0	NA	48.2
524	199725020	59351	Claymax 200R	0	27.0	11.8	6.8	0.6	0.90	47.8	313.0	NA	48.2
710	199729020	62942	Claymax 200R	0	25.0	14.0	7.6	0.4	0.91	32.9	161.7	NA	49.0
711	199729020	62942	Claymax 200R	0	25.0	14.0	7.6	0.4	0.91	32.9	161.7	NA	49.0
712	199729020	62942	Claymax 200R	0	25.0	14.0	7.6	0.4	0.91	32.9	161.7	NA	49.0
713	199729020	62942	Claymax 200R	0	25.0	14.0	7.6	0.4	0.91	32.9	161.7	NA	49.0
714	199729020	62942	Claymax 200R	0	25.0	14.0	7.6	0.4	0.91	32.9	161.7	NA	49.0
715	199729020	62945	Claymax 200R	0	25.0	14.0	7.6	0.4	0.91	32.9	161.7	NA	49.0
716	199729020	62945	Claymax 200R	0	25.0	14.0	7.6	0.4	0.91	32.9	161.7	NA	49.0
717	199729020	62945	Claymax 200R	0	25.0	14.0	7.6	0.4	0.91	32.9	161.7	NA	49.0
718	199729020	62945	Claymax 200R	0	25.0	14.0	7.6	0.4	0.91	32.9	161.7	NA	49.0
719	199729020	62945	Claymax 200R	0	25.0	14.0	7.6	0.4	0.91	32.9	161.7	NA	49.0
720	199729020	62945	Claymax 200R	0	25.0	14.0	7.6	0.4	0.91	32.9	161.7	NA	49.0
721	199729020	62945	Claymax 200R	0	25.0	14.0	7.6	0.4	0.91	32.9	161.7	NA	49.0
722	199729020	62944	Claymax 200R	0	25.0	14.0	7.6	0.4	0.91	32.9	161.7	NA	49.0
723	199729020	62942	Claymax 200R	0	25.0	14.0	7.6	0.4	0.91	32.9	161.7	NA	49.0
724	199729020	62942	Claymax 200R	0	25.0	14.0	7.6	0.4	0.91	32.9	161.7	NA	49.0
725	199729020	62942	Claymax 200R	0	25.0	14.0	7.6	0.4	0.91	32.9	161.7	NA	49.0
726	199729020	62936	Claymax 200R	0	25.0	14.0	7.6	0.4	0.89	32.9	161.7	NA	47.3
727	199729020	62942	Claymax 200R	0	25.0	14.0	7.6	0.4	0.89	32.9	161.7	NA	47.3
728	199729020	62942	Claymax 200R	0	25.0	14.0	7.6	0.4	0.89	32.9	161.7	NA	47.3
729	199729020	62942	Claymax 200R	0	25.0	14.0	7.6	0.4	0.89	32.9	161.7	NA	47.3
730	199729020	62945	Claymax 200R	0	25.0	14.0	7.6	0.4	0.89	32.9	161.7	NA	47.3
731	199729020	62945	Claymax 200R	0	25.0	14.0	7.6	0.4	0.89	32.9	161.7	NA	47.3
732	199729020	62945	Claymax 200R	0	25.0	14.0	7.6	0.4	0.89	32.9	161.7	NA	47.3

Table 4.5-3, page 7 of 18

Summary of Geosynthetic Results
Geosynthetic Clay Layer

102nd Street Landfill Site

Roll Number	Log Number	Order Number	Material	Bentonite Properties					Roll Properties				
				Ret 10 Mesh	Free Swell	Fluid Loss	Moisture	Passing 200	Bentonite Mass/Area	Grab Elongation	Grab Strength	Peel Strength	Moisture
733	199729020	62945	Claymax 200R	0	25.0	14.0	7.6	0.4	0.89	32.9	161.7	NA	47.3
734	199729020	62945	Claymax 200R	0	25.0	14.0	7.6	0.4	0.89	32.9	161.7	NA	47.3
735	199729020	62945	Claymax 200R	0	25.0	14.0	7.6	0.4	0.89	32.9	161.7	NA	47.3
736	199729020	62936	Claymax 200R	0	25.0	14.0	7.6	0.4	0.89	32.9	161.7	NA	47.3
737	199729020	62936	Claymax 200R	0	25.0	14.0	7.6	0.4	0.89	32.9	161.7	NA	47.3
738	199729020	62936	Claymax 200R	0	25.0	14.0	7.6	0.4	0.89	32.9	161.7	NA	47.3
739	199729020	62936	Claymax 200R	0	25.0	14.0	7.6	0.4	0.89	32.9	161.7	NA	47.3
740	199729020	62936	Claymax 200R	0	25.0	14.0	7.6	0.4	0.89	32.9	161.7	NA	47.3
741	199729020	62936	Claymax 200R	0	25.0	14.0	7.6	0.4	0.89	32.9	161.7	NA	47.3
742	199729020	62936	Claymax 200R	0	25.0	14.0	7.6	0.4	0.91	32.9	161.7	NA	46.5
743	199729020	62940	Claymax 200R	0	25.0	14.0	7.6	0.4	0.91	32.9	161.7	NA	46.5
744	199729020	62936	Claymax 200R	0	25.0	14.0	7.6	0.4	0.91	32.9	161.7	NA	46.5
745	199729020	62936	Claymax 200R	0	25.0	14.0	7.6	0.4	0.91	32.9	161.7	NA	46.5
746	199729020	62945	Claymax 200R	0	25.0	14.0	7.6	0.4	0.91	32.9	161.7	NA	46.5
747	199729020	62936	Claymax 200R	0	25.0	14.0	7.6	0.4	0.91	32.9	161.7	NA	46.5
748	199729020	62935	Claymax 200R	0	25.0	14.0	7.6	0.4	0.91	32.9	161.7	NA	46.5
749	199729020	62935	Claymax 200R	0	25.0	14.0	7.6	0.4	0.91	32.9	161.7	NA	46.5
750	199729020	62935	Claymax 200R	0	25.0	14.0	7.6	0.4	0.91	32.9	161.7	NA	46.5
751	199729020	62935	Claymax 200R	0	25.0	14.0	7.6	0.4	0.91	32.9	161.7	NA	46.5
752	199729020	62935	Claymax 200R	0	25.0	14.0	7.6	0.4	0.91	32.9	161.7	NA	46.5
753	199729020	62936	Claymax 200R	0	25.0	14.0	7.6	0.4	0.91	32.9	161.7	NA	46.5
754	199729020	62936	Claymax 200R	0	25.0	14.0	7.6	0.4	0.91	32.9	161.7	NA	46.5
755	199729020	62940	Claymax 200R	0	25.0	14.0	7.6	0.4	0.91	32.9	161.7	NA	46.5
756	199729020	62940	Claymax 200R	0	25.0	14.0	7.6	0.4	0.91	32.9	161.7	NA	46.5
757	199729020	62940	Claymax 200R	0	25.0	14.0	7.6	0.4	0.91	32.9	161.7	NA	46.5
758	199730020	62944	Claymax 200R	0	25.0	14.4	8.0	0.6	0.90	34.1	203.9	NA	45.8
759	199729020	62940	Claymax 200R	0	25.0	14.4	8.0	0.6	0.90	34.1	203.9	NA	45.8
760	199729020	62940	Claymax 200R	0	25.0	14.4	8.0	0.6	0.90	34.1	203.9	NA	45.8
761	199730020	62944	Claymax 200R	0	25.0	14.4	8.0	0.6	0.90	34.1	203.9	NA	45.8
762	199730020	62944	Claymax 200R	0	25.0	14.4	8.0	0.6	0.90	34.1	203.9	NA	45.8
763	199730020	62944	Claymax 200R	0	25.0	14.4	8.0	0.6	0.90	34.1	203.9	NA	45.8
764	199730020	62945	Claymax 200R	0	25.0	14.4	8.0	0.6	0.90	34.1	203.9	NA	45.8
765	199730020	62945	Claymax 200R	0	25.0	14.4	8.0	0.6	0.90	34.1	203.9	NA	45.8
766	199730020	62936	Claymax 200R	0	25.0	14.4	8.0	0.6	0.90	34.1	203.9	NA	45.8
767	199730020	62936	Claymax 200R	0	25.0	14.4	8.0	0.6	0.90	34.1	203.9	NA	45.8
768	199729020	62935	Claymax 200R	0	25.0	14.4	8.0	0.6	0.90	34.1	203.9	NA	45.8

Table 4.5-3, page 8 of 18

Summary of Geosynthetic Results
Geosynthetic Clay Layer

102nd Street Landfill Site

Roll Number	Log Number	Order Number	Material	Bentonite Properties					Roll Properties				
				Ret 10 Mesh	Free Swell	Fluid Loss	Moisture	Passing 200	Bentonite Mass/Area	Grab Elongation	Grab Strength	Peel Strength	Moisture
769	199729020	62935	Claymax 200R	0	25.0	14.4	8.0	0.6	0.90	34.1	203.9	NA	45.8
776	199729020	62940	Claymax 200R	0	25.0	14.4	8.0	0.6	0.91	34.1	203.9	NA	46.3
777	199729020	62935	Claymax 200R	0	25.0	14.4	8.0	0.6	0.91	34.1	203.9	NA	46.3
778	199729020	62940	Claymax 200R	0	25.0	14.4	8.0	0.6	0.91	34.1	203.9	NA	46.3
779	199729020	62940	Claymax 200R	0	25.0	14.4	8.0	0.6	0.91	34.1	203.9	NA	46.3
807	199730020	62391	Claymax 200R	0	25.0	14.4	8.0	0.6	0.90	34.1	203.9	NA	46.8
808	199730020	62391	Claymax 200R	0	25.0	14.4	8.0	0.6	0.90	34.1	203.9	NA	46.8
809	199730020	62391	Claymax 200R	0	25.0	14.4	8.0	0.6	0.90	34.1	203.9	NA	46.8
835	199730020	62391	Claymax 200R	0	33.0	13.0	8.0	0.8	0.90	35.3	198.5	NA	47.7
841	199730020	62391	Claymax 200R	0	33.0	13.0	8.0	0.8	0.90	35.3	198.5	NA	47.7
842	199730020	62391	Claymax 200R	0	33.0	13.0	8.0	0.8	0.90	35.3	198.5	NA	47.7
946	199731020	62391	Claymax 200R	0	25.0	16.0	9.2	0.2	0.91	36.4	185.5	NA	48.7
947	199731020	62391	Claymax 200R	0	25.0	16.0	9.2	0.2	0.91	36.4	185.5	NA	48.7
948	199731020	62391	Claymax 200R	0	25.0	16.0	9.2	0.2	0.91	36.4	185.5	NA	48.7
949	199731020	62391	Claymax 200R	0	25.0	16.0	9.2	0.2	0.91	36.4	185.5	NA	48.7
950	199731020	62390	Claymax 200R	0	25.0	16.0	9.2	0.2	0.91	36.4	185.5	NA	48.7
951	199731020	62390	Claymax 200R	0	25.0	16.0	9.2	0.2	0.91	36.4	185.5	NA	48.7
952	199731020	62391	Claymax 200R	0	25.0	16.0	9.2	0.2	0.91	36.4	185.5	NA	48.7
953	199731020	62942	Claymax 200R	0	25.0	16.0	9.2	0.2	0.91	36.4	185.5	NA	48.7
954	199731020	62942	Claymax 200R	0	25.0	16.0	9.2	0.2	0.91	36.4	185.5	NA	48.7
955	199731020	62942	Claymax 200R	0	25.0	16.0	9.2	0.2	0.91	36.4	185.5	NA	48.7
956	199731020	62942	Claymax 200R	0	25.0	16.0	9.2	0.2	0.91	36.4	185.5	NA	48.7
965	199731020	62390	Claymax 200R	0	25.0	16.0	9.2	0.2	0.91	36.4	185.5	NA	48.7
966	199731020	62391	Claymax 200R	0	25.0	16.0	9.2	0.2	0.91	36.4	185.5	NA	48.7
967	199731020	62391	Claymax 200R	0	25.0	16.0	9.2	0.2	0.91	36.4	185.5	NA	48.7
968	199731020	62391	Claymax 200R	0	25.0	16.0	9.2	0.2	0.91	36.4	185.5	NA	48.7
969	199731020	62391	Claymax 200R	0	25.0	16.0	9.2	0.2	0.91	36.4	185.5	NA	48.7
970	199731020	62391	Claymax 200R	0	25.0	16.0	9.2	0.2	0.91	36.4	185.5	NA	48.7
997	199731020	62390	Claymax 200R	0	33.0	13.0	8.0	0.8	0.91	34.9	209.5	NA	50.6
998	199731020	62390	Claymax 200R	0	33.0	13.0	8.0	0.8	0.91	34.9	209.5	NA	50.6
1000	199731020	62390	Claymax 200R	0	33.0	13.0	8.0	0.8	0.91	34.9	209.5	NA	50.6
1001	199731020	62390	Claymax 200R	0	33.0	13.0	8.0	0.8	0.91	34.9	209.5	NA	50.6
1005	199731020	62390	Claymax 200R	0	33.0	13.0	8.0	0.8	0.91	34.9	209.5	NA	50.6
1006	199731020	62390	Claymax 200R	0	33.0	13.0	8.0	0.8	0.91	34.9	209.5	NA	50.6
1007	199731020	62390	Claymax 200R	0	33.0	13.0	8.0	0.8	0.91	34.9	209.5	NA	50.6
1008	199731020	62390	Claymax 200R	0	33.0	13.0	8.0	0.8	0.91	34.9	209.5	NA	50.6

Table 4.5-3, page 9 of 18

Summary of Geosynthetic Results
Geosynthetic Clay Layer

102nd Street Landfill Site

Roll Number	Log Number	Order Number	Material	Bentonite Properties					Roll Properties				
				Ret 10 Mesh	Free Swell	Fluid Loss	Moisture	Passing 200	Bentonite Mass/Area	Grab Elongation	Grab Strength	Peel Strength	Moisture
1009	199731020	62390	Claymax 200R	0	33.0	13.0	8.0	0.8	0.91	34.9	209.5	NA	50.6
1010	199731020	62390	Claymax 200R	0	33.0	13.0	8.0	0.8	0.91	34.9	209.5	NA	50.6
1011	199731020	62390	Claymax 200R	0	33.0	13.0	8.0	0.8	0.91	34.9	209.5	NA	50.6
1012	199731020	62390	Claymax 200R	0	33.0	13.0	8.0	0.8	0.91	34.9	209.5	NA	50.6
1013	199731020	62390	Claymax 200R	0	33.0	13.0	8.0	0.8	0.91	34.9	209.5	NA	50.6
1040	199731020	62940	Claymax 200R	0	27.0	14.4	8.8	0.6	0.93	34.0	172.3	NA	47.8
1041	199731020	62937	Claymax 200R	0	27.0	14.4	8.8	0.6	0.93	34.0	172.3	NA	47.8
1042	199731020	62940	Claymax 200R	0	27.0	14.4	8.8	0.6	0.93	34.0	172.3	NA	47.8
1043	199731020	62940	Claymax 200R	0	27.0	14.4	8.8	0.6	0.93	34.0	172.3	NA	47.8
1044	199731020	62940	Claymax 200R	0	27.0	14.4	8.8	0.6	0.93	34.0	172.3	NA	47.8
1045	199731020	62940	Claymax 200R	0	27.0	14.4	8.8	0.6	0.93	34.0	172.3	NA	47.8
1046	199731020	62937	Claymax 200R	0	27.0	14.4	8.8	0.6	0.93	34.0	172.3	NA	47.8
1047	199731020	62937	Claymax 200R	0	27.0	14.4	8.8	0.6	0.93	34.0	172.3	NA	47.8
1048	199731020	62940	Claymax 200R	0	27.0	14.4	8.8	0.6	0.93	34.0	172.3	NA	47.8
1049	199731020	62940	Claymax 200R	0	27.0	14.4	8.8	0.6	0.93	34.0	172.3	NA	47.8
1050	199731020	62937	Claymax 200R	0	27.0	14.4	8.8	0.6	0.93	34.0	172.3	NA	47.8
1051	199731020	62937	Claymax 200R	0	27.0	14.4	8.8	0.6	0.93	34.0	172.3	NA	47.8
1052	199731020	62937	Claymax 200R	0	27.0	14.4	8.8	0.6	0.93	34.0	172.3	NA	47.8
1053	199731020	62937	Claymax 200R	0	27.0	14.4	8.8	0.6	0.93	34.0	172.3	NA	47.8
1054	199731020	62938	Claymax 200R	0	27.0	14.4	8.8	0.6	0.93	34.0	172.3	NA	47.8
1055	199731020	62938	Claymax 200R	0	27.0	14.4	8.8	0.6	0.93	34.0	172.3	NA	47.8
1056	199731020	62938	Claymax 200R	0	27.0	14.4	8.8	0.6	0.93	34.0	172.3	NA	47.8
1057	199731020	62938	Claymax 200R	0	27.0	14.4	8.8	0.6	0.92	34.0	172.3	NA	47.7
1058	199731020	62938	Claymax 200R	0	27.0	14.4	8.8	0.6	0.92	34.0	172.3	NA	47.7
1059	199731020	62938	Claymax 200R	0	27.0	14.4	8.8	0.6	0.92	34.0	172.3	NA	47.7
1060	199731020	62938	Claymax 200R	0	27.0	14.4	8.8	0.6	0.92	34.0	172.3	NA	47.7
1061	199731020	62938	Claymax 200R	0	27.0	14.4	8.8	0.6	0.92	34.0	172.3	NA	47.7
1062	199731020	62938	Claymax 200R	0	27.0	14.4	8.8	0.6	0.92	34.0	172.3	NA	47.7
1063	199731020	62937	Claymax 200R	0	27.0	14.4	8.8	0.6	0.92	34.0	172.3	NA	47.7
1064	199731020	62937	Claymax 200R	0	27.0	14.4	8.8	0.6	0.92	34.0	172.3	NA	47.7
1065	199731020	62937	Claymax 200R	0	27.0	14.4	8.8	0.6	0.92	34.0	172.3	NA	47.7
1066	199731020	62937	Claymax 200R	0	27.0	14.4	8.8	0.6	0.92	34.0	172.3	NA	47.7
1067	199731020	62937	Claymax 200R	0	27.0	14.4	8.8	0.6	0.92	34.0	172.3	NA	47.7
1068	199731020	62937	Claymax 200R	0	27.0	14.4	8.8	0.6	0.92	34.0	172.3	NA	47.7
1072	199731020	62937	Claymax 200R	0	27.0	14.4	8.8	0.6	0.92	34.0	172.3	NA	47.7
1074	199731020	62938	Claymax 200R	0	27.0	14.4	8.8	0.6	0.91	34.0	172.3	NA	49.2

Table 4.5-3, page 10 of 18

Summary of Geosynthetic Results
Geosynthetic Clay Layer

102nd Street Landfill Site

Roll Number	Log Number	Order Number	Material	Bentonite Properties					Roll Properties				
				Ret 10 Mesh	Free Swell	Fluid Loss	Moisture	Passing 200	Bentonite Mass/Area	Grab Elongation	Grab Strength	Peel Strength	Moisture
1079	199731020	62938	Claymax 200R	0	28.0	13.6	8.0	0.3	0.92	32.8	191.5	NA	50.2
1080	199731020	62938	Claymax 200R	0	28.0	13.6	8.0	0.3	0.92	32.8	191.5	NA	50.2
1082	199731020	62938	Claymax 200R	0	28.0	13.6	8.0	0.3	0.92	32.8	191.5	NA	50.2
1083	199731020	62937	Claymax 200R	0	28.0	13.6	8.0	0.3	0.92	32.8	191.5	NA	50.2
1084	199731020	62938	Claymax 200R	0	28.0	13.6	8.0	0.3	0.92	32.8	191.5	NA	50.2
1085	199731020	62937	Claymax 200R	0	28.0	13.6	8.0	0.3	0.92	32.8	191.5	NA	50.2
1097	199731020	62934	Claymax 200R	0	28.0	13.6	8.0	0.3	0.92	32.8	191.5	NA	50.2
1099	199731020	62938	Claymax 200R	0	28.0	13.6	8.0	0.3	0.88	32.8	191.5	NA	48.7
1100	199731020	62938	Claymax 200R	0	28.0	13.6	8.0	0.3	0.88	32.8	191.5	NA	48.7
1102	199731020	62934	Claymax 200R	0	28.0	13.6	8.0	0.3	0.88	32.8	191.5	NA	48.7
1103	199731020	62934	Claymax 200R	0	28.0	13.6	8.0	0.3	0.88	32.8	191.5	NA	48.7
1104	199731020	62934	Claymax 200R	0	28.0	13.6	8.0	0.3	0.88	32.8	191.5	NA	48.7
1105	199731020	62934	Claymax 200R	0	28.0	13.6	8.0	0.3	0.88	32.8	191.5	NA	48.7
1106	199731020	62934	Claymax 200R	0	28.0	13.6	8.0	0.3	0.88	32.8	191.5	NA	48.7
1107	199731020	62934	Claymax 200R	0	28.0	13.6	8.0	0.3	0.88	32.8	191.5	NA	48.7
1108	199731020	62934	Claymax 200R	0	28.0	13.6	8.0	0.3	0.88	32.8	191.5	NA	48.7
1109	199731020	62934	Claymax 200R	0	28.0	13.6	8.0	0.3	0.88	32.8	191.5	NA	48.7
1110	199731020	62934	Claymax 200R	0	28.0	13.6	8.0	0.3	0.88	32.8	191.5	NA	48.7
1111	199731020	62934	Claymax 200R	0	28.0	13.6	8.0	0.3	0.88	32.8	191.5	NA	48.7
1112	199731020	62934	Claymax 200R	0	28.0	13.6	8.0	0.3	0.88	32.8	191.5	NA	48.7
1114	199731020	62934	Claymax 200R	0	28.0	13.6	8.0	0.3	0.89	32.8	191.5	NA	47.9
1122	199731020	62934	Claymax 200R	0	28.0	13.6	8.0	0.3	0.89	32.8	191.5	NA	47.9
1123	199731020	62934	Claymax 200R	0	28.0	13.6	8.0	0.3	0.89	32.8	191.5	NA	47.9
1124	199731020	62934	Claymax 200R	0	28.0	13.6	8.0	0.3	0.89	32.8	191.5	NA	47.9
1125	199731020	62934	Claymax 200R	0	28.0	13.6	8.0	0.3	0.89	32.8	191.5	NA	47.9
1146	199731020	62931	Claymax 200R	0	28.0	13.6	8.0	0.3	0.88	32.8	191.5	NA	48.5
1151	199731020	62931	Claymax 200R	0	28.0	13.6	8.0	0.3	0.89	39.9	218.5	NA	48.0
1152	199731020	62931	Claymax 200R	0	28.0	13.6	8.0	0.3	0.89	39.9	218.5	NA	48.0
1170	199731020	62931	Claymax 200R	0	28.0	13.6	8.0	0.3	0.94	39.9	218.5	NA	43.2
1172	199731020	62931	Claymax 200R	0	28.0	13.6	8.0	0.3	0.94	39.9	218.5	NA	43.2
1173	199731020	62931	Claymax 200R	0	28.0	13.6	8.0	0.3	0.94	39.9	218.5	NA	43.2
1174	199731020	62931	Claymax 200R	0	28.0	13.6	8.0	0.3	0.94	39.9	218.5	NA	43.2
1175	199731020	62931	Claymax 200R	0	28.0	13.6	8.0	0.3	0.94	39.9	218.5	NA	43.2
1176	199731020	62931	Claymax 200R	0	28.0	13.6	8.0	0.3	0.94	39.9	218.5	NA	43.2
1177	199731020	62931	Claymax 200R	0	28.0	13.6	8.0	0.3	0.94	39.9	218.5	NA	43.2
1206	199732020	62941	Claymax 200R	0	28.0	14.4	8.8	0.3	0.92	36.6	203.9	NA	45.0

Table 4.5-3, page 11 of 18

Summary of Geosynthetic Results
Geosynthetic Clay Layer

102nd Street Landfill Site

Roll Number	Log Number	Order Number	Material	Bentonite Properties					Roll Properties				
				Ret 10 Mesh	Free Swell	Fluid Loss	Moisture	Passing 200	Bentonite Mass/Area	Grab Elongation	Grab Strength	Peel Strength	Moisture
1207	199732020	62931	Claymax 200R	0	28.0	14.4	8.8	0.3	0.92	36.6	203.9	NA	45.0
1208	199732020	62931	Claymax 200R	0	28.0	14.4	8.8	0.3	0.92	36.6	203.9	NA	45.0
1209	199732020	62931	Claymax 200R	0	28.0	14.4	8.8	0.3	0.92	36.6	203.9	NA	45.0
1210	199732020	62931	Claymax 200R	0	28.0	14.4	8.8	0.3	0.92	36.6	203.9	NA	45.0
1215	199732020	62931	Claymax 200R	0	28.0	14.4	8.8	0.3	0.92	36.6	203.9	NA	45.0
1216	199732020	62931	Claymax 200R	0	28.0	14.4	8.8	0.3	0.92	36.6	203.9	NA	45.0
1222	199732020	62941	Claymax 200R	0	28.0	14.4	8.8	0.3	0.92	36.6	203.9	NA	45.0
1223	199732020	62941	Claymax 200R	0	28.0	14.4	8.8	0.3	0.92	36.6	203.9	NA	45.0
1224	199732020	62941	Claymax 200R	0	28.0	14.4	8.8	0.3	0.94	36.6	203.9	NA	45.4
1225	199732020	62941	Claymax 200R	0	28.0	14.4	8.8	0.3	0.94	36.6	203.9	NA	45.4
1226	199732020	62941	Claymax 200R	0	28.0	14.4	8.8	0.3	0.94	36.6	203.9	NA	45.4
1227	199732020	62941	Claymax 200R	0	28.0	14.4	8.8	0.3	0.94	36.6	203.9	NA	45.4
1229	199732020	62941	Claymax 200R	0	28.0	14.4	8.8	0.3	0.94	36.6	203.9	NA	45.4
1230	199732020	62941	Claymax 200R	0	28.0	14.4	8.8	0.3	0.94	36.6	203.9	NA	45.4
1231	199732020	62941	Claymax 200R	0	28.0	14.4	8.8	0.3	0.94	36.6	203.9	NA	45.4
1232	199732020	62941	Claymax 200R	0	28.0	14.4	8.8	0.3	0.94	36.6	203.9	NA	45.4
1233	199732020	62941	Claymax 200R	0	28.0	14.4	8.8	0.3	0.94	36.6	203.9	NA	45.4
1234	199732020	62941	Claymax 200R	0	28.0	14.4	8.8	0.3	0.94	36.6	203.9	NA	45.4
1235	199732020	62941	Claymax 200R	0	28.0	14.4	8.8	0.3	0.94	36.6	203.9	NA	45.4
1236	199732020	62941	Claymax 200R	0	28.0	14.4	8.8	0.3	0.94	36.6	203.9	NA	45.4
1237	199732020	62939	Claymax 200R	0	31.0	12.0	8.0	0.4	0.94	36.6	203.9	NA	45.4
1238	199732020	62939	Claymax 200R	0	31.0	12.0	8.0	0.4	0.94	32.0	170.8	NA	43.1
1239	199732020	62939	Claymax 200R	0	31.0	12.0	8.0	0.4	0.94	32.0	170.8	NA	43.1
1240	199732020	62939	Claymax 200R	0	31.0	12.0	8.0	0.4	0.94	32.0	170.8	NA	43.1
1241	199732020	62939	Claymax 200R	0	31.0	12.0	8.0	0.4	0.94	32.0	170.8	NA	43.1
1242	199732020	62939	Claymax 200R	0	31.0	12.0	8.0	0.4	0.94	32.0	170.8	NA	43.1
1243	199732020	62939	Claymax 200R	0	31.0	12.0	8.0	0.4	0.94	32.0	170.8	NA	43.1
1244	199732020	62939	Claymax 200R	0	31.0	12.0	8.0	0.4	0.94	32.0	170.8	NA	43.1
1245	199732020	62939	Claymax 200R	0	31.0	12.0	8.0	0.4	0.94	32.0	170.8	NA	43.1
1266	199732020	62929	Claymax 200R	0	31.0	12.0	8.0	0.4	0.94	32.0	170.8	NA	46.3
1269	199732020	62929	Claymax 200R	0	31.0	12.0	8.0	0.4	0.94	32.0	170.8	NA	46.3
1270	199732020	62929	Claymax 200R	0	31.0	12.0	8.0	0.4	0.94	32.0	170.8	NA	46.3
1271	199732020	62929	Claymax 200R	0	31.0	12.0	8.0	0.4	0.90	32.0	170.8	NA	46.9
1272	199732020	62929	Claymax 200R	0	31.0	12.0	8.0	0.4	0.90	32.0	170.8	NA	46.9
1273	199732020	62929	Claymax 200R	0	31.0	12.0	8.0	0.4	0.90	32.0	170.8	NA	46.9
1277	199732020	62929	Claymax 200R	0	31.0	12.0	8.0	0.4	0.90	32.0	170.8	NA	46.9

Table 4.5-3, page 12 of 18

Summary of Geosynthetic Results
Geosynthetic Clay Layer

102nd Street Landfill Site

Roll Number	Log Number	Order Number	Material	Bentonite Properties					Roll Properties				
				Ret 10 Mesh	Free Swell	Fluid Loss	Moisture	Passing 200	Bentonite Mass/Area	Grab Elongation	Grab Strength	Peel Strength	Moisture
1279	199732020	62929	Claymax 200R	0	31.0	12.0	8.0	0.4	0.90	32.0	170.8	NA	46.9
1280	199732020	62929	Claymax 200R	0	31.0	12.0	8.0	0.4	0.90	32.0	170.8	NA	46.9
1281	199732020	62929	Claymax 200R	0	31.0	12.0	8.0	0.4	0.90	32.0	170.8	NA	46.9
1282	199732020	62929	Claymax 200R	0	31.0	12.0	8.0	0.4	0.90	32.0	170.8	NA	46.9
1283	199732020	62929	Claymax 200R	0	31.0	12.0	8.0	0.4	0.90	32.0	170.8	NA	46.9
1284	199732020	62929	Claymax 200R	0	31.0	12.0	8.0	0.4	0.90	32.0	170.8	NA	46.9
1285	199732020	62929	Claymax 200R	0	31.0	12.0	8.0	0.4	0.90	32.0	170.8	NA	46.9
1286	199732020	62939	Claymax 200R	0	31.0	12.0	8.0	0.4	0.91	32.0	170.8	NA	47.9
1287	199732020	62929	Claymax 200R	0	31.0	12.0	8.0	0.4	0.91	32.0	170.8	NA	47.9
1288	199732020	62929	Claymax 200R	0	31.0	12.0	8.0	0.4	0.91	32.0	170.8	NA	47.9
1289	199732020	62944	Claymax 200R	0	31.0	12.0	8.0	0.4	0.91	32.0	170.8	NA	47.9
1290	199732020	62944	Claymax 200R	0	31.0	12.0	8.0	0.4	0.91	32.0	170.8	NA	47.9
1291	199732020	62944	Claymax 200R	0	31.0	12.0	8.0	0.4	0.91	32.0	170.8	NA	47.9
1292	199732020	62944	Claymax 200R	0	31.0	12.0	8.0	0.4	0.91	32.0	170.8	NA	47.9
1293	199732020	62944	Claymax 200R	0	31.0	12.0	8.0	0.4	0.91	32.0	170.8	NA	47.9
1294	199732020	62944	Claymax 200R	0	31.0	12.0	8.0	0.4	0.91	32.0	170.8	NA	47.9
1295	199732020	62944	Claymax 200R	0	31.0	12.0	8.0	0.4	0.91	32.0	170.8	NA	47.9
1296	199732020	62944	Claymax 200R	0	31.0	12.0	8.0	0.4	0.91	32.0	170.8	NA	47.9
1297	199732020	62944	Claymax 200R	0	31.0	12.0	8.0	0.4	0.91	32.0	170.8	NA	47.9
1298	199732020	62944	Claymax 200R	0	31.0	12.0	8.0	0.4	0.91	32.0	170.8	NA	47.9
1299	199732020	62944	Claymax 200R	0	31.0	12.0	8.0	0.4	0.91	32.0	170.8	NA	47.9
1300	199732020	62939	Claymax 200R	0	31.0	12.0	8.0	0.4	0.91	32.0	170.8	NA	47.9
1301	199732020	62939	Claymax 200R	0	31.0	12.0	8.0	0.4	0.91	32.0	170.8	NA	47.9
1303	199732020	62939	Claymax 200R	0	31.0	12.0	8.0	0.4	0.90	32.0	170.8	NA	47.4
1304	199732020	62939	Claymax 200R	0	31.0	12.0	8.0	0.4	0.90	32.0	170.8	NA	47.4
1305	199732020	62939	Claymax 200R	0	31.0	12.0	8.0	0.4	0.90	32.0	170.8	NA	47.4
1306	199732020	62939	Claymax 200R	0	31.0	12.0	8.0	0.4	0.90	32.0	170.8	NA	47.4
1307	199733020	62946	Claymax 200R	0	25.0	13.6	8.4	0.4	0.90	32.0	170.8	NA	47.4
1313	199733020	62946	Claymax 200R	0	25.0	13.6	8.4	0.4	0.94	35.7	203.0	NA	47.3
1314	199733020	62946	Claymax 200R	0	25.0	13.6	8.4	0.4	0.94	35.7	203.0	NA	47.3
1315	199733020	62946	Claymax 200R	0	25.0	13.6	8.4	0.4	0.94	35.7	203.0	NA	47.3
1316	199733020	62946	Claymax 200R	0	25.0	13.6	8.4	0.4	0.94	35.7	203.0	NA	47.3
1317	199733020	62946	Claymax 200R	0	25.0	13.6	8.4	0.4	0.94	35.7	203.0	NA	47.3
1318	199733020	62946	Claymax 200R	0	25.0	13.6	8.4	0.4	0.94	35.7	203.0	NA	47.3
1319	199733020	62946	Claymax 200R	0	25.0	13.6	8.4	0.4	0.94	35.7	203.0	NA	47.3
1320	199733020	62946	Claymax 200R	0	25.0	13.6	8.4	0.4	0.94	35.7	203.0	NA	47.3

Table 4.5-3, page 13 of 18

Summary of Geosynthetic Results
Geosynthetic Clay Layer

102nd Street Landfill Site

Roll Number	Log Number	Order Number	Material	Bentonite Properties					Roll Properties				
				Ret 10 Mesh	Free Swell	Fluid Loss	Moisture	Passing 200	Bentonite Mass/Area	Grab Elongation	Grab Strength	Peel Strength	Moisture
1321	199733020	62946	Claymax 200R	0	25.0	13.6	8.4	0.4	0.94	35.7	203.0	NA	47.3
1322	199733020	62946	Claymax 200R	0	25.0	13.6	8.4	0.4	0.94	35.7	203.0	NA	47.3
1323	199733020	62946	Claymax 200R	0	25.0	13.6	8.4	0.4	0.94	35.7	203.0	NA	47.3
1324	199733020	62946	Claymax 200R	0	25.0	13.6	8.4	0.4	0.94	35.7	203.0	NA	47.3
1326	199733020	62946	Claymax 200R	0	25.0	13.6	8.4	0.4	0.94	35.7	203.0	NA	47.3
1327	199733020	62946	Claymax 200R	0	25.0	13.6	8.4	0.4	0.94	35.7	203.0	NA	47.3
1326	199736020	62950	Claymax 200R	0	24.0	15.2	8.0	0.4	0.90	28.4	145.9	NA	NA
1325	199736020	62950	Claymax 200R	0	25.0	15.6	8.0	0.6	0.90	28.4	145.9	NA	NA
1324	199736020	62950	Claymax 200R	0	25.0	15.6	8.0	0.6	0.92	10.9	153.3	NA	NA
1323	199736020	62950	Claymax 200R	0	25.0	15.6	8.0	0.6	0.92	10.9	153.3	NA	NA
1322	199736020	62950	Claymax 200R	0	25.0	15.6	8.0	0.6	0.92	10.9	153.3	NA	NA
1321	199736020	62950	Claymax 200R	0	25.0	15.6	8.0	0.6	0.92	10.9	153.3	NA	NA
1320	199736020	62950	Claymax 200R	0	25.0	15.6	8.0	0.6	0.92	10.9	153.3	NA	NA
1319	199736020	62950	Claymax 200R	0	25.0	15.6	8.0	0.6	0.92	10.9	153.3	NA	NA
1318	199736020	62950	Claymax 200R	0	25.0	15.6	8.0	0.6	0.92	10.9	153.3	NA	NA
1317	199736020	62950	Claymax 200R	0	25.0	15.6	8.0	0.6	0.92	10.9	153.3	NA	NA
1316	199736020	62950	Claymax 200R	0	25.0	15.6	8.0	0.6	0.92	10.9	153.3	NA	NA
1315	199736020	62950	Claymax 200R	0	25.0	15.6	8.0	0.6	0.92	10.9	153.3	NA	NA
1314	199736020	62950	Claymax 200R	0	25.0	15.6	8.0	0.6	0.92	10.9	153.3	NA	NA
1313	199736020	62950	Claymax 200R	0	25.0	15.6	8.0	0.6	0.92	10.9	153.3	NA	NA
1312	199736020	62950	Claymax 200R	0	25.0	15.6	8.0	0.6	0.92	10.9	153.3	NA	NA
1638	199736020	62950	Claymax 200R	0	25.0	15.6	8.0	0.6	0.92	10.9	153.3	NA	NA
1656	19937020	62949	Claymax 200R	0	25.0	15.6	8.0	0.6	0.90	8.3	156.3	NA	NA
1659	19937020	62949	Claymax 200R	0	25.0	15.6	8.0	0.6	0.90	8.3	156.3	NA	NA
1660	19937020	62949	Claymax 200R	0	25.0	15.6	8.0	0.6	0.90	8.3	156.3	NA	NA
1661	19937020	62949	Claymax 200R	0	25.0	15.6	8.0	0.6	0.90	8.3	156.3	NA	NA
1662	19937020	62949	Claymax 200R	0	25.0	15.6	8.0	0.6	0.90	8.3	156.3	NA	NA
1665	19937020	62949	Claymax 200R	0	25.0	15.6	8.0	0.6	0.90	8.3	156.3	NA	NA
1666	19937020	62949	Claymax 200R	0	25.0	15.6	8.0	0.6	0.90	8.3	156.3	NA	NA
1667	19937020	62949	Claymax 200R	0	25.0	15.6	8.0	0.6	0.90	8.3	156.3	NA	NA
1668	19937020	62949	Claymax 200R	0	25.0	15.6	8.0	0.6	0.90	8.3	156.3	NA	NA
1670	19937020	62949	Claymax 200R	0	25.0	15.6	8.0	0.6	0.90	8.3	156.3	NA	NA
1671	19937020	62949	Claymax 200R	0	25.0	15.6	8.0	0.6	0.90	8.3	156.3	NA	NA
1672	19937020	62949	Claymax 200R	0	25.0	15.6	8.0	0.6	0.89	8.3	156.3	NA	NA
1675	19937020	62949	Claymax 200R	0	25.0	15.6	8.0	0.6	0.89	8.3	156.3	NA	NA
1676	19937020	62949	Claymax 200R	0	25.0	15.6	8.0	0.6	0.89	8.3	156.3	NA	NA

Table 4.5-3, page 14 of 18

Summary of Geosynthetic Results
Geosynthetic Clay Layer

102nd Street Landfill Site

Roll Number	Log Number	Order Number	Material	Bentonite Properties					Roll Properties				
				Ret 10 Mesh	Free Swell	Fluid Loss	Moisture	Passing 200	Bentonite Mass/Area	Grab Elongation	Grab Strength	Peel Strength	Moisture
1681	19937020	62949	Claymax 200R	0	25.0	15.6	8.0	0.6	0.89	8.3	156.3	NA	NA
1682	19937020	62949	Claymax 200R	0	25.0	15.6	8.0	0.6	0.89	8.3	156.3	NA	NA
8508	199735030	65643	Claymax 200R	0	25.0	13.6	8.0	0.6	0.87	27.2	145.4	NA	NA
8510	199735030	65643	Claymax 200R	0	25.0	13.6	8.0	0.6	0.87	27.2	145.4	NA	NA
8522	199735030	65643	Claymax 200R	0	25.0	13.6	8.0	0.6	0.87	27.2	145.4	NA	NA
8526	199735030	65643	Claymax 200R	0	25.0	13.6	8.0	0.6	0.89	27.2	145.4	NA	NA
8534	199735030	65647	Claymax 200R	0	25.0	13.6	8.0	0.6	0.89	27.2	145.4	NA	NA
8535	199735030	65578	Claymax 200R	0	25.0	13.6	8.0	0.6	0.89	27.2	145.4	NA	NA
8539	199735030	65577	Claymax 200R	0	25.0	13.6	8.0	0.6	0.89	27.2	145.4	NA	NA
8543	199735030	65647	Claymax 200R	0	25.0	13.6	8.0	0.6	0.88	27.2	145.4	NA	NA
8553	199735030	65577	Claymax 200R	0	25.0	13.6	8.0	0.6	0.88	27.2	145.4	NA	NA
8554	199735030	65577	Claymax 200R	0	25.0	13.6	8.0	0.6	0.88	27.2	145.4	NA	NA
8556	199735030	65578	Claymax 200R	0	24.0	13.4	8.8	0.5	0.88	27.2	145.4	NA	NA
8559	199735030	65647	Claymax 200R	0	24.0	13.4	8.8	0.5	0.88	27.2	145.4	NA	NA
8560	199735030	65577	Claymax 200R	0	24.0	13.4	8.8	0.5	0.88	27.2	145.4	NA	NA
8561	199735030	65647	Claymax 200R	0	24.0	13.4	8.8	0.5	0.88	27.2	145.4	NA	NA
8562	199735030	65577	Claymax 200R	0	24.0	13.4	8.8	0.5	0.88	27.2	145.4	NA	NA
8563	199735030	65577	Claymax 200R	0	24.0	13.4	8.8	0.5	0.88	27.2	145.4	NA	NA
8564	199735030	65647	Claymax 200R	0	24.0	13.4	8.8	0.5	0.88	27.2	145.4	NA	NA
8565	199735030	65578	Claymax 200R	0	24.0	13.4	8.8	0.5	0.88	27.2	145.4	NA	NA
8566	199735030	65647	Claymax 200R	0	24.0	13.4	8.8	0.5	0.88	27.2	145.4	NA	NA
8567	199735030	65578	Claymax 200R	0	24.0	13.4	8.8	0.5	0.88	27.2	145.4	NA	NA
8568	199735030	65578	Claymax 200R	0	24.0	13.4	8.8	0.5	0.88	27.2	145.4	NA	NA
8569	199735030	65647	Claymax 200R	0	24.0	13.4	8.8	0.5	0.88	27.2	145.4	NA	NA
8571	199735030	65577	Claymax 200R	0	24.0	13.4	8.8	0.5	0.88	27.2	145.4	NA	NA
8572	199735030	65577	Claymax 200R	0	24.0	13.4	8.8	0.5	0.88	27.2	145.4	NA	NA
8573	199735030	65578	Claymax 200R	0	24.0	13.4	8.8	0.5	0.88	27.2	145.4	NA	NA
8574	199735030	65577	Claymax 200R	0	24.0	13.4	8.8	0.5	0.88	27.2	145.4	NA	NA
8575	199735030	65578	Claymax 200R	0	24.0	13.4	8.8	0.5	0.88	27.2	145.4	NA	NA
8577	199735030	65578	Claymax 200R	0	24.0	13.4	8.8	0.5	0.88	27.2	145.4	NA	NA
8578	199735030	65647	Claymax 200R	0	24.0	13.4	8.8	0.5	0.88	27.2	145.4	NA	NA
8580	199735030	65577	Claymax 200R	0	24.0	13.4	8.8	0.5	0.88	27.2	145.4	NA	NA
8581	199735030	65647	Claymax 200R	0	24.0	13.4	8.8	0.5	0.88	27.2	145.4	NA	NA
8583	199735030	65577	Claymax 200R	0	24.0	13.4	8.8	0.5	0.88	27.2	145.4	NA	NA
8584	199735030	65577	Claymax 200R	0	24.0	13.4	8.8	0.5	0.88	27.2	145.4	NA	NA
8586	199735030	65647	Claymax 200R	0	24.0	13.4	8.8	0.5	0.88	27.2	145.4	NA	NA

Table 4.5-3, page 15 of 18

Summary of Geosynthetic Results
Geosynthetic Clay Layer

102nd Street Landfill Site

Roll Number	Log Number	Order Number	Material	Bentonite Properties					Roll Properties				
				Ret 10 Mesh	Free Swell	Fluid Loss	Moisture	Passing 200	Bentonite Mass/Area	Grab Elongation	Grab Strength	Peel Strength	Moisture
8590	199735030	65647	Claymax 200R	0	24.0	13.4	8.8	0.5	0.88	27.2	145.4	NA	NA
8591	199735030	65647	Claymax 200R	0	24.0	13.4	8.8	0.5	0.88	27.2	145.4	NA	NA
8594	199735030	65643	Claymax 200R	0	24.0	13.4	8.8	0.5	0.91	30.4	120.6	NA	NA
8595	199735030	65643	Claymax 200R	0	24.0	13.4	8.8	0.5	0.91	30.4	120.6	NA	NA
8596	199735030	65578	Claymax 200R	0	24.0	13.4	8.8	0.5	0.88	27.2	145.4	NA	NA
8597	199735030	65643	Claymax 200R	0	24.0	13.4	8.8	0.5	0.91	30.4	120.6	NA	NA
8598	199735030	65578	Claymax 200R	0	24.0	13.4	8.8	0.5	0.88	27.2	145.4	NA	NA
8599	199735030	65578	Claymax 200R	0	24.0	13.4	8.8	0.5	0.88	27.2	145.4	NA	NA
8600	199735030	65578	Claymax 200R	0	24.0	13.4	8.8	0.5	0.88	27.2	145.4	NA	NA
8601	199735030	65647	Claymax 200R	0	24.0	13.4	8.8	0.5	0.88	27.2	145.4	NA	NA
8602	199735030	65647	Claymax 200R	0	24.0	13.4	8.8	0.5	0.88	27.2	145.4	NA	NA
8603	199735030	65647	Claymax 200R	0	24.0	13.4	8.8	0.5	0.88	27.2	145.4	NA	NA
8605	199735030	65643	Claymax 200R	0	24.0	13.4	8.8	0.5	0.93	30.4	120.6	NA	NA
8609	199735030	65643	Claymax 200R	0	24.0	13.4	8.8	0.5	0.93	30.4	120.6	NA	NA
8611	199735030	65643	Claymax 200R	0	24.0	13.4	8.8	0.5	0.93	30.4	120.6	NA	NA
8612	199735030	65577	Claymax 200R	0	24.0	13.4	8.8	0.5	0.88	27.2	145.4	NA	NA
8613	199735030	65577	Claymax 200R	0	24.0	13.4	8.8	0.5	0.88	27.2	145.4	NA	NA
8614	199735030	65577	Claymax 200R	0	24.0	13.4	8.8	0.5	0.88	27.2	145.4	NA	NA
8615	199735030	65578	Claymax 200R	0	24.0	13.4	8.8	0.5	0.88	27.2	145.4	NA	NA
8616	199735030	65577	Claymax 200R	0	24.0	13.4	8.8	0.5	0.88	27.2	145.4	NA	NA
8617	199735030	65643	Claymax 200R	0	24.0	13.4	8.8	0.5	0.91	30.4	120.6	NA	NA
8618	199735030	65578	Claymax 200R	0	24.0	13.4	8.8	0.5	0.88	27.2	145.4	NA	NA
8619	199735030	65647	Claymax 200R	0	24.0	13.4	8.8	0.5	0.88	27.2	145.4	NA	NA
8620	199735030	65578	Claymax 200R	0	24.0	13.4	8.8	0.5	0.88	27.2	145.4	NA	NA
8621	199735030	65643	Claymax 200R	0	24.0	13.4	8.8	0.5	0.91	30.4	120.6	NA	NA
8624	199735030	65643	Claymax 200R	0	24.0	13.4	8.8	0.5	0.91	30.4	120.6	NA	NA
8625	199735030	65643	Claymax 200R	0	24.0	13.4	8.8	0.5	0.91	30.4	120.6	NA	NA
8626	199735030	65643	Claymax 200R	0	24.0	13.4	8.8	0.5	0.91	30.4	120.6	NA	NA
8631	199735030	65578	Claymax 200R	0	24.0	13.4	8.8	0.5	0.88	27.2	145.4	NA	NA
8632	199735030	65643	Claymax 200R	0	24.0	13.4	8.8	0.5	0.91	30.4	120.6	NA	NA
25324	199726020	59661	Bentomat	0	25.0	12.6	8.2	0.8	0.96	18.8	153.3	21.0	23.3
25325	199726020	59661	Bentomat	0	25.0	12.6	8.2	0.8	0.96	18.8	153.3	21.0	23.3
25326	199726020	59661	Bentomat	0	25.0	12.6	8.2	0.8	0.96	18.8	153.3	21.0	23.3
25327	199726020	59661	Bentomat	0	25.0	12.6	8.2	0.8	0.91	18.8	153.3	18.1	26.2
25328	199726020	59661	Bentomat	0	25.0	12.6	8.2	0.8	0.91	18.8	153.3	18.1	26.2
25380	199726020	59661	Bentomat	0	29.0	11.2	8.0	0.4	0.96	18.8	153.3	21.0	23.3

Table 4.5-3, page 16 of 18

Summary of Geosynthetic Results
Geosynthetic Clay Layer

102nd Street Landfill Site

Roll Number	Log Number	Order Number	Material	Bentonite Properties					Roll Properties				
				Ret 10 Mesh	Free Swell	Fluid Loss	Moisture	Passing 200	Bentonite Mass/Area	Grab Elongation	Grab Strength	Peel Strength	Moisture
25382	199726020	59661	Bentomat	0	29.0	11.2	8.0	0.4	0.96	18.8	153.3	21.0	23.3
25744	199726020	59662	Bentomat	0	30.0	12.8	8.0	0.5	0.95	19.5	189.9	26.5	23.1
25749	199726020	59662	Bentomat	0	30.0	12.8	8.0	0.5	0.98	19.5	189.9	30.9	22.5
25750	199726020	59662	Bentomat	0	30.0	12.8	8.0	0.5	0.98	19.5	189.9	30.9	22.5
25751	199726020	59662	Bentomat	0	30.0	12.8	8.0	0.5	0.98	19.5	189.9	30.9	22.5
25752	199726020	59662	Bentomat	0	30.0	12.8	8.0	0.5	0.98	19.5	189.9	30.9	22.5
25753	199726020	59662	Bentomat	0	30.0	12.8	8.0	0.5	0.98	19.5	189.9	30.9	22.5
25781	199726020	59662	Bentomat	0	30.0	12.8	8.0	0.5	0.97	19.5	189.9	26.6	23.2
25782	199726020	59662	Bentomat	0	30.0	12.8	8.0	0.5	0.97	19.5	189.9	26.6	23.2
25783	199726020	59662	Bentomat	0	30.0	12.8	8.0	0.5	0.97	19.5	189.9	26.6	23.2
25785	199726020	59662	Bentomat	0	30.0	12.8	8.0	0.5	0.99	19.5	189.9	25.2	24.4
25786	199726020	59662	Bentomat	0	30.0	12.8	8.0	0.5	0.99	19.5	189.9	25.2	24.4
25787	199726020	59662	Bentomat	0	30.0	12.8	8.0	0.5	0.99	19.5	189.9	25.2	24.4
25790	199726020	59662	Bentomat	0	30.0	12.8	8.0	0.5	0.99	19.5	189.9	25.2	24.4
25791	199726020	59662	Bentomat	0	30.0	12.8	8.0	0.5	0.99	19.5	189.9	25.2	24.4
25792	199726020	59662	Bentomat	0	30.0	12.8	8.0	0.5	0.99	19.5	189.9	25.2	24.4
27788	199732020	62928	Bentomat	0	28.0	14.4	8.8	0.3	0.96	17.3	141.2	19.8	24.7
27806	199732020	62928	Bentomat	0	28.0	13.8	8.4	0.6	0.98	28.1	166.5	20.5	22.9
27807	199732020	62928	Bentomat	0	28.0	13.8	8.4	0.6	0.98	28.1	166.5	20.5	22.9
27808	199732020	62928	Bentomat	0	28.0	13.8	8.4	0.6	0.98	28.1	166.5	20.5	22.9
27809	199732020	62928	Bentomat	0	28.0	13.8	8.4	0.6	0.98	28.1	166.5	20.5	22.9
27810	199732020	62928	Bentomat	0	28.0	13.8	8.4	0.6	0.98	28.1	166.5	20.5	22.9
27811	199732020	62928	Bentomat	0	28.0	13.8	8.4	0.6	0.98	28.1	166.5	20.5	22.9
27812	199732020	62928	Bentomat	0	28.0	13.8	8.4	0.6	0.98	28.1	166.5	20.5	22.9
27813	199732020	62928	Bentomat	0	28.0	13.8	8.4	0.6	0.92	28.1	166.5	23.8	27.6
27814	199732020	62928	Bentomat	0	28.0	13.8	8.4	0.6	0.92	28.1	166.5	23.8	27.6
27815	199732020	62928	Bentomat	0	28.0	13.8	8.4	0.6	0.92	28.1	166.5	23.8	27.6
27816	199732020	62928	Bentomat	0	28.0	13.8	8.4	0.6	0.92	28.1	166.5	23.8	27.6
27817	199732020	62928	Bentomat	0	28.0	13.8	8.4	0.6	0.92	28.1	166.5	23.8	27.6
27818	199732020	62928	Bentomat	0	28.0	13.8	8.4	0.6	0.92	28.1	166.5	23.8	27.6
27819	199732020	62928	Bentomat	0	28.0	13.8	8.4	0.6	0.92	28.1	166.5	23.8	27.6
27820	199732020	62928	Bentomat	0	28.0	13.8	8.4	0.6	0.92	28.1	166.5	23.8	27.6
27999	199732020	62943	Bentomat	0	32.0	12.0	8.0	0.4	0.99	18.4	115.8	25.4	27.1
28000	199732020	62943	Bentomat	0	32.0	12.0	8.0	0.4	0.99	18.4	115.8	25.4	27.1
28001	199732020	62943	Bentomat	0	32.0	12.0	8.0	0.4	0.99	18.4	115.8	25.4	27.1
28002	199732020	62943	Bentomat	0	32.0	12.0	8.0	0.4	0.99	18.4	115.8	25.4	27.1

Table 4.5-3, page 17 of 18

Summary of Geosynthetic Results
Geosynthetic Clay Layer

102nd Street Landfill Site

Roll Number	Log Number	Order Number	Material	Bentonite Properties					Roll Properties				
				Ret 10 Mesh	Free Swell	Fluid Loss	Moisture	Passing 200	Bentonite Mass/Area	Grab Elongation	Grab Strength	Peel Strength	Moisture
28003	199732020	62943	Bentomat	0	32.0	12.0	8.0	0.4	0.99	18.4	115.8	25.4	27.1
28004	199732020	62943	Bentomat	0	32.0	12.0	8.0	0.4	0.99	18.4	115.8	25.4	27.1
28005	199732020	62943	Bentomat	0	32.0	12.0	8.0	0.4	0.99	18.4	115.8	25.4	27.1
28006	199732020	62943	Bentomat	0	32.0	12.0	8.0	0.4	0.99	18.4	115.8	25.4	27.1
28007	199732020	62943	Bentomat	0	32.0	12.0	8.0	0.4	0.99	18.4	115.8	25.4	27.1
28076	199732020	62943	Bentomat	0	28.0	12.6	7.4	0.8	0.95	38.0	193.6	28.6	23.9
28086	199732020	62943	Bentomat	0	28.0	12.6	7.4	0.8	0.94	22.9	162.3	24.4	25.2
28087	199732020	62943	Bentomat	0	28.0	12.6	7.4	0.8	0.94	22.9	162.3	24.4	25.2
28088	199732020	62943	Bentomat	0	28.0	12.6	7.4	0.8	0.94	22.9	162.3	24.4	25.2
28089	199732020	62943	Bentomat	0	28.0	12.6	7.4	0.8	0.94	22.9	162.3	24.4	25.2
28139	199732020	62943	Bentomat	0	28.0	12.6	7.4	0.8	0.97	22.9	162.3	24.0	24.7
28176	199732020	62935	Bentomat	0	29.0	12.8	7.6	0.6	0.98	15.5	120.0	20.8	27.0
28177	199732020	62935	Bentomat	0	29.0	12.8	7.6	0.6	0.98	15.5	120.0	20.8	27.0
28178	199732020	62935	Bentomat	0	29.0	12.8	7.6	0.6	0.98	15.5	120.0	20.8	27.0
28344	199732020	62943	Bentomat	0	24.0	15.2	7.6	0.5	0.95	15.0	120.5	27.0	24.0
28402	199732020	62935	Bentomat	0	30.0	13.2	8.0	0.6	0.95	28.6	211.0	20.6	25.6
28419	199732020	62935	Bentomat	0	30.0	13.2	8.0	0.6	0.97	28.6	211.0	16.8	24.5
28420	199732020	62935	Bentomat	0	30.0	13.2	8.0	0.6	0.97	28.6	211.0	16.8	24.5
28421	199732020	62935	Bentomat	0	30.0	13.2	8.0	0.6	0.97	28.6	211.0	16.8	24.5
29111	199733020	62947	Bentomat	0	34.0	13.2	9.2	0.4	0.97	30.2	195.7	20.5	23.9
29112	199733020	62947	Bentomat	0	34.0	13.2	9.2	0.4	0.97	30.2	195.7	20.5	23.9
29113	199733020	62947	Bentomat	0	34.0	13.2	9.2	0.4	0.97	30.2	195.7	20.5	23.9
29114	199733020	62947	Bentomat	0	34.0	13.2	9.2	0.4	0.97	30.2	195.7	20.5	23.9
29115	199733020	62947	Bentomat	0	34.0	13.2	9.2	0.4	0.97	30.2	195.7	20.5	23.9
29116	199733020	62947	Bentomat	0	34.0	13.2	9.2	0.4	0.97	30.2	195.7	20.5	23.9
29117	199733020	62947	Bentomat	0	34.0	13.2	9.2	0.4	0.97	30.2	195.7	20.5	23.9
29119	199733020	62947	Bentomat	0	34.0	13.2	9.2	0.4	0.97	30.2	195.7	20.5	23.9
29120	199733020	62947	Bentomat	0	34.0	13.2	9.2	0.4	0.97	30.2	195.7	20.5	23.9
29194	199733020	62947	Bentomat	0	34.0	13.4	9.0	0.4	0.92	34.9	189.3	24.8	23.2
29195	199733020	62947	Bentomat	0	34.0	13.4	9.0	0.4	0.92	34.9	189.3	24.8	23.2
29196	199733020	62947	Bentomat	0	34.0	13.4	9.0	0.4	0.92	34.9	189.3	24.8	23.2
29197	199733020	62947	Bentomat	0	34.0	13.4	9.0	0.4	0.92	34.9	189.3	24.8	23.2
29198	199733020	62947	Bentomat	0	34.0	13.4	9.0	0.4	0.92	34.9	189.3	24.8	23.2
29199	199733020	62947	Bentomat	0	34.0	13.4	9.0	0.4	0.92	34.9	189.3	24.8	23.2
29200	199733020	62947	Bentomat	0	34.0	13.4	9.0	0.4	0.92	34.9	189.3	24.8	23.2
29199	199735020	62948	Bentomat ST	0	25.0	15.6	7.6	0.6	0.98	NA	152.5	27.3	NA

Table 4.5-3, page 18 of 18

Summary of Geosynthetic Results
Geosynthetic Clay Layer

102nd Street Landfill Site

Roll Number	Log Number	Order Number	Material	Bentonite Properties					Roll Properties				
				Ret 10 Mesh	Free Swell	Fluid Loss	Moisture	Passing 200	Bentonite Mass/Area	Grab Elongation	Grab Strength	Peel Strength	Moisture
29198	199735020	62948	Bentomat ST	0	25.0	15.6	7.6	0.6	0.98	NA	152.5	27.3	NA
29197	199735020	62948	Bentomat ST	0	25.0	15.6	7.6	0.6	0.98	NA	152.5	27.3	NA
29196	199735020	62948	Bentomat ST	0	25.0	15.6	7.6	0.6	0.98	NA	152.5	27.3	NA
29195	199735020	62948	Bentomat ST	0	25.0	15.6	7.6	0.6	0.98	NA	152.5	27.3	NA
29194	199735020	62948	Bentomat ST	0	25.0	15.6	7.6	0.6	0.98	NA	152.5	27.3	NA
29193	199735020	62948	Bentomat ST	0	25.0	15.6	7.6	0.6	0.98	NA	152.5	27.3	NA
29192	199735020	62948	Bentomat ST	0	25.0	15.6	7.6	0.6	0.98	NA	152.5	27.3	NA
29191	199735020	62948	Bentomat ST	0	25.0	15.6	7.6	0.6	0.98	NA	152.5	27.3	NA
29190	199735020	62948	Bentomat ST	0	25.0	15.6	7.6	0.6	0.98	NA	152.5	27.3	NA
29189	199735020	62948	Bentomat ST	0	25.0	15.6	7.6	0.6	0.98	NA	152.5	27.3	NA
29188	199735020	62948	Bentomat ST	0	25.0	15.6	7.6	0.6	0.98	NA	152.5	27.3	NA
29187	199735020	62948	Bentomat ST	0	25.0	15.6	7.6	0.6	0.98	NA	152.5	27.3	NA
29186	199735020	62948	Bentomat ST	0	25.0	15.6	7.6	0.6	0.95	NA	152.5	35.6	NA
29185	199735020	62948	Bentomat ST	0	25.0	15.6	7.6	0.6	0.95	NA	152.5	35.6	NA
30286	199735020	62948	Bentomat ST	0	25.0	15.6	7.6	0.6	0.95	NA	152.5	35.6	NA
30290	199735020	62948	Bentomat ST	0	25.0	15.6	7.6	0.6	0.95	NA	152.5	35.6	NA
31243	199737020	62951	Bentomat	0	24.0	12.0	7.6	0.4	0.96	NA	159.7	30.1	NA
31302	199737020	62951	Bentomat	0	27.0	14.0	8.6	0.5	0.96	NA	121.6	24.6	NA
31303	199737020	62951	Bentomat	0	27.0	14.0	8.6	0.5	0.96	NA	121.6	24.6	NA
31477	199737020	62951	Bentomat	0	26.0	13.8	8.4	0.7	0.96	NA	177.6	27.8	NA
31482	199737020	62951	Bentomat	0	26.0	13.8	8.4	0.7	0.96	NA	177.6	27.8	NA
31483	199737020	62951	Bentomat	0	26.0	13.8	8.4	0.7	0.96	NA	177.6	27.8	NA
31652	199737020	62951	Bentomat	0	26.0	13.2	8.0	0.6	0.97	NA	110.1	23.1	NA
31942	199738020	62951	Bentomat	0	25.0	12.2	8.4	0.5	0.95	NA	216.9	29.9	NA
31943	199738020	62951	Bentomat	0	25.0	12.2	8.4	0.5	0.95	NA	216.9	29.9	NA
31944	199738020	62951	Bentomat	0	25.0	12.2	8.4	0.5	0.95	NA	216.9	29.9	NA
31948	199738020	62951	Bentomat	0	25.0	12.2	8.4	0.5	0.95	NA	216.9	29.9	NA
31950	199738020	62951	Bentomat	0	25.0	12.2	8.4	0.5	1.01	NA	87.9	34.9	NA
31951	199738020	62951	Bentomat	0	25.0	12.2	8.4	0.5	1.01	NA	87.9	34.9	NA
31952	199738020	62951	Bentomat	0	25.0	12.2	8.4	0.5	1.01	NA	87.9	34.9	NA
31953	199738020	62951	Bentomat	0	25.0	12.2	8.4	0.5	1.01	NA	87.9	34.9	NA

Table 4.5-4

Summary Table of Linear Low Density Polyethylene Liner Results

102nd Street Landfill Site

Panel Number	Roll Number	Bill of Lading	Resin Type	Melt Flow Index (g/10 min)	Resin Density (g/cm^3)	Thick. (mil)	Stress at Break(psi)		Strain at Break(%)		Carbon Dispersion	Carbon Content(%)	Density (g/cm^3)
							MD	TD	MD	TD			
1-22	L04L652N-6I1900100	13172	Novacor	0.82	0.917	43.7	5620	5910	931	1000	1	2.38	0.928
23-28	R04L700E-7G1200090	13595	Chevron	0.90	0.919	42.9	5200	4930	1090	1060	1	2.36	0.930
29-32,35	R04L700E-7G1200120	13595	Chevron	0.90	0.919	43.0	4980	4840	1040	1030	1	2.40	0.929
33-34,36-38	R04L700E-7G1200140	13595	Chevron	0.90	0.919	42.9	5220	5240	1120	1150	1	2.39	0.929
39-42	R04L700E-7G1200110	13595	Chevron	0.90	0.919	43.0	4920	4970	1040	1060	1	2.40	0.929
43-47	R04L700E-7G1200100	13595	Chevron	0.90	0.919	42.9	5020	4850	1070	1040	1	2.44	0.929
48-51	L04L652N-6I2000050	13172	Novacor	0.82	0.917	43.0	5990	6030	1060	1120	1	2.43	0.932
52-54	L04L652N-6I2000030	13172	Novacor	0.82	0.917	43.3	5460	6310	964	1150	1	2.40	0.932
55-59	L04L652N-6I1800060	13172	Novacor	0.82	0.917	43.4	5530	5780	998	1070	1	2.34	0.927
60-65	L04L779N-6I2100110	13172	Novacor	0.76	0.919	43.3	5320	5870	994	1130	1	2.44	0.929
66-68	L04L779N-6I2100090	13172	Novacor	0.76	0.919	43.3	5710	5980	1030	1120	1	2.30	0.929
69-71	L04L781N-6I2300170	13171	Novacor	0.76	0.919	43.3	5490	6080	1020	1170	1	2.30	0.928
72-75	L04L922N-5L2100160	13171	Novacor	0.85	0.918	41.9	5180	5960	919	1090	1	2.41	0.928
76-77,89	L04L781N-6I2400020	13171	Novacor	0.76	0.919	43.0	5950	6060	110	1200	1	2.38	0.928
78-84	L04L779N-6I2100020	13171	Novacor	0.76	0.919	42.9	5810	5950	1040	1110	1	2.44	0.927
85-88	R04L604E-7G1500030	13920	Chevron	0.87	0.919	42.4	5000	4850	1100	1030	1	2.33	0.929
90-95	R04L604E-7G1500040	13920	Chevron	0.87	0.919	42.6	5080	4870	1040	1020	1	2.44	0.929
96-99, 113, 128	R04L604E-7G1400120	13920	Chevron	0.87	0.919	42.8	5060	5330	1000	1060	1	2.32	0.929
100-103	R04L604E-7G1500020	13920	Chevron	0.87	0.919	42.9	5080	4840	1060	1030	1	2.40	0.929
104-105	R04L604E-7G1400110	13920	Chevron	0.87	0.919	43.1	4740	5250	1050	1110	1	2.40	0.929
106-108	R04L604E-7G1400100	13920	Chevron	0.87	0.919	43.1	5210	4740	1100	1130	1	2.37	0.929
109-110	L04L780N-6I2300080	13171	Novacor	0.77	0.918	42.7	5770	5970	1070	1160	1	2.42	0.929
111-112	R04L700E-7G1200060	13922	Chevron	0.90	0.919	42.5	5140	4890	1070	1020	1	2.44	0.930
114-115	R04L700E-7G1200050	13922	Chevron	0.90	0.919	42.6	4910	4860	1140	1020	1	2.42	0.930
116-117	R04L699E-7G1200030	13922	Chevron	0.80	0.922	42.7	5090	4830	1050	1010	1	2.42	0.930
118-120	R04L699E-7G1200010	13922	Chevron	0.80	0.922	43.0	4980	4540	1010	1130	1	2.42	0.929
121-123	R04L699E-7G1200020	13922	Chevron	0.80	0.922	42.9	5230	4860	1080	1020	1	2.42	0.930
124-126	R04L699E-7G1100150	13922	Chevron	0.80	0.922	43.7	4650	4470	991	930	1	2.38	0.930
127,129-131,150	L04L779N-6I2000100	13171	Novacor	0.76	0.919	43.2	5540	5970	1010	1140	1	2.36	0.929
132-141, 149	R04L699E-7G1100080	14187	Chevron	0.80	0.922	43.2	5180	4880	1060	1010	1	2.40	0.930
142-148, 151	R04L604E-7G1400060	14187	Chevron	0.87	0.919	43.2	4950	4900	1040	1140	2	2.40	0.929
152-163	R04L699E-7G1100120	14187	Chevron	0.80	0.922	43.5	4850	4680	993	998	1	2.42	0.930
164-176	R04L699E-7G1100050	14187	Chevron	0.80	0.922	43.0	5140	4850	1010	1020	1	2.47	0.930
177-182	R04L699E-7G1100060	14187	Chevron	0.80	0.922	43.0	5230	5010	1040	1030	1	2.43	0.930

Table 4.5-5, page 1 of 2

Summary of Geosynthetic Quality Control Procedures
Fusion Trial Tests on LLDPE Liner
(Machine #1534 @ 700 degrees F and 9.0 speed)

102nd Street Landfill Site

Trial #	Date	Time	Air Temp.(F)	Peel Resistance(ppi)	Peel-Type Break	Shear Resistance(ppi)	Shear-Type Break
F-1	7/17/97	7:45	77	69,69,70	NB	75,75,75	NB
F-2	7/17/97	12:50	88	63,63,63	NB	68,72,70	NB
F-3	7/18/97	7:45	75	68,72,73	BRK,SE,SE	76,78,78	NB
F-4	7/18/97	1:10	85	62,65,66	NB	68,70,71	NB
F-5	7/22/97	8:40	75	73,74,75	NB,SE,NB	80,81,84	NB,NB,SE
F-6	7/22/97	3:20	78	66,66,69	NB	72,75,83	NB
F-7	7/23/97	10:18	72	63,64,64	NB,SE,NB	68,69,69	NB,SE,SE
F-8	7/23/97	1:10	79	63,64,64	NB	65,66,66	NB
F-9	7/24/97	2:00	78	65,66,66	NB,NB,SE	69,70,72	NB,SE,NB
F-10	7/24/97	5:41	80	67,71,71	NB	72,76,77	NB,NB,SE
F-11	7/25/97	8:55	75	62,64,65	NB	62,69,69	NB
F-12	7/29/97	10:15	70	73,73,74	NB,SE,SE	74,76,76	SE
F-13	7/29/97	1:10	85	63,65,65	SE,SE,NB	68,72,70	NB
F-14	7/30/97	10:30	78	74,75,75	SE,NB,SE	79,79,79	SE
F-15	7/30/97	12:55	84	66,67,68	SE,NB,SE	70,73,73	NB
F-16	7/30/97	3:00	84	66,67,67	NB,SE,NB	69,70,69	NB
F-17	7/31/97	10:21	76	65,65,67	SE	67,68,69	NB
F-18	7/31/97	12:50	85	62,63,64	NB	67,67,67	NB
F-19	8/1/97	8:55	75	76,76,76	SE	80,81,80	NB
F-20	8/1/97	8:00	80	68,70,72	NB,NB,SE	73,75,76	NB
F-21	8/4/97	2:30	80	65,66,66	SE	676,768	NB
F-22	8/5/97	8:15	68	77,77,77	SE	85,83,83	NB
F-23	8/5/97	2:34	80	67,68,67	NB	71,83,78	NB
F-24	8/6/97	1:48	85	66,66,66	NB	70,77,79	NB
F-25	8/7/97	10:50	70	70,71,74	NB	76,79,81	NB
F-26	8/7/9/	2:00	80	65,67,67	NB	72,73,74	NB
F-27	8/8/97	1:00	80	65,65,65	NB	70,71,70	NB
F-28	8/11/97	8:45	70	73,74,73	SE	80,83,79	NB
F-29	8/11/97	1:35	70	70,70,71	NB	88,79,74	SE,NB,NB
F-30	8/12/97	3:00	80	63,64,63	NB	70,67,72	NB
F-31	8/14/97	2:40	75	67,67,67	NB	67,72,70	NB
F-32	8/15/97	10:45	65	71,72,72	SE	83,71,79	NB
F-33	8/15/97	1:30	70	71,72,72	NB	77,80,79	NB
F-34	8/18/97	2:20	75	67,69,67	NB	78,74,82	NB
F-35	8/19/97	8:10	70	77,78,79	NB,SE,NB	92,95,89	SE,NB,NB
F-36	8/19/97	12:50	85	61,62,63	NB	71,71,67	NB
F-37	8/19/97	5:45	75	69,71,71	SE	77,78,86	NB,SE,NB
F-38	8/20/97	10:30	65	69,71,72	SE,NB,NB	76,75,77	SE,SE,NB
F-39	8/25/97	3:15	80	66,67,67	NB	76,71,75	NB,BRK,SE
F-40	8/26/97	8:50	75	76,75,76	SE	79,78,79	NB,SE,NB
F-41	8/26/97	10:30	75	71,72,73	SE	80,86,84	SE
F-42	8/26/97	12:50	70	71,71,71	NB	75,76,76	SE,NB,SE
F-43	8/27/98	1:00	75	65,68,67	SE	72,71,73	NB
F-44	8/28/97	2:00	75	67,68,68	SE,NB,NB	72,76,79	NB
F-45	8/29/97	10:20	60	76,77,78	SE	81,82,83	NB,SE,SE
F-46	8/29/97	1:00	70	74,75,75	SE	78,79,81	NB,NB,SE
F-47	9/3/97	3:00	60	75,76,76	SE	82,83,82	SE
F-48	9/4/97	1:25	60	77,78,78	SE	84,85,86	NB,SE,SE
F-49	9/5/97	1:00	70	67,68,68	SE	73,74,74	SE
F-50	9/9/97	1:30	75	61,63,64	SE	72,72,73	NB
F-51	9/9/97	1:00	70	70,72,72	SE,SE,NB	75,73,76	SE,SE,NB

Table 4.5-5, page 2 of 2

Summary of Geosynthetic Quality Control Procedures
Fusion Trial Tests on LLDPE Liner
(Machine #1534 @ 700 degrees F and 9.0 speed)

102nd Street Landfill Site

Trial #	Date	Time	Air Temp.(F)	Peel Resistance(ppi)	Peel-Type Break	Shear Resistance(ppi)	Shear-Type Break
F-52	9/16/97	8:40	70	76,77,77	SE	83,84,80	SE
F-53	9/16/97	1:00	80	62,63,63	NB,SE,SE	68,70,68	NB
F-54	9/17/97	7:45	65	74,77,77	SE	82,82,82	SE
F-55	9/22/97	10:20	60	76,77,78	SE	89,87,88	SE
F-56	9/22/97	1:00	65	72,74,74	SE	80,79,79	NB
F-57	9/23/97	8:35	60	81,81,83	SE	89,90,89	NB,SE,SE
F-58	9/23/97	1:10	60	81,82,83	SE	92,92,93	SE
F-59	9/25/97	8:00	55	80,82,84	SE	94,94,94	SE
F-60	9/27/97	8:20	55	85,87,83	SE	104,101,102	SE
F-61	9/27/97	12:43	65	65,69,70	SE	90,88,80	SE
F-62	9/28/97	8:00	65	81,82,84	SE	97,96,95	SE
F-63	9/28/97	12:50	70	69,70,72	SE	71,74,75	SE

Table 4.5-6, page 1 of 3

Summary of Geosynthetic Quality Control Procedures
Extrusion Trial Tests on LLDPE Liner

102nd Street Landfill Site

Trial #	Date	Time	Ambient Air Temp.(F)	Equipment #	Equipment Temp. (F)	Pre-Heat Temp. (F)	Peel Resistance(ppi)	Peel-Type Break	Shear Resistance(ppi)	Shear-Type Break
E-1	7/18/97	1:30	85	E-711	220	225	62,65,65	NB	70,69,74	NB,NB,SE
E-2	7/23/97	8:00	70	E-711	210	210	66,69,69	SE,NB,SE	77,76,79	NB
E-3	7/23/97	1:15	79	E-711	210	210	61,61,69	NB	70,74,74	NB
E-4	7/24/97	8:00	65	E-711	210	210	60,71,71	SE	76,82,83	SE,NB,NB
E-5	7/24/97	1:20	79	E-711	210	200	64,63,68	NB	72,70,69	NB,SE,NB
E-6	7/25/97	10:30	80	E-711	205	180	58,57,60	NB	73,64,71	NB,NB,SE
E-7	7/25/97	1:20	85	E-711	205	180	61,58,59	NB	61,62,62	NB
E-8	7/29/97	10:30	70	E-711	205	200	67,65,62	SE	73,80,76	SE
E-9	7/29/97	1:00	85	E-711	205	200	64,64,63	NB	70,72,68	NB
E-10	7/31/97	8:15	70	E-711	205	200	70,74,65	SE	82,78,78	NB
E-11	7/31/97	12:50	85	E-711	205	200	68,61,61	NB	67,68,70	NB,SE,NB
E-12	7/31/97	4:00	85	E-208	210	4.5	58,57,60	NB	64,65,65	NB
E-13	8/1/97	8:15	70	E-208	210	4.5	71,64,70	SE	82,70,79	NB,SE,NB
E-14	8/1/97	1:00	80	E-208	210	6.0	69,66,67	SE	76,73,75	NB
E-15	8/2/97	8:00	70	E-208	215	6.5	59,64,62	SE,NB,NB	70,72,73	NB
E-16	8/2/97	1:00	85	E-208	215	6.5	69,71,74	SE	70,71,75	NB
E-17	8/4/97	8:15	70	E-208	215	6.0	67,71,67	SE	78,77,80	SE
E-18	8/4/97	1:00	80	E-208	215	6.0	65,67,65	NB	75,74,80	SE
E-19	8/5/97	8:10	65	E-208	215	5.5	73,76,67	NB,NB,SE	78,77,77	NB
E-20	8/5/97	1:00	80	E-208	215	5.5	69,70,72	NB	74,75,77	NB
E-21	8/6/97	8:00	70	E-208	212	5.5	72,76,77	NB	76,78,81	SE
E-22	8/6/97	1:00	85	E-208	210	6.0	70,74,80	SE	818,281	SE
E-23	8/7/97	8:30	65	E-208	210	5.0	75,76,73	NB,SE,SE	82,83,78	SE
E-24	8/7/97	1:00	80	E-208	210	5.0	76,76,72	SE	70,68,75	SE
E-25	8/897	8:00	68	E-208	210	5.0	66,68,63	NB,NB,SE	73,85,76	SE
E-26	8/8/97	1:15	83	E-208	210	5.5	77,72,79	SE	81,76,78	SE
E-27	8/12/97	8:00	65	E-208	210	5.0	76,74,74	SE	78,77,82	SE,NB,SE
E-28	8/12/97	1:00	80	E-208	210	5.0	71,70,69	NB	72,74,72	NB,NB,SE
E-29	8/14/97	10:15	70	E-208	205	5.0	68,74,72	SE,NB,NB	83,92,79	NB,SE,SE
E-30	8/14/97	1:00	75	E-208	205	5.0	67,69,67	NB	85,70,74	NB
E-31	8/15/97	8:30	65	E-208	210	6.0	75,71,70	NB,NB,SE	74,75,76	NB
E-32	8/15/97	1:30	70	E-208	208	7.0	68,70,68	NB	99,82,93	NB,SE,NB
E-33	8/1/97	3:00	75	E-208	210	5.0	71,75,75,	SE,NB,NB	77,78,79	SE
E-34	8/18/97	8:10	70	E-208	205	5.0	69,61,55	SE	79,78,82	SE
E-35	8/19/97	2:00	85	E-208	205	5.5	64,66,67	NB,NB,SE	74,67,67	NB,SE,SE

Table 4.5-6, page 2 of 3

Summary of Geosynthetic Quality Control Procedures
Extrusion Trial Tests on LLDPE Liner

102nd Street Landfill Site

Trial #	Date	Time	Ambient Air Temp.(F)	Equipment #	Equipment Temp. (F)	Pre-Heat Temp. (F)	Peel Resistance(ppi)	Peel-Type Break	Shear Resistance(ppi)	Shear-Type Break
E-36	8/20/97	8:45	65	E-208	205	6.0	71,67,66	SE	77,77,77	SE
E-37	8/20/97	1:30	70	E-208	205	6.0	70,72,70	NB,SE,NB	75,75,73	NB,BRK,BRK
E-38	8/25/97	8:30	65	E-208	205	6.0	71,55,64	SE	87,84,87	SE
E-39	8/25/97	1:00	80	E-208	205	5.0	60,61,60	SE	70,80,72	SE
E-40	8/26/97	8:15	75	E-208	205	5.0	66,77,78	SE	83,82,83	SE
E-41	8/26/97	1:00	70	E-208	205	5.0	69,70,71	NB	87,80,77	NB,SE,NB
E-42	8/26/97	3:30	78	E-715	210	215	63,62,64	NB	72,69,71	NB
E-43	8/27/97	8:15	68	E-715	210	210	26,50,56	SE	81,80,82	FAILED
E-44	8/27/97	9:17	68	E-715	210	210	73,73,73	NB,BRK,NB	81,86,83	BRK,NB,SE
E-45	8/27/97	4:30	70	E-715	210	210	60,67,67	NB	76,71,72	SE,NB,NB
E-46	8/28/97	8:20	70	E-715	210	210	71,73,72,	NB,NB,SE	82,79,80	NB,NB,SE
E-47	8/28/97	2:30	75	E-715	210	210	64,65,65	NB	69,74,84	SE
E-48	8/29/97	8:20	60	E-715	210	210	63,75,67	SE	86,84,85	SE
E-49	8/29/97	1:00	70	E-715	210	210	68,72,70	SE	78,84,74	SE
E-50	9/3/97	8:35	6	E-715	220	235	78,73,79	SE	86,86,86	SE,NB,SE
E-51	9/3/97	1:00	60	E-715	220	240	77,77,75	SE	90,87,86	SE,SE,NB
E-52	9/4/97	8:15	60	E-715	215	220	74,76,72	SE	88,86,83	SE,NB,SE
E-53	9/4/97	1:00	60	E-715	215	220	74,72,76	SE	86,86,93	SE
E-54	9/5/97	8:15	55	E-715	215	215	65,72,74	SE	91,87,91	SE
E-55	9/5/97	1:00	70	E-715	210	215	64,64,61	NB	71,72,75	NB
E-56	9/9/97	9:00	70	E-715	215	220	59,65,65	SE	85,86,87	SE
E-57	9/9/97	3:45	75	E-715	215	220	57,61,65	SE	69,74,73	SE
E-58	9/15/97	1:00	70	E-715	215	215	65,65,64	SE	78,77,72	NB,SE,SE
E-59	9/16/97	9:00	70	E-715	215	215	63,69,67	SE,NB,SE	72,74,74	SE
E-60	9/16/97	1:00	80	E-715	210	210	73,64,60	SE,NB,SE	75,67,67	SE
E-61	9/17/97	8:00	65	E-715	210	210	46,71,47	FAILED		
E-62	9/17/97	8:30	65	E-715	210	210	50,44,68	PEAL	FAILED	
E-63	9/17/97	7:45	70	E-208	215	6.0	70,70,77	SE,SE,NB	81,80,83	NB,SE,NB
E-64	9/19/97	8:15	70	E-208	215	6.0	71,68,68	SE,SE,BRK	85,84,81	SE
E-65	9/23/97	8:15	60	E-208	220	6.5	83,77,74	SE	70,89,65	SE
E-66	9/23/97	1:45	60	E-208	220	6.0	76,75,72	SE	80,83,81	SE
E-67	9/25/97	8:40	55	E-208	223	7.0	78,82,85	SE	91,92,89	SE
E-68	9/27/97	9:50	60	E-208	225	6.0	72,75,73	SE	85,87,84	SE
E-69	9/27/97	1:00	65	E-208	220	5.0	65,70,71	SE,NB,SE	78,78,78	SE
E-70	9/28/97	8:00	65	E-208	220	6.0	55,57,58	SE	88,89,88	SE

Table 4.5-6, page 3 of 3

Summary of Geosynthetic Quality Control Procedures
Extrusion Trial Tests on LLDPE Liner

102nd Street Landfill Site

Trial #	Date	Time	Ambient Air Temp.(F)	Equipment #	Equipment Temp. (F)	Pre-Heat Temp. (F)	Peel Resistance(ppi)	Peel-Type Break	Shear Resistance(ppi)	Shear-Type Break
E-71	9/28/97	1:00	70	E-208	220	5.5	66,70,74	SE	73,75,74	SE,NB,SE
E-72	10/1/97	8:20	50	E-208	235	7.5	85,88,90	SE,BRK,SE	97,97,99	SE
E-73	10/1/97	1:00	50	E-208	235	7.0	71,82,79	SE	112,94,96	SE
E-74	10/2/97	8:00	50	E-208	230	7	82,87,88	SE	100,102,99	SE

Table 4.5-7, page 1 of 9

Summary of Geosynthetic Quality Control Procedures
Seams of the LLDPE Liner

102nd Street Landfill Site

Seam #	Date	Time	Seam Length	Trial #	Test Date	Test Time	Pressure Test	Vacuum Box	Start Pressure(psi)	Ending Pressure(psi)
1/2	7/17/97	1:21	55 ft	F-2	7/17/97	1:29	X		30	29
2/3	7/17/97	1:30	55 ft	F-2	7/17/97	1:45	X		29	29
3/4	7/17/97	1:47	55 ft	F-2	7/17/97	2:13	X		30	30
4/5	7/17/97	2:13	50 ft	F-2	7/17/97	2:08	X		30	29
4/5	7/17/97	2:19	5 ft	F-2	7/17/97	PM		X	-5	-5
5/6	7/17	2:25	55 ft	F-2	7/17/97	2:38	X		30	30
7/8	7/17	3:18	55 ft	F-2	7/17/97	3:27	X		30	30
8/9	7/18	8:23	55 ft	F-3	7/18/97	8:32	X		30	28
9/10	7/18	8:32	50 ft	F-3	7/18/97	8:44	X		28	27
9/10	7/18	8:37	5 ft	F-3	7/18/97	8:46	X		30	29
10/11	7/18	10:05	50 ft	F-3	7/18/97	10:14	X		30	29
11/12	7/18	10:14	50 ft	F-3	7/18/97	10:25	X		30	30
11/12	7/18	10:19	5 ft	F-3	7/18/97	10:31	X		29	28
12/13	7/18	10:25	50 ft	F-3	7/18/97	10:42	X		30	28
13/14	7/18	10:33	50 ft	F-3	7/18/97	10:47	X		30	29
14/15	7/18	10:59	40 ft	F-3	7/18/97	11:07	X		30	29
15/16	7/18	11:15	40 ft	F-3	7/18/97	11:22	X		30	29
1/17	7/18	11:44	55 ft	F-3	7/18/97	11:50	X		30	28
17/18	7/18	2 '05	58 ft	F-4	7/18/97	2:28	X		30	27
18/19	7/18	2:15	58 ft	F-4	7/18/97	2:29	X		30	28
19/20	7/18	3:19	65 ft	F-4	7/18/97	3:29	X		30	28
20/21	7/18	3:40	68 ft	F-4	7/18/97	3:44	X		29	27
22/23	7/18	3:50	30 ft	F-4	7/18/97	4:12	X		28	26
21/23	7/18	4:05	25 ft	F-4	7/18/97	4:14	X		30	27
21/22	7/18	4:10	25 ft	F-4	7/18/97	4:16	X		30	28
25/28	7/23	11:12	350 ft	F-7	7/23/97	11:49	X		28	26
23/25	7/23	11:45	5 ft	F-7	7/23/97	1:14	X		28	27
16/27	7/23	AM	40	F-7	7/23/97	1:00	X		30	29
27/28	7/23	11:45	40 ft	F-8	7/23/97	1:08	X		29	26
28/29	7/23	1:50	15 ft	F-8	7/23/97	2:24	X		30	27
28/29	7/23	1:52	15 ft	F-8	7/23/97	2:28	X		30	28
25/29	7/23	2:20	197 ft	F-8	7/23/97	2:45	X		30	28
28/30	7/23	3:45	108 ft	F-8	7/24/97	10:53	X		30	27
29/30	7/23	3:30	197 ft	F-8	7/24/97	10:54	X		30	28
28/31	7/23	4:00	308 ft	F-8	7/24/97	11:21	X		29	27
30/31	7/23	3:55	25 ft	F-8	7/24/97	11:31	X		27	27
30/31	7/23	3:56	5 ft	F-8	7/24/97	1:03		X	-5	-5
23/24	7/22	9:24	20 ft	F-5	7/22/97	10:46	X		30	27
22/24	7/22	9:30	20 ft	F-5	7/22/97	10:46	X		30	30
24/26	7/22	4:30	10 ft	F-6	7/24/97	7:45		X	-5	-5
25/26	7/22	4:20	15 ft	F-6	7/24/97	7:50		X	-5	-5
23/25	7/22	4:32	30 ft	F-6	7/24/97	7:55		X	-5	-5
21/25	7/22	4:35	30 ft	F-6	7/24/97	8:00		X	-5	-5
20/25	7/22	4:38	30 ft	F-6	7/24/97	8:05		X	-5	-5
19/25	7/22	4:41	30 ft	F-6	7/24/97	8:10		X	-5	-5
18/25	7/22	4:44	30 ft	F-6	7/24/97	8:15		X	-5	-5
17/25	7/22	4:47	30 ft	F-6	7/24/97	8:20		X	-5	-5
1/25	7/22	4:50	30 ft	F-6	7/24/97	8:25		X	-5	-5
2/25	7/22	4:53	30 ft	F-6	7/24/97	8:30		X	-5	-5
3/25	7/22	4:56	30 ft	F-6	7/24/97	8:35		X	-5	-5
4/25	7/22	4:59	30 ft	F-6	7/24/97	8:40		X	-5	-5
5/25	7/22	5:02	30 ft	F-6	7/24/97	8:45		X	-5	-5

Table 4.5-7, page 2 of 9

Summary of Geosynthetic Quality Control Procedures
Seams of the LLDPE Liner

102nd Street Landfill Site

Seam #	Date	Time	Seam Length	Trial #	Test Date	Test Time	Pressure Test	Vacuum Box	Start Pressure(psi)	Ending Pressure(psi)
6/25	7/22	5:05	30 ft	F-6	7/24/97	8:50		X	-5	-5
7/25	7/22	5:08	30 ft	F-6	7/24/97	8:55		X	-5	-5
8/25	7/22	5:11	30 ft	F-6	7/24/97	9:00		X	-5	-5
9/25	7/22	5:18	30 ft	F-6	7/24/97	9:05		X	-5	-5
10/25	7/22	5:17	30 ft	F-6	7/24/97	9:10		X	-5	-5
11/25	7/22	5:20	30 ft	F-6	7/24/97	9:15		X	-5	-5
12/25	7/22	5:23	30 ft	F-6	7/24/97	9:20		X	-5	-5
13/25	7/22	5:26	30 ft	F-6	7/24/97	9:25		X	-5	-5
15/25	7/22	5:29	4 ft	F-6	7/24/97	9:30		X	-5	-5
16/25	7/22	5:30	15 ft	F-6	7/24/97	9:35		X	-5	-5
31/32	7/24	4:10	285 ft	F-9	7/24/97	4:54	X		30	28
32/33	7/24	4:30	30 ft	F-9	7/24/97	5:02	X		29	26
31/33	7/24	5:40	40 ft	F-	7/25/97	8:46	X		30	28
30/33	7/24	5:22	105 ft	F-9	7/25/97	8:46	X		30	27
30/33	7/24	5:12	95 ft	F-9	7/25/97	9:00	X		30	28
33/34	7/24	5:00	30 ft	F-9	7/25/97	PM		X	-5	-5
30/34	7/24	5:11	8 ft	F-9	7/25/97	9:00	X		29	29
30/34	7/24	5:10	32 ft	F-9	7/25/97	9:24	X		30	29
30/34	7/24	5:07	22 ft	F-9	7/25/97	9:24	X		29	28
31/35	7/24	PM	10 ft	F-9	7/25/97	11:29	X		30	28
32/35	7/24	PM	6 ft	F-9	7/25/97	11:31	X		30	28
36/37	7/25	9:30	30 ft	F-11	7/25/97	11:44	X		30	28
32/36	7/25	10:30	6 ft	F-11	7/25/97	1:07	X		29	28
32/36	7/25	10:00	90 ft	F-11	7/25/97	1:11	X		30	29
32/37	7/25	10:00	206 ft	F-11	7/25/97	1:37	X		30	29
33/37	7/25	9:40	243 ft	F-11	7/25/97	1:39	X		29	27
34/37	7/25	9:00	42 ft	F-11	7/25/97	2:04	X		30	29
37/38	7/29	10:34	224	F-12	7/29/97	11:28	X		30	29
38/39	7/29	11:15	30 ft	F-12	7/29/97	11:20	X		29	28
38/39	7/29	11:20	29 ft	F-12	7/29/97	3:00	X		30	29
36/39	7/29	11:40	45 ft	F-12	7/29/97	3:12	X		30	29
36/39	7/29	11:45	65 ft	F-12	7/29/97	3:20	X		30	28
41/42	7/29	PM	30 ft	F-13	7/29/97	3:46	X		30	28
39/40	7/29	PM	124 ft	F-13	7/29/97	3:47	X		30	28
39/41	7/29	PM	267 ft	F-13	7/29/97	3:58	X		30	27
38/41	7/29	PM	224 ft	F-13	7/29/97	4:10	X		30	29
41/43	7/29	PM	485 ft	F-13	7/29/97	4:45	X		30	30
42/43	7/29	PM	30 ft	F-13	7/29/97	4:50	X		29	27
41/42	7/29	PM	8 ft	F-13	7/29/97	5:06	X		29	28
40/42	7/29	PM	124 ft	F-13	7/29/97	5:07	X		30	27
43/44	7/30	10:55	485 ft	F-14	7/30/97	1:45	X		30	29
42/44	7/30	11:45	63 ft	F-14	7/30/97	1:46	X		30	30
44/45	7/30	11:55	30	F-14	7/30/97	2:01	X		30	29
42/45	7/30	12:07	70 ft	F-15	7/30/97	2:02	X		30	30
44/46	7/30	4:20	260 ft	F-16	7/30/97	4:51	X		30	27
46/47	7/30	4:40	30 ft	F-16	7/30/97	4:54	X		30	30
45/47	7/30	4:43	53 ft	F-16	7/31/97	4:57	X		30	29
45/47	7/30	5:00	31 ft	F-16	7/31/97	4:58	X		29	28
44/47	7/30	5:03	60 ft	F-16	7/31/97	8:10	X		30	29
44/47	7/30	5:10	237 ft	F-16	7/31/97	8:11	X		30	28
46/48	7/30	2:00	260 ft	F-18	7/31/97	3:24	X		30	28
47/48	7/30	2:25	8 ft	F-18	7/31/97	PM		X	-5	-5

Table 4.5-7, page 3 of 9

Summary of Geosynthetic Quality Control Procedures
Seams of the LLDPE Liner

102nd Street Landfill Site

Seam #	Date	Time	Seam Length	Trial #	Test Date	Test Time	Pressure Test	Vacuum Box	Start Pressure(psi)	Ending Pressure(psi)
47/48	7/31	2:30	160 ft	F-18	7/31/97	3:44	X		30	29
47/49	7/31	2:50	175 ft	F-18	7/31/97	3:55	X		30	30
48/49	7/31	2:42	30	F-18	7/31/97	3:47	X		27	25
32/CS EAST	7/31	11:41	48 ft	F-17	7/31/97	11:53	X		30	28
32/CS WEST	7/31	1:15	48 ft	F-18	7/31/97	12:30	X		30	29
33/CS EAST	7/31	11:36	28 ft	F-17	7/31/97	1:48	X		30	28
33/CS WEST	7/31	1:20	28 ft	F-18	7/31/97	2:26	X		30	28
33/CS EAST	7/31	11:33	75 ft	F-17	7/31/97	1:46	X		30	30
33/CS WEST	7/31	1:28	75 ft	F-18	7/31/97	2:15	X		30	30
33/CS EAST	7/31	11:25	75 ft	F-17	7/31/97	1:46	X		30	30
33/CS WEST	7/31	1:36	75 ft	F-18	7/31/97	2:06	X		30	29
33/CS EAST	7/31	11:15	62 ft	F-17	7/31/97	1:55	X		29	28
33/CS WEST	7/31	1:44	62 ft	F-18	7/31/97	2:03	X		30	30
46/48	7/31	2:00	260 ft	F-18	7/31/97	3:24	X		30	28
47/48	7/31	2:25	8 ft	F-18	7/31/97	PM		X	-5	-5
47/48	7/31	2:30	160 ft	F-18	7/31/97	3:44	X		30	29
47/49	7/31	2:50	233 ft	F-18	7/31/97	3:55	X		30	30
48/49	7/31	2:42	30 ft	F-18	7/31/97	3:47	X		27	25
47/50	8/1	10:55	233 ft	F-19	8/1/97	12:53	X		30	29
48/50	8/1	10:17	370 ft	F-19	8/1/97	12:53	X		30	29
48/50	8/1	10:15	40 ft	F-19	8/1/97	1:26	X		29	28
50/51	8/1	1:20	268 ft	F-20	8/1/97	2:20	X		29	28
51/52	8/1	1:55	30 ft	F-20	8/1/97	30 ft	X		30	28
50/52	8/1	2:00	347 ft	F-20	8/1/97	2:35	X		30	28
51/53	8/1	3:05	250 ft	F-20	8/1/97	3:33	X		30	27
52/53	8/1	3:30	315 ft	F-20	8/1/97	4:00	X		30	30
53/54	8/4	3:10	243 ft	F-21	8/4/97	4:00	X		30	30
54/55	8/4	3:30	30 ft	F-21	8/4/97	4:00	X		30	30
53/55	8/4	3:45	237 ft	F-21	8/4/97	4:13	X		30	28
54/56	8/5	9:00	243 ft	F-22	8/5/97	10:23	X		30	29
55/56	8/5	9:25	102 ft	F-22	8/5/97	10:22	X		30	28
56/57	8/5	10:40	227 ft	F-22	8/5/97	11:14	X		30	28
56/57	8/5	10:39	4 ft	F-22	8/5/97	11:30		X	-5	-5
57/58	8/5	11:00	43 ft	F-22	8/5/97	11:36	X		30	29
57/58	8/5	11:37	75 ft	F-22	8/5/97	11:45	X		30	28
58/59	8/5	3:22	88 ft	F-22	8/5/97	4:05	X		30	28
58/59	8/5	3:20	5 ft	F-22	8/6/97	PM		X	-5	-5
57/59	8/5	3:30	90 ft	F-23	8/5/97	4:05	X		30	30
56/59	8/5	3:40	24 ft	F-23	8/5/97	3:53	X		30	29
59/60	8/5	3:45	30 ft	F-23	8/5/97	4:15	X		30	28
56/60	8/5	3:50	75 ft	F-23	8/5/97	4:20	X		30	29
55/60	8/5	4:00	100 ft	F-23	8/5/97	4:29	X		29	29
53/60	8/5	4:10	55	F-23	8/5/97	4:38	X		30	29
60/61	8/5	4:15	125	F-23	8/5/97	4:50	X		30	28
61/62	8/5	4:45	25	F-23	8/5/97	5:01	X		30	28
53/61	8/5	4:30	17	F-23	8/5/97	5:09	X		30	28
52/61	8/5	4:33	57	F-23	8/6/97	7:59	X		30	28
50/61	8/5	4:20	25	F-23	8/6/97	8:06	X		30	28
50/62	8/5	4:50	15	F-23	8/6/97	8:13	X		30	28
49/62	8/5	4:55	15 ft	F-23	8/6/97	8:14	X		30	29
59/63	8/6	2:25	10 ft	F-24	8/6/97	PM		X	-5	-5
59/63	8/6	2:26	200 ft	F-24	8/6/97	2:52	X		30	28

Table 4.5-7, page 4 of 9

Summary of Geosynthetic Quality Control Procedures
Seams of the LLDPE Liner

102nd Street Landfill Site

Seam #	Date	Time	Seam Length	Trial #	Test Date	Test Time	Pressure Test	Vacuum Box	Start Pressure(psi)	Ending Pressure(psi)
60/63	8/6	2:50	210 ft	F-24	8/6/97	3:08	X		30	29
63/64	8/6	3:40	30 ft	F-24	8/6/97	3:58	X		30	29
60/64	8/6	3:45	150 ft	F-24	8/6/97	4:07	X		30	29
65/66	8/6	4:15	30 ft	F-24	8/6/97	4:25	X		30	29
64/66	8/6	4:23	75 ft	F-24	8/6/97	4:35	X		30	29
64/65	8/6	4:30	80 ft	F-24	8/6/97	4:40	X		30	28
63/67	8/7	11:25	250 ft	F-25	8/7/97	11:48	X		30	28
63/67	8/7	12:53	185 ft	F-25	8/7/97	1:48	X		30	30
66/67	8/7	1:35	30 ft	F-25	8/7/97	2:01	X		30	29
67/68	8/7	3:00	50 ft	F-26	8/7/97	3:05	X		30	30
67/68	8/7	2:30	390 ft	F-26	8/7/97	3:13	X		30	30
66/68	8/7	3:10	75 ft	F-26	8/7/97	3:26	X		30	28
65/68	8/7	3:20	80 ft	F-26	8/7/97	3:27	X		30	29
68/68	8/7	4:45	50 ft	F-26	8/7/97	4:45	X		30	30
68/69	8/7	3:55	493 ft	F-26	8/7/97	4:50	X		30	28
69/70	8/8	2:00	30 ft	F-27	8/8/97	2:40	X		30	28
68/70	8/8	2:05	65 ft	F-27	8/8/97	2:50	X		30	29
71/72	8/8	2:25	30 ft	F-27	8/8/97	3:15	X		30	30
69/72	8/8	2:35	98 ft	F-27	8/8/97	3:15	X		30	29
69/71	8/8	2:45	450 ft	F-27	8/8/97	3:27	X		30	28
70/71	8/8	3:30	65 ft	F-27	8/8/97	3:35	X		30	29
71/74	8/8	4:40	115 ft	F-27	8/11/97	8:02	X		30	28
73/74	8/8	4:35	30 ft	F-27	8/11/97	8:02	X		30	29
71/73	8/8	3:55	406 ft	F-27	8/11/97	8:25	X		30	29
72/73	8/8	3:45	105 ft	F-27	8/11/97	8:25	X		30	28
73/75	8/11	9:40	430 ft	F-28	8/11/97	11:35	X		30	29
75/76	8/11	11:10	30 ft	F-28	8/11/97	11:35	X		30	28
73/76	8/11	11:15	88 ft	F-28	8/11/97	1:05	X		30	28
74/76	8/11	11:25	122 ft	F-28	8/11/97	1:09	X		30	27
75/77	8/11	2:10	260 ft	F-29	8/11/97	2:10	260		30	28
76/77	8/11	2:30	217 ft	F-29	8/11/97	2:50	X		30	29
78/79	8/12	3:05	40 ft	F-30	8/11/97	3:30	X		30	29
79/80	8/12	3:10	61 ft	F-30	8/12/97	3:34	X		30	30
80/81	8/12	3:20	8 ft	F-30	8/12/97	3:38	X		30	28
75/80	8/12	4:00	20 ft	F-30	8/12/97	4:15	X		30	30
75/80	8/12	5:05	10 ft	F-30	8/12/97	5:11	X		30	29
75/80	8/12	4:02	33 ft	F-30	8/12/97	4:19	X		30	29
75/79	8/12	4:06	38 ft	F-30	8/12/97	4:25	X		30	29
75/78	8/12	4:25	38 ft	F-30	8/12/97	4:25	X		30	29
75/82	8/12	5:00	38 ft	F-30	8/12/97	5:10	X		30	28
81/82	8/12	4:35	114 ft	F-30	8/12/97	5:10	X		30	30
77/78	8/15	11:30	30 ft	F-32	8/15/97	11:50	X		30	29
77/83	8/15	11:35	300 ft	F-32	8/15/97	1:05	X		30	29
77/83	8/15	12:05	180 ft	F-32	8/15/97	1:10	X		30	29
84/85	8/15	2:35	15 ft	F-33	8/15/97	3:10	X		30	29
84/85	8/15	2:37	15 ft	F-33	8/15/97	3:15	X		30	28
83/85	8/15	2:50	87 ft	F-33	8/15/97	3:10	X		30	27
83/84	8/15	3:00	458 ft	F-33	8/15/97	4:35	X		30	27
82/86	8/18	3:22	15 ft	F-34	8/18/97	4:00	X		30	27
82/86	8/18	3:20	17 ft	F-34	8/18/97	4:05	X		30	29
82/86	8/18	3:30	114 ft	F-34	8/18/97	4:15	X		30	29
85/86	8/18	4:30	113 ft	F-34	8/18/97	4:45	X		30	28

Table 4.5-7, page 5 of 9

Summary of Geosynthetic Quality Control Procedures
Seams of the LLDPE Liner

102nd Street Landfill Site

Seam #	Date	Time	Seam Length	Trial #	Test Date	Test Time	Pressure Test	Vacuum Box	Start Pressure(psi)	Ending Pressure(psi)
84/87	8/18	4:43	230 ft	F-34	8/18/97	4:53	X		30	29
84/87	8/18	5:05	238	F-34	8/18/97	5:10	X		30	28
82/87	8/19	8:50	26 ft	F-35	8/19/97	10:55	X		30	28
81/85	8/19	8:53	34 ft	F-35	8/19/97	10:43	X		30	29
80/85	8/19	8:56	8 ft	F-35	8/19/97	10:43	X		30	29
80/83	8/19	8:57	22 ft	F-35	8/19/97	10:35	X		30	30
79/83	8/19	9:00	31 ft	F-35	8/19/97	10:34	X		30	29
78/83	8/19	9:03	14 ft	F-35	8/19/97	10:36	X		30	28
88/89	8/19	11:50	30 ft	F-35	8/19/97	1:04	X		30	28
89/90	8/19	1:10	30 ft	F-36	8/19/97	2:12	X		30	27
87/89	8/19	12:55	125 ft	F-36	8/19/97	2:12	X		30	27
87/90	8/19	1:20	240 ft	F-36	8/19/97	2:17	X		30	27
87/88	8/19	2:00	150 ft	F-35	8/19/97	2:33	X		30	29
90/91	8/19	6:10	245 ft	F-37	8/20/97	8:04	X		30	28
89/91	8/19	5:55	73 ft	F-37	8/20/97	8:04	X		30	28
89/91	8/19	5:25	52 ft	F-36	8/20/97	8:15	X		30	27
88/91	8/19	5:20	55 ft	F-36	8/20/97	8:26	X		30	28
88/91	8/19	5:00	203 ft	F-36	8/19/97	8:35	X		30	29
91/92	8/20	10:45	259 ft	F-38	8/20/97	11:31	X		30	28
92/93	8/20	11:15	30 ft	F-38	8/20/97	11:31	X		30	28
91/93	8/20	11:25	375 ft	F-38	8/20/97	11:57	X		30	28
86/94	8/20		95 ft	F-38	8/20/97	1:35	X		30	30
86/95	8/20	12:25	55 ft	F-38	8/20/97	2:18	X		30	28
94/95	8/20	12:35	38 ft	F-38	8/20/97	10:10	X		30	28
94/95	8/20	12:40	15 ft	F-38	8/20/97	10:28	X		30	27
94/96	8/25	5:15	43 ft	F-42	8/27/97	10:22	X		30	27
94/97	8/25	5:12	30 ft	F-42	8/27/97	10:32	X		30	28
94/97	8/25	5:10	20 ft	F-42	8/27/97	10:34	X		30	27
96/97	8/25	4:32	95 ft	F-42	8/27/97	10:45	X		30	28
96/97	8/25	4:30	15 ft	F-42	8/27/97	11:37	X		30	29
94/98	8/25	5:02	50 ft	F-42	8/27/97	11:02	X		30	29
97/98	8/25	4:45	70 ft	F-42	8/27/97	11:02	X		30	28
94/98	8/25	5:00	16 ft	F-42	8/27/97	11:14	X		30	29
98/99	8/25	4:55	25 ft	F-42	8/27/97	11:15	X		30	30
96/101	8/26	AM	14 ft	F-40	8/28/97	11:38	X		30	28
96/101	8/26	AM	13ft	F-40	8/28/97	10:37	X		30	29
96/101	8/26	AM	119 ft	F-40	8/28/97	10:33	X		30	28
100/101	8/26	10:00	147 ft	F-40	8/28/97	11:00	X		30	28
101/102	8/26	1:27	147 ft	F-41	8/27/97	1:17	X		30	28
92/102	8/26	1:40	256 ft	F-41	8/28/97	11:11	X		30	27
93/102	8/26	2:10	300 ft	F-41	8/27/97	1:35	X		30	27
93/102	8/26	2:40	85 ft	F-41	8/27/97	4:38	X		30	28
102/103	8/26	2:23	212 ft	F-41	8/27/97	4:23	X		30	27
102/104	8/26	1:27	573 ft	F-41	8/27/97	2:07	X		30	27
103/104	8/26	2:20	30 ft	F-41	8/27/97	4:15	X		30	29
103/105	8/26	8:30	212 ft	F-41	8/27/97	2:48	X		30	27
104/105	8/26	7:55	334 ft	F-41	8/27/97	2:45	X		30	28
104/106	8/26	7:30	229 ft	F-41	8/28/98	11:44	X		30	30
105/106	8/26	7:52	30 ft	F-41	8/28/97	11:44	X		30	29
105/107	8/27	2:35	556 ft	F-43	8/28/97	12:47	X		30	29
106/107	8/27	2:15	229 ft	F-43	8/28/97	12:48	X		30	27
107/108	8/27	5:25	111 ft	F-43	8/28/97	1:13	X		30	30

Table 4.5-7, page 6 of 9

Summary of Geosynthetic Quality Control Procedures
Seams of the LLDPE Liner

102nd Street Landfill Site

Seam #	Date	Time	Seam Length	Trial #	Test Date	Test Time	Pressure Test	Vacuum Box	Start Pressure(psi)	Ending Pressure(psi)
107/108	8/27	5:24	6 ft	F-43	8/28/97	1:30	X		30	25
107/108	8/27	5:23	6 ft	F-43	8/28/97	1:33	X		30	27
108/110	8/28	2:15	122 ft	F-44	8/28/97	2:32	X		30	30
10109/110	8/28	2:30	322 ft	F-44	8/28/97	3:11	X		30	29
110/111	8/28	3:05	30 ft	F-44	8/28/97	3:14	X		30	28
110/112	8/28	4:10	410 ft	F-44	8/28/97	9:19	X		30	29
110/112	8/28	4:05	37 ft	F-44	8/29/97	10:44	X		30	29
110/112	8/28	4:50	355 ft	F-44	8/29/97	10:00	X		30	29
111/113	8/28	5:30	35 ft	F-44	8/29/97	10:08	X		30	27
112/113	8/28	5:25	30 ft	F-44	8/29/97	10:07	X		30	29
112/114	8/29	10:30	772 ft	F-45	8/29/97	1:40	X		30	27
113/114	8/29	11:40	35 ft	F-45	8/29/97	1:42	X		30	27
78/83	8/26	1:21	10 ft	F-42	9/2/97	8:00		X	-5	-5
79/83	8/26	1:19	15 ft	F-42	9/2/97	8:05		X	-5	-5
80/83	8/26	1:17	15 ft	F-42	9/2/97	8:07		X	-5	-5
80/85	8/26	1:16	5 ft	F-42	9/2/97	8:09		X	-5	-5
81/85	8/26	1:13	30 ft	F-42	9/2/97	8:14		X	-5	-5
82/87	8/26	1:11	420 ft	F-42	9/2/97	8:19		X	-5	-5
86/87	8/26	1:10	11 ft	F-42	9/2/97	8:21		X	-5	-5
88/94	8/26	1:07	25 ft	F-42	9/2/97	8:22		X	-5	-5
88/96	8/26	1:06	6 ft	F-42	9/2/97	8:26		X	-5	-5
91/100	8/26	1:03	30 ft	F-42	9/2/97	8:27		X	-5	-5
92/101	8/26	1:00	30 ft	F-42	9/2/97	8:32		X	-5	-5
114/115	8/29	1:28	304 ft	F-46	9/3/97	10:26	X		-5	-5
114/116	8/29	2:06	85 ft	F-46	9/3/97	10:38	X			
114/116	8/29	2:15	715 ft	F-46	9/3/97	10:47	X		30	28
115/116	8/29	2:01	30 ft	F-47	9/4/97	10:18	X		30	28
115/117	9/3	4:04	320 ft	F-47	9/4/97	10:07	X		30	28
116/117	9/3	9:35	330 ft	F-47	9/4/97	10:00	X		30	29
117/118	9/3	5:05	20 ft	F-47	9/4/97	9:12	X		30	30
117/118	9/3	5:07	10 ft	F-47	9/4/97	9:13	X		30	30
116/118	9/3	5:13	173 ft	F-47	9/4/97	10:24	X		30	28
118/119	9/4	3:30	185 ft	F-48	9/4/97	3:49	X		30	28
117/119	9/4	2:45	654 ft	F-48	9/4/97	4:05	X		30	28
118/119	9/4	3:45	5 ft	F-48	9/4/97	4:30	X		30	28
119/120	9/4	4:01	131 ft	F-48	9/4/97	8:43	X		30	28
120/121	9/4	4:35	30 ft	F-48	9/5/97	8:43	X		30	28
119/121	9/4	4:40	463 ft	F-48	9/5/97	8:58	X		30	28
119/122	9/5	1:30	234 ft	F-48	9/9/97	8:39	X		30	28
120/122	9/5	2:04	30 ft	F-49	9/9/97	8:45	X		30	30
120/123	9/5	245	82 ft	F-49	9/9/97	7:45	X		30	28
121/123	9/5	2:55	231 ft	F-47	9/9/97	8:20	X		30	28
121/123	9/5	3:18	16 ft	F-49	9/9/97	8:15	X		30	30
121/123	9/5	3:20	103 ft	F-49	9/9/97	7:59	X		30	29
121/124	9/5	3:37	121 ft	F-49	9/9/97	8:05	X		30	28
123/125	9/9	2:20	400 ft	F-50	9/9/97	3:00	X		30	29
124/425	9/9	2:54	125 ft	F-50	9/9/97	3:15	X		30	29
124/125	9/5	3:34	30 ft	F-49	9/9/97	3:02	X		30	29
125/156	9/9	3:24	482 ft	F-50	9/9/97	4:05	X		30	28
126/127	9/9	4:30	430 ft	F-50	9/9/97	5:14	X		30	28
127/128	9/15	1:38	41 ft	F-51	9/15/97	1:45	X		30	28
127/129	9/15	1:35	252 ft	F-51	9/15/97	2:10	X		30	29

Table 4.5-7, page 7 of 9

Summary of Geosynthetic Quality Control Procedures
Seams of the LLDPE Liner

102nd Street Landfill Site

Seam #	Date	Time	Seam Length	Trial #	Test Date	Test Time	Pressure Test	Vacuum Box	Start Pressure(psi)	Ending Pressure(psi)
128/129	9/15	1:30	30 ft	F-51	9/15/97	1:50	X		30	28
129/130	9/15	3:00	238 ft	F-51	9/15/97	3:29	X		30	29
132/133	9/16	9:52	131 ft	F-52	9/16/97	10:12	X		30	28
131/132	9/16	9:03	90 ft	F-52	9/16/97	10:13	X		30	27
131/132	9/16	9:12	18 ft	F-52	9/16/97	10:23	X		30	27
133/134	9/16	10:50	133 ft	F-52	9/16/97	11:29	X		30	27
134/135	9/16	11:00	133 ft	F-52	9/16/97	11:30	X		30	27
130/131	9/15	3:45	30 ft	F-52	9/16/97	1:40	X		30	29
135/136	9/16	1:25	125 ft	F-52	9/16/97	1:55	X		30	28
136/138	9/16	2:00	117 ft	F-52	9/16/97	2:22	X		30	30
136/137	9/16	1:50	30 ft	F-52	9/16/97	2:22	X		30	30
137/138	9/16	2:10	10 ft	F-52	9/16/97	2:33		X	-5	-5
135/137	9/16	1:40	5 ft	F-52	9/16/97	2:00		X	-5	-5
130/132	9/16	11:30	33 ft	F-52	9/16/97	2:45		X	-5	-5
130/133	9/16	11:34	4 ft	F-52	9/16/97	2:50		X	-5	-5
129/133	9/16	11:35	22 ft	F-52	9/16/97	2:53		X	-5	-5
128/133	9/16	11:38	7 ft	F-52	9/16/97	2:58		X	-5	-5
128/134	9/16	11:39	30 ft	F-52	9/16/97	3:00		X	-5	-5
138/139	9/16	2:50	107 ft	F-52	9/16/97	3:05	X		30	29
139/140	9/16	3:10	30 ft	F-52	9/16/97	3:20	X		30	28
138/141	9/16	3:20	107 ft	F-52	9/16/97	3:32	X		30	28
141/142	9/16	4:00	119 ft	F-53	9/17/97	7:58	X		30	29
142/143	9/17	8:26	120 ft	F-54	9/17/97	9:08	X		30	29
143/144	9/17	9:00	120 ft	F-54	9/17/97	9:15	X		30	28
128/135	9/16	4:20	11 ft	F-53	9/22/97	PM		X	-5	-5
127/135	9/16	4:21	20 ft	F-53	9/22/97	PM		X	-5	-5
127/136	9/16	4:23	30 ft	F-53	9/22/97	PM		X	-5	-5
127/138	9/16	4:26	30 ft	F-53	9/22/97	PM		X	-5	-5
127/139	9/16	4:29	30 ft	F-53	9/22/97	PM		X	-5	-5
127/141	9/16	4:32	30 ft	F-53	9/22/97	PM		X	-5	-5
126/142	9/16	4:35	30 ft	F-53	9/22/97	PM		X	-5	-5
126/143	9/17	10:00	30 ft	F-53	9/22/97	PM		X	-5	-5
126/144	9/17	10:03	12 ft	F-53	9/22/97	PM		X	-5	-5
125/144	9/17	10:04	19 ft	F-54	9/22/97	PM		X	-5	-5
125/145	9/17	10:07	30 ft	F-54	9/22/97	PM		X	-5	-5
144/145	9/17	10:30	120 ft	F-54	9/17/97	10:50	X	X	30	28
145/146	9/17	11:22	120 ft	F-54	9/17/97	11:44	X	X	30	27
146/147	9/22	10:45	133 ft	F-55	9/22/97	10:57	X		30	28
147/148	9/22	2:17	80 ft	F-56	9/22/97	2:59	X		30	29
147/148	9/22	2:25	65 ft	F-56	9/22/97	3:10	X		30	28
131/153	9/23	9:00	70 ft	F-57	9/23/97	10:00	X		30	29
153/154	9/23	9:10	70 ft	F-57	9/23/97	10:01	X		30	29
154/155	9/23	10:45	86 ft	F-57	9/23/97	10:54	X		30	28
130/149	9/22	5:07	118 ft	F-56	9/23/97	2:28	X		30	28
130/149	9/22	5:19	70 ft	F-56	9/23/97	2:29	X		30	28
149/150	9/22	5:00	30 ft	F-56	9/23/97	2:33	X		30	28
149/151	9/22	6:00	132 ft	F-56	9/23/97	2:35	X		30	29
150/151	9/22	6:14	53 ft	F-56	9/23/97	2:46	X		30	28
150/152	9/23	6:20	20 ft	F-56	9/23/97	2:52	X		30	29
151/152	9/22	5:50	30 ft	F-56	9/23/97	2:55	X		30	28
123/146	9/22	3:00	30 ft	F-56	9/24/97	8:00		X	-5	-5
120/147	9/22	3:03	30 ft	F-56	9/24/97	8:05		X	-5	-5

Table 4.5-7, page 8 of 9

Summary of Geosynthetic Quality Control Procedures
Seams of the LLDPE Liner

102nd Street Landfill Site

Seam #	Date	Time	Seam Length	Trial #	Test Date	Test Time	Pressure Test	Vacuum Box	Start Pressure(psi)	Ending Pressure(psi)
130/131	9/15	3:30	30 ft	F-56	9/24/97	9:00		X	-5	-5
131/149	9/22	6:30	30 ft	F-56	9/24/97	9:05		X	-5	-5
131/151	9/22	6:33	30 ft	F-56	9/24/97	9:10		X	-5	-5
157/153	9/23	11:00	30 ft	F-57	9/24/97	9:15		X	-5	-5
151/154	9/23	11:03	30 ft	F-57	9/24/97	9:20		X	-5	-5
151/155	9/23	11:06	30 ft	F-57	9/22/97	9:25		X	-5	-5
151/156	9/25	8:32	25 ft	F-59	9/25/97	8:50	X		30	29
155/157	9/25	9:23	82 ft	F-59	9/25/97	10:00	X		30	28
148/159	9/27	9:15	150 ft	F-60	9/27/97	10:09	X		30	27
150/160	9/27	11:05	105 ft	F-60	9/27/97	11:20	X		30	29
160/161	9/27	11:35	83 ft	F-60	9/27/97	1:07	X		30	27
161/161	9/27	11:45	17 ft	F-60	10/1/97	AM		X	-5	-5
161/162	9/27	2:00	88 ft	F-61	9/27/97	2:35	X		30	28
162/163	9/27	2:10	80 ft	F-61	9/27/97	2:45	X		30	28
163/164	9/27	2:55	75 ft	F-61	9/27/97	3:04	X		30	29
164/165	9/27	3:00	60 ft	F-61	9/27/97	3:12	X		30	27
165/166	9/27	3:15	28 ft	F-61	9/27/97	3:22	X		30	27
120/148	9/22	3:06	30 ft	F-56	10/1/98	8:05		X	-5	-5
122/159	9/27	3:30	30 ft	F-61	10/1/98	8:10		X	-5	-5
122/160	9/27	3:33	30 ft	F-61	10/1/98	8:13		X	-5	-5
122/161	9/27	3:36	30 ft	F-61	10/1/98	8:17		X	-5	-5
122/162	9/27	3:39	30 ft	F-61	10/1/98	8:20		X	-5	-5
122/163	9/27	3:42	30 ft	F-61	10/1/98	8:24		X	-5	-5
122/164	9/27	3:45	30 ft	F-61	10/1/98	8:27		X	-5	-5
122/165	9/27	3:48	15 ft	F-61	10/1/98	8:31		X	-5	-5
122/166	9/27	3:51	30 ft	F-61	10/1/98	8:35		X	-5	-5
159/167	9/27	4:50	30 ft	F-61	10/1/98	8:40		X	-5	-5
160/167	9/27	4:54	30 ft	F-61	10/1/98	8:44		X	-5	-5
161/167	9/27	4:57	30 ft	F-61	10/1/98	8:48		X	-5	-5
162/167	9/27	5:00	30 ft	F-61	10/1/98	8:51		X	-5	-5
163/167	9/27	5:03	30 ft	F-61	10/1/98	8:55		X	-5	-5
1643167	9/27	5:06	30 ft	F-61	10/1/98	8:58		X	-5	-5
165/167	9/27	5:09	30 ft	F-61	10/1/98	9:00		X	-5	-5
167/168	9/28	8:17	163 ft	F-62	9/28/97	8:42	X		30	28
168/169	9/28	9:11	141 ft	F-62	9/28/97	10:03	X		30	28
167/170	9/28	10:40	112 ft	F-62	9/28/97	10:55	X		30	28
170/171	9/28	10:55	88 ft	F-62	9/28/97	11:08	X		30	29
171/172	9/28	11:10	50 ft	F-62	9/28/97	11:22	X		30	28
156/173	9/28	11:11	80 ft	F-63	9/28/97	1:50	X		30	27
158/174	9/28	1:22	66 ft	F-63	9/28/97	1:52	X		30	28
157/158	9/28	9:03	78 ft	F-59	9/28/97	2:20	X		30	29
175/176	9/28	2:22	30 ft	F-63	9/	2:28	X		30	28
175/177	9/28	2:29	50 ft	F-63	9/28/97	2:45	X		30	29
177/179	9/28	2:36	25 ft	F-63	9/28/97	2:45	X		30	28
178/180	9/28	2:48	44 ft	F-63	9/28/97	3:01	X		30	27
180/181	9/28	2:56	32 ft	F-63	9/28/97	3:07	X		30	28
181/182	9/28	2:59	20 ft	F-63	9/28/97	3:11	X		30	28
173/176	9/28	3:04	7 ft	F-63	9/28/97	3:24	X		30	27
173/175	9/28	3:06	58 ft	F-63	9/28/97	3:22	X		30	29
158/173	9/28	3:25	30 ft	F-63	9/28/97	3:33	X		30	29
173/174	9/28	3:30	30 ft	F-63	9/28/97	3:37	X		30	30
176/178	9/28	3:41	11 ft	F-63	10/1/97	PM		X	-5	-5

Table 4.5-7, page 9 of 9

Summary of Geosynthetic Quality Control Procedures
Seams of the LLDPE Liner

102nd Street Landfill Site

Seam #	Date	Time	Seam Length	Trial #	Test Date	Test Time	Pressure Test	Vacuum Box	Start Pressure(psi)	Ending Pressure(psi)
175/178	9/28	3:42	20 ft	F-63	9/28/97	3:50	X		30	28
177/180	9/28	3:44	33 ft	F-63	9/28/97	3:58	X		30	28
179/181	9/28	3:47	25 ft	F-63	9/28/97	9:28	X		30	27
177/181	9/28	3:48	8 ft	F-63	10/1/97	PM		X	-5	-5
179/181	9/28	3:52	16 ft	F-63	10/1/97	PM		X	-5	-5
174/178	9/28	2:42	60 ft	F-63	9/28/97	2:55	X		30	28
156/158	9/28	1:30	30 ft	F-63	10/1/97	PM		X	-5	-5
156/157	9/28	1:33	30 ft	F-63	10/1/97	PM		X	-5	-5
155/156	9/28	1:36	30 ft	F-63	10/1/97	PM		X	-5	-5

Table 4.5-8, page 1 of 8

Summary of Geosynthetic Quality Control Procedures
Repair Log of the LLDPE Liner

102nd Street Landfill Site

Repair #	Type of Repair			Repair Location				Date Repaired	Date Tested
	Patch	Extrusion	Other	Panel #	Seam #	Intersection	Location		
R-1	1 ft Circular	-	-	-	4/5	-	9' West of East Runout	7/18/97	7/24/97
R-2	-	2"	-	4	-	-	1' North, 10' West of Runout	7/18/97	7/24/97
R-3	-	2"	-	4	-	-	2' North, 10' West of Runout	7/18/97	7/24/97
R-4	-	2"	-	6	-	-	1' South, 12' East of Runout	7/18/97	7/14/97
R-5	1 ft Circular	-	-	-	9/10	-	10' West of East Runout	7/18/97	7/24/97
R-6	1 ft Circular	-	-	-	10/11	-	7' East of Tie In	7/18/97	7/24/97
R-7	1 ft Circular	-	-	-	-	X	14/15/16	7/18/97	7/24/97
R-8	1 ft Circular	-	-	1	-	-	3' North, 6' West of East Runout	7/18/97	7/24/97
R-9	1 ft Circular	-	-	1	-	-	3' North, 13' West of East Runout	7/18/97	24-Jul
R-10	1 ft Circular	-	-	1	-	-	3' North, 21' West of East Runout	7/18/97	7/24/97
R-11	1 ft Circular	-	-	1	-	-	3' North, 29' West of East Runout	7/18/97	7/24/97
R-12	1ft Circular	-	-	-	-	X	22/23/24	7/23/97	7/24/97
R-13	1 ft Circular	-	-	-	-	X	23/24/26	7/23/97	7/24/97
R-14	1 ft Circular	-	-	-	-	X	23/25/26	7/23/97	7/24/97
R-15	1 ft Circular	-	-	-	-	X	21/23/25	7/23/97	7/24/97
R-16	1 ft Circular	-	-	-	-	X	21/22/23	7/23/97	7/24/97
R-17	1 ft Circular	-	-	-	-	X	20/21/25	7/23/97	7/24/97
R-18	1 ft Circular	-	-	-	-	X	19/20/25	7/23/97	7/24/97
R-19	1 ft Circular	-	-	-	19/25	-	3' North of I 19/20/25	7/23/97	7/24/97
R-20	1 ft Circular	-	-	-	19/25	-	9' North of I 19/20/25	7/23/97	7/24/97
R-21	1' x 6'	-	-	-	-	X	18/19/25	7/23/97	7/24/97
R-22	-	6"	-	-	-	X	17/18/25	7/23/97	7/24/97
R-23	-	6"	-	-	-	X	1/17/25	7/23/97	7/24/97
R-24	-	6"	-	-	-	X	1/2/25	7/23/97	7/24/97
R-25	-	6"	-	-	-	X	2/3/25	7/23/97	7/24/97
R-26	-	6"	-	-	-	X	3/4/25	7/23/97	7/24/97
R-27	01'	-	-	-	-	X	4/5/25	7/23/97	7/24/97
R-28	01'	-	-	-	-	X	5/6/25	7/23/97	7/24/97
R-29	-	6"-	-	-	-	X	6/7/25	7/23/97	7/24/97
R-30	01'	-	-	-	-	X	7/8/25	7/23/97	7/24/97
R-31	-	1'	-	-	-	X	8/9/25	7/23/97	7/24/97
R-32	01'	-	-	-	-	X	9/10/25	7/23/97	7/24/97
R-33	01'	-	-	-	-	X	10/11/25	7/23/97	7/24/97
R-34	01'	-	-	-	-	X	11/12/25	7/23/97	7/24/97
R-35	01'	-	-	-	-	X	12/13/25	7/23/97	7/24/97

Table 4.5-8, page 2 of 8

Summary of Geosynthetic Quality Control Procedures
Repair Log of the LLDPE Liner

102nd Street Landfill Site

Repair #	Type of Repair			Repair Location				Date Repaired	Date Tested
	Patch	Extrusion	Other	Panel #	Seam #	Intersection	Location		
R-36	-	2'	-	-	-	X	14/15/16/25	7/23/97	7/24/97
R-37	1x2	-	-	-	-	X	16/27/25/28	7/23/97	7/24/97
R-38	02'	-	-	-	25/28	-	3' South of I 16/25/27/28	7/23/97	7/24/97
R-39	02'	-	-	-	-	X	25/28/29	7/24/97	7/29/97
R-40	01'	-	-	-	28/29	X	10 West of I 25/28/29	7/24/97	7/29/97
R-41	02'	-	-	-	-	X	28/27/30	7/24/97	7/29/97
R-42	1'x2'	-	-	-	-	X	28/30/31	7/24/97	7/29/97
R-43	1'x3'	-	-	-	-	X	31/32/33	7/29/97	7/29/97
R-44	01'	-	-	31	-	-	48' North of I 31/32/33, 2' East of S 31/32	7/29/97	7/29/97
R-45	01'	-	-	-	-	X	30/31/33	7/29/97	7/29/97
R-46	1'x3'	-	-	-	32/36		5' South of North Run Out	7/29/97	7/29/97
R-47	1'x2'	-	-	-	-	X	32/33/37	7/29/97	7/29/97
R-48	1'x2'	-	-	-	-	X	30/33/34	7/25/97	7/29/97
R-49	1'x2'	-	-	-	-	X	33/34/37	7/25/97	7/29/97
R-50	1x2	-	-	-	-	X	32/36/37	7/29/97	7/29/97
R-51	-	12"	-	37	-	-	1' South of S 37/38, 50' North of South Rd.	7/29/97	7/29/97
R-52	1'x2'	-	-	-	-	X	37/38/39	7/29/97	8/1/97
R-53	1'x2'	-	-	-	36/37	-	65' South of North R.O.	8/1/97	8/1/97
R-54	01'	-	-	-	-	X	36/37/39	7/29/97	7/29/97
R-55	01'	-	-	-	-	X	38/39/41	8/1/97	8/1/97
R-56	01'	-	-	-	-	X	41/42/43	8/1/97	8/1/97
R-57	01'	-	-	-	-	X	40/41/42	8/1/97	8/1/97
R-58	01'	-	-	-	-	X	42/44/45	8/2/97	8/2/97
R-59	01'	-	-	-	45/47	-	53' North of I 44/45/47	8/2/97	8/2/97
R-60	01'	-	-	-	44/47		60' North I 44/46/47	8/2/97	8/2/97
R-61	01'	-	-	-	-	X	44/45/47	8/2/97	8/2/97
R-62	01'	-	-	-	30/34		20' North of Sooth R.O.	7/25/97	8/1/97
R-63	2'x15'	-	-	33	-	-	1' North of S 33/34, I 33/34/37 East 15'	7/29/97	8/1/97
R-64	2'x15'	-	-	33	-	-	1' North of 33/34, I 30/33/34 West 15'	7/29/97	8/1/97
R-65	01'	-	-	-	30/33	-	65' North I 30/33/34	7/25/97	7/29/97
R-66	1'x3'	-	-	-	CS/32	-	62' North of S 33/34	7/31/97	8/1/97
R-67	1'x3'	-	-	-	CS/33	-	140' North of S 33/34	7/31/97	8/1/97
R-68	1'x3'	-	-	-	CS/33	-	215' North of S 33/34	7/31/97	8/1/97
R-69	3'x15'	-	-	-	-	-	From I C5/32/33 West to I 32/33/37	7/31/97	8/1/97
R-70	1'x3'	-	-	-	CS/32	-	50' North of S 32/33	7/31/97	8/1/97

Table 4.5-8, page 3 of 8

Summary of Geosynthetic Quality Control Procedures
Repair Log of the LLDPE Liner

102nd Street Landfill Site

Repair #	Type of Repair			Repair Location				Date Repaired	Date Tested
	Patch	Extrusion	Other	Panel #	Seam #	Intersection	Location		
R-71	1'x3'	-	-	-	33/37	-	32' South of I 32/33/37	8/1/97	8/1/97
R-72	02'	-	-	-	33/37	-	92' South of I 32/33/37	8/1/97	8/1/97
R-73	02'	-	-	-	33/37	-	114' South of I 32/33/37	8/1/97	8/1/97
R-74	1'x3'	-	-	-	-	X	48/49/50	8/1/97	8/2/97
R-75	1'x3'	-	-	-	-	X	39/40/41	8/1/97	8/1/97
R-76	02'	-	-	-	-	X	47/48/49	8/1/97	8/2/97
R-77	02'	-	-	-	-	X	50/51/52	8/2/97	8/2/97
R-78	1'x2'	-	-	-	-	X	42/43/44	8/1/97	8/1/97
R-79	01'	-	-	-	-	X	51/52/53	8/2/97	8/2/97
R-80	1'x2'	-	-	-	-	X	44/46/47	8/1/97	8/2/97
R-81	01'	-	-	-	-	X	46/47/48	8/2/97	8/2/97
R-82	01'	-	-	52	-	-	15' West of S 50/52, 3' North of S 51/52	8/2/97	8/2/97
R-83	02'	-	-	-	-	X	53/54/55	8/5/97	8/5/97
R-84	02'	-	-	-	-	X	54/55/56	8/5/97	8/5/97
R-85	01'	-	-	-	56/57	-	5' North of South Run Out	8/5/97	8/5/97
R-86	01'	-	-	60	-	-	7' North of S 59/60, 15' West of S 56/60	8/6/97	8/6/97
R-87	01'	-	-	60	-	-	15' North of S 59/60, 15' West of S 56/60	8/6/97	8/6/97
R-88	01'	-	-	-	58/59	-	5' North of South Run Out	8/6/97	8/6/97
R-89	01'	-	-	-	-	X	57/58/59	8/6/97	8/6/97
R-90	1'x2'	-	-	-	-	X	56/57/58	8/6/97	8/6/97
R-91	1'x4'	-	-	-	-	X	56/59/60	8/6/97	8/6/97
R-92	01'	-	-	-	-	X	55/56/60	8/6/97	8/6/97
R-93	1x2	-	-	-	-	X	53/55/60	8/6/97	8/6/97
R-94	02'	-	-	-	-	X	53/60/61	8/6/97	8/6/97
R-95	01'	-	-	-	-	X	52/53/61	8/6/97	8/6/97
R-96	01'	-	-	-	-	X	50/52/61	8/6/97	8/6/97
R-97	01'	-	-	-	-	X	50/61/62	8/6/97	8/6/97
R-98	01'	-	-	-	-	X	49/50/62	8/6/97	8/6/97
R-99	01'	-	-	-	59/63	-	10' North of South Run Out	8/6/97	8/6/97
R-100	01'	-	-	-	-	X	59/60/63	8/6/97	8/6/97
R-101	1'x4'	-	-	-	-	X	60/63/64	8/7/97	8/7/97
R-102	03'	-	-	-	-	X	64/65/66	8/7/97	8/7/97
R-103	01'	-	-	66	-	-	15' West of S 64/66 9PL, 6'SP North to South	8/7/97	8/7/97
R-104	01'	-	-	-	67/68	-	50' South of I 66/67/68	8/8/97	8/8/97
R-105	02'	-	-	-	-	X	66/67/68	8/8/97	8/8/97

Table 4.5-8, page 4 of 8

Summary of Geosynthetic Quality Control Procedures
Repair Log of the LLDPE Liner

102nd Street Landfill Site

Repair #	Type of Repair			Repair Location				Date Repaired	Date Tested
	Patch	Extrusion	Other	Panel #	Seam #	Intersection	Location		
R-106	02'	-	-	-	-	X	63/64/66/67	8/8/97	8/8/97
R-107	02'	-	-	-	-	X	65/66/68	8/8/97	8/8/97
R-108	01'	-	-	-	68/69	-	50' South of I 68/69/70	8/8/97	8/8/97
R-109	01'	-	-	-	-		69/70/71	8/8/97	8/12/97
R-110	01'	-	-	-	-	X	68/69/70	8/8/97	8/12/97
R-111	01'	-	-	-	-	X	69/71/72	8/11/97	8/12/97
R-112	01'	-	-	-	-	X	71/72/73	8/11/97	8/12/97
R-113	01'	-	-	-	-	X	71/73/74	8/12/97	8/12/97
R-114	01'	-	-	-	-	X	73/75/76	8/12/97	8/12/97
R-115	01'	-	-	-	-	X	73/74/76	8/12/97	8/12/97
R-116	01'	-	-	-	-	X	75/76/77	8/12/97	8/12/97
R-117	-	2"	-	69	-	-	1' East of S 69/71, 20' North I 69/71/72	8/12/97	8/12/97
R-118	1'x3'	-	-	-	-	X	75/77/78	8/14/97	8/18/97
R-119	01'	-	-	-	-	X	75/78/79	8/14/97	8/18/97
R-120	01'	-	-	-	-	X	75/79/80	8/14/97	8/18/97
R-121	01'	-	-	-	-	X	75/80/81	8/14/97	8/18/97
R-122	01'	-	-	-	-	X	75/81/82	8/14/97	8/21/97
R-123	2'x10'	-	-	57	-	-	1' East of S 57/58, 50' North of S R.O.	8/14/97	8/14/97
R-124	2'x4'	-	-	57	-	-	5' West of S 56/57, 40' North of S R.O.	8/14/97	8/14/97
R-125	1'x2'	-	-	-	77/83	-	180' South of North Run Out	8/15/97	8/1/8/97
R-126	03'	-	-	77	-	-	6 East of S 77/83 180 South of N.R.O.	8/15/97	8/18/97
R-127	01'	-	-	-	-	X	83/84/85	8/19/97	8/21/97
R-128	10'x10'	-	-	-	58/59	X	40 North of South Run out	8/19/97	8/19/97
R-129	1'x2'	-	-	-	-	X	77/78/83	8/20/97	8/21/97
R-130	1'x2'	-	-	-	82/86	-	15' South of I 82/86/87	8/20/97	8/21/97
R-131	1'x2'	-	-	-	82/86	X	32 South of I 82/86/87	8/20/97	8/21/97
R-132	01'	-	-	-	-	X	84/85/87	8/19/97	8/21/97
R-133	01'	-	-	-	-	X	78/79/83	8/20/97	8/21/97
R-134	01'	-	-	-	-	X	79/80/83	8/20/97	8/21/97
R-135	01'	-	-	-	-	X	80/83/85	8/20/97	8/21/97
R-136	01'	-	-	-	-	X	80/81/86	8/20/97	8/21/97
R-137	1'x3'	-	-	-	-	X	81/82/85/87	8/20/97	8/21/97
R-138	1'x3'	-	-	-	-	X	82/86/87	8/20/97	8/21/97
R-139	1'x2'	-	-	-	-	X	87/89/90	8/20/97	8/21/97
R-140	1'x3'	-	-	-	-	X	87/88/89	8/20/97	8/21/97

Table 4.5-8, page 5 of 8

Summary of Geosynthetic Quality Control Procedures
Repair Log of the LLDPE Liner

102nd Street Landfill Site

Repair #	Type of Repair			Repair Location				Date Repaired	Date Tested
	Patch	Extrusion	Other	Panel #	Seam #	Intersection	Location		
R-141	1'x3'	-	-	-	-	X	89/90/91	8/20/97	8/21/97
R-142	1'x3'	-	-	-	82/91		73' South of I 89/90/91	8/29/97	8/21/97
R-143	1'x2'	-	-	-	-	X	91/92/93	8/20/97	8/21/97
R-144	01'	-	-	-	88/91		55' South of I 88/89/91	8/20/97	8/21/97
R-145	1X3	-	-	-	-	X	91/92/93	8/25/97	8/25/97
R-146	2'x4'	-	WEDGE	75	-	-	FROM : I 75/80/81 TO: S73/75 80' NORTH S.R.Q	8/20/97	8/21/97
R-147	1'x2'	-	-	-	-	X	86/94/95	8/26/97	9/1/97
R-148	1'x2'	-	-	-	86/95	X	38' South of I 86/94/95	8/29/97	9/1/97
R-149	1'x3'	-	-	-	94/95	-	38' South of I 86/94/95	8/29/97	9/1/97
R-150	01'	-	-	93	-	-	5' Norht of S 92/93 10' West of S 91/93	8/25/97	8/52/97
R-151	01'	-	-	93	-	-	11' North of S 92/93 10' West of S 91/93	8/25/97	8/25/97
R-152		2"	-	89	-	-	18' South of S 89/90 7' East of S 89/91	8/25/97	8/25/97
R-153	1'x3'	-	-	-	-	X	86/87/88/94	8/26/97	9/1/97
R-154	01'	-	-	-	-	X	88/94/96	8/29/97	9/1/97
R-155	01'	-	-	-	-	X	88/91/96/100	8/29/97	9/1/97
R-156	01'	-	-	-	-	X	91/92/100/101	8/29/97	9/1/97
R-157	01'	-	-	-	-	X	92/101/102	8/29/97	9/1/97
R-158	01'	-	-	-	-	X	94/96/97	8/29/97	9/1/97
R-159	01'	-	-	-	94/97	-	20' North of I 94/97/98	8/29/97	9/1/97
R-160	02'	-	-	-	-	X	94/97/98	8/29/97	9/1/97
R-161	02'	-	-	-	-	X	94/97/98	8/29/97	9/1/97
R-162	1x3	-	-	-	96/97	X	15' North of South Run Out	8/29/97	9/1/97
R-163	01'	-	-	-	96/100	X	14' North of South Run Out	8/29/97	9/1/97
R-164	01'	-	-	-	96/100	X	27' North of South Run Out	8/29/97	9/1/97
R-165	01'	-	-	-	92	-	1' East of S 92/102 193' North of I 92/101/102	8/29/97	9/1/97
R-166	1x2	-	-	-	-	X	92/93/102	8/29/97	9/3/97
R-167	1x4	-	-	-	93/102	-	85' South of North Run Out	8/29/97	9/3/97
R-168	1 x4	-	-	-	-	X	102/103/104	8/29/97	9/3/97
R-169	01'	-	-	-	-	X	103/104/105	8/29/97	9/3/97
R-170	1'x3'	-	-	-	-	X	104/105/106	8/29/97	9/3/97
R-171	1'x2'	-	-	-	-	X	105/106/107	8/29/97	9/3/97
R-172	1'x4'	-	-	-	-	X	107/108/109	8/29/97	9/3/97
R-173	1'x2'	-	-	-	-	X	108/109/110	8/29/97	9/3/97
R-174	01'	-	-	-	69/110	-	78' South of I 109/110/111	8/29/97	9/3/97
R-175	1x4	-	-	-	-	X	109/110/111	8/29/97	9/3/97

Table 4.5-8, page 6 of 8

Summary of Geosynthetic Quality Control Procedures
Repair Log of the LLDPE Liner

102nd Street Landfill Site

Repair #	Type of Repair			Repair Location				Date Repaired	Date Tested
	Patch	Extrusion	Other	Panel #	Seam #	Intersection	Location		
R-176	01'	-	-	-	-	X	110/111/112	8/29/97	9/3/97
R-177	01'	-	-	-	-	X	111/112/1113	8/29/97	9/3/97
R-178	1'x2'	-	-	-	-	X	112/113/114	8/29/97	9/3/97
R-179	01'	-	-	-	-	X	114/115/116	9/4/97	9/8/97
R-180	1'x2'	-	-	-	114/116	-	85' North of I 114/115/116	9/4/97	9/8/97
R-181	01'	-	-	-	-	X	115/116/117	9/4/97	9/8/97
R-182	1'x2'	-	-	-	-	X	116/117/118	9/4/97	9/8/97
R-183	1'X2'	-	-	-	117/118	-	20' East of I 117/118/119	9/4/97	9/8/97
R-184	1'x4'	-	-	-	-	X	119/120/121	9/5/97	9/8/97
R-185	01'	-	-	-	-	X	120/121/123	9/9/97	9/15/97
R-186	01'	-	-	-	121/123	-	120' South of I 121/123/124	9/9/97	9/15/97
R-187	01'	-	-	-	121/123	-	1023 South of I 121/123/124	9/9/97	9/15/97
R-188	1'x3'	-	-	-	-	X	121/123/124	9/9/97	9/15/97
R-189		4"	-	124	-	-	4' North of S 123/124/ 4' West of S 121/124	9/9/97	9/15/97
R-190		2"		124	-	-	4' North of S 123/124/ 4' East of S 121/125	9/9/97	9/15/97
R-191	01'	-	-	-	-	X	123/124/125	9/9/97	9/15/97
R-192	01'	-	-	-	-	X	127/128/129	9/15/97	9/15/97
R-193	02'	-	-	-	-	X	130/131/132	9/16/97	9/16/97
R-194	01'	-	-	-	-	X	130/132/133	9/16/97	9/16/97
R-195		6"	-	-	-	X	129/130/133	9/16/97	9/16/97
R-196	-	6"	-	-	-	X	129/130/133	9/16/97	9/16/97
R-197	01'	-	-	-	-	X	128/129/133	9/16/97	9/16/97
R-198	-	0"	-	-	-	X	128/134/135	9/16/97	9/17/97
R-199	1'x4'	-	-	-	-	X	135/136/137	9/16/97	9/17/97
R-200	01'	-	-	-	-	X	136/137/138	9/16/97	9/17/97
R-201	1'X2'	-	-	-	-	X	138/139/140	9/16/97	9/17/97
R-202	-	6"	-	-	-	X	139/140/141	9/16/97	9/17/97
R-203	2'x4'	-	-	-	-	X	127/128/135	9/16/97	9/17/97
R-204	02'	-	-	-	-	X	127/135/136	9/16/97	9/17/97
R-205	-	6"	-	-	-	X	127/136/138	9/16/97	9/17/97
R-206	-	6"	-	-	-	X	127/138/139	9/16/97	9/17/97
R-207	1'X2'	-	-	-	-	X	127/139/141	9/16/97	9/17/97
R-208	1x5	-	-	-	-	X	126/127/141/142	9/17/97	9/18/97
R-209	1x4	-	-	-	-	X	126/142/143	9/17/9/	9/18/97
R-210	01'	-	-	-	126/143	-	6' North of I 126/143/144	9/17/97	9/19/97

Table 4.5-8, page 7 of 8

Summary of Geosynthetic Quality Control Procedures
Repair Log of the LLDPE Liner

102nd Street Landfill Site

Repair #	Type of Repair			Repair Location				Date Repaired	Date Tested
	Patch	Extrusion	Other	Panel #	Seam #	Intersection	Location		
R-211	-	6"	-	-	-	X	126/143/144	9/17/97	9/19/97
R-212	2'x3'	-	-	-	-	X	125/126/144	9/1/9/7	9/19/97
R-213	1'x2'	-	-	-	-	X	125/144/145	9/19/97	9/19/97
R-214	2'x6'	-	-	-	-	X	123/125/145/146	9/19/97	9/24/97
R-215	1'x3'	-	-	-	147/148	X	65' East of West Run Out	9/23/97	9/24/97
R-216	01'	-	-	-	-	X	123/146/147	9/23/97	9/24/97
R-217	2'x6'	-	-			X	120/123/147	9/23/97	9/24/97
R-218	1'x3'	-	-	-	-	X	120/147/148	9/23/97	9/24/97
R-219	1	-	-	-	-	X	150/151/152	9/23/97	9/24/97
R-220	1'x2'	-	-	-	-	X	149/150/151	9/23/97	9/24/97
R-221	1'x2'	-	-	-	-	X	130/149/150	9/23/97	9/24/97
R-222	3'x5'	-	-	-	-	X	103/131/149	9/23/97	9/24/97
R-223	01'	-	-	-	-	X	131/149/151	9/23/97	9/24/97
R-224	1'x4'	-	-	-	-	X	131/151/153	9/23/97	9/24/97
R-225	-	8"	-	-	-	X	151/153/154	9/23/97	9/24/97
R-226	-	8"	-	-	-	X	151/154/155	9/23/97	9/24/97
R-227	01'	-	-	-	-	X	151/152/156	9/27/97	10/1/97
R-228	01'	-	-	120	-	-	4' East of S 120/147 36' North S 120/122	9/27/97	10/1/97
R-229	2'x4'	-	-	-	-	-	120/122/148/159	9/27/97	10/1/97
R-230	-	8"	-	-	-	X	122/159/160	9/27/97	10/1/97
R-231	-	8"	-	-	-	X	122/159/160	9/27/97	10/1/97
R-232	-	8"	-	-	-	X	122/160/161	9/27/97	10/1/97
R-233	-	8"	-	-	-	X	122/161/163	9/27/97	10/1/97
R-234	-	8"	-	-	-	X	122/163/164	9/27/97	10/1/97
R-235	-	8"	-	-	-	X	122/164/165	9/27/97	10/1/97
R-236	-	8"	-	-	-	X	122/165/166	9/27/97	10/1/97
R-237	1'x3'	-	-	-	-	X	159/160/167	9/27/97	10/1/97
R-238	01'	-	-	-	-	X	160/161/167	9/27/97	10/1/97
R-239	01'	-	-	-	-	X	161/162/167	9/27/97	10/1/97
R-240	01'	-	-	-	-	X	162/163/167	9/27/97	10/1/97
R-241	1x2	-	-	-	-	X	163/164/167	9/27/97	10/1/97
R-242	01'	-	-	-	-	X	164/165/167	9/27/97	10/1/97
R-243	03'	-	-	-	-	X	151/155/156	10/1/97	10/1/97
R-244	-	8"	-	-	-	X	155/156/157	10/1/97	10/1/97
R-245	01'	-	-	-	-	X	156/157/158	10/1/97	10/1/97

Table 4.5-8, page 8 of 8

Summary of Geosynthetic Quality Control Procedures
Repair Log of the LLDPE Liner

102nd Street Landfill Site

Repair #	Type of Repair			Repair Location				Date Repaired	Date Tested
	Patch	Extrusion	Other	Panel #	Seam #	Intersection	Location		
R-246	1'x6'	-	-	-	-	X	156/158/173	10/1/97	10/1/97
R-247	01'	-	-	-	-	X	173/175/176	10/1/97	10/1/97
R-248	1'x2'	-	-	-	-	X	173/174/176	10/1/97	10/1/97
R-249	01'	-	-	-	-	X	174/175/178	10/1/97	10/1/97
R-250	2'x3'	-	-	-	-	X	158/173/174	10/1/97	10/1/97
R-251	01'	-	-	-	-	X	175/176/178	10/1/97	10/1/97
R-252	1'x2'	-	-	-	-	X	175/177/178/180	10/1/97	10/1/97
R-253	01'	-	-	-	-	X	177/180/181	10/1/97	10/1/97
R-254	01'	-	-	-	-	X	177/179/181	10/1/97	10/1/97
R-255	01'	-	-	-	-	X	179/181/182	10/1/97	10/1/97
R-256	01'	-	-	-	160/161	-	10' East of I 160/161/167	10/1/97	10/1/97

Table 4.5-9, page 1 of 3

Summary of Geosynthetic Quality Control Procedures
Destructive Tests on the LLDPE Liner

102nd Street Landfill Site

Trail #	Seam #	Sample Location	Date	Time	Mean Peel Strees (ppi)		Peel Incursion (%)	Peel Failure	Mean Shear Stress (ppi)	Elongation At Break (%)	Shear Failure
					Inside	Outside					
DT-1	9/10	12' West of East Runout	7/18/97	2:00	74	75	<10	SE, FTB	85	>50	FTB
DT-2	10/25	10' North of I-9/10/25	7/23/97	10:30	80	79	<10	SE, FTB	91	>50	FTB
DT-3	25/29	10' South of 25/28/29	7/23/97	4:00	79	77	<10	SE, FTB	76	>50	FTB
DT-4	28/30	20' South of I 28/30/31	7/24/97	1:40	77	77	<10	SE, FTB	81	>50	FTB
DT-5	31/32	25' North 31/32/33	7/24/97	5:10	77	80	<10	SE, FTB	78	>50	FTB
DT-6	33/37	100' South I 32/33/37	7/29/97	11:50	82	81	<10	SE, FTB	82	>50	FTB
DT-7	31/32	90' North I 31/32/33	7/29/97	2:08	76	79	<10	SE, FTB	79	>50	FTB
DT-8	32/33	15' East I 32/33/37	7/29/97	2:15	81	82	<10	SE, FTB	87	>50	FTB
DT-9	32/36	15' South of North Run Out	7/29/97	2:05	81	79	<10	SE, FTB	83	>50	FTB
DT-10	37/39	42' South I 36/37/39	7/30/97	11:00	78	81	<10	SE, FTB	80	>50	FTB
DT-11	39/41	60' South I 39/40/41	7/30/97	11:09	77	80	<10	SE, FTB	87	>50	FTB
DT-12	41/43	45' South 41/42/43	7/30/97	11:13	83	82	<10	SE, FTB	84	>50	FTB
DT-13	41/43	240' South of DT-12	7/30/97	11:20	79	80	<10	SE, FTB	79	>50	FTB
DT-14	43/44	50' South I 42/43/44	7/31/97	8:45	80	81	<10	SE, FTB	81	>50	FTB
DT-15	44/47	60' North I 44/46	7/31/97	8:30	81	78	<10	SE, FTB	82	>50	FTB
DT-16	47/48	52' South I 47/48/49	8/1/97	8:30	79	74	<10	SE, FTB	81	>50	FTB
DT-17	48/50	55' South I48/49/50	8/1/97	2:00	78	76	<10	SE, FTB	80	>50	FTB
DT-18	50/52	45' North I 50/51/52	8/4/97	10:45	78	74	<10	SE, FTB	88	>50	FTB
DT-19	50/51	55' SOUTH I 50/51/52	8/4/97	10:50	78	75	<10	SE, FTB	87	>50	FTB
DT-20	52/53	130' North I 51/52/53	8/4/97	10:55	79	77	<10	SE, FTB	92	>50	FTB
DT-21	51/53	115' South I 51/52/53	8/4/97	11:05	78	76	<10	SE, FTB	89	>50	FTB
DT-22	53/55	150' NORTH I 53/54/55	8/5/97	7:57	77	78	<10	SE, FTB	88	>50	FTB
DT-23	53/54	70' South I 53/54/55	8/5/97	8:05	78	76	<10	SE, FTB	88	>50	FTB
DT-24	54/56	38' South I 54/55/56	8/5/97	10:35	78	76	<10	SE, FTB	86	>50	FTB
DT-25	55/60	33' North I 55/56/60	8/6/97	10:50	79	80	<10	SE, FTB	89	>50	FTB
DT-26	57/59	38' South I 56/57/57	8/6/97	11:00	78	79	<10	SE, FTB	89	>50	FTB
DT-27	60/63	15' North I 59/60/63	8/7/97	8:00	79	80	<10	SE, FTB	93	>50	FTB
DT-28	63/67	90' South I 63/64/66/67	8/8/97	8:00	78	78	<10	SE, FTB	86	>50	FTB
DT-29	63/67	240' South I 63/64/66/67	8/8/97	8:15	79	80	<10	SE, FTB	89	>50	FTB
DT-30	67/68	240' South I 66/67/68	8/89/7	8:20	77	77	<10	SE, FTB	87	>50	FTB
DT-31	68/69	90' South I 68/69/70	8/8/97	10:00	78	78	<10	SE, FTB	92	>50	FTB
DT-32	68/69	38' South I 68/69/70	8/8/97	10:15	78	77	<10	SE, FTB	90	>50	FTB
DT-33	67/71	235' North of I 69/71/72	8/11/97	3:10	80	79	<10	SE, FTB	92	>50	FTB
DT-34	71/73	235' North of I 71/72/73	8/11/97	3:15	76	77	<10	SE, FTB	88	>50	FTB
DT-35	73/75	110' South of I 73/75/76	8/11/97	3:20	77	76	<10	SE, FTB	84	>50	FTB

Table 4.5-9, page 2 of 3

Summary of Geosynthetic Quality Control Procedures
Destructive Tests on the LLDPE Liner

102nd Street Landfill Site

Trail #	Seam #	Sample Location	Date	Time	Mean Peel Strees (ppi)		Peel Incursion (%)	Peel Failure	Mean Shear Stress (ppi)	Elongation At Break (%)	Shear Failure
					Inside	Outside					
DT-36	73/76	35' South of I 73/74/76	8/11/97	3:25	78	77	<10	SE, FTB	92	>50	FTB
DT-37	75/77	120' South of I 75/76/77	8/11/97	3:30	80	79	<10	SE, FTB	88	>50	FTB
DT-38	81/80	50' North of I 75/80/81	8/15/97	11:00	77	79	<10	SE, FTB	88	>50	FTB
DT-39	77/83	120' North of I 77/78/83	8/15/97	1:40	79	76	<10	SE, FTB	88	>50	FTB
DT-40	83/84	230' North of I 83/84/85	8/19/97	8:45	76	76	<10	SE, FTB	89	>50	FTB
DT-41	84/87	230' North of I 84/85/87	8/19/97	9:00	76	75	<10	SE, FTB	89	>50	FTB
DT-42	87/88	30' South of I 87/88/89	8/20/97	8:53	77	76	<10	SE, FTB	82	>50	FTB
DT-43	89/91	36' North of I 88/87/71	8/21/97	8:00	77	78	<10	SE, FTB	84	>50	FTB
DT-44	88/91	183' South of I 88/89/91	8/21/97	8:05	77	76	<10	SE, FTB	73	>50	FTB
DT-45	91/93	40' North of 91/92/93	8/21/97	8:10	78	78	<10	SE, FTB	87	>50	FTB
DT-46	91/92	85[' South of I 91/92/93	8/21/97	8:15	75	76	<10	SE, FTB	80	>50	FTB
DT-47	101/102	81' South of I 92/101/102	8/27/97	3:10	78	77	<10	SE, FTB	76	>50	FTB
DT-48	93/102	225 North of I 92/93/102	8/27/97	3:15	77	79	<10	SE, FTB	82	>50	FTB
DT-49	102/104	20' South of I 102/103/104	8/27/97	3:20	76	75	<10	SE, FTB	81	>50	FTB
DT-50	103/105	35 North of I 103/104/105	8/27/97	3:25	77	78	<10	SE, FTB	79	>50	FTB
DT-51	104/105	200 South of I 103/104/105	8/27/97	3:30	74	75	<10	SE, FTB	79	>50	FTB
DT-52	105/107	114 North of I 105/106/107	8/29/97	11:05	74	71	<10	SE, FTB	80	>50	FTB
DT-53	107/109	175' South of North Run Out	8/29/97	2:05	73	74	<10	SE, FTB	75	>50	FTB
DT-54	107/709	141' North of I 107/108/109	8/29/97	11:10	77	73	<10	SE, FTB	82	>50	FTB
DT-55	109/111	175' South of North Run Out	8/29/97	2:10	77	76	<10	SE, FTB	81	>50	FTB
DT-56	109/110	175' North of I 108/109/110	8/29/97	11:15	77	77	<10	SE, FTB	91	>50	FTB
DT-57	111/112	117' South of North Run Out	8/29/97	2:15	76	77	<10	SE, FTB	80	>50	FTB
DT-58	110/112	135' South of I 110/111/112	8/29/97	11:21	78	79	<10	SE, FTB	86	>50	FTB
DT-59	112/114	175' South of North Run Out	8/29/97	2:20	78	77	<10	SE, FTB	85	>50	FTB
DT-60	114/115	137' South of I 114/115/116	9/3/97	11:00	81	80	<10	SE, FTB	85	>50	FTB
DT-61	114/116	295' North of I 114/115/116	9/3/97	11:05	73	75	<10	SE, FTB	78	>50	FTB
DT-62	116/117	130' South of I 116/117/118	9/4/97	1:30	78	79	<10	SE, FTB	85	>50	FTB
DT-63	117/119	344' South of I 117/118/119	9/4/97	4:20	80	77	<10	SE, FTB	81	>50	FTB
DT-64	118/119	45' North of I 117/118/119	9/4/97	4:30	77	77	<10	SE, FTB	83	>50	FTB
DT-65	119/120	20' South of I 119/120/121	9/5/97	9:10	80	77	<10	SE, FTB	79	>50	FTB
DT-66	119/121	185' South of North Run Out	9/5/97	10:30	77	78	<10	SE, FTB	80	>50	FTB
DT-67	123/125	30' South of I 123/124/125	9/9/97	3:25	82	81	<10	SE, FTB	80	>50	FTB
DT-68	125/126	195' South of North Run Out	9/9/97	4:20	81	80	<10	SE, FTB	78	>50	FTB
DT-69	126/127	240' South of North Run Out	9/15/97	1:00	78	79	<10	SE, FTB	83	>50	FTB
DT-70	129/130	220' South of North Run Out	9/15/97	3:45	78	76	<10	SE, FTB	88	>50	FTB

Table 4.5-9, page 3 of 3

Summary of Geosynthetic Quality Control Procedures
Destructive Tests on the LLDPE Liner

102nd Street Landfill Site

Trail #	Seam #	Sample Location	Date	Time	Mean Peel Strees (ppi)		Peel Incursion (%)	Peel Failure	Mean Shear Stress (ppi)	Elongation At Break (%)	Shear Failure
					Inside	Outside					
DT-71	134/135	25' West of I 128/134/135	9/16/97	1:15	77	78	<10	SE, FTB	84	>50	FTB
DT-72	139/141	21' West of I 127 139 141	9/17/97	9:00	77	80	<10	SE, FTB	87	>50	FTB
DT-73	145/146	21' West of I 125 145 146	9/19/97	9:15	76	77	<10	SE, FTB	79	>50	FTB
DT-74	149/151	15' North of I 131 147 151	9/23/97	3:05	78	80	<10	SE, FTB	78	>50	FTB
DT-75	154/155	20' West of 151/154/155	9/23/97	2:15	82	84	<10	SE, FTB	85	>50	FTB
DT-76	159/160	30' West of I 122/159/160	9/27/97	11:45	79	78	<10	SE, FTB	81	>50	FTB
DT-77	163/164	18' West of I 122/163/164	9/27/97	3:40	79	77	<10	SE, FTB	83	>50	FTB
DT-78	168/169	50' South of North Run Out	9/28/97	10:40	78	77	<10	SE, FTB	80	>50	FTB
DT-79	170/171	40 South of North Run Out	9/28/97	11:20	78	77	<10	SE, FTB	82	>50	FTB
DT-80	173/174	8 South of I 173/174/176	10/1/97	10:20	79	81	<10	SE, FTB	77	>50	FTB
DT-81	175/177	10' North of I 175/177/178/180	10/1/97	10:30	77	78	<10	SE, FTB	77	>50	FTB

Table 4.5-10
Summary of Geonet Results
102nd Street Landfill Site

Roll Number	Batch Number	Bill of Lading	Average Thickness (inches)	MD Tensile Strength (ppi)	Weight (lb/ft^2)	Carbon Black %	Density (g/cm^3)	Transmissivity (m^2/sec x 10e-3)
7A0401154	OPE	13648	0.2217	-	0.1881	2.63	-	1.73
7A0401164	OPE	13648	0.2217	-	0.1932	2.31	-	-
7A0401134	OPE	13648	0.2155	-	0.1909	2.47	-	-
7A0401124	OPE	13648	0.2189	-	0.1875	2.42	-	
7A0401114	OPE	13648	0.2214	55.3	0.1785	2.82	0.948	-
7A0401144	OPE	13648	0.2254	53.9	0.1822	2.46	0.949	-
7A0401194	OPE	13648	0.2202	-	0.1864	2.54	-	
7G1400224	OPE	13657	0.2114	52.7	0.1669	1.93	0.951	1.51
7A0401054	OPE	13657	0.2050	49.2	0.1711	2.48	0.946	-
7A0401014	OPE	13657	0.2072	50.2	0.1721	2.15	0.947	2.09
7A0500274	OPE	13657	0.2279	56.6	0.1951	2.34	-	2.56
7A0401084	OPE	13657	0.2437	55.5	0.1879	3.05	0.951	2.73
7A0700124	OPE1	13949	0.1854	44.3	0.1441	2.51	0.947	-
7A0700134	OPE1	13949	0.1880	-	0.1458	2.42	-	-
7E0202104	331A	13821	0.2268	58.6	0.1740	2.56	0.949	-
7A0700144	OPE1	13838	0.2030	-	0.2154	2.44	-	-
7A0600384	OPE1	13992	0.2247	53.8	0.1823	2.74	0.941	2.10
7A0600484	OPE1	13992	0.2130	57.3	0.1863	2.48	0.955	
7A0700074	OPE1	13992	0.2276	-	0.1960	2.74	-	-
7A0700114	OPE1	13992	0.2165	63.7	0.2091	2.58	0.946	1.82
4H1800164	CVRP	13626	0.1907	40.7	0.1441	2.42	0.949	-
4H1800204	CVRP	13626	0.1836	44.9	0.1438	2.33	0.948	-
5L1300164	GPE	13626	0.1977	52.5	0.1483	2.51	0.943	1.76
6C0200024	GPE	13626	0.1945	-	0.2098	-	-	-
6C0200034	GPE	13626	0.1958	-	0.2131	-	-	-
6C0200044	GPE	13626	0.1977	-	0.2211	-	-	-
6C0200054	GPE	13626	0.2065	58.1	0.2241	2.73	0.95	1.05
7A0401064	OPE	13999	0.2122	-	0.1729	3.16	-	-
7A0600394	OPE1	13999	0.2274	-	0.1843	2.59	-	-
7A0700034	OPE1	13999	0.2300	-	0.1938	2.64	-	-
7A0700044	OPE1	13999	0.2156	-	0.1984	2.75	-	-
7A0700064	OPE1	13999	0.2190	-	0.1697	2.74	-	-
7A0600364	OPE1	13959	0.2207	-	0.1812	2.66	-	-
7A0600444	OPE1	13959	0.2130	59.9	0.1763	2.96	0.941	1.98
7A0700024	OPE1	13959	0.2264	57.9	0.1892	2.65	0.948	-
7A0700054	OPE1	13959	0.2199	58.2	0.1703	2.46	0.948	2.00
7A0700154	OPE1	14182	0.2055	58.9	0.2027	2.52	0.943	-
7A0700224	OPE1	14188	0.2456	-	0.1972	2.05	-	-
7G2300014	GPE	14189	0.2159	-	0.1606	-	-	-
7A0700264	OPE1	14397	0.2233	61.4	0.2060	3.27	-	-
7G2000194	OPE	14397	0.2066	-	0.1515	-	-	-

Table 4.5-11

Summary of Geotechnical Results
Select Cover Fill Layer

102nd Street Landfill Site

Date	Sample No.	Borrow Source	Water Content	Atterburg Limits LL	PL	PI	Soil Classification	Gradation < 200 Sieve	Hydrometer	Standard Proctor	Permeability (cm/sec)
7/30/97	07307-1	Summit Park	17.8%	39	20	19	CL	91	46	113.5 pcf @ 17.0%	2.20E-08
7/31/97	07317-1	Summit Park	18.1%	-	-	-	CL	98	50	-	-
8/4/97	08047-1	Summit Park	19.5%	39	17	22	CL	94	50	110.5 pcf @ 17.0%	4.40E-08
8/5/97	08057-1	Summit Park	21.2%	-	-	-	CL	99	55	-	-
8/5/97	08057-2	Summit Park	19.6%	40	18	22	CL	99	54	108.5 pcf @ 19.0%	2.40E-08
8/6/97	08067-1	Summit Park	23.5%	-	-	-	CL	99	54	-	-
8/8/97	08087-1	Summit Park	25.1%	41	21	20	CL	98	54	108.5 pcf @ 19.0%	2.50E-08
8/12/97	08127-1	Summit Park	23.8%	42	19	23	CL	98	51	-	-
8/14/97	08147-1	Summit Park	22.6%	43	19	24	CL	98	54	107.0 pcf @ 19.5%	1.90E-08
8/18/98	08187-1	Helmick Farm	18.7%	-	-	-	CL	88	46	-	-
8/18/98	08187-2	Helmick Farm	20.2%	37	17	20	CL	89	46	111.5 pcf @ 17.5%	1.60E-08
8/28/97	08287-1	Summit Park	22.4%	-	-	-	CL	98	54	-	-
9/2/97	09027-1	Summit Park	19.5%	41	19	22	CL	97	50	110.5 pcf @ 17.5%	1.90E-08
9/4/97	09047-1	Summit Park	27.6%	-	-	-	CL	99	61	-	-
9/5/97	09057-1	Summit Park	25.0%	49	22	27	CL	98	59	103.5 pcf @ 22.0%	2.20E-08
9/8/97	09087-1	Summit Park	24.8%	-	-	-	CL	99	56	-	-
9/18/97	09087-1	Summit Park	27.6%	48	23	25	CL	99	62	105.0 pcf @ 20.0%	1.70E-08
9/22/97	09227-1	Helmick Farm	17.7%	-	-	-	CL	88	34	-	-
9/23/97	09237-1	Helmick Farm	19.4%	37	19	18	CL	81	31	110.0 pcf @ 17.0%	5.60E-08
10/2/97	10027-1	Helmick Farm	17.5%	-	-	-	CL	85	39	-	-
10/6/97	10067-1	Helmick Farm	17.0%	34	16	18	CL	86	43	113.0 pcf @ 15.5%	2.10E-08
10/7/97	10077-1	Helmick Farm	21.0%	-	-	-	CL	92	50	-	-
10/13/97	10137-1	Helmick Farm	17.9%	30	17	13	CL	86	40	112.5 pcf @ 16.5%	4.10E-08

Table 4.5-12, page 1 of 8

Summary of Geotechnical Results
Select Cover Fill Layer

102nd Street Landfill Site

Date	Test No.	Test Location	Material	Depth or Elevation	Dry Density(pcf)	Water Content(%)	% Proctor Density	Remarks
7/30/97	10	Norteast Corner Olin	Summit Park	1st Lift	103.7	15.8%	96.0%	
7/30/97	11	Norteast Corner Olin	Summit Park	1st Lift	103.0	16.2%	95.4%	
7/31/97	1	Southeast Corner Olin	Summit Park	1st Lift	108.3	16.8%	100.3%	
7/31/97	2	Southeast Corner Olin	Summit Park	1st Lift	110.4	16.3%	102.2%	
7/31/97	3	Southeast Corner Olin	Summit Park	1st Lift	107.9	17.4%	99.9%	
7/31/97	4	Southeast Corner Olin	Summit Park	1st Lift	94.7	16.7%	87.7%	
7/31/97	5	Southeast Corner Olin	Summit Park	1st Lift	92.9	16.5%	86.0%	
7/31/97	6	Southeast Corner Olin	Summit Park	1st Lift	91.7	16.8%	84.9%	
7/31/97	7	Southeast Corner Olin	Summit Park	1st Lift	99.3	16.7%	91.9%	
8/1/197	9	Southeast Corner Olin	Summit Park	1st Lift	98.4	15.9%	91.1%	
8/1/197	10	Southeast Corner Olin	Summit Park	1st Lift	101.3	16.2%	93.8%	
8/4/97	6	Center of Olin	Summit Park	1st Lift	90.6	16.2%	83.9%	
8/4/97	7	Center of Olin	Summit Park	1st Lift	103.2	15.8%	95.6%	
8/4/97	8	Center of Olin	Summit Park	1st Lift	88.7	17.6%	82.1%	
8/4/97	9	Center of Olin	Summit Park	1st Lift	90.6	16.3%	83.9%	
8/4/97	10	Center of Olin	Summit Park	1st Lift	92.7	16.8%	85.8%	
8/4/97	11	Center of Olin	Summit Park	1st Lift	95.8	15.9%	88.7%	
8/4/97	13	Center of Olin	Summit Park	1st Lift	101.2	16.5%	93.7%	
8/5/97	8	South Slope of Olin	Summit Park	1st Lift	103.6	16.2%	95.9%	
8/5/97	9	South Slope of Olin	Summit Park	1st Lift	102.2	20.6%	94.6%	
8/5/97	10	South Slope of Olin	Summit Park	1st Lift	108.0	17.0%	100.0%	
8/5/97	16	Center of Olin	Summit Park	1st Lift	109.1	16.5%	101.0%	
8/5/97	17	Center of Olin	Summit Park	1st Lift	105.4	17.9%	97.6%	
8/5/97	18	Center of Olin	Summit Park	1st Lift	103.6	12.5%	95.9%	
8/5/97	19	Center of Olin	Summit Park	1st Lift	101.2	18.2%	93.7%	
8/6/97	3	Center of Olin	Summit Park	1st Lift	96.2	16.1%	89.1%	
8/6/97	4	Center of Olin	Summit Park	1st Lift	108.7	15.8%	100.6%	
8/6/97	5	Center of Olin	Summit Park	1st Lift	106.5	16.0%	98.6%	
8/6/97	6	North Slope of Olin	Summit Park	1st Lift	95.8	15.5%	88.7%	
8/6/97	7	North Slope of Olin	Summit Park	1st Lift	99.6	16.3%	92.2%	
8/6/97	10	South Slope of Olin	Summit Park	1st Lift	97.3	12.6%	90.1%	
8/6/97	11	South Slope of Olin	Summit Park	1st Lift	103.8	12.6%	96.1%	
8/6/97	12	Center of Olin	Summit Park	1st Lift	101.4	14.8%	93.9%	
8/7/97	8	Retest of No. 10, 8/6/97	Summit Park	1st Lift	91.8	18.6%	85.0%	
8/7/97	9	Retest of No. 11, 8/6/97	Summit Park	1st Lift	95.4	15.7%	88.3%	

Table 4.5-12, page 2 of 8

Summary of Geotechnical Results
Select Cover Fill Layer

102nd Street Landfill Site

Date	Test No.	Test Location	Material	Depth or Elevation	Dry Density(pcf)	Water Content(%)	% Proctor Density	Remarks
8/7/97	10	Retest of No. 12, 8/6/97	Summit Park	1st Lift	109.5	16.4%	101.4%	
8/7/97	11	Center of Olin	Summit Park	1st Lift	101.8	13.6%	94.3%	
8/7/97	12	Center of Olin	Summit Park	1st Lift	100.1	14.3%	92.7%	
8/7/97	13	Center of Olin	Summit Park	1st Lift	99.4	13.4%	92.0%	
8/7/97	14	Center of Olin	Summit Park	1st Lift	99.1	16.1%	91.8%	
8/7/97	23	South Slope of Olin	Summit Park	1st Lift	99.6	13.7%	92.2%	
8/7/97	24	South Slope of Olin	Summit Park	1st Lift	88.9	16.7%	82.3%	
8/7/97	25	South Slope of Olin	Summit Park	1st Lift	91.9	14.9%	85.1%	
8/8/97	9	Retest of No. 13, 8/7/97	Summit Park	1st Lift	102.3	16.2%	94.7%	
8/8/97	10	Retest of No. 23, 8/7/97	Summit Park	1st Lift	100.8	15.9%	93.3%	
8/8/97	11	Retest of No. 11, 8/7/97	Summit Park	1st Lift	99.4	15.7%	92.0%	
8/8/97	12	Retest of No. 12, 8/7/97	Summit Park	1st Lift	108.8	16.2%	100.7%	
8/8/97	13	Retest of No. 25, 8/7/97	Summit Park	1st Lift	111.9	15.5%	103.6%	
8/8/97	25	Northeast Corner of Olin	Summit Park	1st Lift	94.8	18.0%	87.8%	
8/8/97	26	Northeast Corner of Olin	Summit Park	1st Lift	100.2	19.6%	92.8%	
8/8/97	27	Northeast Corner of Olin	Summit Park	1st Lift	89.1	21.0%	82.5%	
8/8/97	35	North Slope of Olin	Summit Park	1st Lift	99.1	19.2%	91.8%	
8/8/97	36	North Slope of Olin	Summit Park	1st Lift	102.1	17.7%	94.5%	
8/8/97	37	North Slope of Olin	Summit Park	1st Lift	95.8	20.6%	88.7%	
8/8/97	38	North Slope of Olin	Summit Park	1st Lift	102.0	17.3%	94.4%	
8/11/97	1	West Slope of Olin	Summit Park	1st Lift	95.3	11.8%	88.2%	
8/11/97	2	West Slope of Olin	Summit Park	1st Lift	100.5	14.7%	93.1%	
8/11/97	3	West Slope of Olin	Summit Park	1st Lift	92.9	13.5%	86.0%	
8/11/97	4	West Slope of Olin	Summit Park	1st Lift	101.5	14.0%	94.0%	
8/11/97	7	West Slope of Olin	Summit Park	1st Lift	90.0	17.2%	83.3%	
8/12/97	2	Retest of No. 1, 8/11/97	Summit Park	1st Lift	99.5	16.2%	92.1%	
8/12/97	3	Retest of No. 2, 8/11/97	Summit Park	1st Lift	99.7	18.2%	92.3%	
8/12/97	4	Retest of No. 3, 8/11/97	Summit Park	1st Lift	102.8	16.8%	95.2%	
8/12/97	5	Retest of No. 4, 8/11/97	Summit Park	1st Lift	102.6	16.6%	95.0%	
8/12/97	10	West Slope of Olin	Summit Park	1st Lift	95.6	22.6%	88.5%	
8/12/97	11	West Slope of Olin	Summit Park	1st Lift	90.0	15.3%	83.3%	
8/14/97	1	West Slope of Olin	Summit Park	1st Lift	98.6	19.3%	91.3%	
8/14/97	2	West Slope of Olin	Summit Park	1st Lift	105.1	19.1%	97.3%	
8/14/97	3	West Slope of Olin	Summit Park	1st Lift	104.6	18.3%	96.9%	
8/14/97	4	West Slope of Olin	Summit Park	1st Lift	102.4	21.6%	94.8%	

Table 4.5-12, page 3 of 8

Summary of Geotechnical Results
Select Cover Fill Layer

102nd Street Landfill Site

Date	Test No.	Test Location	Material	Depth or Elevation	Dry Density(pcf)	Water Content(%)	% Proctor Density	Remarks
8/14/97	5	West Slope of Olin	Summit Park	1st Lift	99.9	22.1%	92.5%	
8/14/97	6	West Slope of Olin	Summit Park	1st Lift	101.9	20.2%	94.4%	
8/14/97	7	West Slope of Olin	Summit Park	1st Lift	102.4	18.9%	94.8%	
8/15/97	3	Center of Site	Helmick Farm	1st Lift	107.6	15.6%	97.8%	
8/15/97	4	Center of Site	Helmick Farm	1st Lift	96.9	14.7%	88.1%	
8/15/97	5	Center of Site	Summit Park	1st Lift	106.1	17.6%	98.2%	
8/15/97	6	Center of Site	Summit Park	1st Lift	99.9	18.6%	92.5%	
8/18/97	21	East Slope of Oxy	Helmick Farm	1st Lift	107.7	14.5%	97.9%	
8/18/97	22	East Slope of Oxy	Helmick Farm	1st Lift	93.0	14.6%	84.5%	
8/19/97	8	Retest of No. 24, 8/18/97	Summit Park	1st Lift	107.3	17.0%	99.4%	
8/25/97	5	East Slope of Oxy	Summit Park	1st Lift	95.4	14.3%	88.3%	
8/25/97	6	East Slope of Oxy	Summit Park	1st Lift	97.6	15.2%	90.4%	
8/26/97	8	East Slope of Oxy	Summit Park	1st Lift	93.9	19.6%	86.9%	
8/27/96	7	East Slope of Oxy	Summit Park	1st Lift	104.3	17.1%	96.6%	
8/28/97	7	Northeast Corner of Oxy	Summit Park	1st Lift	91.0	14.2%	84.3%	
8/28/97	8	Northeast Corner of Oxy	Summit Park	1st Lift	103.3	18.9%	95.6%	
8/29/97	3	Northeast Corner of Oxy	Summit Park	1st Lift	100.2	18.5%	92.8%	
8/29/97	4	Northeast Corner of Oxy	Summit Park	1st Lift	93.3	22.8%	86.4%	
9/2/97	1	Southeast Corner of Oxy	Summit Park	1st Lift	112.1	15.5%	103.8%	
9/4/97	3	Top of Oxy	Summit Park	1st Lift	92.3	15.7%	85.5%	
9/4/97	4	Southeast Corner of Oxy	Summit Park	1st Lift	106.8	17.3%	98.9%	
9/5/97	7	Southeast Corner of Oxy	Summit Park	1st Lift	100.0	21.1%	92.6%	
9/8/97	1	Top of Oxy	Summit Park	1st Lift	84.6	24.4%	78.3%	
9/8/97	2	North Slope of Oxy	Summit Park	1st Lift	90.4	18.1%	83.7%	
9/9/97	1	East Side of Olin	Summit Park	1st Lift	106.4	12.8%	98.5%	
9/9/97	2	East Side of Olin	Summit Park	1st Lift	101.3	18.0%	93.8%	
9/9/97	3	East Side of Olin	Summit Park	1st Lift	108.3	16.1%	100.3%	
9/9/97	4	East Side of Olin	Summit Park	1st Lift	102.9	8.7%	95.3%	
9/9/97	5	East Side of Olin	Summit Park	1st Lift	102.4	13.7%	94.8%	
9/9/97	6	East Side of Olin	Summit Park	1st Lift	92.9	9.3%	86.0%	
9/9/97	8	South Slope of Oxy	Summit Park	1st Lift	96.3	21.7%	89.2%	
9/9/97	9	South Slope of Oxy	Summit Park	1st Lift	98.2	16.3%	90.9%	
9/15/97	1	Center of Site	Summit Park	1st Lift	109.5	14.6%	101.4%	
9/15/97	2	Center of Site	Summit Park	1st Lift	111.3	15.2%	103.1%	
9/15/97	3	Center of Site	Summit Park	1st Lift	107.7	17.3%	99.7%	

Table 4.5-12, page 4 of 8

Summary of Geotechnical Results
Select Cover Fill Layer

102nd Street Landfill Site

Date	Test No.	Test Location	Material	Depth or Elevation	Dry Density(pcf)	Water Content(%)	% Proctor Density	Remarks
9/15/97	4	Center of Site	Summit Park	1st Lift	107.5	14.4%	99.5%	
9/15/97	5	Center of Site	Summit Park	1st Lift	112.4	14.3%	104.1%	
9/15/97	6	Center of Site	Summit Park	1st Lift	110.6	12.7%	102.4%	
9/15/97	7	Center of Site	Summit Park	1st Lift	109.3	143.0%	101.2%	
9/15/97	8	Center of Site	Summit Park	1st Lift	107.6	15.2%	99.6%	
9/15/97	9	Center of Site	Summit Park	1st Lift	108.3	14.7%	100.3%	
9/15/97	10	Center of Site	Summit Park	1st Lift	105.7	14.5%	97.9%	
9/16/97	3	East Slope of Oxy	Summit Park	1st Lift	112.3	14.2%	104.0%	
9/16/97	4	East Slope of Oxy	Summit Park	1st Lift	114.8	14.9%	106.3%	
9/16/97	5	East Slope of Oxy	Summit Park	1st Lift	114.7	13.1%	106.2%	
9/16/97	6	East Slope of Oxy	Summit Park	1st Lift	116.3	13.2%	107.7%	
9/16/97	7	East Slope of Oxy	Summit Park	1st Lift	112.2	14.2%	103.9%	
9/16/97	9	East Slope of Oxy	Summit Park	1st Lift	106.5	15.8%	98.6%	
9/16/97	10	East Slope of Oxy	Summit Park	1st Lift	112.6	12.0%	104.3%	
9/19/97	1	East Slope of Oxy	Summit Park	1st Lift	107.6	17.1%	99.6%	
9/19/97	2	East Slope of Oxy	Summit Park	1st Lift	109.5	14.5%	101.4%	
9/19/97	3	East Slope of Oxy	Summit Park	1st Lift	105.9	15.7%	98.1%	
9/19/97	4	East Slope of Oxy	Summit Park	1st Lift	101.6	16.8%	94.1%	
9/19/97	5	East Slope of Oxy	Summit Park	1st Lift	108.2	13.1%	100.2%	
9/19/97	6	East Slope of Oxy	Summit Park	1st Lift	106.4	16.0%	98.5%	
9/19/97	7	East Slope of Oxy	Summit Park	1st Lift	109.3	15.3%	101.2%	
9/19/97	8	along Olin Cribwall	Summit Park	1st Lift	96.2	16.2%	89.1%	
9/19/97	9	along Olin Cribwall	Summit Park	1st Lift	95.0	17.9%	88.0%	
9/19/97	10	along Olin Cribwall	Summit Park	1st Lift	95.4	16.9%	88.3%	
9/19/97	11	along Olin Cribwall	Summit Park	1st Lift	98.9	22.9%	91.6%	
9/19/97	14	along Olin Cribwall	Summit Park	1st Lift	103.3	21.8%	95.6%	
9/19/97	15	along Olin Cribwall	Summit Park	1st Lift	99.9	20.8%	92.5%	
9/22/97	1	top of Oxy	Summit Park	1st Lift	110.2	15.4%	102.0%	
9/22/97	2	top of Oxy	Summit Park	1st Lift	119.2	13.0%	110.4%	
9/22/97	3	top of Oxy	Summit Park	1st Lift	111.8	17.2%	103.5%	
9/22/97	4	top of Oxy	Summit Park	1st Lift	110.8	16.2%	102.6%	
9/22/97	5	top of Oxy	Summit Park	1st Lift	114.2	15.4%	105.7%	
9/22/97	6	top of Oxy	Summit Park	1st Lift	109.3	15.9%	101.2%	
9/22/97	7	along Oxy Cribwall	Summit Park	1st Lift	104.5	16.7%	96.8%	
9/22/97	8	along Oxy Cribwall	Summit Park	1st Lift	100.3	22.2%	92.9%	

Table 4.5-12, page 5 of 8

Summary of Geotechnical Results
Select Cover Fill Layer

102nd Street Landfill Site

Date	Test No.	Test Location	Material	Depth or Elevation	Dry Density(pcf)	Water Content(%)	% Proctor Density	Remarks
10/1/97	1	East Slope of Oxy	Summit Park	1st Lift	101.2	20.8%	93.7%	
10/1/97	2	East Slope of Oxy	Summit Park	1st Lift	115.7	16.6%	107.1%	
10/1/97	3	East Slope of Oxy	Summit Park	1st Lift	107.7	19.5%	99.7%	
10/1/97	4	East Slope of Oxy	Summit Park	1st Lift	110.9	17.8%	102.7%	
10/1/97	5	East Slope of Oxy	Summit Park	1st Lift	108.7	20.7%	100.6%	
10/1/97	6	East Slope of Oxy	Summit Park	1st Lift	105.9	20.1%	98.1%	
10/1/97	7	East Slope of Oxy	Summit Park	1st Lift	108.6	18.2%	100.6%	
10/1/97	8	West Slope of Oxy	Summit Park	1st Lift	107.4	15.8%	99.4%	
10/1/97	9	West Slope of Oxy	Summit Park	1st Lift	113.1	14.6%	104.7%	
10/2/97	3	West Slope of Oxy	Summit Park	1st Lift	108.9	16.1%	100.8%	
10/2/97	4	West Slope of Oxy	Summit Park	1st Lift	105.5	20.4%	97.7%	
10/2/97	5	West Slope of Oxy	Summit Park	1st Lift	101.0	18.2%	93.5%	
10/2/97	6	West Slope of Oxy	Summit Park	1st Lift	101.4	18.5%	93.9%	
10/2/97	7	West Slope of Oxy	Summit Park	1st Lift	102.0	18.1%	94.4%	
10/2/97	8	West Slope of Oxy	Summit Park	1st Lift	10.6	19.2%	9.8%	
10/2/97	9	West Slope of Oxy	Summit Park	1st Lift	111.0	17.0%	102.8%	
10/2/97	10	West Slope of Oxy	Summit Park	1st Lift	104.6	22.1%	96.9%	
10/2/97	11	West Slope of Oxy	Summit Park	1st Lift	108.1	13.3%	100.1%	
10/3/97	5	Southwest Corner of Oxy	Helmick Farm	1st Lift	104.0	14.8%	94.5%	
10/6/97	7	Southwest Corner of Oxy	Helmick Farm	1st Lift	103.5	17.9%	94.1%	
10/6/97	8	Southwest Corner of Oxy	Helmick Farm	1st Lift	108.6	15.5%	98.7%	
10/6/97	9	West Slope of Oxy	Helmick Farm	1st Lift	106.2	19.6%	96.5%	
10/7/97	1	Southwest Corner of Oxy	Helmick Farm	1st Lift	93.2	21.5%	84.7%	
10/8/97	6	Top of Oxy	Summit Park	1st Lift	111.2	16.6%	103.0%	
10/8/97	7	Top of Oxy	Summit Park	1st Lift	113.4	15.6%	105.0%	
10/8/97	8	Top of Oxy	Summit Park	1st Lift	113.0	16.1%	104.6%	
10/8/97	9	Top of Oxy	Summit Park	1st Lift	109.8	16.4%	101.7%	
10/8/97	10	Top of Oxy	Summit Park	1st Lift	106.1	16.3%	98.2%	
10/8/97	11	Top of Oxy	Summit Park	1st Lift	108.2	16.9%	100.2%	
10/8/97	12	Top of Oxy	Summit Park	1st Lift	107.2	17.5%	99.3%	
10/8/97	13	Top of Oxy	Summit Park	1st Lift	109.3	16.7%	101.2%	
10/8/97	14	Top of Oxy	Summit Park	1st Lift	106.3	17.3%	98.4%	
10/8/97	15	Top of Oxy	Summit Park	1st Lift	110.4	17.6%	102.2%	
10/8/97	16	Top of Oxy	Summit Park	1st Lift	111.7	17.1%	103.4%	
10/8/97	17	Top of Oxy	Summit Park	1st Lift	106.5	16.3%	98.6%	

Table 4.5-12, page 6 of 8

Summary of Geotechnical Results
Select Cover Fill Layer

102nd Street Landfill Site

Date	Test No.	Test Location	Material	Depth or Elevation	Dry Density(pcf)	Water Content(%)	% Proctor Density	Remarks
10/8/97	18	Top of Oxy	Summit Park	1st Lift	108.3	15.9%	100.3%	
10/8/97	19	Top of Oxy	Summit Park	1st Lift	107.6	16.8%	99.6%	
10/8/97	21	Northwest Corner of Oxy	Helmick Farm	1st Lift	107.9	18.3%	98.1%	
10/9/97	3	Under Bulkhead Road, Center of Site	Helmick/Summit	-	117.3	8.7%	-	
10/9/97	4	Under Bulkhead Road, Center of Site	Helmick/Summit	-	118.1	12.4%	-	
10/10/97	2	Under Bulkhead Road, near WW#2	Summit Park	1st Lift	111.2	12.6%	103.0%	
10/10/97	3	Under Bulkhead Road, near WW#2	Summit Park	1st Lift	112.1	14.4%	103.8%	
10/11/97	2	Under Bulkhead Road, between WW#2 & CO#3	Summit Park	1st Lift	105.9	16.4%	98.1%	
10/11/97	3	Under Bulkhead Road, between WW#2 & CO#3	Summit Park	1st Lift	107.0	14.4%	99.1%	
10/11/97	4	Under Bulkhead Road, between WW#2 & CO#3	Summit Park	1st Lift	118.1	10.7%	109.4%	
10/11/97	7	Northwest Corner of Oxy	Helmick Farm	1st Lift	107.6	12.5%	97.8%	
10/11/97	8	Under Bulkhead Road, between CO#5 & WW#3	Summit Park	1st Lift	118.0	11.9%	109.3%	
10/11/97	9	Under Bulkhead Road, between CO#5 & WW#3	Summit Park	1st Lift	117.6	10.7%	108.9%	
10/11/97	10	Under Bulkhead Road, between CO#5 & WW#3	Summit Park	1st Lift	118.5	11.2%	109.7%	
10/13/97	1	Under Bulkhead Road, near CO#3	Helmick Farm	1st Lift	112.4	14.1%	102.2%	
10/13/97	2	Under Bulkhead Road, near CO#3	Helmick Farm	1st Lift	114.6	13.8%	104.2%	
10/13/97	3	Under Bulkhead Road, near CO#6	Summit Park	1st Lift	117.2	10.2%	108.5%	
10/13/97	4	Under Bulkhead Road, near CO#6	Summit Park	1st Lift	119.1	8.9%	110.3%	
10/13/97	5	South Slope of Oxy	Summit Park	1st Lift	110.4	16.1%	102.2%	
10/13/97	6	South Slope of Oxy	Summit Park	1st Lift	109.6	17.2%	101.5%	
10/13/97	7	South Slope of Oxy	Summit Park	1st Lift	107.4	16.6%	99.4%	
10/13/97	8	Top of Oxy	Summit Park	1st Lift	103.3	17.0%	95.6%	
10/13/97	9	Top of Oxy	Summit Park	1st Lift	116.5	12.2%	107.9%	
10/13/97	10	Top of Oxy	Summit Park	1st Lift	109.9	16.5%	101.8%	
10/13/97	11	Top of Oxy	Summit Park	1st Lift	111.9	8.6%	103.6%	
10/13/97	12	Top of Oxy	Summit Park	1st Lift	11.4	12.3%	10.6%	
10/13/97	13	Top of Oxy	Summit Park	1st Lift	110.3	15.4%	102.1%	
10/13/97	14	Top of Oxy	Helmick Farm	1st Lift	105.9	17.6%	96.3%	
10/13/97	15	Along Oxy Cribwall	Helmick Farm	1st Lift	103.7	10.8%	94.3%	
10/13/97	16	Along Oxy Cribwall	Helmick Farm	1st Lift	102.3	11.1%	93.0%	
10/13/97	17	Along Oxy Cribwall	Helmick Farm	1st Lift	106.2	11.2%	96.5%	
10/13/97	18	Along Oxy Cribwall	Helmick Farm	1st Lift	110.4	12.2%	100.4%	
10/13/97	19	Along Oxy Cribwall	Helmick Farm	1st Lift	94.7	14.1%	86.1%	
10/13/97	20	Along Oxy Cribwall	Helmick Farm	1st Lift	108.1	10.7%	98.3%	
10/13/97	21	West Slope of Oxy	Helmick Farm	1st Lift	92.6	14.7%	84.2%	

Table 4.5-12, page 7 of 8

Summary of Geotechnical Results
Select Cover Fill Layer

102nd Street Landfill Site

Date	Test No.	Test Location	Material	Depth or Elevation	Dry Density(pcf)	Water Content(%)	% Proctor Density	Remarks
10/13/97	22	Under Bulkhead Road, near WW#1	Helmick Farm	1st Lift	104.8	20.9%	95.3%	
10/13/97	23	Under Center Access Road, Near Bulkhead	Helmick Farm	1st Lift	116.4	11.0%	105.8%	
10/13/97	24	Under Center Access Road, Near Bulkhead	Helmick Farm	1st Lift	114.7	9.6%	104.3%	
10/13/97	25	Under Center Access Road, Near Bulkhead	Helmick Farm	1st Lift	128.7	10.2%	117.0%	
10/14/97	1	Under Bulkhead Road, near WW#4	Summit Park	1st Lift	115.7	13.2%	107.1%	
10/14/97	2	Under Bulkhead Road, near WW#4	Summit Park	1st Lift	113.3	12.5%	104.9%	
10/14/97	3	Retest of No.15, 10/13/97	Helmick Farm	1st Lift	115.0	13.4%	104.5%	
10/14/97	4	Retest of No.16, 10/13/97	Helmick Farm	1st Lift	97.3	11.4%	88.5%	
10/14/97	5	Retest of No.17, 10/13/97	Helmick Farm	1st Lift	96.6	13.2%	87.8%	
10/14/97	6	Retest of No.18, 10/13/97	Helmick Farm	1st Lift	105.4	12.6%	95.8%	
10/14/97	7	Retest of No.20, 10/13/97	Helmick Farm	1st Lift	107.4	9.9%	97.6%	
10/14/97	8	Along Oxy Cribwall	Helmick Farm	1st Lift	104.2	10.2%	94.7%	
10/14/97	9	Along Oxy Cribwall	Helmick Farm	1st Lift	92.2	14.7%	83.8%	
10/14/97	10	Along Oxy Cribwall	Helmick Farm	1st Lift	90.0	9.9%	81.8%	
10/15/97	1	Under Olin NAPL Well Access Road	Summit Park	1st Lift	117.5	12.0%	108.8%	
10/15/97	2	Under Olin NAPL Well Access Road	Summit Park	1st Lift	116.7	11.2%	108.1%	
10/15/97	3	Under Olin NAPL Well Access Road	Summit Park	1st Lift	110.7	10.7%	102.5%	
10/15/97	4	Under Olin NAPL Well Access Road	Summit Park	1st Lift	114.1	9.4%	105.6%	
10/15/97	5	Under Olin NAPL Well Access Road	Summit Park	1st Lift	122.8	10.7%	113.7%	
10/16/97	1	West Side of Oxy	Helmick Farm	1st Lift	109.6	16.3%	99.6%	
10/16/97	2	West Side of Oxy	Helmick Farm	1st Lift	107.6	14.9%	97.8%	
10/16/97	3	West Side of Oxy	Helmick Farm	1st Lift	116.3	15.2%	105.7%	
10/16/97	4	West Side of Oxy	Helmick Farm	1st Lift	107.7	14.5%	97.9%	
10/16/97	5	West Side of Oxy	Helmick Farm	1st Lift	110.4	14.2%	100.4%	
10/16/97	6	West Side of Oxy	Helmick Farm	1st Lift	111.6	14.8%	101.5%	
10/16/97	7	West Side of Oxy	Helmick Farm	1st Lift	109.4	15.9%	99.5%	
10/16/97	8	West Side of Oxy	Helmick Farm	1st Lift	116.1	16.1%	105.5%	
10/16/97	12	Under Oxy NAPL Well Access Road	Summit Park	1st Lift	108.3	13.9%	100.3%	
10/16/97	13	Under Oxy NAPL Well Access Road	Summit Park	1st Lift	122.5	11.1%	113.4%	
10/16/97	14	Under Oxy NAPL Well Access Road	Summit Park	1st Lift	121.1	10.8%	112.1%	
10/16/97	15	Under Oxy NAPL Well Access Road	Summit Park	1st Lift	115.0	10.7%	106.5%	
10/16/97	16	Under Oxy NAPL Well Access Road	Summit Park	1st Lift	118.9	14.0%	110.1%	
10/16/97	17	Under Oxy NAPL Well Access Road	Summit Park	1st Lift	121.3	10.0%	112.3%	
10/16/97	18	Under Oxy NAPL Well Access Road	Summit Park	1st Lift	119.8	10.9%	110.9%	
10/16/97	19	Under Oxy NAPL Well Access Road	Summit Park	1st Lift	113.4	11.4%	105.0%	

Table 4.5-12, page 8 of 8

Summary of Geotechnical Results
Select Cover Fill Layer

102nd Street Landfill Site

Date	Test No.	Test Location	Material	Depth or Elevation	Dry Density(pcf)	Water Content(%)	% Proctor Density	Remarks
10/16/97	20	Under Oxy NAPL Well Access Road	Summit Park	1st Lift	111.7	13.2%	103.4%	
10/16/97	21	Under Oxy NAPL Well Access Road	Summit Park	1st Lift	115.3	11.4%	106.8%	
10/17/97	1	Southwest Corner of Oxy	Helmick Farm	1st Lift	107.3	17.0%	97.5%	
10/17/97	2	Southwest Corner of Oxy	Helmick Farm	1st Lift	113.7	14.7%	103.4%	
10/17/97	3	Northwest Corner of Oxy	Helmick Farm	1st Lift	107.3	15.0%	97.5%	
10/17/97	4	Northwest Corner of Oxy	Helmick Farm	1st Lift	101.2	14.1%	92.0%	
10/21/97	1	West Slope of Oxy	Helmick Farm	1st Lift	117.6	14.2%	106.9%	
10/21/97	2	West Slope of Oxy	Helmick Farm	1st Lift	111.0	15.1%	100.9%	
10/21/97	3	West Slope of Oxy	Helmick Farm	1st Lift	108.4	17.3%	98.5%	
10/21/97	4	West Slope of Oxy	Helmick Farm	1st Lift	110.0	19.0%	100.0%	
10/21/97	5	West Slope of Oxy	Helmick Farm	1st Lift	109.6	14.9%	99.6%	
10/21/97	6	West Slope of Oxy	Helmick Farm	1st Lift	106.4	20.3%	96.7%	
10/21/97	7	West Slope of Oxy	Helmick Farm	1st Lift	114.5	14.2%	104.1%	
10/21/97	8	West Slope of Oxy	Helmick Farm	1st Lift	110.0	15.1%	100.0%	
10/21/97	9	West Slope of Oxy	Helmick Farm	1st Lift	110.0	14.6%	100.0%	
10/21/97	10	West Slope of Oxy	Helmick Farm	1st Lift	111.5	15.0%	101.4%	
10/21/97	11	West Slope of Oxy	Helmick Farm	1st Lift	108.9	14.9%	99.0%	
10/21/97	12	West Slope of Oxy	Helmick Farm	1st Lift	109.6	15.2%	99.6%	
10/21/97	13	West Slope of Oxy	Helmick Farm	1st Lift	108.9	16.1%	99.0%	
10/29/97	1	Under Center Access Road, Near Middle Entrance	Summit Park	1st Lift	111.3	21.1%	103.1%	
10/29/97	2	Under Center Access Road, Near Middle Entrance	Summit Park	1st Lift	111.1	19.3%	102.9%	
10/29/97	3	Under Center Access Road, Near Middle Entrance	Summit Park	1st Lift	113.9	16.0%	105.5%	

Table 4.5-13

Summary of Geotechnical Results
Topsoil Testing

102nd Street Landfill Site

Date	Sample No.	Borrow Source	Water Content	Organic %	Ash %	Gradation < 200 Sieve	pH in H20	pH in .01M CaCl2
7/29/97	07297-1	Buffalo Creek	19.0%	5.9%	94.1%	27	6.2	5.7
9/18/97	09187-2	Buffalo Creek	21.3%	5.7%	94.3%	25	6.7	6.7
10/3/97	10037-1	Frontier	25.0%	5.0%	95.0%	87	7.0	6.8
10/6/97	10067-2	Buffalo Creek	22.1%	5.2%	94.8%	28	7.0	6.8
10/17/97	10177-1	Frontier	20.2%	5.5%	94.5%	86	6.7	6.3
10/21/97	10217-1	Frontier	20.3%	5.0%	95.0%	84	7.1	6.9
10/21/97	10217-2	Frontier	18.7%	5.5%	94.5%	83	6.7	6.5
10/23/97	10237-1	Frontier	21.3%	5.5%	94.5%	85	6.4	6.1
10/31/97	10317-1	Air Base	22.3%	4.6%	95.4%	84	6.7	6.5
10/31/97	10317-2	Frontier	23.1%	4.2%	95.8%	69	7.4	7.1

Table 4.6-1, page 1 of 5

Summary Table of APL Collection Trench Depths

102nd Street Landfill Site

Station	Actual Ground Elevation	Depth Dug	Actual Bottom Elevation	Actual Depth to Top of Pipe	Actual Top of Pipe Elevation
0	574.17	14.5	559.67	11.6	562.57
10	574.31	13.9	560.41	12.0	562.31
20	574.45	13.8	560.65	12.0	562.45
30	574.50	13.9	560.60	12.1	562.40
40	574.54	13.9	560.64	12.2	562.34
50	574.51	14.8	559.71	12.2	562.31
60	574.48	15.0	559.48	12.5	561.98
70	574.57	14.5	560.07	12.5	562.07
80	574.65	15.0	559.65	12.5	562.15
90	574.66	14.0	560.66	12.6	562.11
100	574.67	14.7	559.97	12.6	562.07
110	574.68	14.6	560.08	12.2	562.48
120	574.69	14.3	560.39	11.8	562.89
130	574.64	14.8	559.84	12.3	562.34
140	574.58	15.0	559.58	12.8	561.78
150	574.50	14.9	559.60	12.8	561.75
160	574.41	15.0	559.41	12.7	561.71
170	574.43	15.0	559.43	12.8	561.68
180	574.44	14.5	559.94	12.8	561.64
190	574.33	14.8	559.53	12.7	561.63
200	574.21	15.0	559.21	12.6	561.61
210	574.07	14.4	559.67	12.7	561.37
220	573.92	14.8	559.12	12.8	561.12
230	573.72	14.7	559.02	12.6	561.12
240	573.52	14.0	559.52	12.4	561.12
250	573.55	14.2	559.35	12.4	561.15
260	573.58	14.5	559.08	12.4	561.18
270	573.63	14.6	559.03	12.6	561.03
280	573.68	14.8	558.88	12.8	560.88
290	573.69	14.8	558.89	12.8	560.89
300	573.70	15.2	558.50	12.8	560.90
310	573.59	14.4	559.19	12.8	560.84
320	573.48	14.8	558.68	12.7	560.78
330	573.46	14.3	559.16	12.7	560.76
340	573.43	14.6	558.83	12.7	560.73
350	573.46	14.6	558.86	12.7	560.81
360	573.48	14.7	558.78	12.6	560.88
370	573.51	14.8	558.71	12.9	560.61
380	573.54	14.8	558.74	13.2	560.34
390	573.54	14.6	558.94	13.0	560.54
400	573.54	14.3	559.24	12.8	560.74
410	573.13	14.2	558.93	12.7	560.43
420	572.72	13.6	559.12	12.6	560.12
430	572.60	13.7	558.90	12.6	560.05
440	572.48	14.0	558.48	12.5	559.98
450	572.37	14.0	558.37	12.5	559.92
460	572.25	13.7	558.55	12.4	559.85
510	571.15	13.0	558.15	11.1	560.05

Table 4.6-1, page 2 of 5

Summary Table of APL Collection Trench Depths

102nd Street Landfill Site

Station	Actual Ground Elevation	Depth Dug	Actual Bottom Elevation	Actual Depth to Top of Pipe	Actual Top of Pipe Elevation
520	571.12	12.4	558.72	11.2	559.92
530	570.92	11.8	559.12	11.0	559.97
540	570.72	12.0	558.72	10.7	560.02
550	570.58	11.5	559.08	10.5	560.08
560	570.44	11.8	558.64	10.3	560.14
570	570.37	11.8	558.57	10.2	560.22
580	570.30	11.8	558.50	10.0	560.30
590	570.36	11.4	558.96	10.0	560.36
600	570.41	11.5	558.91	10.0	560.41
610	570.46	11.4	559.06	10.1	560.36
620	570.51	11.5	559.01	10.2	560.31
630	570.45	11.4	559.05	10.0	560.45
640	570.38	11.3	559.08	9.8	560.58
650	570.37	11.0	559.37	9.8	560.57
660	570.35	11.3	559.05	9.8	560.55
670	570.26	11.0	559.26	9.6	560.66
680	570.17	11.0	559.17	9.4	560.77
690	570.13	11.1	559.03	9.3	560.88
700	570.09	11.2	558.89	9.1	560.99
710	570.05	11.0	559.05	9.1	560.95
720	570.01	10.7	559.31	9.1	560.91
730	570.07	10.3	559.77	9.1	561.02
740	570.13	10.5	559.63	9.0	561.13
750	570.15	10.4	559.75	9.0	561.20
760	570.16	10.5	559.66	8.9	561.26
770	570.12	10.4	559.72	9.0	561.17
780	570.08	10.5	559.58	8.8	561.28
790	570.07	10.5	559.57	8.7	561.37
800	570.06	10.5	559.56	8.6	561.46
810	570.06	10.4	559.66	8.5	561.56
820	570.06	11.0	559.06	8.5	561.56
830	570.04	11.0	559.04	8.6	561.49
840	570.01	11.5	558.51	8.6	561.41
850	570.03	12.0	558.03	8.7	561.38
860	570.04	12.0	558.04	8.7	561.34
870	570.07	12.0	558.07	8.8	561.27
880	570.10	10.5	559.60	8.9	561.20
890	570.15	10.6	559.55	9.0	561.15
900	570.20	10.6	559.60	9.1	561.10
910	570.24	10.5	559.74	9.2	561.04
920	570.28	10.8	559.48	9.3	560.98
930	570.24	10.9	559.34	9.3	560.94
940	570.19	10.5	559.69	9.3	560.89
950	570.25	10.7	559.55	9.5	560.80
960	570.30	10.8	559.50	9.6	560.70
970	570.29	10.9	559.39	9.6	560.69
980	570.27	11.0	559.27	9.6	560.67
990	570.24	11.0	559.24	9.7	560.59

Table 4.6-1, page 3 of 5

Summary Table of APL Collection Trench Depths

102nd Street Landfill Site

Station	Actual Ground Elevation	Depth Dug	Actual Bottom Elevation	Actual Depth to Top of Pipe	Actual Top of Pipe Elevation
1000	570.21	11.1	559.11	9.7	560.51
1010	570.02	11.0	559.02	9.6	560.47
1020	569.83	11.1	558.73	9.4	560.43
1030	569.91	11.1	558.81	9.6	560.36
1040	569.98	11.3	558.68	9.7	560.28
1050	569.95	11.2	558.75	9.7	560.25
1060	569.91	11.4	558.51	9.7	560.21
1070	569.94	11.4	558.54	9.8	560.14
1080	569.96	11.1	558.86	9.9	560.06
1090	569.87	11.4	558.47	9.9	560.02
1100	569.78	11.5	558.28	9.8	559.98
1110	569.71	11.4	558.31	9.8	559.91
1120	569.64	11.2	558.44	9.8	559.84
1130	569.36	11.0	558.36	9.5	559.84
1140	569.07	11.0	558.07	9.2	559.87
1150	568.93	10.7	558.23	9.1	559.88
1160	568.79	11.0	557.79	8.9	559.89
1170	568.91	11.3	557.61	9.0	559.96
1180	569.02	11.2	557.82	9.0	560.02
1190	569.35	11.0	558.35	9.3	560.10
1200	569.67	11.0	558.67	9.5	560.17
1210	569.79	11.0	558.79	9.6	560.24
1220	569.91	11.4	558.51	9.6	560.31
1230	569.80	11.2	558.60	9.5	560.30
1240	569.69	11.0	558.69	9.4	560.29
1250	569.79	10.9	558.89	9.4	560.39
1260	569.89	10.9	558.99	9.4	560.49
1270	569.90	11.5	558.40	9.5	560.45
1280	569.91	11.1	558.81	9.5	560.41
1290	569.96	11.0	558.96	9.5	560.48
1300	570.00	11.0	559.00	9.5	560.55
1310	569.95	11.0	558.95	9.3	560.62
1320	569.89	11.0	558.89	9.2	560.69
1330	569.96	10.9	559.06	9.1	560.82
1340	570.02	11.0	559.02	9.1	560.95
1350	570.03	11.0	559.03	9.1	560.94
1360	570.03	11.0	559.03	9.1	560.93
1370	570.02	10.7	559.32	9.1	560.97
1380	570.00	10.4	559.60	9.0	561.00
1390	570.94	11.0	559.94	8.9	562.07
1400	569.87	10.5	559.37	8.7	561.13
1410	570.07	10.4	559.67	8.9	561.19
1420	570.27	10.9	559.37	9.0	561.25
1430	570.01	10.6	559.41	8.7	561.29
1440	569.75	10.2	559.55	8.4	561.33
1450	569.74	10.7	559.04	8.3	561.46
1460	569.72	10.8	558.92	8.1	561.59
1470	569.65	10.2	559.45	8.1	561.58

Table 4.6-1, page 4 of 5

Summary Table of APL Collection Trench Depths

102nd Street Landfill Site

Station	Actual Ground Elevation	Depth Dug	Actual Bottom Elevation	Actual Depth to Top of Pipe	Actual Top of Pipe Elevation
1480	569.58	10.0	559.58	8.0	561.57
1490	569.70	10.1	559.60	8.1	561.61
1500	569.82	10.0	559.82	8.2	561.65
1510	569.84	10.0	559.84	8.3	561.56
1520	569.86	10.0	559.86	8.4	561.47
1530	570.04	10.1	559.94	8.6	561.42
1540	570.22	10.3	559.92	8.8	561.38
1550	570.25	10.8	559.45	9.0	561.28
1560	570.28	11.0	559.28	9.1	561.18
1570	570.28	11.0	559.28	9.2	561.07
1580	570.27	10.9	559.37	9.3	560.96
1590	570.37	10.8	559.57	9.5	560.90
1600	570.47	11.0	559.47	9.6	560.85
1610	570.50	11.0	559.50	9.7	560.79
1620	570.52	11.0	559.52	9.8	560.73
1630	570.55	11.0	559.55	9.9	560.68
1640	570.57	11.0	559.57	9.9	560.63
1650	570.45	10.9	559.55	10.0	560.48
1660	570.32	11.0	559.32	10.0	560.33
1670	570.27	11.3	558.97	10.0	560.26
1680	570.22	11.4	558.82	10.0	560.20
1690	570.21	11.5	558.71	10.1	560.10
1700	570.19	11.5	558.69	10.2	560.00
1710	570.12	11.4	558.72	10.2	559.97
1720	570.05	11.6	558.45	10.1	559.95
1730	570.14	11.4	558.74	10.2	559.90
1740	570.22	11.6	558.62	10.4	559.85
1750	570.32	11.5	558.82	10.4	559.95
1760	570.42	11.6	558.82	10.4	560.05
1770	570.46	11.5	558.96	10.4	560.07
1780	570.49	11.6	558.89	10.4	560.09
1790	570.51	11.5	559.01	10.4	560.16
1800	570.52	11.4	559.12	10.3	560.22
1810	570.54	11.5	559.04	10.2	560.35
1820	570.56	11.3	559.26	10.1	560.48
1830	570.49	11.4	559.09	10.0	560.52
1840	570.42	11.3	559.12	9.9	560.55
1850	570.45	11.0	559.45	9.8	560.68
1860	570.47	11.1	559.37	9.7	560.76
1870	570.38	11.0	559.38	9.7	560.73
1880	570.28	11.2	559.08	9.5	560.80
1890	570.37	11.1	559.27	9.3	561.06
1900	570.45	11.2	559.25	9.4	561.10
1910	570.45	11.0	559.45	9.4	561.06
1920	570.44	10.9	559.54	9.3	561.18
1930	570.41	10.8	559.61	9.1	561.29
1940	570.37	10.8	559.57	9.0	561.38
1950	570.32	10.6	559.72	8.9	561.46

Table 4.6-1, page 5 of 5

Summary Table of APL Collection Trench Depths

102nd Street Landfill Site

Station	Actual Ground Elevation	Depth Dug	Actual Bottom Elevation	Actual Depth to Top of Pipe	Actual Top of Pipe Elevation
1960	570.26	10.4	559.86	8.7	561.61
1970	570.26	10.7	559.56	8.9	561.40
1980	570.25	10.8	559.45	9.1	561.18
1990	570.15	10.7	559.45	9.0	561.11
2000	570.05	10.5	559.55	9.0	561.05
2010	570.14	10.9	559.24	9.2	560.91
2020	570.23	11.0	559.23	9.5	560.77
2030	570.19	11.0	559.19	9.5	560.68
2040	570.14	11.2	558.94	9.6	560.58
2050	570.18	11.4	558.78	9.8	560.42
2060	570.22	11.3	558.92	10.0	560.26
2070	570.21	11.3	558.91	10.1	560.10
2080	570.20	11.2	559.00	10.3	559.95
2090	570.10	11.7	558.40	10.2	559.95
2100	570.00	11.5	558.50	10.1	559.95
2110	570.01	11.2	558.81	9.9	560.08
2120	570.01	11.1	558.91	9.8	560.20
2130	570.10	11.4	558.70	9.8	560.28
2140	570.19	11.5	558.69	9.8	560.37
2150	570.48	11.4	559.08	9.9	560.63
2160	570.76	11.5	559.26	9.9	560.88
2170	571.45	11.7	559.75	10.5	560.99
2180	572.13	12.5	559.63	11.0	561.09
2190	572.58	13.0	559.58	11.4	561.22
2200	573.02	13.0	560.02	11.7	561.35
2210	573.42	13.0	560.42	11.9	561.50
2220	573.82	13.6	560.22	12.2	561.65
2230	573.97	13.8	560.17	12.2	561.80
2240	574.12	13.8	560.32	12.2	561.95
2250	574.32	13.9	560.42	12.2	562.09
2260	574.52	13.9	560.62	12.3	562.23
2270	574.61	13.8	560.81	12.2	562.40
2280	574.69	13.8	560.89	12.1	562.56
2285	574.62	13.5	561.12	12.0	562.65

Table 4.6-2, page 1 of 2

Summary Table of APL Collection Trench Depths

102nd Street Landfill Site

			Batch Plant Slurry				In-trench Bio-Polymer Slurry				
Date	Station	Time	Density	pH	Viscosity	Filtrate	Time	Density	pH	Viscosity	Filtrate
9/20/96	0	8:42	61	10	850	13	9:15	62	9	162	11
9/20/96	30	13:15	61	10	150	15.5	14:15	61.5	10	145	16.5
9/20/96	40	8:24	60.5	10	144	17	15:40	61.5	9	110	12.5
9/21/96	60	8:35	61.5	10	135	11	8:52	62.5	9	120	12
9/21/96	90	10:30	61	10	195	13	10:48	62	9	162	12.5
9/21/96	100	13:00	61.5	10	190	15.5	14:24	61	10	135	13
9/23/96	110	-	-	-	-	-	7:40	61	8	101	12.5
9/23/96	130	11:19	62	9	370	13	-	-	-	-	-
9/24/96	140	8:42	61	10	150	10.5	8:10	62.5	9	115	11
9/24/96	160	9:52	61.5	9	142	-	-	-	-	-	-
9/24/96	200	10:58	61.5	8	105	-	11:10	61	9	113	-
9/24/96	240	13:25	61	9	113	-	13:34	61.5	9	105	-
9/24/96	250	-	-	-	-	-	15:06	62	9	162	-
9/25/96	280	8:40	61	10	96	-	8:10	62.5	9	95	-
9/25/96	340	-	-	-	-	-	10:20	61	9	119	-
9/25/96	380	11:30	61.5	9	107	-	-	-	-	-	-
9/25/96	400	13:33	61	9	98	-	13:10	61.5	9	114	-
9/25/96	450	14:10	61	10	102	13.5	14:40	61.5	9	105	12
9/26/96	470	13:10	62	9	103	12	-	-	-	-	-
9/26/96	480	-	-	-	-	-	14:20	63.5	9	95	13.5
9/26/96	520	-	-	-	-	-	15:40	63	9	101	-
9/27/96	530	-	-	-	-	-	7:30	61	9	100	14
9/27/96	600	-	-	-	-	-	10:14	61.5	9	97	-
9/27/96	610	10:25	62	10	98	12.5	-	-	-	-	-
9/27/96	640	13:13	62.5	9	102	-	-	-	-	-	-
9/27/96	650	-	-	-	-	-	13:48	61	10	93	-
9/30/96	680	8:02	60.5	8	93	12	8:15	63	9	101	-
9/30/96	740	10:29	61	9	92	-	10:56	61.5	9	94	9.5
9/30/96	750	-	-	-	-	-	-	-	-	-	-
9/30/96	780	-	-	-	-	-	16:30	63	9	97	-
10/1/96	890	8:27	61	11	115	-	-	-	-	-	-
10/1/96	900	-	-	-	-	-	9:05	62.5	9	97	-
10/1/96	930	10:55	61	10	92	13	-	-	-	-	-
10/1/96	960	-	-	-	-	-	10:22	61.5	9	102	-
10/1/96	1020	13:20	61.5	10	119	-	-	-	-	-	-
10/1/96	1030	-	-	-	-	-	13:58	62.5	9	122	-
10/1/96	1040	14:17	61	10	123	-	-	-	-	-	-
10/1/96	1050	-	-	-	-	-	15:25	62	9	117	11
10/2/96	1070	-	-	-	-	-	8:00	63	10	132	-
10/2/96	1110	-	-	-	-	-	11:13	63	9	127	10.5
10/2/96	1130	-	-	-	-	-	13:02	62.5	9	124	-
10/2/96	1140	-	-	-	-	-	16:55	63	9	121	-
10/3/96	1150	-	-	-	-	-	8:05	63.5	9	135	-
10/3/96	1200	8:50	62.5	10	96	12	10:42	63	9	127	11.5
10/3/96	1250	10:15	62	10	98	-	-	-	-	-	-
10/3/96	1260	-	-	-	-	-	-	-	-	-	-
10/3/96	1290	15:45	62	10	115	-	-	-	-	-	-
10/3/96	1300	-	-	-	-	-	13:14	63	9	123	-
10/3/96	1330	-	-	-	-	-	14:55	63.5	9	128	-
10/4/96	1370	-	-	-	-	-	8:24	62.5	10	135	-
10/4/96	1380	8:40	63	9	123	-	-	-	-	-	-
10/4/96	1400	10:15	62.5	9	119	14	10:25	63	9	141	11.5
10/4/96	1440	-	-	-	-	-	13:10	63	10	132	-

Table 4.6-2, page 2 of 2

Summary Table of APL Collection Trench Depths

102nd Street Landfill Site

Date	Station	Time	Batch Plant Slurry				In-trench Bio-Polymer Slurry				
			Density	pH	Viscosity	Filtrate	Time	Density	pH	Viscosity	Filtrate
10/4/96	1500	-	-	-	-	-	14:48	63	10	138	-
10/7/96	1570	-	-	-	-	-	8:20	64	9	141	12
10/7/96	1580	-	-	-	-	-	10:15	63.5	9	135	
10/7/96	1580	-	-	-	-	-	13:49	63.5	9	138	
10/7/96	1620	16:20	64	11	105	14.5	16:12	63	9	144	
10/8/96	1660	-	-	-	-	-	7:30	62.5	8	112	-
10/8/96	1670	9:25	62	10	94	15	-	-	-	-	-
10/8/96	1700	-	-	-	-	-	10:31	63	9	110	13.5
10/8/96	1720	10:58	62.5	11	108	-	8:24	63	10	143	-
10/8/96	1760	14:25	62.5	10	106	-	14:41	63.5	9	137	-
10/8/96	1840	16:53	63	10	133	-	-	-	-	-	-
10/9/96	1840	-	-	-	-	-	8:18	64	10	196	13
10/9/96	1890	10:36	63	9	109	-	10:14	63.5	10	172	-
10/9/96	1920	13:15	62.5	10	113	12	12:53	62.5	10	135	-
10/9/96	2000	15:53	63	10	111	-	16:15	63.5	10	125	-
10/10/96	2070	-	-	-	-	-	7:42	62.5	9	139	14
10/10/96	2080	8:22	63	10	107	-	-	-	-	-	-
10/10/96	2150	10:32	62.5	10	99	-	10:18	63	9	137	-
10/10/96	2180	13:58	63	10	102	12.5	-	-	-	-	-
10/10/96	2190	-	-	-	-	-	14:15	63	9	128	-
10/10/96	2210	-	-	-	-	-	16:01	62.5	10	146	-
11/11/96	2250	-	-	-	-	-	7:32	63	9	132	-
11/11/96	2270	-	-	-	-	-	10:21	62.5	9	127	13
11/11/96	2270	-	-	-	-	-	13:14	63	9	141	-
11/11/96	2270	-	-	-	-	-	16:10	63	9	139	-

Table 4.6-3, page 1 of 2

Summary of Soil Compaction Results
APL Trench Cap

102nd Street Landfill Site

Date	Test No.	Test Location	Material	Depth or Elevation	Dry Density(pcf)	Water Content(%)	% Proctor Density	Remarks
10/9/96	1	Station 0+50	Frontier	1st Lift	109.1	15.2%	95.3%	
10/9/96	2	Station 1+00	Frontier	1st Lift	108.8	16.1%	95.0%	
10/9/96	3	Station 1+50	Frontier	1st Lift	111.2	12.6%	97.1%	
10/9/96	4	Station 2+00	Frontier	1st Lift	109.0	13.5%	95.2%	
10/9/96	5	Station 2+50	Frontier	1st Lift	106.9	15.1%	93.4%	
10/9/96	6	Station 3+00	Frontier	1st Lift	111.5	13.7%	97.4%	
10/9/96	7	Retest of No. 5	Frontier	1st Lift	109.5	14.7%	95.6%	
10/11/96	7	10' East of WW#1	Frontier	1st Lift	112.4	14.9%	98.2%	
10/11/96	8	75' East of WW#1	Frontier	1st Lift	113.3	14.3%	99.0%	
10/11/96	9	150' East of WW#1	Frontier	1st Lift	112.6	15.1%	98.3%	
10/11/96	10	200' East of WW#1	Frontier	1st Lift	112.0	15.5%	97.8%	
10/11/96	11	Between WW#1 and CO#1	Frontier	1st Lift	114.7	15.2%	100.2%	
10/14/96	1	250' East of WW#1	Frontier	Top Lift	118.9	14.0%	103.8%	
10/14/96	2	300' East of WW#1	Frontier	Top Lift	114.8	14.3%	100.3%	
10/14/96	3	350' East of WW#1	Frontier	Top Lift	115.4	15.9%	100.8%	
10/14/96	4	1' West CO#3	Frontier	Top Lift	110.0	15.3%	96.1%	
10/14/96	5	50' East CO#3	Frontier	Top Lift	113.5	14.8%	99.1%	
10/14/96	6	100' East CO#3	Frontier	Top Lift	116.4	14.1%	101.7%	
10/14/96	7	150' East CO#3	Frontier	Top Lift	112.3	15.4%	98.1%	
10/14/96	8	200' East CO#3	Frontier	Top Lift	110.1	16.8%	96.2%	
10/15/96	1	300' East CO#3	Frontier	1st Lift	102.0	13.6%	89.1%	
10/15/96	2	250' East CO#3	Frontier	2nd Lift	115.9	14.3%	101.2%	
10/15/96	3	Retest of No. 1	Frontier	1st Lift	113.0	15.7%	98.7%	
10/16/96	1	1' Northeast of WW#2	Frontier	1st Lift	114.8	14.6%	100.3%	Torvane=1.10 ton/ft^2
10/16/96	2	50' Northeast of WW#2	Frontier	1st Lift	110.8	14.9%	96.8%	
10/16/96	3	100' Northeast of WW#2	Frontier	1st Lift	114.5	15.3%	100.0%	
10/16/96	4	150' Northeast of WW#2	Frontier	1st Lift	116.3	14.1%	101.6%	Torvane=1.40 ton/ft^2
10/16/96	5	2' East of CO #4	Frontier	1st Lift	110.8	14.9%	96.8%	
10/17/96	1	100' East of CO #4	Frontier	Final Lift	116.0	14.2%	101.3%	Torvane=1.41 ton/ft^2
10/28/96	1	20' West of CO#5	Frontier	Final Lift	119.4	14.0%	104.3%	Torvane=1.10 ton/ft^2
10/28/96	2	70' West of CO#5	Frontier	Final Lift	117.8	14.3%	102.9%	
10/28/96	3	30' East of CO#5	Frontier	Final Lift	117.0	15.8%	102.2%	
10/28/96	4	WW#3	Frontier	Final Lift	109.1	17.9%	95.3%	Torvane=.80 ton/ft^2
10/28/96	5	50' East of WW#3	Frontier	Final Lift	116.2	15.7%	101.5%	Torvane=1.10 ton/ft^2
10/28/96	6	100' East of WW#3	Frontier	Final Lift	112.2	17.3%	98.0%	

Table 4.6-3, page 2 of 2

Summary of Soil Compaction Results
APL Trench Cap

102nd Street Landfill Site

Date	Test No.	Test Location	Material	Depth or Elevation	Dry Density(pcf)	Water Content(%)	% Proctor Density	Remarks
10/28/96	7	150' East of WW#3	Frontier	Final Lift	115.1	15.9%	100.5%	Torvane=1.00 ton/ft^2
10/28/96	8	200' East of WW#3	Frontier	Final Lift	114.2	16.0%	99.7%	
10/28/96	9	10' East of CO#6	Frontier	Final Lift	114.5	16.6%	100.0%	Torvane=1.10 ton/ft^2
10/28/96	10	60' East of CO#6	Frontier	Final Lift	117.4	14.8%	102.5%	
10/28/96	11	10' West of WW#4	Frontier	Final Lift	116.0	14.1%	101.3%	Torvane=1.20 ton/ft^2
10/28/96	12	40' North of WW#4	Frontier	Final Lift	114.2	14.2%	99.7%	
10/31/96	1	5' South of CO#7	Frontier	Final Lift	116.4	12.3%	101.7%	
10/31/96	2	60' South of CO#7	Frontier	Final Lift	115.6	12.9%	101.0%	

Table 4.6-4

Summary of Soil Compaction Results
Force Main Trench

102nd Street Landfill Site

Date	Test No.	Test Location	Material	Depth or Elevation	Dry Density(pcf)	Water Content(%)	% Proctor Density	Remarks
7/14/97	1	Near WW#4	Frontier	-	117.1	14.1%	102.3%	Torvane=2.50 ton/ft^2
7/15/97	10	30' West of WW#4	Frontier	1st Lift	102.8	18.4%	89.8%	Torvane=1.50 ton/ft^2
7/15/97	11	50' West of WW#4	Frontier	2nd Lift	108.9	14.2%	95.1%	Torvane=2.20 ton/ft^2
7/15/97	12	30' West of CO-MH#7	Frontier	1st Lift	109.3	14.5%	95.5%	Torvane=1.50 ton/ft^2
7/15/97	13	35' West of CO-MH#7	Frontier	2nd Lift	109.7	14.9%	95.8%	Torvane=1.80 ton/ft^2
7/16/97	11	45' East of WW#3	Frontier	1st Lift	112.3	15.8%	98.1%	Torvane=1.40 ton/ft^2
7/16/97	13	30' East of WW#3	Frontier	2nd Lift	113.5	14.1%	99.1%	Torvane=1.60 ton/ft^2
7/17/97	5	between WW#3 and CO-MH#6	Frontier	1st Lift	120.1	15.1%	104.9%	Torvane=2.50 ton/ft^2
8/8/97	28	West Side	Summit Park	1st Lift	97.2	23.4%	90.0%	
8/8/97	29	West Side	Summit Park	1st Lift	99.3	16.0%	91.9%	
8/8/97	30	West Side	Summit Park	1st Lift	104.1	16.2%	96.4%	
8/8/97	31	West Side	Summit Park	1st Lift	103.0	18.8%	95.4%	
8/8/97	32	West Side	Summit Park	1st Lift	97.2	18.3%	90.0%	
8/14/97	9	Between WW#1 and CO-MH#3	Frontier	1st Lift	112.9	10.5%	98.6%	
8/26/97	1	Near Sampling Manhole	Summit Park	1st Lift	111.1	16.2%	102.9%	
8/26/97	2	Between CO-MH#1 and Sampling Manhole	Summit Park	1st Lift	101.0	19.9%	93.5%	
8/26/97	3	Near CO-MH#1	Summit Park	1st Lift	106.4	19.9%	98.5%	
8/26/97	4	25'South of CO-MH#1	Summit Park	1st Lift	105.6	17.8%	97.8%	
8/26/97	7	Near Sampling Manhole	Summit Park	2nd Lift	106.4	16.5%	98.5%	
8/26/97	13	Between CO-MH#1 and Sampling Manhole	Summit Park	2nd Lift	104.2	19.0%	96.5%	
8/26/97	16	Near Sampling Manhole	Summit Park	3rd Lift	107.2	17.3%	99.3%	
8/26/97	17	Near CO-MH#1	Summit Park	2nd Lift	104.0	18.9%	96.3%	
8/26/97	18	Near CO-MH#1	Summit Park	3rd Lift	98.4	22.5%	91.1%	
8/26/97	19	Near CO-MH#2	Summit Park	1st Lift	98.3	22.8%	91.0%	
8/27/97	1	Near CO-MH#2	Summit Park	2nd Lift	103.3	21.3%	95.6%	
8/27/96	6	Near CO-MH#2	Summit Park	3rd Lift	101.4	22.3%	93.9%	
8/27/96	8	Near CO-MH#3	Summit Park	2nd Lift	106.3	17.6%	98.4%	

Table 4.6-5
NAPL Well Pilot Hole Information
102nd Street Landfill Site

Pilot Hole #	Date Drilled	Ground Surface	Hole Depth	Bottom of Pilot Hole
NR-1	6/17/97	591.24	46'	545.24
NR-2	6/18/97	584.20	46'	538.20
NR-3	6/19/97	589.20	46'	543.20
NR-4	6/20/97	577.32	34'	543.32
NR-6A	6/16/97	571.50	30'	541.50
NR-6B	6/16/97	571.50	30'	541.50
NR-6C	6/17/97	571.50	28'	543.50
NR-7A	6/11/97	580.80	36'	544.80
NR-7B	6/12/97	579.80	36'	543.80
NR-7C	6/13/97	581.45	36'	545.45
NR-8	6/23/97	578.22	40'	538.22
NR-9A	6/4/97	582.85	38'	544.85
NR-9B	6/5/97	582.91	36'	546.81
NR-9C	6/6/97	581.97	36'	545.97
NR-10A	6/9/97	582.70	34'	548.70
NR-10B	6/10/97	582.63	28'	554.63
NR-10C	6/10/97	581.58	32'	549.58

Table 4.6-6
NR Well Development Information
102nd Street Landfill Site

Well #	Development Dates	Gallons Pumped
NR-1	11/19,20/1997	450
NR-2	11/12,13,1997	1800
NR-3	11/18,19/1997	600
NR-4	11/20,21/1997	450
NR-5	11/11,12/1997	750
NR-7	11/10,11/1997	2350
NR-8	11/13,18/1997	550
NR-10	9/8,9/97	

Table 4.7-1

PCM Well Development Information

102nd Street Landfill Site

Well #	Development Dates	Gallons Pumped
PCM-1	8/28/1997	20
PCM-2	8/25,26/1997	160
PCM-3	11/21,24/1997	30
PCM-4	8/29/1997	25
PCM-5	8/29/1997	25
PCM-6	8/28/1997	2.5
PCM-7	9/2/1997	6.0
PCM-8	8/28/1997	7.0
PCM-9	8/28/1997	1.0
PCM-10	8/28/1997	25

Table 4.7-2

PCBM Well Development Information

102nd Street Landfill Site

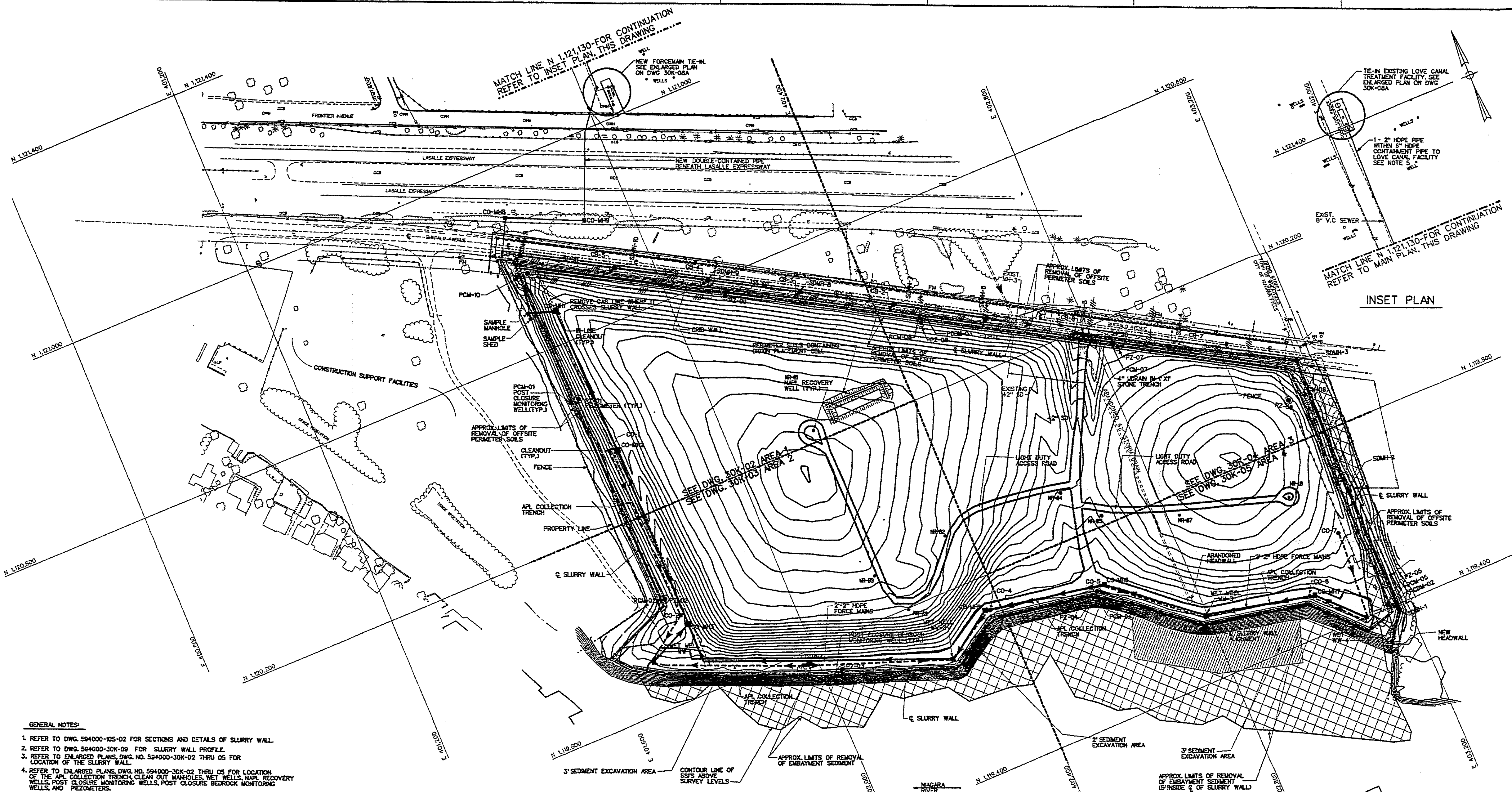
Well #	Development Dates	Gallons Pumped
PCBM-1	11/21,24/1997	80
PCBM-2	8/27/1997	72
PCBM-3	9/2/1997	15

Table 4.7-3

Piezometer Development Information

102nd Street Landfill Site

Well #	Development Dates	Gallons Pumped
PZ-1	8/26/1997	30
PZ-2	8/25/1997	64
PZ-3	11/21,24/1997	35
PZ-4	8/29/1997	50
PZ-5	8/27/1997	40
PZ-6	8/28/1997	25
PZ-7	9/2/1997	7.0
PZ-8	8/28/1997	14
PZ-9	8/28/1997	24
PZ-10	8/28/1997	30

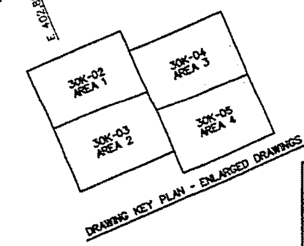


GENERAL NOTES:

1. REFER TO DWG. 594000-10S-02 FOR SECTIONS AND DETAILS OF SLURRY WALL.
2. REFER TO DWG. 594000-30K-09 FOR SLURRY WALL PROFILE.
3. REFER TO ENLARGED PLANS, DWG. NO. 594000-30K-02 THRU 05 FOR LOCATION OF THE SLURRY WALL.
4. REFER TO ENLARGED PLANS, DWG. NO. 594000-30K-02 THRU 05 FOR LOCATION OF THE APL COLLECTION TRENCH, CLEAN OUT MANHOLES, WET WELLS, NAPL RECOVERY WELLS, POST CLOSURE MONITORING WELLS, POST CLOSURE BEDROCK MONITORING WELLS, AND PIEZOMETERS.
5. REFER TO DWG. NO. 594000-30K-06 FOR NAPL RECOVERY WELL, POST CLOSURE MONITORING WELL, POST CLOSURE BEDROCK MONITORING WELLS, AND PIEZOMETER DETAILS.
6. REFER TO DWG. NO. 594000-10U-01 FOR MASTER SITE GRADING PLAN.
7. REFER TO DWG. 594000-30K-06C FOR WET WELL DETAILS
8. REFER TO SITE REMEDIATION PLAN DWGS. 594000-30K-02 THRU 05 FOR CHAIN LINK FENCE LOCATION.
9. REFER TO DWG. 594000-30K-06B FOR PLANS SHOWING REMOVAL/CONSOLIDATION OF PERIMETER SOILS FOR AREAS 1 THRU 4 RESPECTIVELY.
10. REFER TO DWGS. 594000-30K-03 AND 05 FOR DELINEATION OF THE LIMITS OF REMOVAL OF OFFSHORE SEDIMENT.
11. REFER TO DWG. 594000-10Z-02 FOR LEGEND & ABBREVIATIONS.

LIST OF EXISTING UTILITIES

UTILITY	OWNING UTILITY/AGENCY
1. CITY WATER	CITY OF NIAGARA FALLS, NEW YORK
2. GAS	NATIONAL FUEL GAS CORPORATION
3. TELEPHONE	NEW YORK TELEPHONE
4. POWER	NIAGARA MOHAWK POWER CORPORATION
5. CABLE TV	NIAGARA FRONTIER CABLE TELEVISION
6. STORM SEWER	CITY OF NIAGARA FALLS AND TOWN OF WHEATFIELD, NY



0 80 160 FT.

8-13-99

REV.	DATE	REVISION DESCRIPTION	DES. CHK.	APPROVED
A	01/29/93	ENGINEERING REPORT SUBMITTAL (PRELIMINARY/INTERMEDIATE)	JTG	DRK
B	6/3/94	DELETED CURTAIN WALL, ADDED OPTIONAL SLURRY WALL ALIGNMENT, ADDED NOTES 15 & 16 : ISSUED FOR REVIEW AND COMMENT-RELOCATION OF UNDERGROUND UTILITIES AND REMOVAL/CONSOLIDATION OF PERIMETER SOILS		
C	09/08/95	FINAL ENGINEERING REPORT (DRAFT SUBMITTAL)		
0	12/21/95	ISSUE FOR BID		
1	02/05/96	ISSUED FOR CONSTRUCTION		
2	6/7/96	REVISED SLURRY WALL LOCATION IN SE CORNER		
3	3/12/97	STORM SEWER AS-BUILTS		
4	8/13/97	ADDED STORM SEWER CB-8 W/TIE IN TO SDMH-5 AND 4" UDRAIN W/TIE IN TO CB-8		
5	1/28/98	AS-BUILT		

DWG.NO.	REFERENCE DRAWINGS
594000-10S-01	SITE DETAILS
594000-10S-02	CAPPING SYSTEM & BULKHEAD - SECTIONS AND DETAILS
594000-10U-01	MASTER SITE GRADING PLAN
594000-30K-02	SITE REMEDIATION PLAN - AREA 1
594000-30K-03	SITE REMEDIATION PLAN - AREA 2
594000-30K-04	SITE REMEDIATION PLAN - AREA 3
594000-30K-05	SITE REMEDIATION PLAN - AREA 4
594000-30K-06	APL, NAPL AND MONITORING WELLS AND MISC. DETAILS
594000-30K-06B	MASTER SITE REMEDIATION PLAN - EXCAVATION DEPTH OF PERIMETER SOILS
594000-30K-06C	APL WET WELL DETAILS
594000-30K-09	SLURRY WALL PROFILE

FLUOR DANIEL

NOTICE: THIS DRAWING HAS NOT BEEN PUBLISHED AND IS THE SOLE PROPERTY OF FLUOR DANIEL AND IS LENT TO THE BORROWER FOR HIS CONFIDENTIAL USE ONLY, AND IN CONSIDERATION OF THE LOAN OF THIS DRAWING, THE BORROWER PROMISES AND AGREES TO RETURN IT UPON REQUEST AND AGREES THAT IT SHALL NOT BE REPRODUCED, COPIED, LENT OR OTHERWISE DISPOSED OF DIRECTLY OR INDIRECTLY, NOR USED FOR ANY PURPOSE OTHER THAN FOR WHICH IT IS FURNISHED.

DESIGNED BY: U. KUMTHEKAR/A. BUMB
CHECKED BY: S. LAWRENCE
SUPERVISOR: C. MARS
LEAD ENGR./SPEC.: C. TAYLOR
PROJECT: C. MARS
CLIENT: OXYCHEM/OLIN

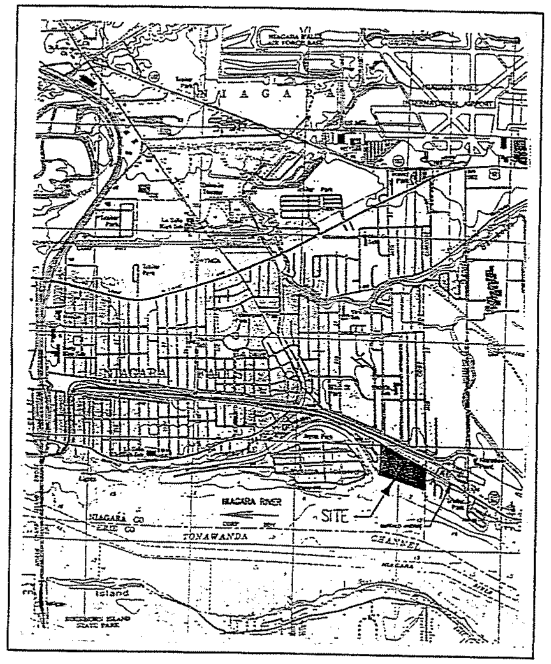
OXYCHEM/OLIN
REMEDIAL DESIGN
102nd STREET LANDFILL SITE
NIAGARA FALLS, NEW YORK

AS-BUILT
MASTER SITE REMEDIATION PLAN

SCALE: 1"=80' | DRAWING NUMBER: 594000-30K-01 | REV. 5

MANUAL CHANGES MADE - YES ☐ NO ☐ DWG. FILE UPDATED - YES ☐ NO ☐ MODEL UPDATED - YES ☐ NO ☐ CADD DRAWING No. 30K01.DGN

WRK. PKG. DIST. CODE SUB-CONTRACT PKG.



REF: U.S. GEOLOGICAL SURVEY, TONAWANDA WEST QUADRANGLE

LOCATION MAP
SCALE: 1"=2000'

REMEDIAL AS-BUILT DRAWINGS FOR ACTION REPORT FOR OU-1 AND OU-2 102nd STREET LANDFILL SITE NIAGARA FALLS, NEW YORK

PREPARED FOR

OCCIDENTAL CHEMICAL CORPORATION
360 RAINBOW BOULEVARD SOUTH
NIAGARA FALLS, NEW YORK 14302

OLIN CORPORATION
LOWER RIVER ROAD
CHARLESTON, TENNESSEE 37310

LIST OF DRAWINGS

DWG. NO.	TITLE
594000-10Z-01-03	COVER SHEET
594000-10Z-02-02	LEGEND AND ABBREVIATIONS
594000-30K-01-05	AS-BUILT MASTER SITE REMEDIATION PLAN (60 SCALE)
594000-10U-01-08	AS-BUILT MASTER SITE GRADING PLAN (60 SCALE)
594000-30K-02-03	AS-BUILT SITE REMEDIATION PLAN - AREA 1 (40 SCALE)
594000-30K-03-02	AS-BUILT SITE REMEDIATION PLAN - AREA 2 (40 SCALE)
594000-30K-04-04	AS-BUILT SITE REMEDIATION PLAN - AREA 3 (40 SCALE)
594000-30K-05-05	AS-BUILT SITE REMEDIATION PLAN - AREA 4 (40 SCALE)
594000-30K-06-03	AS-BUILT APL, NAPL AND MONITORING WELLS AND MISC. DETAILS
594000-30K-05B-02	AS-BUILT MASTER SITE REMEDIATION PLAN - EXCAVATION DEPTHS OF PERIMETER SOILS
594000-30K-06C-01	AS-BUILT APL WET WELL DETAILS
594000-30K-08-05	AS-BUILT APL COLLECTION SYSTEM - SECTIONS & DETAILS
594000-30K-09-02	AS-BUILT SLURRY WALL PROFILE
594000-10S-01-03	AS-BUILT SITE DETAILS
594000-10S-02-01	AS-BUILT CAPPING SYSTEM & BULKHEAD - SECTIONS AND DETAILS
594000-10U-07-06	FORCE MAIN ROUTING PLAN
594000-30K-08A-04	FORCE MAIN WET/SUMP MH TO L.C. FACILITY PLAN & DETAILS
594000-10ZPROF1-04	FORCE MAIN FROM METERING/SAMPLING MH TO L.C. FACILITY PROFILE
594000-SK-270-107-04	INSTRUMENT BLOCK DIAGRAM
594000-25J-02-07	P&ID APL SYSTEM

Need elec Dwgs

GENERAL NOTES:

1. ALL COORDINATES AND BEARINGS ARE BASED ON THE NEW YORK STATE PLANE COORDINATE SYSTEM, UNLESS NOTED OTHERWISE. ELEVATIONS ARE BASED UPON THE NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD).
2. STANDARD ABBREVIATIONS AND LEGEND ARE SHOWN ON DRAWING NO. 594000-10Z-02

REV.	DATE	REVISION DESCRIPTION	DES. / CHK.	APPROVED
A	0?/28/93	ENGINEERING REPORT SUBMITTAL (PRELIMINARY/INTERMEDIATE)	FCS	DRK
B	0?/15/95	FINAL ENGINEERING REPORT (DRAFT SUBMITTAL)		
0	12/21/95	ISSUED FOR BIDS		
1	2/5/96	ISSUED FOR CONSTRUCTION		
2	3/12/97	STORM SEWER AS-BUILTS		
3	1/19/98	FINAL AS-BUILT		

REV.	DATE	REVISION DESCRIPTION	DES. / CHK.	APPROVED	DWG.NO.	REFERENCE DRAWINGS	DWG.NO.	REFERENCE DRAWINGS

FLUOR DANIEL

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DESIGNED BY: G. KURYLEC
CHECKED BY: S. LAWRENCE
SUPERVISOR: C. MARS — RELEASE DATE:
LEAD ENGR./SPEC.: C. TAYLOR — INITIALS:
PROJECT: C. MARS — APP.DATE:
CLIENT: OXYCHEM / OLIN — APP.DATE:

OXYCHEM / OLIN
REMEDIAL DESIGN
102nd STREET LANDFILL SITE
NIAGARA FALLS, NEW YORK

COVER SHEET

SCALE: NONE — DRAWING NUMBER: 594000-10Z-01 — REV. 3

STATE OF NEW YORK — CHARLES TAYLOR, JR. — LICENSED PROFESSIONAL ENGINEER

8-13-99

MANUAL CHANGES MADE - YES ☐ NO ☐ DWG. FILE UPDATED - YES ☐ NO ☐ MODEL UPDATED - YES ☐ NO ☐ CADD DRAWING No. 10Z01.DWG 1/19/98

SUB-CONTRACT PKG. VRK. PKG. DIST. CODE

ABBREVIATIONS

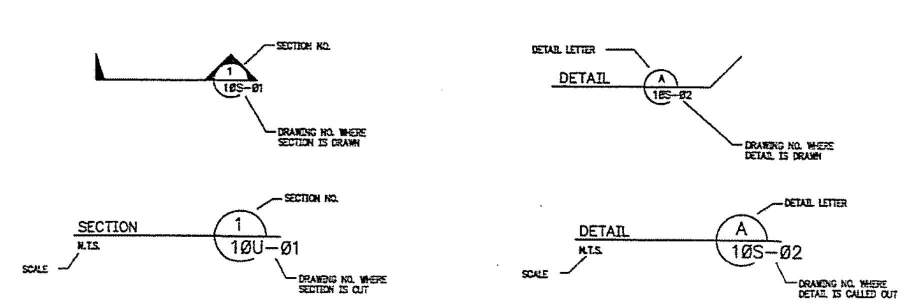
@	AT
&	AND
316SS	316 STAINLESS STEEL
AIT	ANALYZER INDICATING TRANSMITTER
ALT	ALTERNATE
APL	AQUEOUS PHASE LIQUID
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
BL	BASE LINE
BLDG	BUILDING
BM	BENCH MARK
BOT	BOTTOM
B/C	BOTTOM OF CURB
CL	CENTERLINE
CB	CATCH BASIN
CJ	CONTROL JOINT
CI	CURB INLET
CIP	CAST IRON PIPE
CLR	CLEAR
CO	CLEANOUT
CONC	CONCRETE
CONST JT	CONSTRUCTION JOINT
COORD	COORDINATE
DEPT	DEPARTMENT
DET	DETAIL
DI	DUCTILE IRON
DIA; ⌀	DIAMETER
DIP	DUCTILE IRON PIPE
DWG	DRAWING
E	EAST
EA	EACH
EL	ELEVATION
ELEC	ELECTRIC
ET	ELECTRIC TRACING
EW	EACH WAY
EXIST	EXISTING
EXP	EXPANSION
EXP JT	EXPANSION JOINT
EXT	EXTERIOR
FL	FLOW LINE
FI	FIBERGLASS REINFORCED PLASTIC
FB	FLAT BOTTOM
FIN FL EL	FINISHED FLOOR ELEVATION
FIN GR	FINISHED GRADE
FH	FIRE HYDRANT
FQI	FLOW TOTALIZER INDICATOR
FT	FEET
G	GAS
GCL	GEOSYNTHETIC CLAY LINER
GP	GUARD POST
GR	GUARDRAIL
HDPE	HIGH DENSITY POLYETHYLENE
HORIZ	HORIZONTAL
HP	HIGH POINT
HS	HAND SWITCH
HW	HEADWALL
ID	INSIDE DIAMETER
IFC	ISSUED FOR CONSTRUCTION
IH	INSULATION
INFO	INFORMATION
IP	IRON PIN
INV	INVERT
INV EL (IE)	INVERT ELEVATION
JT	JOINT
L	LENGTH (OF CURVE)
LAH	LEVEL ALARM HIGH
LDS	LEVEL DIFFERENTIAL SWITCH
LE	LEVEL ELEMENT
LF	LINEAR FEET
LIT	LEVEL INDICATOR TRANSMITTER
LP	LIGHT POLE
LR	LEVEL RECORDER
LSH	LEVEL SWITCH HIGH
LSHH	LEVEL SWITCH HIGH HIGH
LSL	LEVEL SWITCH LOW
LT	LEVEL TRANSMITTER
MAX	MAXIMUM
MECH	MECHANICAL
MH	MANHOLE
MIN	MINIMUM
MISC	MISCELLANEOUS
N	NORTH
NAPL	NON-AQUEOUS PHASE LIQUID
NGVD	NATIONAL GEODETIC VERTICAL DATUM OF 1929
(NIC)	NOT IN CONTRACT
# OR NO.	NUMBER
NTS	NOT TO SCALE
NYDOT	NEW YORK STATE DEPARTMENT OF TRANSPORTATION
OC	ON CENTER(S)
OD	OUTSIDE DIAMETER
OPP	OPPOSITE
PL	PROPERTY LINE
PG	PRESSURE GAUGE
PI	POINT OF INTERSECTION
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PVC	POLYVINYL CHLORIDE
PVMT	PAVEMENT
QTY	QUANTITY
R; RAD	RADIUS
RCP	REINFORCED CONCRETE PIPE
REV	REVISION
REINF	REINFORCED
REQD	REQUIRED
R/W	RIGHT OF WAY
R.O.W.	RIGHT OF WAY
S	SOUTH
SCH	SCHEDULE
SD	STORM DRAIN (NEW)
SDP	SUBDRAIN COLLECTION PIPE
SECT	SECTION
SHT	SHEET
SQ	SQUARE
SSI's	SITE SPECIFIC INDICATORS
ST	STORM DRAIN (EXISTING)
STA	STATION
STD	STANDARD
STRUCT	STRUCTURAL
SYM	SYMMETRICAL
TBD	TO BE DETERMINED
T/C	TOP OF CURB
T/CONC.	TOP OF CONCRETE
T/G	TOP OF GRATE
THK	THICK(NESS)
TYP	TYPICAL
UD	UNDERDRAIN
UESC	NEW YORK GUIDELINES FOR URBAN EROSION AND SEDIMENT CONTROL
U/G	UNDERGROUND
UNO	UNLESS NOTED OTHERWISE
VERT	VERTICAL
VLDPE	VERY LOW DENSITY POLYETHYLENE
W	WEST
W/	WITH
WP	WORKING POINT
WWF	WELDED WIRE FABRIC
XA	REMOTE PHONE DIALER
YD	YARD

P & ID LEGEND

- FLOW LINE
- ELECTRIC LINE
- FIELD MOUNTED INSTRUMENT
- GATE, BALL, OR GLOBE HAND VALVE
- CHECK VALVE
- INTERLOCK
- CENTRIFUGAL PUMP
- ELECTRIC MOTOR
- CONCENTRIC REDUCER / INCREASER
- SUBMERSIBLE PUMP
- FLANGE
- FLOW TOTALIZER INDICATOR
- REMOTE PHONE DIALER
- CONTROL PANEL MOUNTED INSTRUMENT
- HEAT TRACED AND INSULATE
- REMOVABLE ELECTRIC PANEL COIL HEATERS WITH REMOVABLE INSULATION
- CARBON FILTER

LEGEND

	EXISTING	NEW
APL COLLECTION TRENCH		
BUILDING		
CATCH BASIN	CB	CB
CITY WATER LINE	W	W
CLEANOUT (UNDERDRAIN)	CO	CO
CLEANOUT (APL COLLECTION TRENCH)		CO-1
COFFERDAM CL		
DIOXIN CONTAINING SOIL	ITSON 38K-B2B	
CONTOUR	348	348
CURTAIN WALL		
DOUBLE WALL PIPE		
DRAINAGE FLOW		
EASEMENT (PERMANENT)		
EASEMENT (CONSTRUCTION)		
CHAIN LINK FENCE		
FIRE HYDRANT	FH	FH
FORMER EMBAYMENT AREA		
GAS LINE	G	G
GUARD POST	GP	GP
HEADWALL	HW	HW
100 YEAR FLOOD LIMIT		FL
INLINE MANHOLE CLEANOUT (APL SYSTEM)		CO-MH1
IRON PIN	IP	
LEVEL SPREADER		
LIGHT POLE	LP	LP
MANHOLE		
MONUMENT	MON.	
NAPL RECOVERY WELL		NR-1
OVERHEAD ELECTRIC POWER & POLE	OE P OE	OE P OE
PIEZOMETER WELL		PZ-1
POST CLOSURE MONITORING WELL		PCM-01
PROPERTY LINE	PL	PL
REMOVED/ABANDON UNDERGROUND LINES		
RIGHT OF WAY		
RIVER LEVEL GAUGE		
SEDIMENT EXCAVATION AREA (2' DEEP)		
SEDIMENT EXCAVATION AREA (3' DEEP)		
SIGN		
SILT CURTAIN		
SILT FENCE		S/F
SLOPE LINE		
SLURRY WALL	SEE 39K-01A	
STABILIZED CONSTRUCTION ENTRANCE (SYMBOL)		
SPOT ELEVATION	x 576.2	+ 596.00
STONE OUTLET SEDIMENT TRAP (SYMBOL)		
STORM DRAIN LINE	ST	SD
SUBDRAIN COLLECTION PIPE		SDP
SWALE		
TEMPORARY DIVERSION BERM & SWALE		
TREE – CONIFEROUS		
TREE – DECIDUOUS		
TREE LINE		
TREE PROTECTION (TEMPORARY)		
UNDERGROUND INSTRUMENTATION LINE		UC
UNDERGROUND ELECTRIC POWER		UE
UNDERGROUND TELEPHONE LINE	UT	UT
VALVE	V	V
WATERSHED DRAINAGE DIVIDE		
WET WELL		



DETAILS AND SECTIONS CALLOUT SYMBOLOGY

REV.	DATE	REVISION DESCRIPTION	DES. CHK.	APPROVED
A	01/29/93	ENGINEERING REPORT SUBMITTAL (PRELIMINARY/INTERMEDIATE)	FGS	DRK
B	03/15/95	ISSUED FOR REFERENCE		JTG
C	08/08/95	FINAL ENGINEERING REPORT (DRAFT SUBMITTAL)		RM
0	12/21/95	ISSUED FOR BID		
1	2/5/96	ISSUED FOR CONSTRUCTION		
2	3/28/95	AS-BUILT		

FLUOR DANIEL

DESIGNED BY: K. BARBER
CHECKED BY: S. LAWRENCE
SUPERVISOR: C. MARS
LEAD ENGR./SPEC.: C. TAYLOR
PROJECT: C. MARS — APP. DATE: 9/13/95
CLIENT: OXYCHEM / OLIN

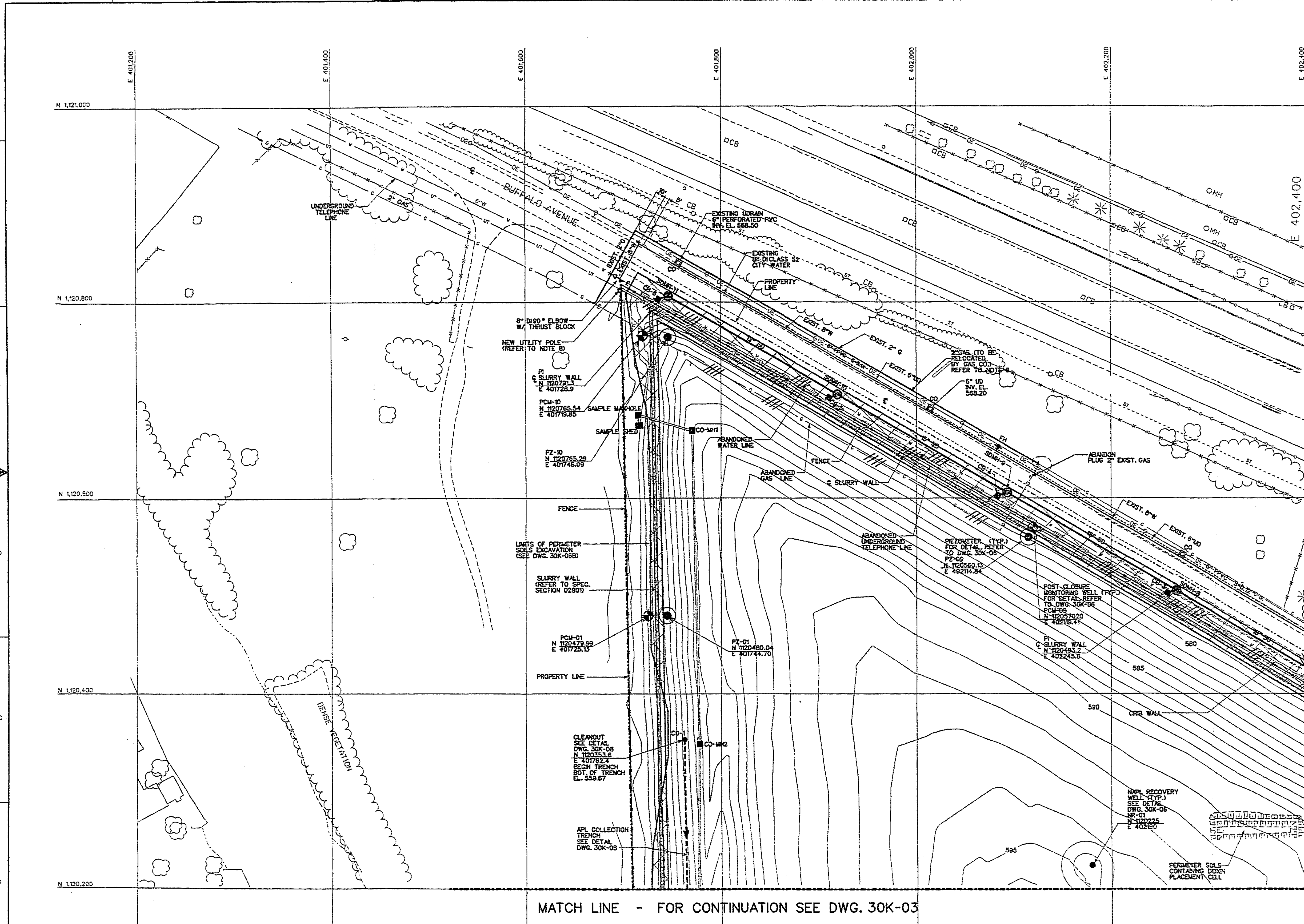
OXYCHEM / OLIN
REMEDIAL DESIGN
102nd STREET LANDFILL SITE
NIAGARA FALLS, NEW YORK

LEGEND AND ABBREVIATIONS

SCALE: NONE — DRAWING NUMBER: 594000-10Z-02 — REV. 2

MANUAL CHANGES MADE – YES ☐ NO ☐ DWG. FILE UPDATED – YES ☐ NO ☐ MODEL UPDATED – YES ☐ NO ☐ CADD DRAWING No. 10Z02.DWG 1/19/98

8-13-99



NOTES:

GENERAL NOTES:

1. REFER TO DWG. 594000-10S-02 FOR DETAILS AND CROSS SECTIONS OF SLURRY WALL.
2. REFER TO DWG. NO. 594000-30K-09 FOR PROFILE OF SLURRY WALL.
3. REFER TO DWG. NO. 594000-30K-06 FOR NAPL RECOVERY WELL, POST CLOSURE MONITORING WELL AND PIEZOMETER DETAILS.
4. REFER TO DRAWING 594000-30K-08 FOR CLEANOUT MANHOLE DETAIL, INLINE CLEANOUT DETAIL, AND APL COLLECTION TRENCH.
5. REFER TO DWG. NO. 594000-10U-01 FOR MASTER SITE GRADING PLAN.
6. REFER TO DWG. 594000-30K-6B FOR LIMITS OF REMOVAL OF OFFSITE PERIMETER SOILS.
7. REFER TO DWG. 594000-10Z-02 FOR LEGEND AND ABBREVIATIONS.
8. EXISTING GAS LINE, TELEPHONE LINE, OVERHEAD ELECTRICAL LINE AND CABLE TV LINE TO BE RELOCATED AND INSTALLED BY THE OWNING UTILITY/AGENCY. LAYOUT SHOWN IS TENTATIVE. ACTUAL LOCATION TO BE DETERMINED BY OWNING UTILITY.
9. PRIOR TO WORK ACTIVITIES, THE PUBLIC UTILITY COMPANIES WILL BE NOTIFIED BY THE OWNER OF IMPENDING OPERATIONS. UPON AWARD OF CONTRACT, THE CONTRACTOR SHALL NOTIFY EACH UTILITY OF THE WORK SCHEDULE AND COORDINATE ACTIVITIES WITH THE UTILITY COMPANIES. ALL UNDERGROUND UTILITIES WITHIN THE WORK AREA SHALL BE SUITABLY MARKED BY THE UTILITIES COMPANIES. EXCAVATION AROUND AND WITHIN 2 FEET OF BURIED UTILITIES, ABOVEGROUND APPURTENANCES AND UTILITY POLES SHALL BE PERFORMED BY USE OF HAND TOOLS. PROVIDE SUITABLE PROTECTION FOR ALL UTILITIES. EXCAVATIONS DEEPER THAN 18 INCHES ADJACENT TO UTILITY POLES SHALL BE SLOPED AT 1:1 FROM THE EDGE OF THE POLE. NO MORE THAN 18 INCHES OF THE BURIED SECTION OF THE POLE SHALL BE UNEARTHED WITHOUT TEMPORARY SUPPORT AS APPROVED BY THE UTILITY.

30K-02 AREA 1	30K-04 AREA 3
30K-03 AREA 2	30K-05 AREA 4

DRAWING KEY PLAN

0 40 80 FT.

STATE OF NEW YORK — CHARLES TAYLOR, JR. — LICENSED PROFESSIONAL ENGINEER
8-13-99

REV.	DATE	REVISION DESCRIPTION	DES. CHK.	APPROVED
A	1/29/93	ENGINEERING REPORT SUBMITTAL (PRELIMINARY/INTERMEDIATE)		JTG
B	9/8/95	FINAL ENGINEERING REPORT (DRAFT SUBMITTAL)		
0	12/21/95	ISSUED FOR BID		
1	2/5/96	ISSUED FOR CONSTRUCTION		
2	3/12/97	STORM SEWER AS-BUILTS		
3	1/27/98	AS-BUILT		

DWG.NO.	REFERENCE DRAWINGS
594000-10S-02	CAPPING SYSTEM & BULKHEAD - SECTIONS AND DETAILS
594000-10U-01	MASTER SITE GRADING PLAN
594000-30K-01	MASTER SITE REMEDIATION PLAN
594000-30K-06	APL, NAPL AND MONITORING WELLS AND MISC. DETAILS
594000-30K-06B	MASTER SITE REMEDIATION PLAN-EXCAVATION DEPTH OF PERIMETER SOILS
594000-30K-08	APL COLLECTION SYSTEM - SECTIONS AND DETAILS
594000-30K-09	SLURRY WALL PROFILE

FLUOR DANIEL

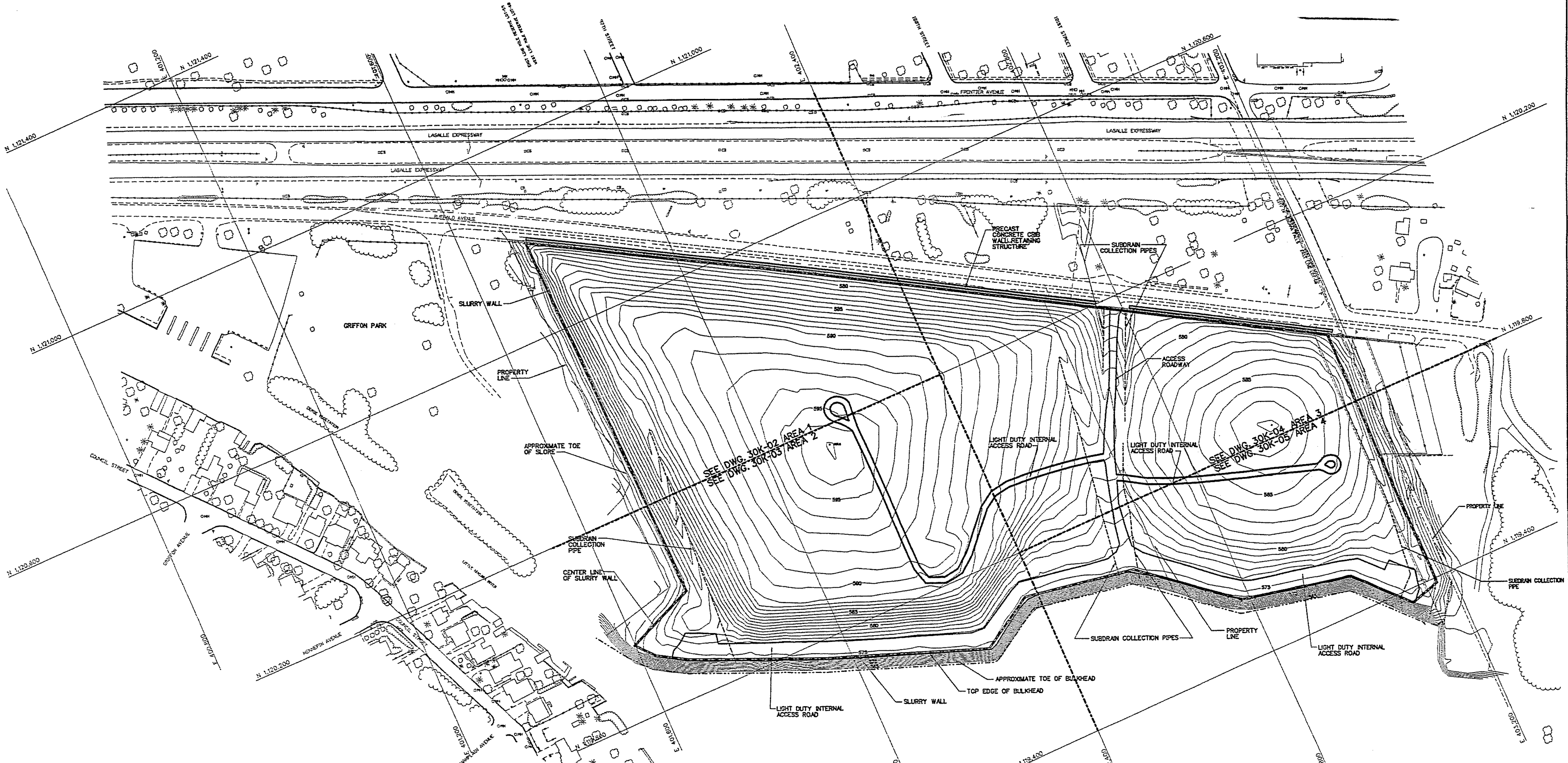
DESIGNED BY: A. BUMB/U. KUMTHEKAR
CHECKED BY: S. LAWRENCE
SUPERVISOR: C. MARS
LEAD ENGR./SPEC.: C.TAYLOR
PROJECT: C. MARS
CLIENT: OXYCHEM/OLIN

OXYCHEM/OLIN
REMEDIALDESIGN
102nd STREET LANDFILL SITE
NIAGARA FALLS, NEW YORK

AS-BUILT SITE REMEDIATION PLAN
AREA 1

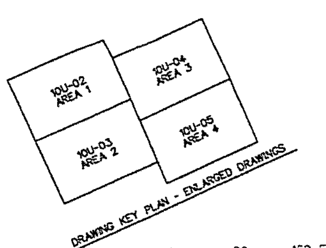
SCALE: 1"=40' | DRAWING NUMBER: 594000-30K-02 | REV. 3

MANUAL CHANGES MADE - YES ☐ NO ☐ DWG. FILE UPDATED - YES ☐ NO ☐ MODEL UPDATED - YES ☐ NO ☐ CADD DRAWING No. 30K02.DGN 9/07/95



GENERAL NOTES:

1. REFER TO COVER SHEET (DWG. 59400-10Z-01) FOR GENERAL NOTES. REFER TO LEGEND AND ABBREVIATIONS (DWG. 594000-10Z-02).
2. THE SUBDRAIN COLLECTION PIPE IS LOCATED DIRECTLY BELOW DIVERSION SWALES AND EXTENDED TO BULKHEAD AS SHOWN ON DRAWING 594000-30K-02 THRU100U-05 AND DETAILS ON DRAWING 594000-10S-02.
3. THE LIMIT OF THE TEMPORARY CONSTRUCTION EASEMENT ALONG BUFFALO AVENUE SHALL BE THE SOUTHERN EDGE OF PAVEMENT OF BUFFALO AVENUE.
4. THIS DRAWING REPRESENTS FINAL GRADING AND FENCE LINE AFTER THE REMEDIATION OF 102nd STREET LANDFILL SITE.
5. REFERENCE BENCH MARK USED: N22 (U.S.L.S). ON THE NORTH SIDE OF BUFFALO AVENUE IN THE WEST WALL OF HOUSE NO. 9818. 9 FEET SOUTH OF THE NORTHWEST CORNER OF THE HOUSE, IN THE CONRETE WATER TABLE. ABOUT 2-1/2 FEET HIGHER THAN GROUND. THE HORIZONTAL LINE OF A CROSS ON THE UNITED STATES LAKE SURVEY STANDARD DISK SET VERTICALLY. (176.038 METERS OR 5.77.551 FEET NGVD)



0 80 160 FT.

8-13-99

REV.	DATE	REVISION DESCRIPTION	DES. / CHK.	APPROVED
A	1/23/93	ENGINEERING REPORT SUBMITTAL (PRELIMINARY/INTERMEDIATE)	JTG	
B	3/9/95	FINAL ENGINEERING REPORT (DRAFT SUBMITTAL)		
0	12/2V95	ISSUED FOR BIDS		
1	2/5/95	ISSUED FOR CONSTRUCTION		
2	6/7/96	REVISED SLURRY WALL LOCATION & CONTOURS IN S.E. CORNER		
3	8/27/96	REVISED CONTOURS IN WESTERN PORTION OF LANDFILL		
4	4/4/97	REVISED LANDFILL CONTOURS & ACCESS RD. LOCATION, REMOVED LOADOUT FACILITY		
5	4/23/97	REVISED OLIN LANDFILL CONTOURS	MCG	
6	4/24/97	REVISED OLIN LANDFILL CONTOURS- HIGH POINT @ EL. 587		
7	5/7/97	REVISED LANDFILL CONTOURS		
8	1/25/99	AS-BUILT		

DWG.NO.	REFERENCE DRAWINGS
594000-10S-02	CAPPING SYSTEM & BULKHEAD - SECTIONS AND DETAILS
594000-30K-02	SITE REMEDIATION PLAN - AREA 1
594000-30K-03	SITE REMEDIATION PLAN - AREA 2
594000-30K-04	SITE REMEDIATION PLAN - AREA 3
594000-30K-05	SITE REMEDIATION PLAN - AREA 4

FLUOR DANIEL

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DESIGNED BY: T. SZYMONIAK
CHECKED BY: S. LAWRENCE
SUPERVISOR: C.MARS
LEAD ENGR./SPEC.: C. TAYLOR
PROJECT: C. MARS
CLIENT: OXYCHEM/OLIN

OXYCHEM/OLIN
REMEDIALDESIGN
102nd STREET LANDFILL SITE
NIAGARA FALLS, NEW YORK

AS-BUILT MASTER SITE GRADING PLAN

SCALE: 1"=80' | DRAWING NUMBER: 594000-10U-01 | REV. 8

MANUAL CHANGES MADE - YES ☐ NO ☐ DWG. FILE UPDATED - YES ☐ NO ☐ MODEL UPDATED - YES ☐ NO ☐ CADD DRAWING No. 10U01.DGN

MATCH LINE - FOR CONTINUATION SEE DWG. 30K-02

MATCH LINE - FOR CONTINUATION SEE DWG. 30K-04

MATCH LINE - FOR CONTINUATION SEE DWG. 30K-05

POINT No.	TABLE - LOCATION OF SEDIMENT EXCAVATION	
○	N. COORDINATE	E. COORDINATE
1	N 119915.00	E 401833.50
2	N 119840.25	E 401843.45
3	N 119808.73	E 401683.46
4	N 119801.33	E 401729.48
5	N 119819.02	E 401777.93
6	N 119753.29	E 401802.99
7	N 119698.30	E 401831.01
8	N 119668.96	E 401869.45
9	N 119679.48	E 401919.40
10	N 119637.77	E 401952.04
11	N 119624.08	E 401995.04
12	N 119605.72	E 402034.13
13	N 119654.93	E 402100.18
14	N 119628.09	E 402133.13
15	N 119622.43	E 402172.41
16	N 119512.79	E 402230.38
17	N 119568.61	E 402259.84
18	N 119561.20	E 402351.39
19	N 119547.86	E 402395.75
48	N 119717.76	E 402372.43
49	N 119651.33	E 402262.59
50	N 119768.77	E 401950.33
51	N 119758.00	E 401947.00
52	N 119837.00	E 401785.50
53	N 119839.86	E 401785.44
54	N 119881.25	E 401690.99

GENERAL NOTES:

1. REFER TO DWG. NO. 594000-10S-01 & 02 FOR DETAILS AND CROSS SECTIONS OF SLURRY WALL AND BULKHEAD.
2. REFER TO DWG. NO. 594000-30K-09 FOR SLURRY WALL PROFILE.
3. REFER TO DWG. NO. 594000-30K-06 FOR WET WELL, NAPL RECOVERY WELL, POST CLOSURE MONITORING WELL, POST CLOSURE BEDROCK MONITORING WELL AND PIEZOMETER DETAILS.
4. REFER TO DRAWING 594000-30K-08 FOR CLEANOUT MANHOLE DETAIL, INLINE CLEANOUT DETAIL, AND APL COLLECTION TRENCH .
5. REFER TO DWG. NO. 594000-10U-01 FOR MASTER SITE GRADING PLAN.
6. REFER TO ENLARGED PLAN 594000-10U-03 FOR SITE GRADING PLAN AND RELOCATED CHAINLINK FENCE ALIGNMENT, AREA 2.
7. REFER TO DWG. 594000-10Z-02 FOR LEGEND AND ABBREVIATIONS.
8. EMBAYMENT SEDIMENTS LYING WITHIN THE AREAS OF ELEVATED CHEMICAL CONCENTRATION ARE TO BE EXCAVATED TO A DEPTH OF 2 FEET AND BACK-FILLED ACCORDING TO SPECIFICATION NO. 02220.
9. EMBAYMENT SEDIMENTS LYING WITHIN THE CONTOUR LINE OF 559'± ABOVE SURVEY LEVELS AND LYING OUTSIDE OF AREAS OF ELEVATED CONCENTRATION ARE TO BE EXCAVATED TO A DEPTH OF 2 FEET AND BACKFILLED ACCORDING TO SPECIFICATION NO. 02220.
10. AREAS OF ELEVATED CHEMICAL CONCENTRATION REFERENCE OXY/OLIN ALLOCATION MAP 102nd STREET REMEDIAL INVESTIGATION, CONESTOGA-ROVERS & ASSOCIATED - OCTOBER 1990.

DRAWING KEY PLAN

30K-02 AREA 1 | 30K-04 AREA 3 | 30K-03 AREA 2 | 30K-05 AREA 4

0 40 80 FT.

8-13-99

REV.	DATE	REVISION DESCRIPTION	DES CHK	APPROVED
A	1/23/93	ENGINEERING REPORT SUBMITTAL (PRELIMINARY /INTERMEDIATE)	JTG	VRK
B	9/8/95	FINAL ENGINEERING REPORT (DRAFT SUBMITTAL)		
0	12/21/95	ISSUE FOR BID		
1	2/5/96	ISSUED FOR CONSTRUCTION		
2	2/17/98	AS-BUILT		

DWG NO.	REFERENCE DRAWINGS	DWG NO.	REFERENCE DRAWINGS
594000-10S-01	SITE DETAILS	594000-30K-09	SLURRY WALL PROFILE
594000-10S-02	CAPPING SYSTEM & BULKHEAD - SECTIONS AND DETAILS		
594000-10U-01	MASTER SITE GRADING PLAN		
594000-10Z-02	LEGEND AND ABBREVIATIONS		
594000-30K-05	APL, NAPL AND MONITORING WELLS AND MISC. DETAILS		
594000-30K-06C	APL WET WELL DETAILS		

FLUOR DANIEL

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DESIGNED BY	A. BUMB
CHECKED BY	S. LAWRENCE
SUPERVISOR	C. MARS
LEAD DISCIPLINE	C. TAYLOR
PROJECT	C. MARS
CLIENT	OXYCHEM/OLIN

RELEASE DATE | DETAILS | APP. DATE | APP. DATE

OXYCHEM/OLIN
REMEDIAL DESIGN
102nd STREET LANDFILL SITE
NIAGARA FALLS, NEW YORK

AS-BUILT
SITE REMEDIATION PLAN
AREA 2

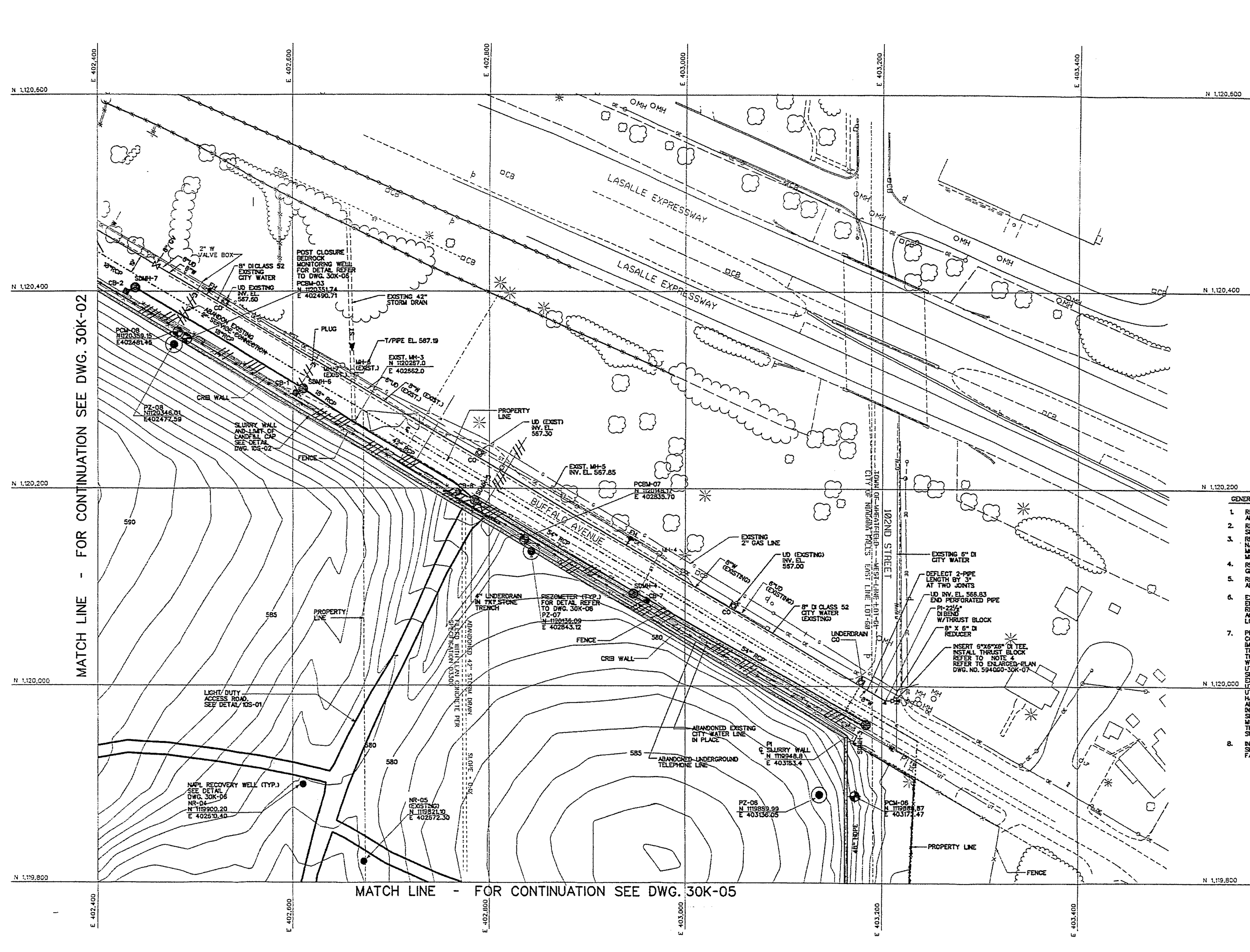
SCALE 1" = 40' | DRAWING NUMBER 594000-30K-03 | REV. 2

MANUAL CHANGES MADE - YES ☐ NO ☐ | DWG. FILE UPDATED - YES ☐ NO ☐ | MODEL UPDATED - YES ☐ NO ☐ | CADD DRAWING No. 30K03.DGN

SSD CONTRACT PROJ. | WRK. PKG. | DIST. CODE

REDUCED PRINT SCALES

Tuesday, July 13, 1999 09:40:16 AM EDT (/@)



GENERAL NOTES:

1. REFER TO DWG. NO. 594000-10S-01 & 02 FOR DETAILS AND AND CROSS SECTIONS OF SLURRY WALL.
2. REFER TO DWG. NO. 594000-30K-09 FOR SLURRY WALL PROFILE.
3. REFER TO DWG. NO. 594000-30K-06 FOR NAPL RECOVERY WELL, POST CLOSURE MONITORING WELL, POST CLOSURE BEDROCK MONITORING WELL, AND PIEZOMETER DETAILS .
4. REFER TO DWG. NO. 594000-10U-01 FOR MASTER SITE GRADING PLAN.
5. REFER TO DWG. 594000-10Z-02 FOR LEGEND AND ABBREVIATIONS.
6. EXISTING GAS LINE, TELEPHONE LINE, OVERHEAD ELECTRICAL LINE AND CABLE TV LINE TO BE RELOCATED AND INSTALLED BY THE OWNING UTILITY/ AGENCY. LAYOUT SHOWN IS TENTATIVE. ACTUAL LOCATION TO BE DETERMINED BY OWNING UTILITY.
7. PRIOR TO WORK ACTIVITIES, THE PUBLIC UTILITY COMPANIES WILL BE NOTIFIED BY THE OWNER OF IMPENDING OPERATIONS. UPON AWARD OF CONTRACT, THE CONTRACTOR SHALL NOTIFY EACH UTILITY OF THE WORK SCHEDULE AND COORDINATE ACTIVITIES WITH THE UTILITY COMPANIES. ALL UNDERGROUND UTILITIES WITHIN THE WORK AREA SHALL BE SUITABLY MARKED BY THE UTILITIES COMPANIES. EXCAVATION AROUND AND WITHIN 2 FEET OF BURIED UTILITIES, ABOVEGROUND APPURTENANCES AND UTILITY POLES SHALL BE PERFORMED BY USE OF HAND TOOLS. PROVIDE SUITABLE PROTECTION FOR ALL UTILITIES. EXCAVATIONS DEEPER THAN 18 INCHES ADJACENT TO UTILITY POLES SHALL BE SLOPED AT 1:1 FROM THE EDGE OF THE POLE. NO MORE THAN 18 INCHES OF THE BURIED SECTION OF THE POLE SHALL BE UNEARTHED WITHOUT TEMPORARY SUPPORT AS APPROVED BY THE UTILITY.
8. INVERT ELEVATIONS OF EXISTING APPURTENANCES, SHOWN WITH AN ASTERISK (*) ARE CITY OF NIAGARA FALLS DATUM.

30K-02 AREA 1	30K-04 AREA 3
30K-03 AREA 2	30K-05 AREA 4

DRAWING KEY PLAN

0 40 80 FT.

8-13-99

REV.	DATE	REVISION DESCRIPTION	DES. / CHK.	APPROVED	REV.	DATE	REVISION DESCRIPTION	DES. / CHK.	APPROVED
A	1/29/93	ENGINEERING REPORT SUBMITTAL (PRELIMINARY /INTERMEDIATE)	JTG	CRK	4	1/27/98	AS-BUILT		
B	9/8/95	FINAL ENGINEERING REPORT (DRAFT SUBMITTAL)							
0	12/21/95	ISSUED FOR BIDS							
1	2/5/96	ISSUED FOR CONSTRUCTION							
2	3/12/97	STORM SEWER AS-BUILTS							
3	8/13/97	ADDED STORM SEWER CB-8 W/TIE IN TO SDMH-3 AND 4" UDRAN W/TIE IN TO CB-8							

DWG.NO.	REFERENCE DRAWINGS	DWG.NO.	REFERENCE DRAWINGS
594000-10S-01	SITE DETAILS		
594000-10S-02	CAPPING SYSTEM & BULKHEAD - SECTIONS AND DETAILS		
594000-10U-01	MASTER SITE GRADING PLAN		
594000-10Z-02	LEGEND AND ABBREVIATIONS		
594000-30K-06	APL, NAPL AND MONITORING WELLS AND MISC. DETAILS		
594000-30K-09	SLURRY WALL PROFILE		

FLUOR DANIEL

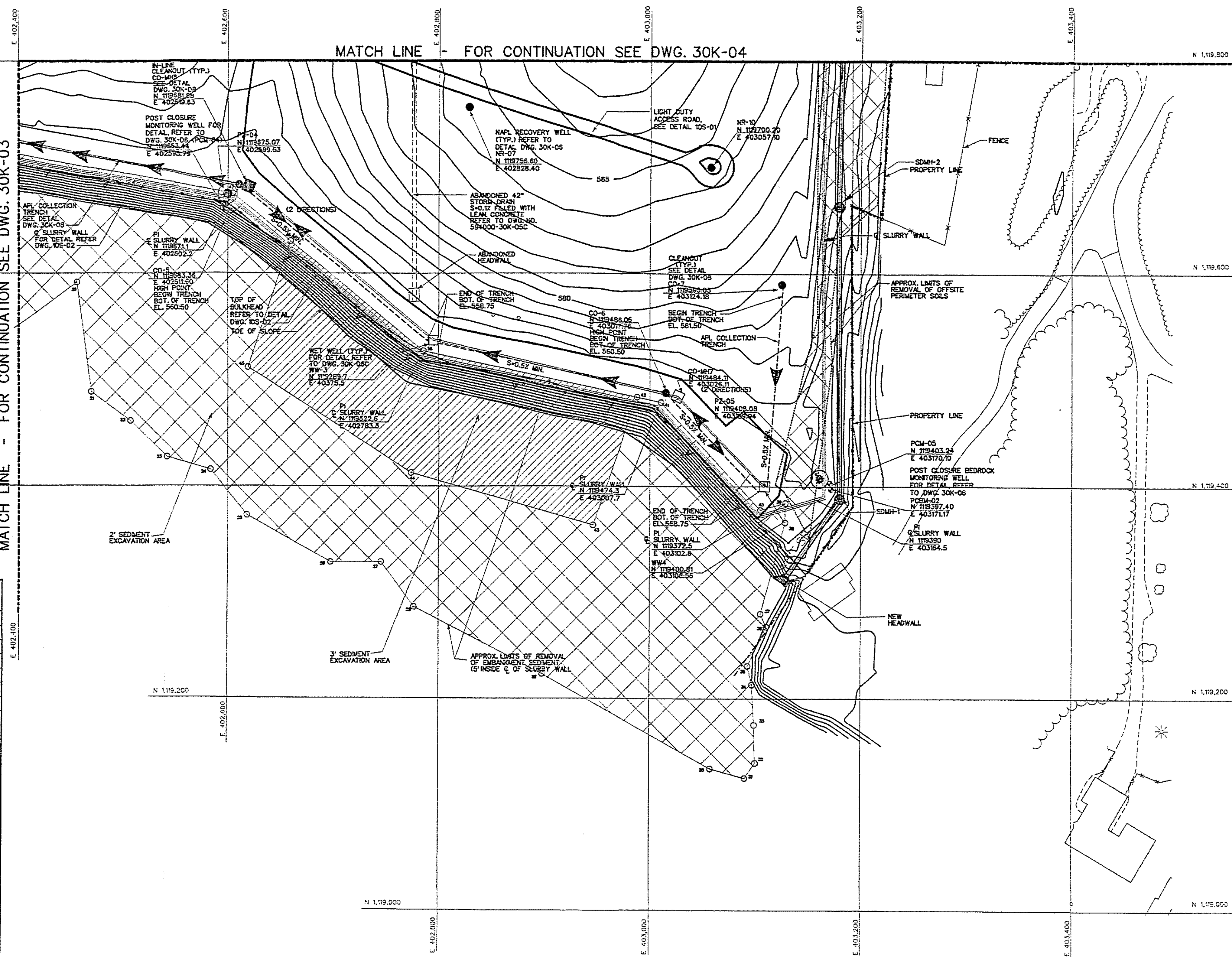
DESIGNED BY: A. BLUME/U. KULITHEKAR
CHECKED BY: S. LAWRENCE
SUPERVISOR: C. MARS — RELEASE DATE:
LEAD ENGR./SPEC.: C.TAYLOR — DETAILS
PROJECT: C.MARS — APP DATE
CLIENT: OXYCHEM/OLIN — APP DATE

OXYCHEM/OLIN
REMEDIAL DESIGN
102nd STREET LANDFILL SITE
NIAGARA FALLS, NEW YORK

AS-BUILT
SITE REMEDIATION PLAN
AREA 3

SCALE: 1"=40' — DRAWING NUMBER: 594000-30K-04 — REV. 4

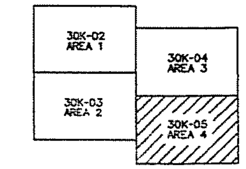
MANUAL CHANGES MADE - YES ☐ NO ☐ DWG. FILE UPDATED - YES ☐ NO ☐ MODEL UPDATED - YES ☐ NO ☐ CADD DRAWING No. 30K04.DGN



POINT No. ○	TABLE - LOCATION OF SEDIMENT EXCAVATION	
	N. COORDINATE	E. COORDINATE
20	N 1119591.81	E 402456.88
21	N 1119488.28	E 402470.23
22	N 1119460.91	E 402507.12
23	N 1119427.16	E 402541.81
24	N 1119415.44	E 402583.35
25	N 1119372.59	E 402618.30
26	N 1119328.60	E 402697.14
27	N 1119328.60	E 402745.29
28	N 1119285.23	E 402778.79
29	N 1119223.10	E 402898.39
30	N 1119134.03	E 403057.32
31	N 1119125.00	E 403090.00
32	N 1119139.33	E 403099.67
33	N 1119175.13	E 403098.81
34	N 1119213.18	E 403096.73
35	N 1119230.65	E 403092.55
36	N 1119267.76	E 403108.80
37	N 1119280.00	E 403104.50
38	N 1119366.50	E 403127.00
39	N 1119384.71	E 403127.30
40	N 1119378.14	E 403104.17
41	N 1119478.86	E 403010.29
42	N 1119483.69	E 402987.83
43	N 1119363.50	E 402948.50
44	N 1119413.50	E 402774.50
45	N 1119512.50	E 402819.00
46	N 1119630.75	E 402859.29
47	N 1119675.79	E 402604.37
58	N 1119527.23	E 402785.53

GENERAL NOTES:

1. REFER TO DWG. NO. 594000-10S-01 & 02 FOR DETAILS AND CROSS SECTIONS OF SLURRY WALL.
2. REFER TO DWG. NO. 594000-30K-09 FOR SLURRY WALL PROFILE.
3. REFER TO DWG. NO. 594000-30K-06 FOR NAPL RECOVERY WELL, POST CLOSURE MONITORING WELL, POST CLOSURE BEDROCK MONITORING WELL, AND PEZOMETER DETAILS.
4. REFER TO DRAWING 594000-30K-08 FOR CLEANOUT MANHOLE DETAIL, INLINE CLEANOUT DETAIL, AND APL COLLECTION TRENCH .
5. REFER TO DWG. NO. 594000-10U-01 FOR MASTER SITE GRADING PLAN.
6. REFER TO DWG. 594000-30K-05B FOR LIMITS OF REMOVAL OF PERIMETER SOILS.
7. REFER TO DWG. NO. 594000-10Z-02 FOR SITE LEGEND AND ABBREVIATIONS.
8. EMBANKMENT SEDIMENTS LYING WITHIN THE AREAS OF ELEVATED CHEMICAL CONCENTRATION ARE TO BE EXCAVATED TO A DEPTH OF 3 FEET AND BACK-FILLED ACCORDING TO SPECIFICATION NO. 02200.
9. EMBANKMENT SEDIMENTS LYING WITHIN THE CONTOUR LINE OF SSI's ABOVE SURVEY LEVELS AND LYING OUTSIDE OF AREAS OF ELEVATED CONCENTRATION ARE TO BE EXCAVATED TO A DEPTH OF 2 FEET AND BACKFILLED ACCORDING TO SPECIFICATION NO. 02200.
10. AREAS OF ELEVATED CHEMICAL CONCENTRATION REFERENCE OXY/OLIN ALLOCATION MAP 102nd STREET REMEDIAL INVESTIGATION, CONESTOGA-ROVERS & ASSOCIATED - OCTOBER 1990.



DRAWING KEY PLAN

0 40 80 FT.

8-13-99

REV.	DATE	REVISION DESCRIPTION	DES. CHK.	APPROVED
A	1/29/93	ENGINEERING REPORT SUBMITTAL (PRELIMINARY/INTERMEDIATE)		
B	9/8/95	FINAL ENGINEERING REPORT (DRAFT SUBMITTAL)	JTG	
0	12/21/95	ISSUED FOR BIDS		
1	2/5/96	ISSUED FOR CONSTRUCTION		
2	6/7/96	REVISED SLURRY WALL & WELL LOCATION IN S.E. CORNER		
3	3/12/97	STORM SEWER AS-BUILTS		
4	7/24/97	STORM SEWER AS-BUILTS-REVISED OLIN SHORELINE		DRK
5	2/17/98	FINAL AS-BUILT		

DWG.NO.	REFERENCE DRAWINGS
594000-10S-01	SITE DETAILS
594000-10S-02	CAPPING SYSTEM & BULKHEAD - SECTIONS AND DETAILS
594000-10U-01	MASTER SITE GRADING PLAN
594000-10Z-02	LEGEND AND ABBREVIATIONS
594000-30K-06	APL, NAPL AND MONITORING WELLS AND MISC. DETAILS
594000-30K-09	SLURRY WALL PROFILE

FLUOR DANIEL

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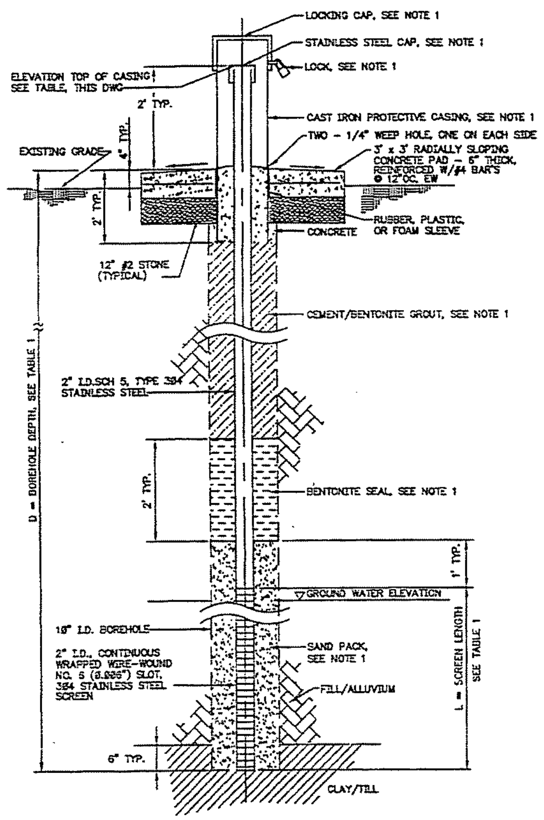
DESIGNED BY: A. BUMB/U. KUMTHEKAR
CHECKED BY: S. LAWRENCE
SUPERVISOR: C. MARS
LEAD ENGR./SPEC.: C. TAYLOR
PROJECT: C. MARS
CLIENT: OXYCHEM/OLIN

OXYCHEM/OLIN
REMEDIAL DESIGN
102nd STREET LANDFILL SITE
NIAGARA FALLS, NEW YORK

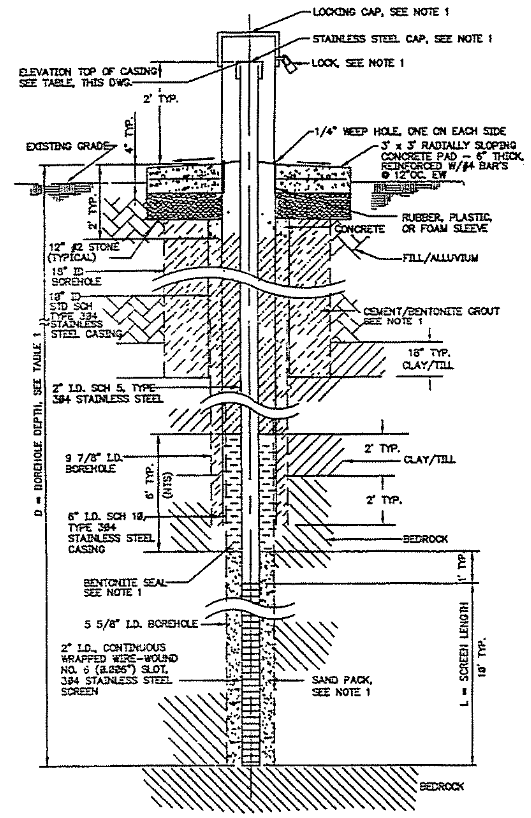
AS-BUILT
SITE REMEDIATION PLAN
AREA 4

SCALE: 1"=40' DRAWING NUMBER: 594000-30K-05 REV. 5

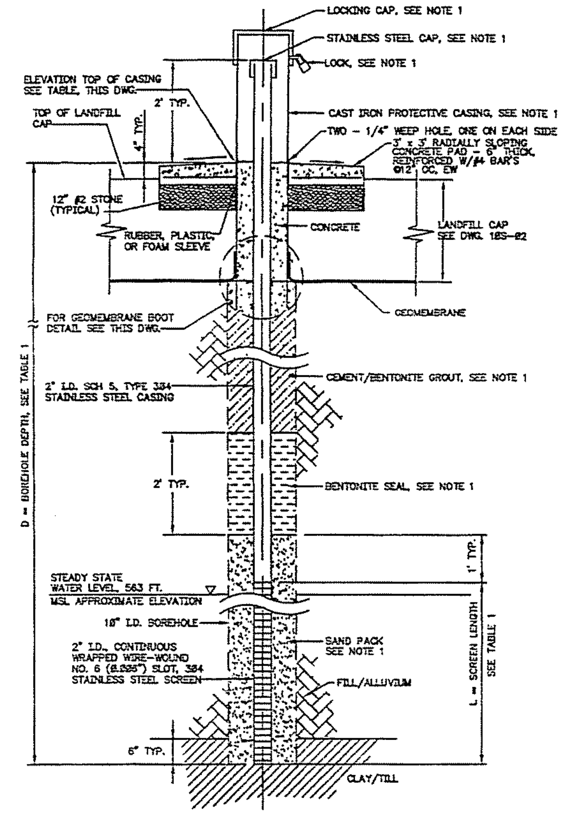
MANUAL CHANGES MADE - YES ☐ NO ☐ DWG. FILE UPDATED - YES ☐ NO ☐ MODEL UPDATED - YES ☐ NO ☐ CADD DRAWING No. 30K05.DGN



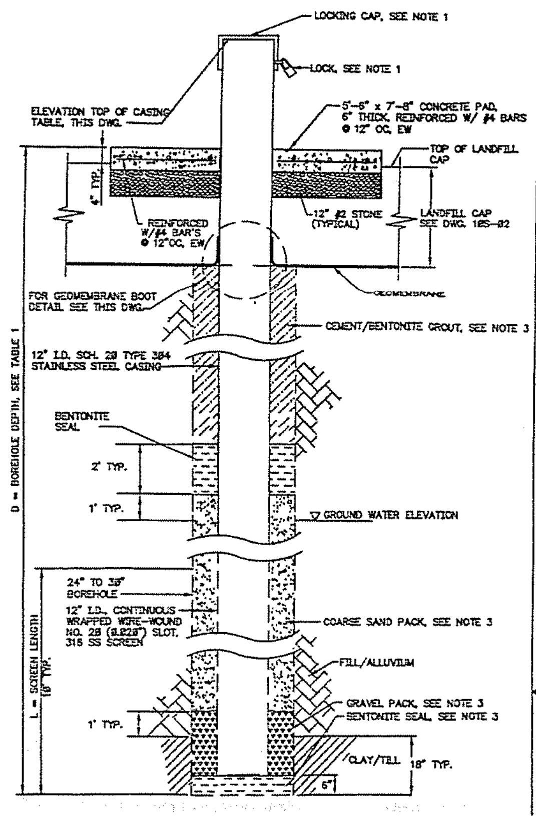
POST CLOSURE MONITORING WELL (PCM) DETAIL
PCM-01 THROUGH PCM-08
N.T.S.



POST CLOSURE BEDROCK
MONITORING WELL (PCBM) DETAIL
PCBM-01 THROUGH PCBM-03
N.T.S.



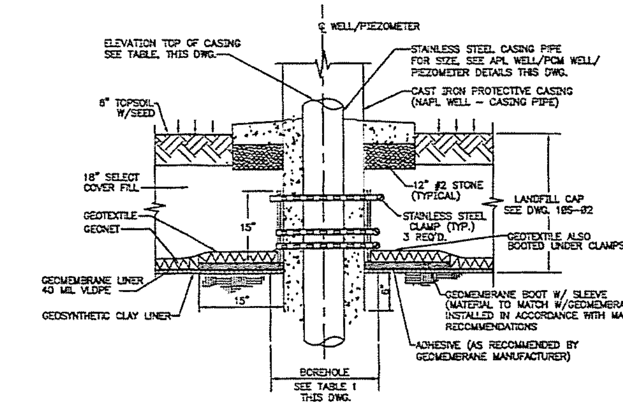
PIEZOMETER (PZ) DETAIL
PZ-01 THROUGH PZ-08
N.T.S.



TYPICAL NAPL RECOVERY WELL (NR) DETAIL
N.T.S.

TABLE-1 AS-BUILT LOCATIONS AND ELEVATIONS OF WELLS						
WELL NO.	NORTHING	EASTING	TOP OF CASING (FT)	BOTTOM OF WELL (FT)	DEPTH OF WELL (FT)	SCREEN LENGTH (FT)
PZ-1	1120482.04	481744.70	582.21	549.64	32.57	5
PZ-2	1120019.49	481749.55	577.92	548.43	23.49	15
PZ-3	1119734.85	482039.86	576.68	545.63	31.05	10
PZ-4	1119575.07	482599.63	576.96	545.63	31.33	25
PZ-5	1119428.08	483159.34	576.87	550.50	26.37	10
PZ-6	1119889.99	483133.05	584.66	564.05	20.61	5
PZ-7	1120136.09	482843.12	579.10	564.80	14.30	5
PZ-8	1120345.01	482477.59	580.99	565.38	15.61	5
PZ-9	1120562.13	482114.84	580.67	566.28	14.39	4
PZ-10	1120765.29	481746.09	581.65	561.56	20.09	10
PCM-1	1120479.99	481725.13	578.24	549.05	29.19	10
PCM-2	1120020.44	481735.99	577.24	547.90	29.34	10
PCM-3	1119725.56	482034.23	576.81	545.15	31.66	10
PCM-4	1119663.44	482595.79	575.73	545.74	29.99	25
PCM-5	1119483.24	483170.10	575.93	550.00	25.93	13
PCM-6	1119885.67	483172.47	582.25	568.50	13.75	5
PCM-7	1120148.17	482835.70	578.80	557.63	21.17	8
PCM-8	1120359.15	482481.45	579.32	564.43	14.89	5
PCM-9	1120570.20	482119.41	578.99	567.87	11.12	4
PCM-10	1120765.54	481719.85	579.40	556.39	23.01	15
PCBM-1	1119728.99	482023.91	576.75	519.72	57.03	10
PCBM-2	1119397.40	483171.17	576.03	519.20	56.83	10
PCBM-3	1120351.74	482460.71	580.24	517.01	63.23	10
NR-1	1120225.50	482179.30	597.30	547.02	50.28	10
NR-2	1119989.60	482358.20	589.73	539.25	53.48	10
NR-3	1119890.80	482179.40	591.70	543.47	48.23	10
NR-4	1119900.20	482510.40	582.39	543.93	38.46	10
NR-5	1119821.10	482672.30	581.55	538.70	42.85	10
NR-7	1119756.60	482828.40	587.21	546.18	41.03	10
NR-8	1119797.00	482217.60	592.31	538.73	53.58	10
NR-10	1119700.20	483257.10	587.87	550.73	37.14	10

NOTE: NR-6 AND NR-9 WERE NOT INSTALLED SINCE NAPL WAS NOT FOUND IN THE AREA AFTER THREE DRILLINGS



TYPICAL GEOMEMBRANE BOOT DETAIL
N.T.S.

GENERAL NOTES:

1. FOR SITE REMEDIATION PLANS SEE DWGS. 30K-02 THRU -05.
2. FOR SITE GRADING PLANS SEE DWGS. 10U-02 THRU -05.
3. ALL CONCRETE SURFACES TO BE BROOM FINISHED.

NOTES - WELL INSTALLATION

1. MATERIALS AND INSTALLATION FOR POST CLOSURE MONITORING WELLS AND PIEZOMETERS SHALL BE AS SPECIFIED IN SECTION 02011.
2. FOR LOCATION OF POST CLOSURE MONITORING WELLS, WET WELLS, NAPL RECOVERY WELLS AND PIEZOMETERS SEE SITE REMEDIATION PLAN DWGS. 30K-02 THRU 30K-05.
3. MATERIALS AND INSTALLATION FOR NAPL RECOVERY WELLS SHALL BE AS SPECIFIED IN SECTION 02012.

8-13-99

REV.	DATE	REVISION DESCRIPTION	DES./CHK.	APPROVED
A	8/20/93	ENGINEERING REPORT SUBMITTAL (PRELIMINARY/INTERMEDIATE)	ACB / JG	DRK
B	08/08/95	FINAL ENGINEERING REPORT (DRAFT SUBMITTAL)	JG	
0	12/2/96	ISSUED FOR BID		
1	2/5/98	ISSUED FOR CONSTRUCTION		
2	3/2/97	REVISED WET WELL DTL., WW-1 DATA (TABLE 1) & WELL INSTL. NOTES		
3	1/3/98	AS-BUILT		

DWG.NO.	REFERENCE DRAWINGS
594000-30K-02	SITE REMEDIATION PLAN - AREA 1
594000-30K-03	SITE REMEDIATION PLAN - AREA 2
594000-30K-04	SITE REMEDIATION PLAN - AREA 3
594000-30K-05	SITE REMEDIATION PLAN - AREA 4

FLUOR DANIEL

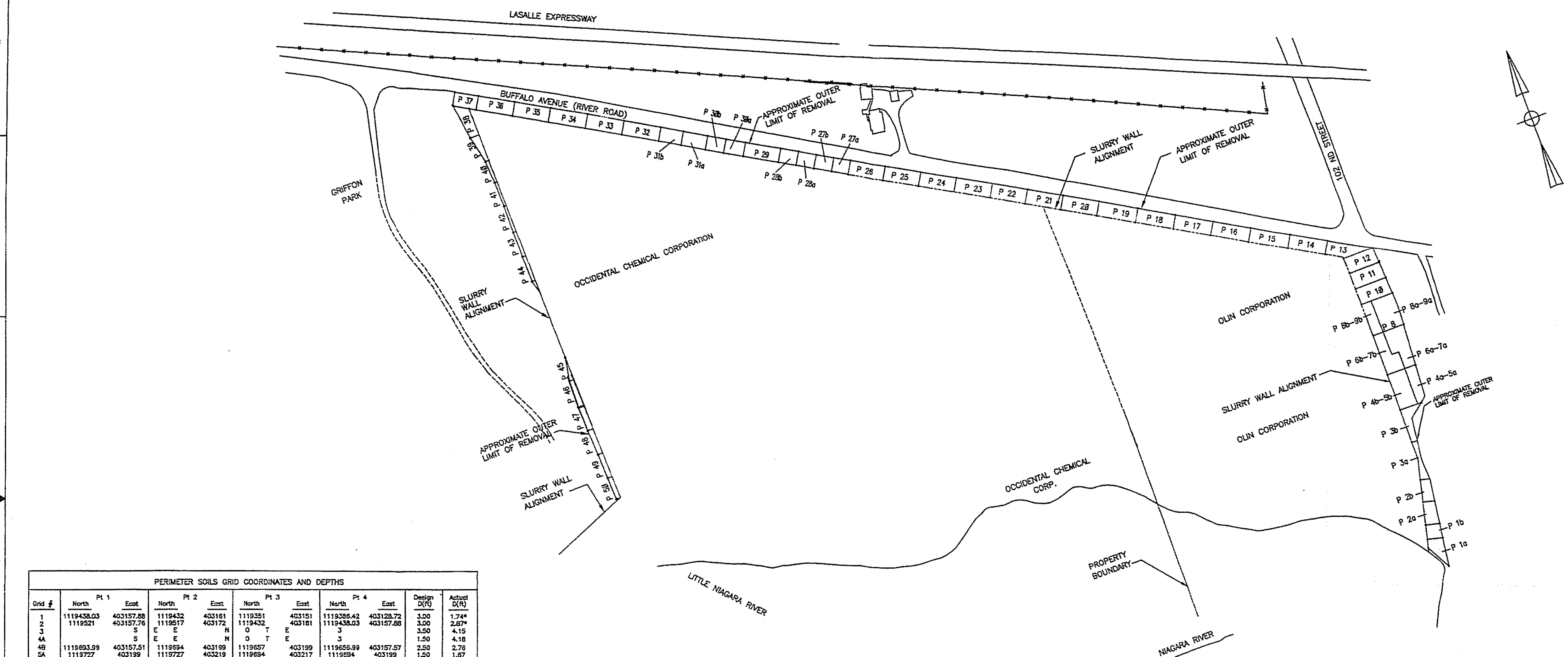
DESIGNED BY A. BUMB/AL KUMTHEKAR
CHECKED BY S. LAWRENCE
SUPERVISOR C. MARS
LEAD ENGR./SPEC. C. TAYLOR
PROJECT C. MARS
CLIENT OXYCHEM / OLIN

OXYCHEM / OLIN
REMEDIAL DESIGN
102nd STREET LANDFILL SITE
NIAGARA FALLS, NEW YORK

AS-BUILT
APL, NAPL AND MONITORING WELLS AND MISC. DETAILS

SCALE AS NOTED | DRAWING NUMBER 594000-30K-06 | REV. 3

MANUAL CHANGES MADE - YES ☐ NO ☐ DWG. FILE UPDATED - YES ☐ NO ☐ MODEL UPDATED - YES ☐ NO ☐ CADD DRAWING No. 30K06.DWG 1/21/98



PERIMETER SOILS GRID COORDINATES AND DEPTHS

Grid #	Pt 1 North	Pt 1 East	Pt 2 North	Pt 2 East	Pt 3 North	Pt 3 East	Pt 4 North	Pt 4 East	Design D(ft)	Actual D(ft)
1	1119438.03	403157.88	1119432	403161	1119351	403151	1119386.42	403128.72	3.00	1.74*
2	1119521	403157.76	1119517	403172	1119432	403181	1119438.03	403157.88	3.00	2.87*
3		S	E E	N	O T	E	3		3.50	4.15
4A		S	E E	N	O T	E	3		1.50	4.18
4B	1119693.99	403157.51	1119694	403199	1119657	403199	1119656.99	403157.57	2.50	2.76
5A	1119727	403199	1119727	403219	1119694	403217	1119694	403199	1.50	1.67
5B	1119725.99	403157.47	1119727	403199	1119694	403199	1119693.99	403157.47	2.50	2.59
6A	1119760	403199	1119760	403221	1119727	403219	1119727	403199	1.50	2.23
6B	1119759.99	403157.42	1119760	403199	1119727	403199	1119726.99	403157.47	8.50	9.485
7A	1119792	403184	1119792	403223	1119760	403221	1119760	403184	1.50	2.61
7B	1119791.99	403157.37	1119792	403184	1119760	403184	1119759.99	403157.42	8.50	9.03
8A	1119823	403184	1119823	403225	1119792	403223	1119792	403184	2.50	6.01
8B	1119822.99	403157.33	1119823	403184	1119792	403184	1119791.99	403157.37	8.50	9.03
9A	1119854	403184	1119854	403224	1119823	403225	1119823	403184	2.50	6.35
9B	1119853.99	403157.29	1119854	403184	1119823	403184	1119822.99	403157.33	8.50	8.85
10	1119884.99	403157.24	1119885	403223	1119854	403224	1119853.99	403157.29	2.50	4.84
11	1119915.99	403157.2	1119916	403222	1119885	403223	1119884.99	403157.24	2.00	4.55
12	1119945.39	403157.15	1119946	403221	1119916	403222	1119915.99	403157.2	1.50	1.81
13	1119961.5	403129.74	1119990	403147	1119946	403221	1119945.39	403157.15	1.50	1.97
14	1119998.08	403068.08	1120025	403085	1119990	403147	1119961.5	403129.74	2.00	2.72
15	1120035.62	403004.81	1120064	403021	1120026	403085	1119998.08	403068.08	2.00	2.58
16	1120072.48	402942.71	1120101	402959	1120064	403021	1120035.62	403004.81	2.00	2.27
17	1120109.3	402880.62	1120138	402898	1120101	402959	1120072.48	402942.71	2.00	2.2
18	1120145.88	402818.96	1120175	402836	1120138	402898	1120109.3	402880.62	2.00	2.16
19	1120183.86	402754.95	1120212	402772	1120175	402836	1120145.88	402818.96	2.00	2.145
20	1120218.42	402696.69	1120247	402714	1120212	402772	1120183.86	402754.95	2.00	2.28
21	1120252.29	402639.61	1120281	402656	1120247	402714	1120218.42	402696.69	2.00	2.36
22	1120286.59	402581.79	1120315	402599	1120281	402656	1120252.29	402639.61	2.00	2.21
23	1120320.9	402523.97	1120349	402541	1120315	402599	1120286.59	402581.79	1.50	1.81
24	1120355.46	402465.71	1120384	402483	1120349	402541	1120320.9	402523.97	1.50	1.69
25	1120389.76	402407.89	1120418	402425	1120384	402483	1120355.46	402465.71	1.50	2.03
26	1120424.07	402350.07	1120452	402367	1120418	402425	1120389.76	402407.89	2.00	3.58
27	1120457.93	402292.99	1120486	402309	1120452	402367	1120424.07	402350.07	2.50	4.62
28A	1120492.79	402234	1120520	402250	1120486	402309	1120457.93	402292.99	2.50	4.67
28B	–	–	–	–	–	–	–	–	3.00	–
29	1120525.7	402176.94	1120554	402193	1120520	402250	1120492.79	402234	2.00	4.14
30A	1120561.51	402114.84	1120590	402131	1120554	402193	1120525.7	402176.94	3.00	4.02
30B	–	–	–	–	–	–	–	–	2.50	–
31	1120606.5	402036.83	1120635	402053	1120590	402131	1120561.51	402114.84	2.50	3.98
32	1120641.2	401976.66	1120670	401993	1120635	402053	1120606.5	402036.83	2.00	3.95
33	1120675.65	401916.92	1120705	401934	1120670	401993	1120641.2	401976.66	1.50	3.6
34	1120710.38	401856.75	1120739	401874	1120705	401934	1120675.65	401916.92	1.50	2.74
35	1120744.62	401797.32	1120774	401814	1120739	401874	1120710.38	401856.75	2.00	2.38
36	1120779.76	401738.4	1120808	401754	1120774	401814	1120744.62	401797.32	1.50	2.36
37	1120808	401703	1120830	401715	1120808	401754	1120779.75	401736.4	1.50	2.31
38	1120740	401712	1120740.1	401738.01	1120779.75	401736.4	1120808	401703	1.50	1.79
39	1120689.1	401738.86	1120689	401724	1120740	401712	1120740.1	401738.01	1.50	2.03
40	1120648.11	401737.58	1120646	401727	1120689	401724	1120689.1	401738.86	1.50	2.04
41	1120598.11	401738.38	1120597	401728	1120648	401727	1120646.11	401737.58	1.50	1.88
42	1120546.1	401739.25	1120546	401727	1120597	401728	1120578.11	401738.38	1.50	2.05
43	1120496.1	401740.08	1120498	401727	1120546	401727	1120546.1	401739.25	1.50	2.4
44	1120448.1	401740.92	1120445	401723	1120498	401727	1120496.1	401740.8	1.50	1.95
45	1120246.1	401744.25	1120246	401729	1120291.09	401743.5	–	–	1.50	1.55
46	1120193.09	401745.14	1120192	401728	1120248	401729	1120246.1	401744.25	1.50	1.52
47	1120145	401746.25	1120145	401729	1120192	401728	1120193.09	401745.14	1.50	1.62
48	1120096.1	401746.76	1120096	401731	1120145	401729	1120145	401746.25	1.50	1.81
49	1120048.11	401747.56	1120048	401733	1120096	401731	1120096.1	401746.76	2.50	3.06
50	1120000.9	401748.6	1120003	401732	1120048	401733	1120048.11	401747.56	3.00	3.73

* SEE NOTE 1

NOTE 1: EXCAVATION WAS STOPPED IN GRIDS P-1 AND P-2 WHEN GROUNDWATER WAS ENCOUNTERED

NOTE 2: EXCAVATION WAS DEEPER IN GRIDS P-7A, 8A, 9A, 10, 11, 26, 27, 28, 29, 30, 31, 32, 33, AND 34.

NOTE 3:

GRID 3

NORTH	EAST
1119517.00	403172.00
1119521.00	403157.76
1119528.78	403157.75
1119656.99	403157.75
1119657.00	403205.00
1119534.80	403179.70
1119596.60	403175.00
1119554.30	403170.00

GRID 4A

NORTH	EAST
1119666.00	403215.70
1119694.00	403199.00
1119694.00	403127.00
1119657.00	403199.00
1119657.00	403205.00

GENERAL NOTES:

1. THE WORK ZONE DELINEATION IS BASED ON A SURVEY OF THE CONCENTRATION OF THE INDICATORS REPORTED IN MILESTONE REPORT NO. 4 (ATTACHMENT D), OFF-SITE SOIL SURVEY, REV. 1, OCT. 1988.

2. THE EXCLUSION ZONE IS DEFINED AS THAT AREA ACTIVELY BEING EXCAVATED (OR EXCAVATED AND NOT BACKFILLED) INCLUDING SUCH ADDITIONAL SPACE THAT MAY BE REQUIRED FOR EQUIPMENT MANEUVERING. TEMPORARY AND READILY MOVABLE SECTIONS OF FENCING SHALL BE INSTALLED TO CIRCUMSCRIBE THE AREA.

3. CONTAMINANT REDUCTION PROTOCOL: THE AREA ACTIVELY BEING EXCAVATED SHALL BE KEPT TO A MINIMUM. EXCAVATION AND FILLING (OF THE TRUCKS) OPERATIONS SHALL BE DONE IN A MANNER TO AVOID SOILING OF THE AREA ADJACENT TO THE EXCAVATION AND THE EXTERIOR OF THE TRUCK. THE TRUCK LOADING AREA (UNDER THE TRUCK) SHALL BE COVERED WITH 6 MIL POLYETHYLENE. THIS AREA CONSTITUTES THE CONTAMINANT REDUCTION ZONE. ALL EQUIPMENT (OR PERSONNEL) DECON SHALL BE DONE IN THIS AREA. THE LOADING AREA SHALL BE AS CLOSE AS FEASIBLE TO THE AREA BEING EXCAVATED. ADDITIONALLY, SHEETS SHALL BE DRAPED OVER THE TRAILER AND TRACTOR, THUS ENCAPSULATING THE TRUCK. AFTER THE TRAILER IS FULL (OR THE EXCAVATION OPERATIONS TERMINATED FOR THE DAY) THE SHEETS (DRAPED OVER THE TRUCK) SHALL BE PULLED BACK OVER THE MATERIAL IN THE TRAILER. THE EXTERIOR OF THE TRUCK/TRAILER SHALL BE CLEANED OF ANY SOIL/DUST ACCUMULATION RESULTING FROM THE FILLING OPERATIONS PRIOR TO LEAVING THE LOADING AREA. NO VEHICLES OR PERSONNEL SHALL LEAVE THE WORK ZONE WITHOUT RECEIVING APPROVAL FROM THE SITE REPRESENTATIVES.

4. EXCAVATED DEPTHS ARE TABALIZED ON THIS DRAWING.

5. EXCAVATE TO DEPTH, TRANSPORT SOIL AND OTHER MATERIALS TO THE DESIGNATED FILL MATERIAL PLACEMENT CELL WITHIN THE 102nd STREET LANDFILL SITE AS DIRECTED BY OXY/OLIN. SEE SPECIFICATION SECTION #2200 EARTHWORK, FOR PLACEMENT PROCEDURES.

6. AREAS EXCAVATED (OR PARTIALLY EXCAVATED) AND NOT BACKFILLED SHALL BE COVERED AT THE END OF THE WORK DAY. THE SURFACE SHALL FIRST BE COVERED WITH 6 MIL POLYETHYLENE SHEET. IN THE EVENT OF RAIN, THE EXCAVATION OPERATIONS SHALL CEASE AND THE AREA IMMEDIATELY COVERED AS DESCRIBED ABOVE. ALL COLLECTED RAINWATER WILL BE TREATED BY THE WATER TREATMENT SYSTEM.

7. BACKFILLING OPERATIONS SHALL COMMENCE IMMEDIATELY. THE FACE OF THE BACKFILL SHALL BE KEPT AT A MINIMUM OF 10 FEET FROM THE AREA BEING EXCAVATED. THE EXCAVATION AREA SHALL BE BACKFILLED WITH CLEAN FILL FROM A PREAPPROVED SOURCE, PLACED AND COMPACTED IN LIFTS NOT EXCEEDING 8 INCHES. THE BACKFILL SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF THE EXCAVATION TO THE PRE-EXCAVATION GRADES MINUS 6". PROVIDE TEMPORARY MEASURES TO CONTROL EROSION.

8. ALL LOADING AND HAULING OF EXCAVATED MATERIALS SHALL BE COMPLETED FROM THE SITE SIDE OF THE WORK AREA. NO EQUIPMENT SHALL BE OPERATED ON BUFFALO AVENUE WHEN INVOLVED IN EXCAVATION OPERATIONS.

9. THE MATERIAL TO BE EXCAVATED (GRIDS 27 THROUGH 31) WITHIN THE AREA IDENTIFIED AS POTENTIALLY CONTAINING DIOXIN MUST BE WETTED AT ALL TIMES DURING THE EXCAVATION, LOADING AND PLACEMENT OPERATIONS. ALL WORKERS SHALL WEAR APPROPRIATE PPE WHEN INVOLVED IN HANDLING MATERIAL CONTAINING DIOXIN. REFER TO HEALTH AND SAFETY PLAN FOR MINIMUM RECOMMENDED REQUIREMENTS FOR PPE.

10. PLACE MARKERS/FLAGGING TO IDENTIFY THE LIMITS OF THE DIOXIN CONTAINING SOIL PLACEMENT CELL.

11. LIMITS OF REMOVAL OF THE OFFSITE PERIMETER SOILS ALONG BUFFALO AVENUE ARE DEFINED BY THE EDGE OF CONCRETE TO THE NORTH AND A LINE 6.25 FEET SOUTH OF AND PARALLEL TO THE CENTERLINE OF THE PROPOSED SLURRY WALL. SEE COORDINATES, THIS DRAWING.

12. LIMITS OF REMOVAL OF THE OFFSITE PERIMETER SOILS ALONG THE WESTERN BOUNDARY OF THE SITE ARE DEFINED BY THE SAMPLE POINTS INDICATED TO THE WEST AND A LINE 6.25 FEET EAST OF AND PARALLEL TO THE CENTERLINE OF THE PROPOSED SLURRY WALL. SEE COORDINATES, THIS DRAWING.

13. LIMITS OF REMOVAL OF THE OFFSITE PERIMETER SOILS ALONG THE EASTERN BOUNDARY OF THE SITE ARE DEFINED BY THE SAMPLE POINTS INDICATED TO THE EAST AND A LINE 6.25 FEET WEST OF AND PARALLEL TO THE CENTERLINE OF THE PROPOSED SLURRY WALL. SEE COORDINATES, THIS DRAWING.

14. REMOVE EXISTING FENCING ALONG BUFFALO AVENUE R.O.W. AND PROVIDE TEMPORARY FENCING ALONG THE EDGE OF PAVEMENT. AFTER COMPLETION OF BACKFILLING, INSTALL FENCING APPROXIMATELY 4 FEET OFF THE EXISTING EDGE OF PAVEMENT UTILIZING THE EXISTING FENCE COMPONENTS.

15. PROVIDE TRAFFIC CONTROL DEVICES, INCLUDING FLASHING AND INFORMATION SIGNS IN ACCORDANCE WITH NEW YORK STATE DEPARTMENT OF TRANSPORTATION (NYSDOT). INFORMATION SIGNS TO INCLUDE: 'REDUCE SPEED AHEAD' AND 'SPEED LIMIT 20 MPH IN CONSTRUCTION AREA'. REFER TO SPECIFICATION NO. 01000.

16. THE EXISTING WATER LINE, TELEPHONE LINE AND GAS LINE WITHIN THE LIMITS OF REMOVAL OF OFFSITE PERIMETER SOILS ARE TO BE ABANDONED. THESE SERVICES ARE SCHEDULED TO BE RELOCATED PRIOR TO COMMENCEMENT OF REMOVAL OF PERIMETER SOILS.

17. PRIOR TO WORK ACTIVITIES, THE PUBLIC UTILITY COMPANIES WILL BE NOTIFIED BY THE OWNER OF IMPENDING OPERATIONS. UPON AWARD OF CONTRACT, THE CONTRACTOR SHALL NOTIFY EACH UTILITY OF THE WORK SCHEDULE AND COORDINATE ACTIVITIES WITH THE UTILITY COMPANIES. ALL UNDERGROUND UTILITIES WITHIN THE WORK AREA SHALL BE SUITABLY MARKED BY THE UTILITIES COMPANIES. EXCAVATION AROUND AND WITHIN 2 FEET OF BURIED UTILITIES, ABOVEGROUND APPURTENANCES AND UTILITY POLES SHALL BE PERFORMED BY USE OF HAND TOOLS. PROVIDE SUITABLE PROTECTION FOR ALL UTILITIES. EXCAVATIONS DEEPER THAN 18 INCHES ADJACENT TO UTILITY POLES SHALL BE SLOPED AT 1:1 FROM THE EDGE OF THE POLE. NO MORE THAN 18 INCHES OF THE BURIED SECTION OF THE POLE SHALL BE UNEARTHED WITHOUT TEMPORARY SUPPORT AS APPROVED BY THE UTILITY.

18. ALL TREES AND SHRUBS CONTAINED WITHIN THE EXTENT OF SURFICIAL EXCAVATION, ARE TO BE REMOVED. THE PORTION OF THE TREES ABOVE GROUND SHALL BE CUT AND FELLED IN A MANNER TO AVOID DISTURBANCE OF THE SURFICIAL SOILS. MEASURES SUCH AS CRIBBING WITH BRANCHES CUT FROM THE TREES SHALL BE EMPLOYED TO AVOID DISTURBING THE GROUND SURFACE. FALLEN TREES SHALL BE CUT INTO SECTIONS AND HAULED TO THE ONSITE STOCKPILE. STUMPS AND ROOT SYSTEMS SHALL BE REMOVED IN CONJUNCTION WITH THE REMOVAL OF PERIMETER SOILS TO A MINIMUM DEPTH OF 18 INCHES, HAULED TO THE ONSITE STOCKPILE PENDING CHIPPING OPERATIONS.

19. THE CONTRACTOR SHALL UTILIZE EXISTING SITE ACCESS ROADS AND INSTALL ADDITIONAL HAUL ROADS AS REQUIRED TO PROVIDE ACCESS TO THE AREA BEING EXCAVATED. TRUCKS SHALL MANEUVER TO AND FROM THE EXCAVATION ON THESE ROADS. THE EXCAVATION OPERATIONS SHALL PROCEED IN A MANNER TO AVOID CONTAMINATION OF THE HAUL ROADS.

0 80 160 FT.

8-13-99

REV.	DATE	REVISION DESCRIPTION	DES. / CHK.	APPROVED
1	2/5/96	ISSUED FOR CONSTRUCTION		
2	2/29/96	FINAL AS-BUILT		

FLUOR DANIEL

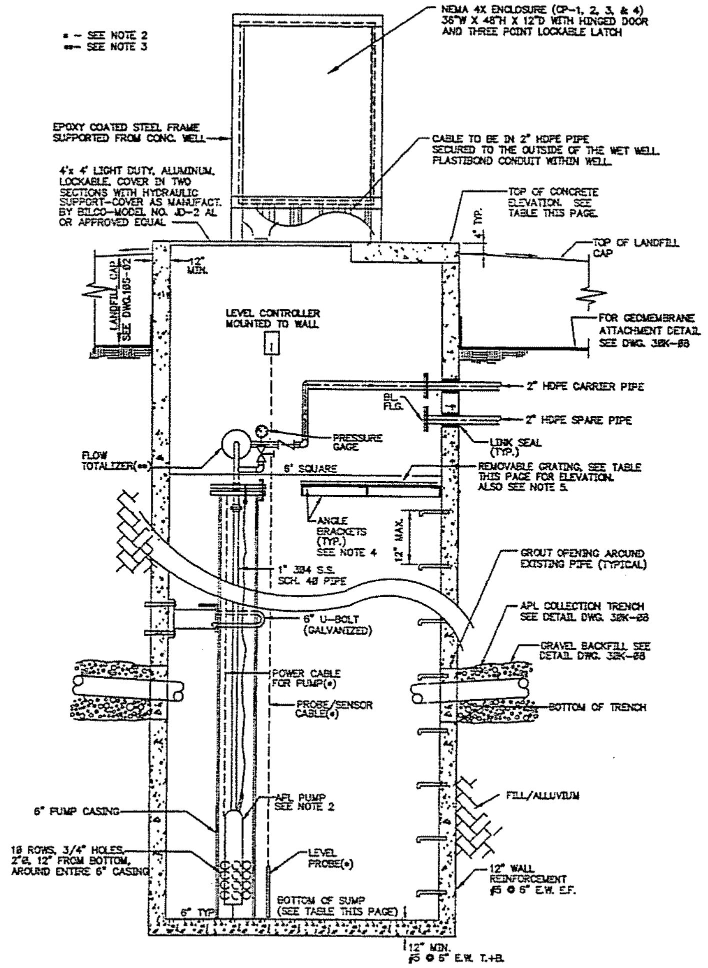
DESIGNED BY F. HOLLIDAY
CHECKED BY S. LAWRENCE
SUPERVISOR C. MARS
LEAD ENGR./SPEC. C.TAYLOR
PROJECT C. MARS
CLIENT OXYCHEM / OLIN

OXYCHEM/OLIN
REMEDIAL DESIGN
102nd STREET LANDFILL SITE
NIAGARA FALLS, NEW YORK

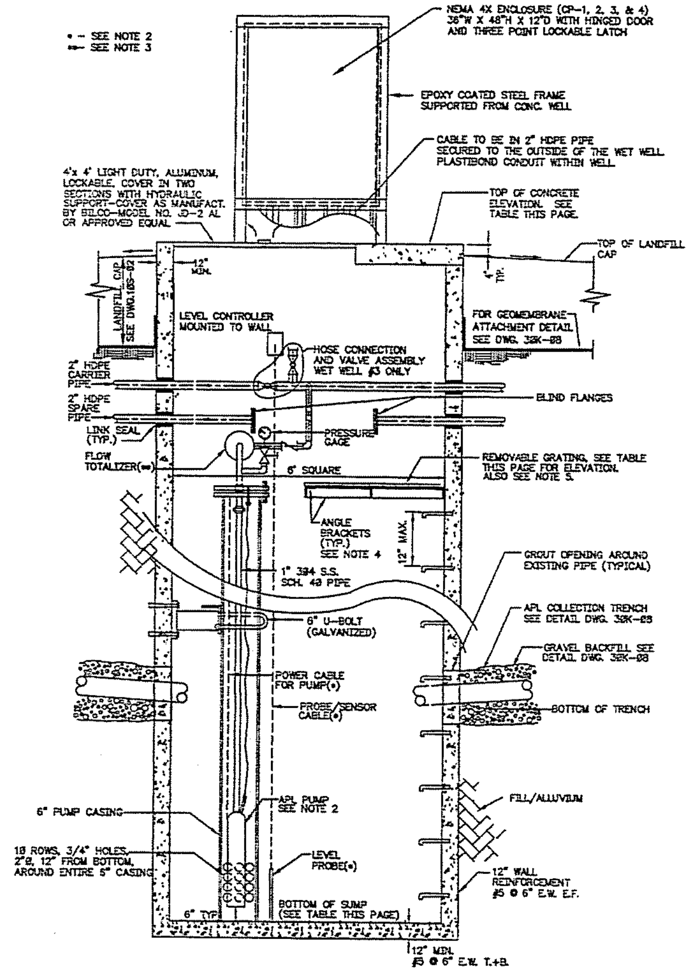
AS-BUILT
MASTER SITE REMEDIATION PLAN
EXCAVATION DEPTHS OF PERIMETER SOILS

SCALE 1" = 80' DRAWING NUMBER 594000-30K-06B REV. 2

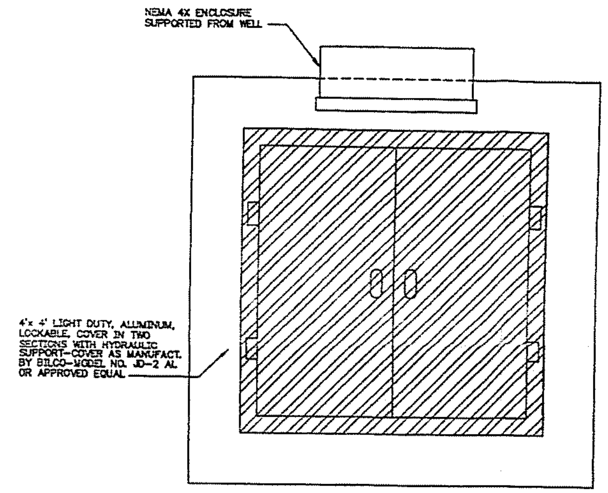
MANUAL CHANGES MADE - YES ☐ NO ☐ DWG. FILE UPDATED - YES ☐ NO ☐ MODEL UPDATED - YES ☐ NO ☐ CADD DRAWING No. 30K06B.DWG 2-05-96



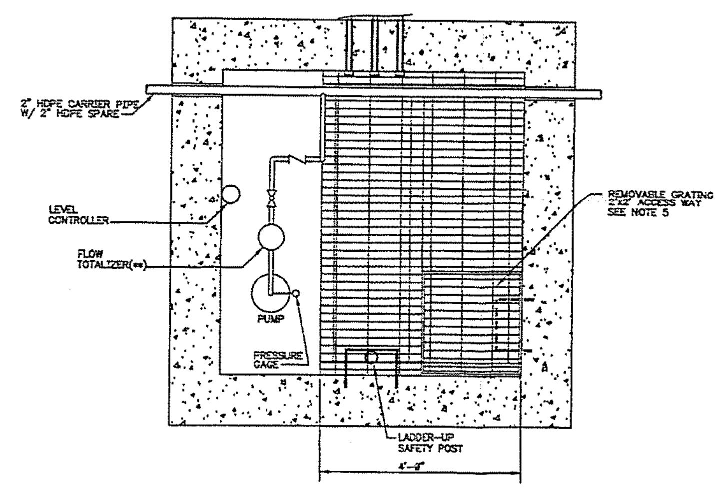
TYPICAL WET WELL DETAIL
WET WELL WW-1 AND WW-4
N.T.S.



TYPICAL WET WELL DETAIL
WET WELL WW-2 AND WW-3
N.T.S.



TYPICAL WET WELL PLAN
EXTERIOR
N.T.S.



TYPICAL WET WELL PLAN
INTERIOR
(WW-2 & 3 SHOWN, WW-1 & 4 SIMILAR)
N.T.S.

GENERAL NOTES:

1. FOR SITE REMEDIATION PLANS SEE DWGS. 30K-02 THRU -05.
2. ALL CONCRETE SURFACES TO BE BROOM FINISHED.

NOTES – WET WELL INSTALLATION

1. FOR LOCATION OF WET WELLS SEE SITE REMEDIATION PLAN DWGS. 30K-02 THRU 30K-05.
2. FOR APL PUMP AND ACCESSORIES AND CONTROLS, SEE EQUIPMENT DATA SHEETS.
3. FOR VALVES AND FLOW TOTALIZER SEE INSTRUMENT SPECIFICATIONS. VALVES WILL HAVE 18 INCH STEM EXTENSIONS.
4. 3" x 2" x 1/2" LLV GALVANIZED BRACKET. ATTACH BRACKETS TO WALL WITH 3/4" DIAMETER HILTI KWIK BOLTS AT 12" ON CENTER.
5. PROVIDE 1 1/2" GALVANIZED GRATING. PROVIDE 1/2" CLEARANCE BETWEEN EDGE OF GRATING AND WALLS.

	TOP OF CONCRETE	GRATING	BOTTOM OF WELL
WW-1	575.80	567.80	553.90
WW-2	575.48	567.43	553.68
WW-3	575.62	567.62	553.72
WW-4	575.97	567.97	554.17

8-13-99

REV.	DATE	REVISION DESCRIPTION	DES. CHK.
A	2/27/97	ISSUED FOR REVIEW	GK
B	3/11/97	ISSUED FOR REVIEW	GK
0	3/21/97	ISSUED FOR APPROVAL	GK
1	1/28/98	AS-BUILT	

DWG.NO.	REFERENCE DRAWINGS
594010-10S-02	CAPPING SYSTEM & BULKHEAD – SECTIONS AND DETAILS
594010-30K-02	SITE REMEDIATION PLAN – AREA 1
594010-30K-03	SITE REMEDIATION PLAN – AREA 2
594010-30K-04	SITE REMEDIATION PLAN – AREA 3
594010-30K-05	SITE REMEDIATION PLAN – AREA 4
594010-30K-08	APL COLLECTION SYSTEM – SECTIONS AND DETAILS

FLUOR DANIEL

DESIGNED BY G. KURILEC
CHECKED BY S. LAWRENCE
SUPERVISOR C. MARS
LEAD ENGR./SPEC. C. TAYLOR
PROJECT C. MARS
CLIENT OXYCHEM / OLIN

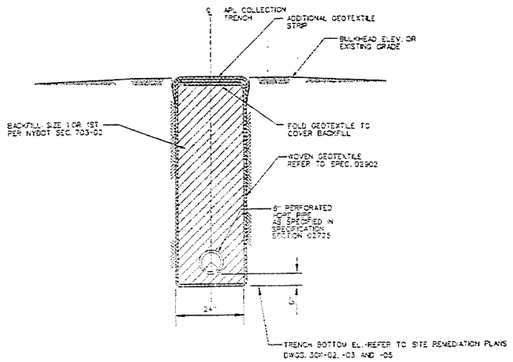
OXYCHEM / OLIN
REMEDIAL DESIGN
102nd STREET LANDFILL SITE
NIAGARA FALLS, NEW YORK

AS-BUILT APL WET WELL DETAILS

SCALE AS NOTED | DRAWING NUMBER 594000-30K-06C | REV. 1

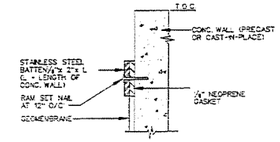
MANUAL CHANGES MADE – YES ☐ NO ☐ DWG. FILE UPDATED – YES ☐ NO ☐ MODEL UPDATED – YES ☐ NO ☐ CADD DRAWING No. 30K06C.DWG 1/20/98

DIST. CODE VRK. PKG. SUB-CONTRACT PKG.



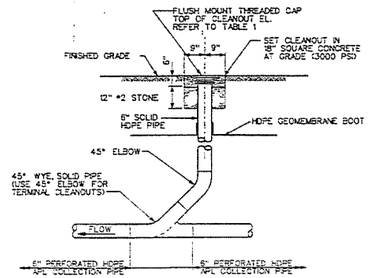
APL COLLECTION TRENCH - TYPICAL SECTION

CONSTRUCTION USING BIO-POLYMER TECHNIQUE (WITHIN LANDFILL) N.T.S.



GEOMEMBRANE ATTACHMENT DETAIL

N.T.S.



(REF. DWG. 30K-02, 30K-03 AND 30K-05)

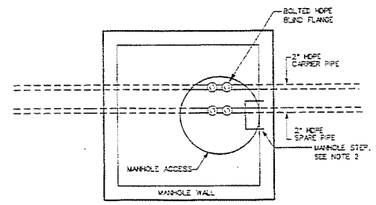
TYPICAL CLEANOUT DETAIL
APL COLLECTION TRENCH
(WITHIN LANDFILL) N.T.S.

TABLE -1
TOP OF CLEANOUT ELEVATION

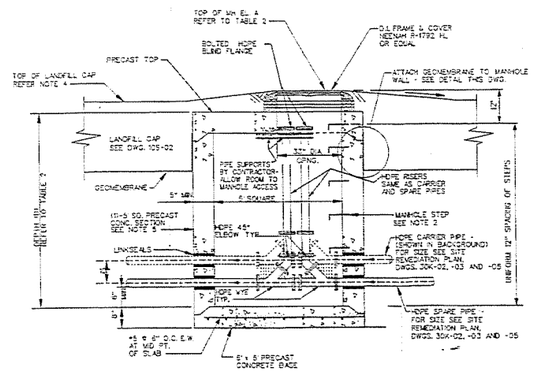
CO #	NORTHING	EASTING	TOP OF CLEANOUT EL.
CO 1	1119978.07	401784.73	577.93
CO 2	1120350.80	401762.54	581.42
CO 3	1119778.23	401967.46	575.51
CO 3	1119774.09	401972.45	575.45
CO 4	1119727.87	402375.94	575.39
CO 5	1119683.30	402610.16	575.44
CO 5	1119683.36	402611.60	575.50
CO 6	1119487.11	403014.81	575.31
CO 6	1119486.06	403017.76	575.51
CO 7	1119599.03	403124.18	579.54

TABLE -2
IN LINE CLEANOUT MANHOLES

CO-MH #	COORDINATES EAST	COORDINATES NORTH	TOP OF MH EL. (A)	DEPTH (D)
CO-MH 1	401770.55	1120518.47	580.07	6'-3"
CO-MH 2	401777.89	1120348.75	583.97	6'-3"
CO-MH 3	401775.31	1119951.61	577.33	6'-4"
CO-MH 4	401681.06	1119774.87	575.81	6'-2"
CO-MH 5	402266.46	1119731.53	575.86	6'-3"
CO-MH 6	402619.03	1119581.55	575.83	6'-2"
CO-MH 7	403026.11	1119484.11	576.12	6'-3"



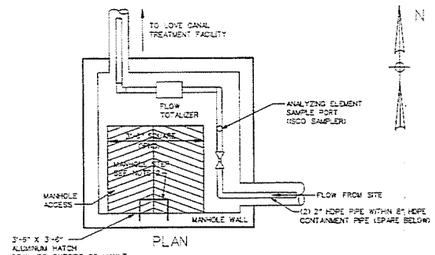
PLAN VIEW



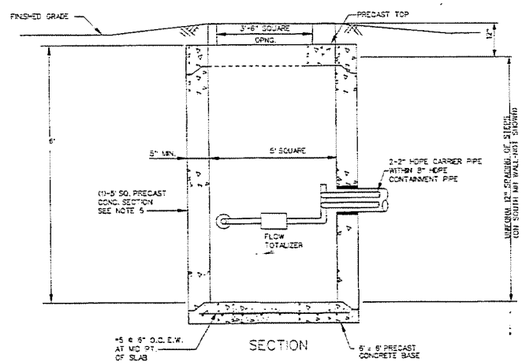
-SECTION

INLINE CLEANOUT MANHOLE DETAIL
(WITHIN LANDFILL)

N.T.S.

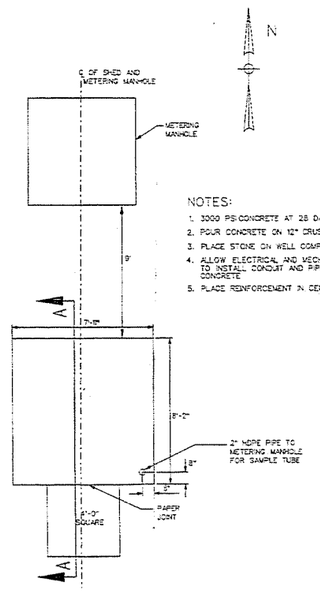


PLAN

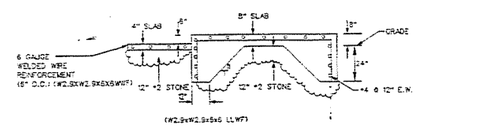


SECTION

SANITARY SEWER METER AND SAMPLING MANHOLE DETAIL
(LKG. NORTHEAST)
N.T.S.



SECTION A-A



SAMPLING SHED FOUNDATION PLAN

GENERAL NOTES: INLINE CLEANOUT MANHOLE DETAIL

1. OPENINGS FOR PIPE IN PRECAST BASE AND RISER UNITS SHALL BE PREFORMED. THE CONTRACTOR SHALL FURNISH THE FABRICATOR WITH ANGLES BETWEEN CENTER LINES, THE INVERT ELEVATIONS AND THE SIZE OF ALL PIPES. HOLES SHALL BE SIZED TO ACCOMODATE LINK SEAL.
2. MANHOLE STEPS SHALL BE NEENAH R-1982W, ALUMINUM OR APPROVED EQUAL.
3. REFER TO SITE REMEDIATION PLANS (DWGS. 30K-02, 03, AND 05) FOR LOCATIONS, INVERT ELEVATIONS AND PIPE SIZES.
4. FOR TOP OF LANDFILL CAP ELEVATIONS AT INLINE CLEANOUT MANHOLES, SEE TABLE 2 THIS DWG.
5. PRECAST REINFORCED CONCRETE CHAMBER SHALL CONFORM TO ASTM C478.
6. CAST STEEL SLEEVES INTO MANHOLES.

REV.	DATE	REVISION DESCRIPTION	DES. CHK.	APPROVED
A	1/29/93	ENGINEERING REPORT SUBMITTAL (PRELIMINARY/INTERMEDIATE)	DTG	DRK
B	3/24/95	REVISED TITLE		
C	9/8/95	FINAL ENGINEERING REPORT (DRAFT SUBMITTAL)		
D	12/21/95	ISSUED FOR BID		
1	2/5/96	ISSUED FOR CONSTRUCTION		
2	1/21/97	REVISED IN LINE C.O DTL., TABLE 2 & ADDED SAN MH DTLS.	DTG	

REV.	DATE	REVISION DESCRIPTION	DES. CHK.	APPROVED
3	9/22/97	REVISED CLEANOUT SCHEDULES AND SAN. MH DTL. ADDED VARIOUS DETAILS.	MCLG	
4	12/2/97	REVISED SANITARY SEWER AND SAMPLING MANHOLE DETAIL ADDED SAMPLING SHED DETAIL.		
5	1/20/98	AS-BUILT		

DWG NO.	REFERENCE DRAWINGS	DWG NO	REFERENCE DRAWINGS
594010-10U-07	FORCE MAIN ROUTING PLAN		
594010-30K-08A	FORCE MAIN DETAILS		
594010-30K-02	SITE REMEDIATION PLAN - AREA 1		
594010-30K-03	SITE REMEDIATION PLAN - AREA 2		
594010-30K-04	SITE REMEDIATION PLAN - AREA 3		
594010-30K-05	SITE REMEDIATION PLAN - AREA 4		

FLUOR DANIEL

DESIGNED BY	A. BUMB/U. KUMTHEKAR
DRAWN BY	S. LAWRENCE
CHECKED BY	C. MARS
RELEASE DATE	
LEAD ENGR./SPEC.	C. TAYLOR
DETAILS	
PROJECT	C. MARS
APP. DATE	
CLIENT	OXYCHEM/OLIN
APP. DATE	

MANUAL CHANGES MADE - YES ☐ NO ☐ DWG. FILE UPDATED - YES ☐ NO ☐ MODEL UPDATED - YES ☐ NO ☐ CADD DRAWING No. 30K08.DGN

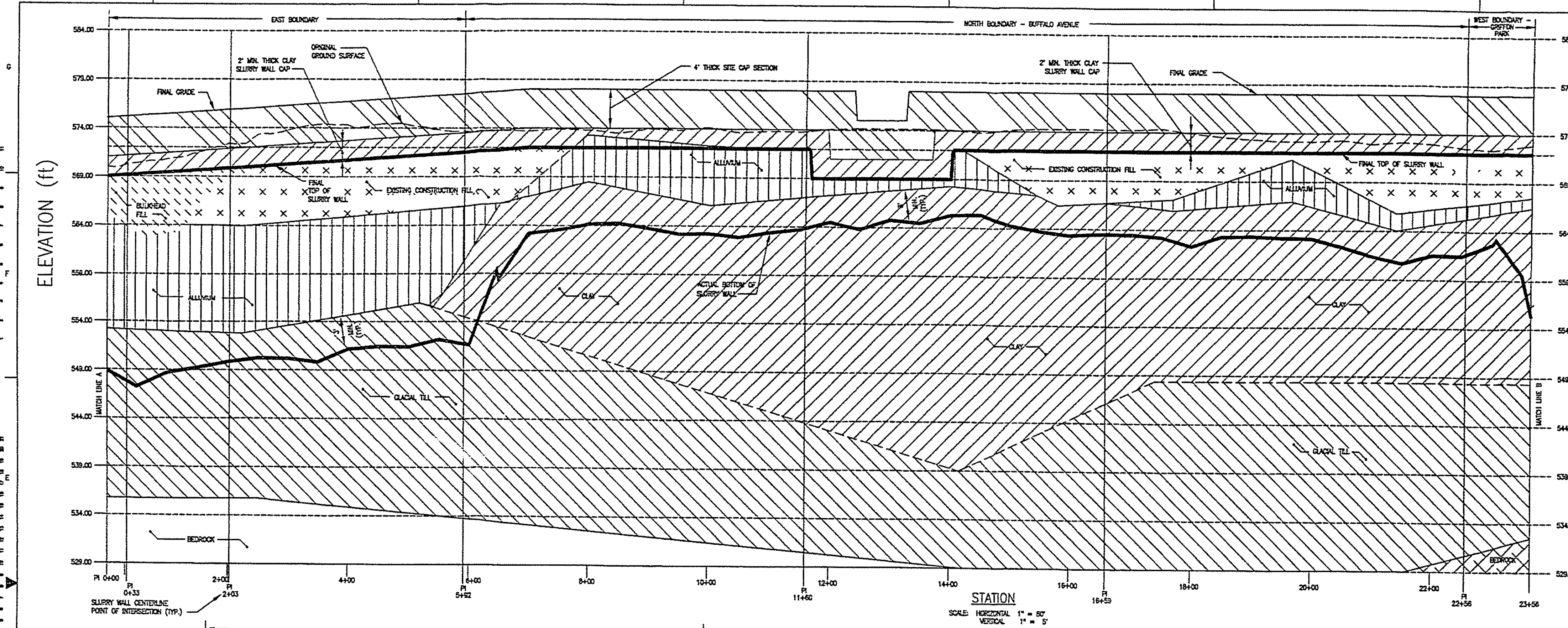
OXYCHEM/OLIN
REMEDIAL DESIGN
102nd STREET LANDFILL SITE
NIAGARA FALLS, NEW YORK

AS-BUILT APL COLLECTION SYSTEM SECTIONS AND DETAILS

SCALE	GRAPHIC NUMBER	REV.
	594000-30K-08	5

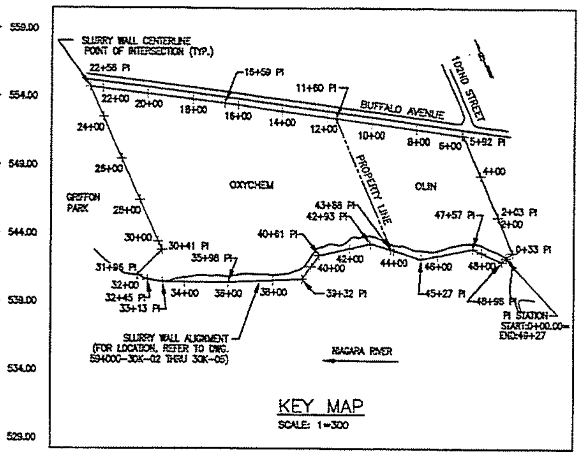
8-13-99

SUB-CONTRACT PKG.
WORK PKG.
INDEX & CODE

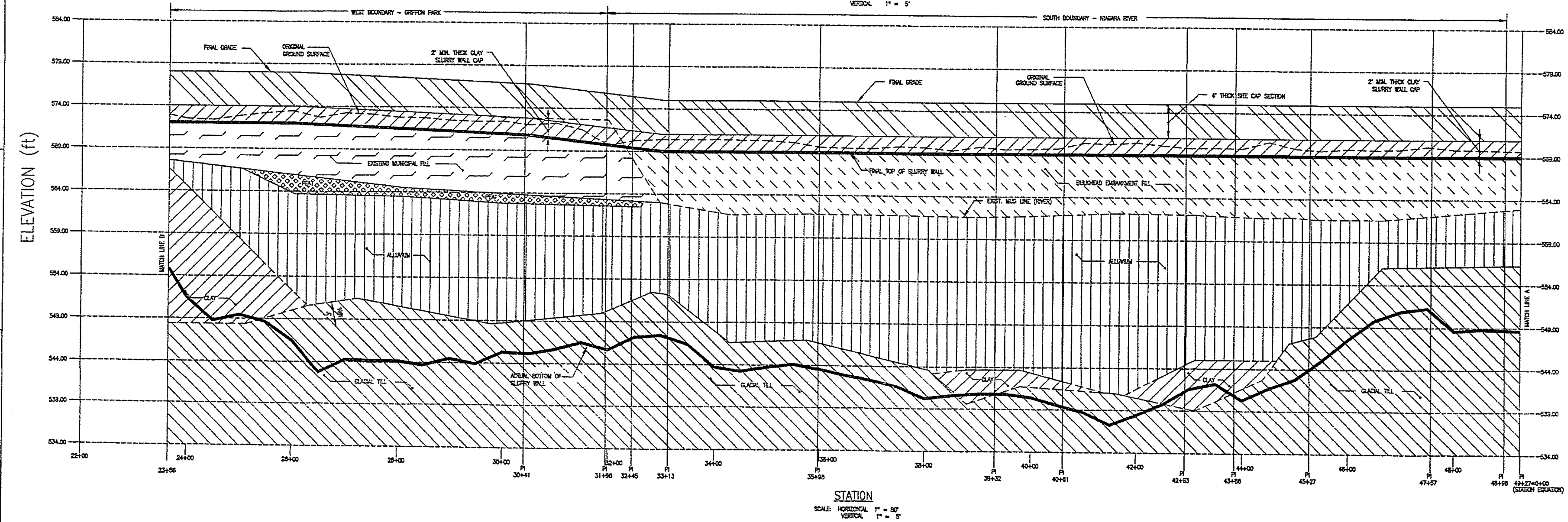


NOTES:

1. DATA CONCERNING SUBSURFACE CONDITIONS HAS BEEN OBTAINED FROM BORINGS PERFORMED DURING THE PREDESIGN FIELD ACTIVITIES. BORING LOGS ARE INCLUDED IN APPENDIX A OF THE PREDESIGN FIELD ACTIVITIES REPORT.
2. A TWO FOOT THICK MIN. CLAY SLURRY WALL CAP IS TO BE INSTALLED ON TOP OF THE SLURRY WALL ALONG ITS ENTIRE LENGTH.
3. SLURRY WALL WILL BE KEYED INTO THE UNDERLYING GLACIAL TILL/CLAY A MINIMUM OF 3 FEET BELOW ANY WEATHERED ZONE.



KEY MAP
SCALE: 1=300



STATION
SCALE: HORIZONTAL 1" = 80' VERTICAL 1" = 5'

0 40 80 FT.
UNLESS NOTED OTHERWISE

REV.	DATE	REVISION DESCRIPTION	DES. / CHK.	APPROVED
A	01/29/93	ENGINEERING REPORT SUBMITTAL (PRELIMINARY/INTERMEDIATE)	FGS	DRK
B	09/06/95	ENGINEERING REPORT SUBMITTAL (FINAL)		
0	12/21/95	ISSUE FOR BIDS		
1	2/5/96	ISSUED FOR CONSTRUCTION		
2	2/19/98	AS-BUILT		

FLUOR DANIEL

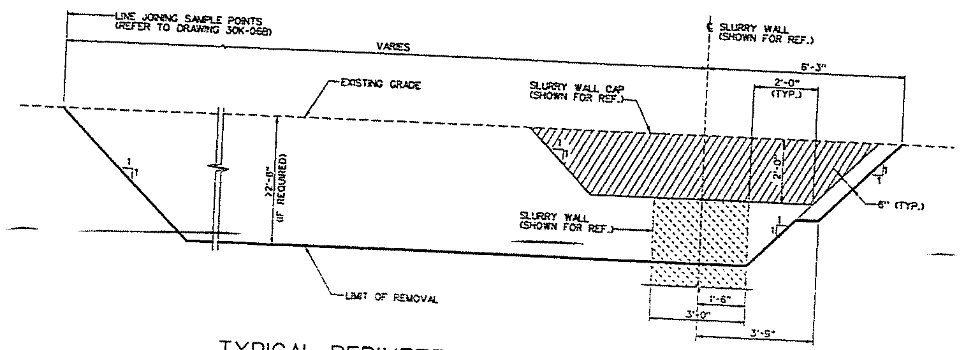
DESIGNED BY: G. KORYLEC
CHECKED BY: S. LAWRENCE
SUPERVISOR: C. MARS
DISC ENGR./SPEC.: C. TAYLOR
PROJECT: C. MARS
CLIENT: OXYCHEM / OLIN

OXYCHEM / OLIN
REMEDIAL DESIGN
102nd STREET LANDFILL SITE
NIAGARA FALLS, NEW YORK

AS-BUILT SLURRY WALL PROFILE

SCALE: AS NOTED — DRAWING NUMBER: 594000-30K-09 — REV. 2

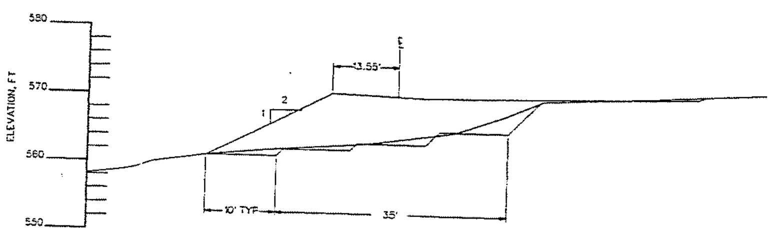
MANUAL CHANGES MADE - YES ☐ NO ☐ DWG. FILE UPDATED - YES ☐ NO ☐ MODEL UPDATED - YES ☐ NO ☐ CADD DRAWING No. 30K09B.DWG 2/5/96



TYPICAL PERIMETER SOILS SECTION

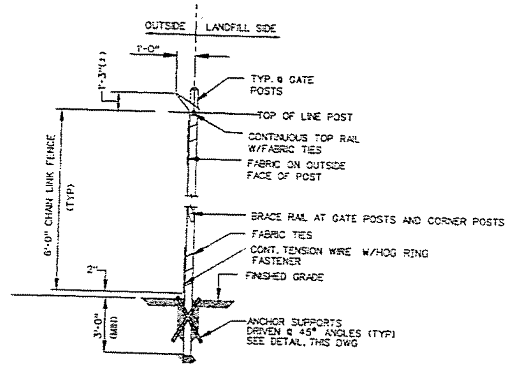
SCALE: 1"=2'

REFER TO DWG. 30K-06B FOR GRID COORDINATES AND DEPTHS



TYPICAL BULKHEAD CONSTRUCTION BENCH SECTION

NTS

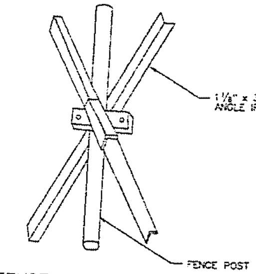


TYPICAL FENCE POST DETAIL

NTS

FENCING NOTES:

1. FOR LOCATION OF FENCING, SEE DWGS. 594000-30K-02 THROUGH 30K-05.
2. ALL FENCING MATERIAL SHALL BE AS SPECIFIED IN SPECIFICATION SECTION 02834.
3. DOUBLE SLIDE GATE FRAMES SHALL BE 1-1/2 INCH SCHEDULE 40 HOT DIP GALVANIZED STEEL PIPE WITH 1-1/2 INCH SCHEDULE 40 INTERMEDIATE POSTS AND 5/8 INCH DIA. POST RODS.
4. ALL HARDWARE SHALL BE MANUFACTURER'S STANDARD HARDWARE.
5. ALL CORNER, END AND GATE POSTS SHALL BE SET IN CONCRETE. OTHER POSTS SHALL BE ANCHORED AS PER FENCE ANCHOR DETAIL THIS DWG.
6. REFER TO DWGS. 30K-02 THROUGH -05 FOR FENCE LOCATIONS.



FENCE ANCHOR DETAIL

NTS

PERMANENT SEEDING MIXTURE AND NOTES

MIXTURE	"INSIDE SLURRY WALL" LB/ACRE
WHITE CLOVER	5
"LANCER" PERENIAL PEA	20
ANNUAL RYEGRASS	30
TIMOTHY	30
ORCHARD GRASS	10
SMOOTH BROMEGRASS	10
REDTOP	5
TOTAL	110

"PERIMETER AREAS"	LB/ACRE
TRIPLE CROWN PERENIAL RYE	49.12
KENTUCKY BLUE GRASS	24.68
CREEPING RED FESCUE	24.24

NOTES

1. USE ONE (1) 55 LB BAG OF SEED, THREE (3) 66.3 LB BAGS OF FERTILIZER, THIRTEEN (13) 50 LB BAGS OF MULCH, AND ½ ~~BAG OF INNOCULAR.~~ 1500 GALLONS OF WATER NEEDED.
2. PERIMETER AREAS INCLUDE GRIFFON PARK AND ANCZOK EASEMENT AREA.
3. SITE PREPARATION
   A. INSTALL NEEDED WATER AND EROSION CONTROL MEASURES AND BRING AREA TO BE SEEDED TO DESIRED GRADES.
   B. TOPSOIL TO BE A MINIMUM OF 6" THICK. TOPSOIL MATERIAL AND INSTALLATION TO BE IN ACCORDANCE WITH THE NY GUIDELINES FOR URBAN EROSION AND SEDIMENT CONTROL (UESC).
   C. REMOVE ALL STONES OVER 1 INCH IN DIAMETER, STICKS AND FOREIGN MATTER FROM THE SURFACE.
   D. INCORPORATE LIME AND FERTILIZER IN TOP 2-4 INCHES OF TOPSOIL.
   E. SMOOTH AND FIRM THE SEEDBED.
4. PLANTING

   IF HYDROSEEDED, LIME AND FERTILIZER MAY BE APPLIED THROUGH THE SEEDER THEN ROLLING IS NOT PRACTICAL.
5. MULCHING

   MULCH ALL SEEDED AREAS IN ACCORDANCE WITH STANDARD AND SPECIFICATIONS FOR MULCHING ON PAGE 3.31 OF THE N.Y. GUIDELINES FOR URBAN EROSION AND SEDIMENT CONTROL (UESC).
6. RESTRICT USE

   NEW SEEDINGS SHOULD BE PROTECTED FROM USE FOR ONE FULL YEAR TO ALLOW DEVELOPMENT OF A DENSE SOD WITH GOOD ROOT STRUCTURE.
7. SWALES

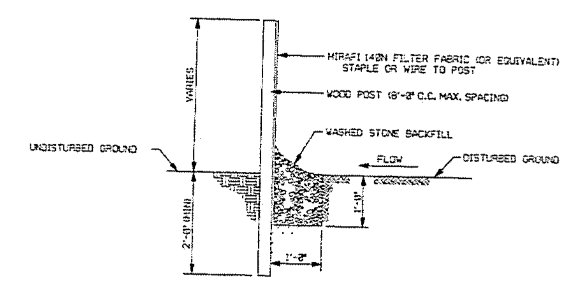
   THE ABOVE SEED MIXTURE IS COMPATIBLE WITH WATERWAYS. SWALES AND OUTLETS SHALL BE PROTECTED AGAINST EROSION BY VEGETATIVE MEANS AS SOON AFTER CONSTRUCTION AS PRACTICAL. VEGETATION MUST BE WELL ESTABLISHED BEFORE DIVERSIONS OR OTHER CHANNELS ARE OUTLETTED INTO THEM. USE EROSION CONTROL MATTING OR SODDING OF CHANNELS TO PROVIDE EROSION PROTECTION AS SOON AFTER CONSTRUCTION AS POSSIBLE.

   SWALE CENTERS OR CRUCIAL AREAS MAY BE SODDED. REFER TO THE STANDARD AND SPECIFICATION FOR STABILIZATION WITH SOD ON PAGE 3.35 OF THE N.Y. GUIDELINES FOR URBAN EROSION AND SEDIMENT CONTROL. BE SURE SOD IS SECURELY ANCHORED USING STAPLES OR STAKES.
8. MAINTENANCE

   FERTILIZE, LIME AND MOW AS NEEDED TO MAINTAIN DENSE PROTECTIVE VEGETATIVE COVER.

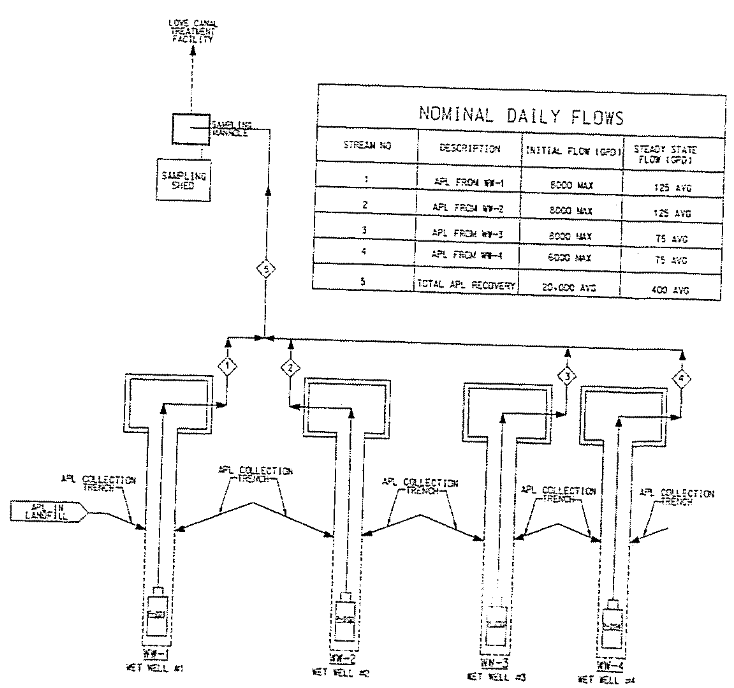
   SWALES SHALL NOT BE USED FOR ROADWAYS.

   IF RILLS DEVELOP IN THE BOTTOM OF A SWALE, PROMPT ATTENTION IS REQUIRED TO AVOID THE FORMATION OF GULLIES. EITHER HAY OR STRAW BALES, RIPRAP, EXCELSIOR OR FILTER FABRIC MAY BE USED DURING THE ESTABLISHMENT PHASE. SEE FIGURE 3.3, RILL MAINTENANCE MEASURES ON PAGE 3.27 OF THE N.Y. GUIDELINES FOR URBAN EROSION AND SEDIMENT CONTROL. SPACING BETWEEN RILL MAINTENANCE BARRIERS SHALL NOT EXCEED 100 FEET.



TYPICAL SILT FENCE DETAIL

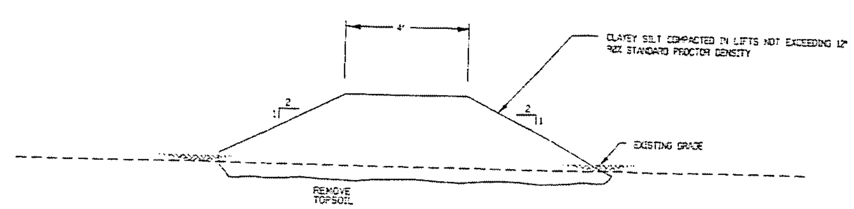
N.T.S.



NOMINAL DAILY FLOWS

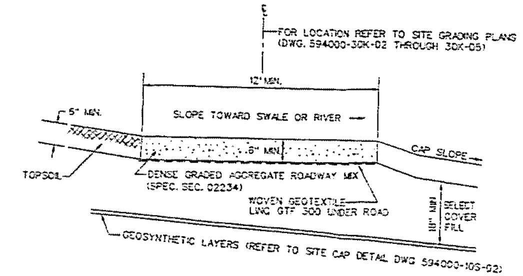
STREAM NO	DESCRIPTION	INITIAL FLOW (GPD)	STEADY STATE FLOW (GPD)
1	APL FROM WW-1	6000 MAX	125 AVG
2	APL FROM WW-2	8000 MAX	125 AVG
3	APL FROM WW-3	8000 MAX	75 AVG
4	APL FROM WW-4	6000 MAX	75 AVG
5	TOTAL APL RECOVERY	20,000 AVG	400 AVG

AQUEOUS PHASE LIQUID (APL) SYSTEM



TYPICAL DIVERSION BERM/DIKE DETAIL

N.T.S.



LIGHT DUTY ACCESS ROAD DETAIL

NTS

REV.	DATE	REVISION DESCRIPTION	DES. CHK.	APPROVED
A	2/25/93	ENGINEERING REPORT SUBMITTAL (PRELIMINARY/INTERMEDIATE)		
5	5/8/95	FINAL ENGINEERING REPORT (DRAFT SUBMITTAL)		
0	12/2/95	ISSUE FOR BIDS		
1	7/5/96	ISSUE FOR CONSTRUCTION		
2	1/15/98	AS-BUILT		
3	7/13/99	AS-BUILT, DELETED DETAILS		

DWG. NO.	REFERENCE DRAWINGS
594000-30K-02	SITE REMEDIATION PLAN - AREA 1
594000-30K-03	SITE REMEDIATION PLAN - AREA 2
594000-30K-04	SITE REMEDIATION PLAN - AREA 3
594000-30K-05	SITE REMEDIATION PLAN - AREA 4
594000-10S-02	CAPPING SYSTEM & BULKHEAD - SECTIONS AND DETAILS

FLUOR DANIEL

DESIGNED BY: T. SZYMONIAK
CHECKED BY: S. LAWRENCE
SUPERVISOR: C. MARS
LEAD ENGR./SPEC.: C. TAYLOR
PROJECT: C. MARS
CLIENT: OXYCHEM/OLIN

OXYCHEM/OLIN
REMEDIAL DESIGN
102nd STREET LANDFILL SITE
NIAGARA FALLS, NEW YORK

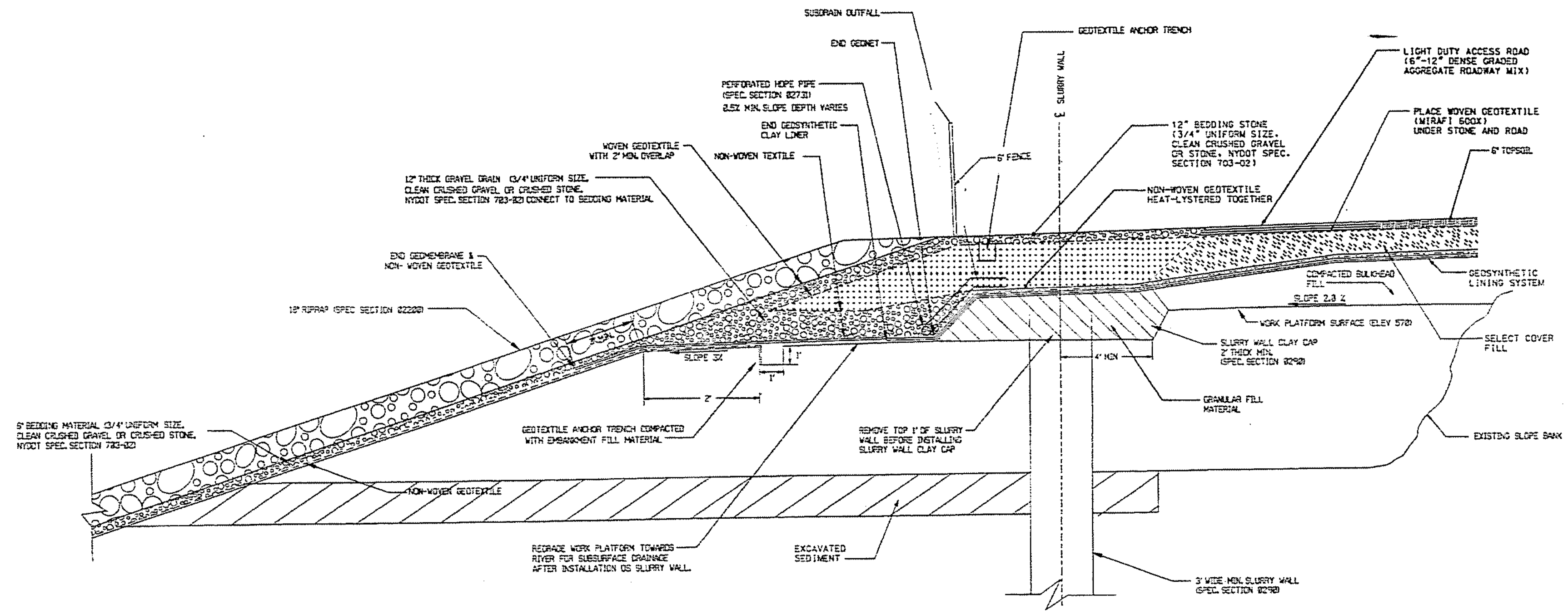
AS-BUILT SITE DETAILS

DRAWING NUMBER: 594000-10S-01 REV. 3

MANUAL CHANGES MADE - YES ☐ NO ☐ DWG. FILE UPDATED - YES ☐ NO ☐ MODEL UPDATED - YES ☐ NO ☐ CADD DRAWING No. 10S01DGN

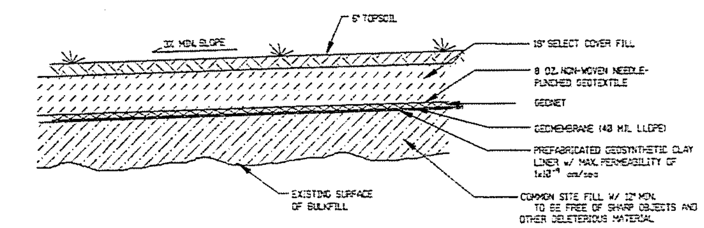
STATE OF NEW YORK — CHARLES TAYLOR, JR — LICENSED PROFESSIONAL ENGINEER

8-13-99



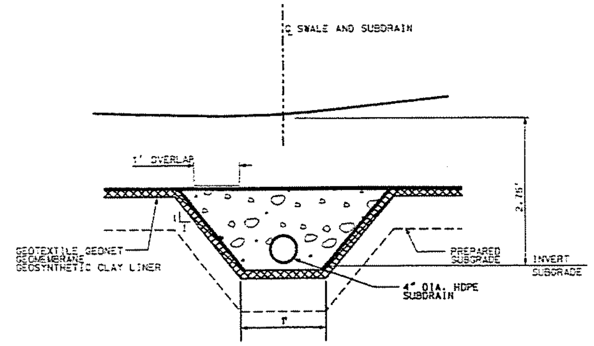
TYPICAL BULKHEAD DETAIL

NTS



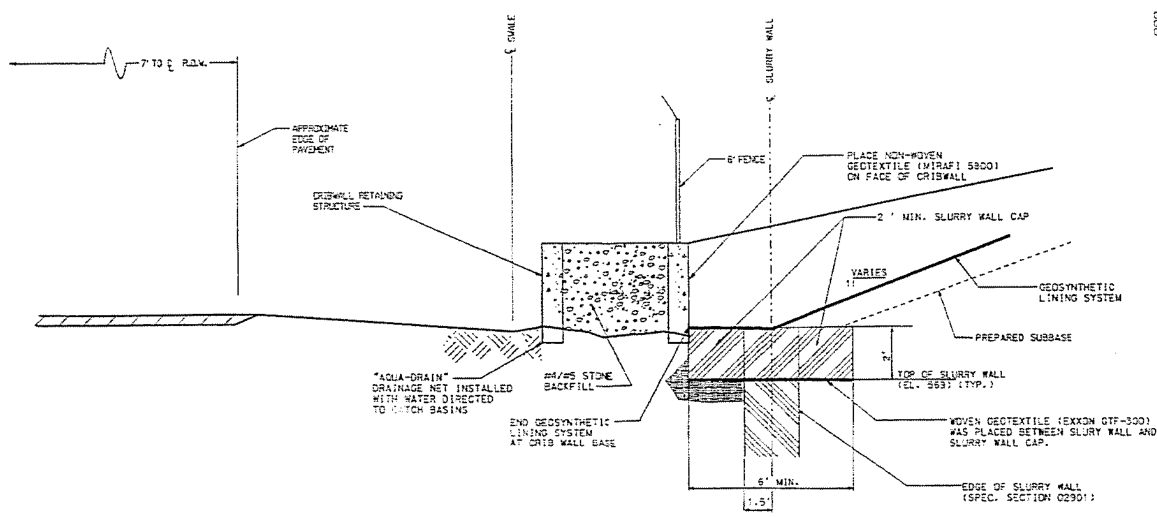
TYPICAL CAP DETAIL

NTS



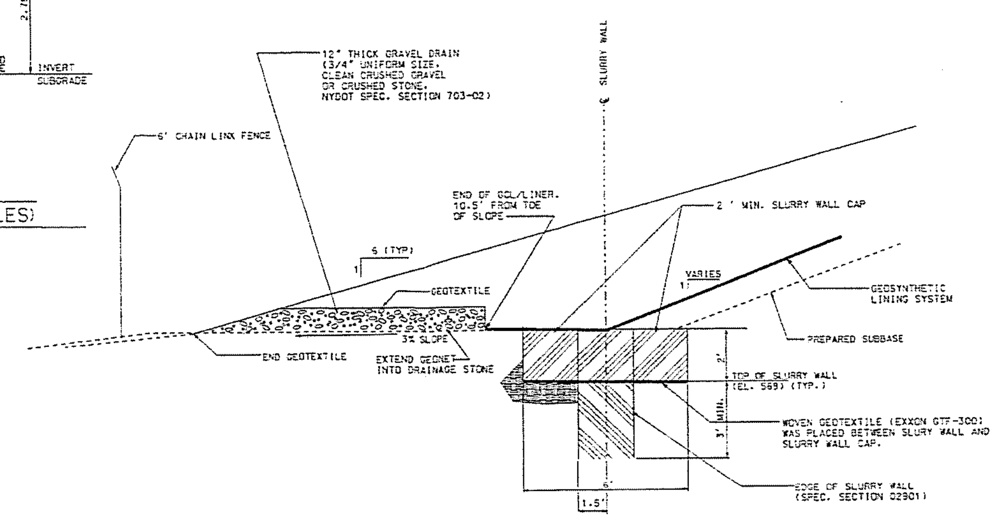
DRAINAGE TRENCH DETAIL
(TYPICAL BELOW ALL SURFACE SWALES)

NTS



TYPICAL LANDFILL/SLURRY WALL DETAIL
TOE AT BUFFALO AVENUE

NTS



TYPICAL LANDFILL/SLURRY WALL DETAIL

NTS

GENERAL NOTES

1. FIELD INSTALLATION AND TESTING OF GEOSYNTHETIC LAYERS SHALL BE AS RECOMMENDED BY THEIR RESPECTIVE MANUFACTURER(S) AND APPROVED BY THE CONSTRUCTION MANAGER. THE GEOSYNTHETIC LAYERS SHALL BE INSTALLED BY AN EXPERIENCED INSTALLER. ALL SUBMITTALS AND RESULTS OF TESTING DATA SHALL BE APPROVED BY THE CONSTRUCTION MANAGER PRIOR TO ANY MATERIALS ARRIVING ON THE SITE.

2. THE CONTRACTOR SHALL SUBMIT A QUALITY CONTROL AND FIELD TESING PLAN INCLUDING APPROPRIATE ASTM STANDARD METHODS AS RECOMMENDED BY THE GEOSYNTHETIC MANUFACTURER(S) FOR THE CONSTRUCTION MANAGERS APPROVAL.

3. THE WOVEN GEOTEXTILE ON BULKHEAD SHALL BE MIRAFI 700X.

4. THE NON-WOVEN GEOTEXTILE SHALL BE EVERGREEN TECHNOLOGIES TG 700.

5. THE GEONET SHALL BE NATIONAL SEAL COMPANY POLY-NET 2000 OR EQUIVALENT HAVING A MINIMUM TRANSMISSIVITY OF $0.21X10^{-3}$ SQUARE METERS PER SECOND FOR EACH FOOT OF WIDTH FOR ALL SLOPES.

6. THE GEOMEMBRANE SHALL BE A MINIMUM 40 MIL THICK LLDPE. THE GEOMEMBRANE SHALL BE NATIONAL SEAL COMPANY LLDPE.

7. THE GEOSYNTHETIC CLAY LINER SHALL BE CLAYMAX 200R.

8. THE GEOSYNTHETIC CLAY LINER ON SLOPES GREATER THEN 10% SHALL BE BENTOMAT ST.

REV.	DATE	REVISION DESCRIPTION	DES. CHK.	APPROVED
A	9/26/92	PRELIMINARY ISSUE FOR 30% DESIGN		
B	8/24/95	REVISED TITLE		
C	9/8/95	FINAL ENGINEERING REPORT (DRAFT SUBMITTAL)		
1	2/15/99	AS-BUILT		

FLUOR DANIEL

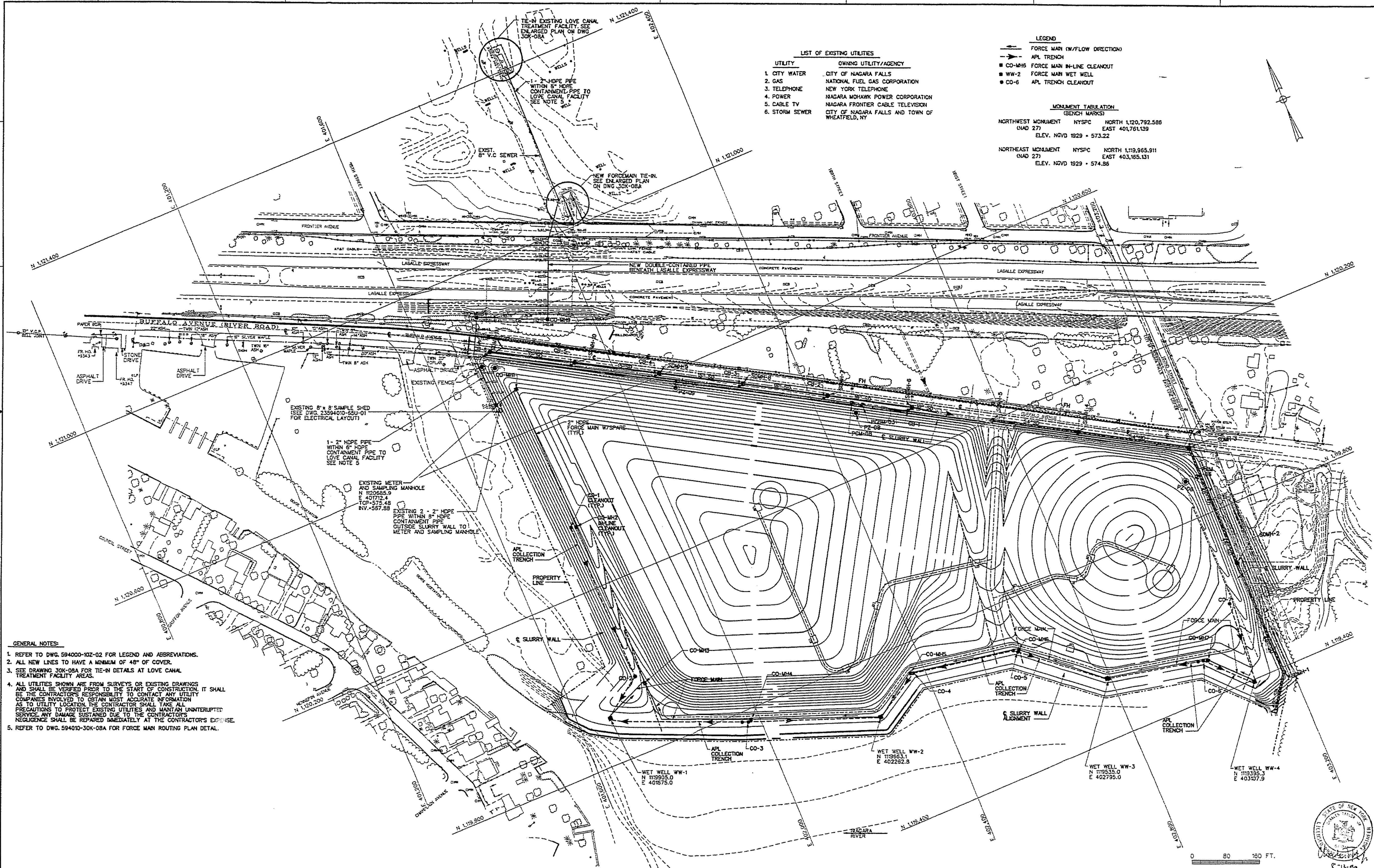
DESIGNED BY: L. ATTCITY
CHECKED BY: S. LAWRENCE
SUPERVISOR: C. MARS
LEAD ENGINEER: C. TAYLOR
PROJECT: C. MARS
CLIENT: OXYCHEM/OLIN

OXYCHEM / OLIN
REMEDIAL DESIGN
102nd STREET LANDFILL SITE
NIAGARA FALLS, NEW YORK

AS-BUILT
CAPPING SYSTEM AND BULKHEAD
SECTION AND DETAILS

SCALE: AS NOTED | DRAWING NUMBER: 594020-10S-02 | REV. 1

MANUAL CHANGES MADE - YES ☐ NO ☐ DWG. FILE UPDATED - YES ☐ NO ☐ MODEL UPDATED - YES ☐ NO ☐ CADD DRAWING No.



LIST OF EXISTING UTILITIES

UTILITY	OWNING UTILITY/AGENCY
1. CITY WATER	CITY OF NIAGARA FALLS
2. GAS	NATIONAL FUEL GAS CORPORATION
3. TELEPHONE	NEW YORK TELEPHONE
4. POWER	NIAGARA MOHAWK POWER CORPORATION
5. CABLE TV	NIAGARA FRONTIER CABLE TELEVISION
6. STORM SEWER	CITY OF NIAGARA FALLS AND TOWN OF WHEATFIELD, NY

LEGEND

- FORCE MAIN (W/FLOW DIRECTION)
- APL TRENCH
- CO-MH6 FORCE MAIN IN-LINE CLEANOUT
- WW-2 FORCE MAIN WET WELL
- CO-6 APL TRENCH CLEANOUT

MONUMENT TABULATION (BENCH MARKS)

NORTHWEST MONUMENT (NAD 27) NYSPC NORTH 1,120,792.586 EAST 401,761.139 ELEV. NGVD 1929 = 573.22

NORTHEAST MONUMENT (NAD 27) NYSPC NORTH 1,119,965.911 EAST 403,165.131 ELEV. NGVD 1929 = 574.86

GENERAL NOTES:

1. REFER TO DWG. 594000-10Z-02 FOR LEGEND AND ABBREVIATIONS.
2. ALL NEW LINES TO HAVE A MINIMUM OF 48" OF COVER.
3. SEE DRAWING 30K-08A FOR TIE-IN DETAILS AT LOVE CANAL TREATMENT FACILITY AREAS.
4. ALL UTILITIES SHOWN ARE FROM SURVEYS OR EXISTING DRAWINGS AND SHALL BE VERIFIED PRIOR TO THE START OF CONSTRUCTION. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO CONTACT ANY UTILITY COMPANIES INVOLVED TO OBTAIN MOST ACCURATE INFORMATION AS TO UTILITY LOCATION. THE CONTRACTOR SHALL TAKE ALL PRECAUTIONS TO PROTECT EXISTING UTILITIES AND MAINTAIN UNINTERUPTED SERVICE. ANY DAMAGE SUSTAINED DUE TO THE CONTRACTOR'S NEGLIGENCE SHALL BE REPAIRED IMMEDIATELY AT THE CONTRACTOR'S EXPENSE.
5. REFER TO DWG. 594010-30K-08A FOR FORCE MAIN ROUTING PLAN DETAIL.

8-13-99

REV.	DATE	REVISION DESCRIPTION	DES. CHK.	APPROVED
A	[illegible]	ISSUED FOR REVIEW	GZK	
B	[illegible]	REVISED SANITARY SEWER GRAVITY LINE AND APL FORCE MAIN	GZK	
0	[illegible]	ISSUED FOR APPROVAL	GZK	
1	[illegible]	ISSUED FOR CLIENT REVIEW	MCG	
2	[illegible]	NEW LINE REROUTED TO LOVE CANAL TREATMENT FACILITY	MCG	
3	[illegible]	NEW LAYOUT OF FORCEMAIN		

REV.	DATE	REVISION DESCRIPTION	DES. CHK.	APPROVED
4	[illegible]	ISSUED FOR CIVIL PACKAGE CONSTRUCTION		
5	[illegible]	REVISED PER AGENCIES COMMENTS		
6	[illegible]	AS BUILT, ISSUED FOR CLOSEOUT REPORT		

DWG.NO.	REFERENCE DRAWINGS
594000-30K-06C	APL WELL DETAILS
594000-30K-08	APL COLLECTION SYSTEM SECTIONS AND DETAILS
594010-30K-08A	FORCE MAIN DETAILS

FLUOR DANIEL

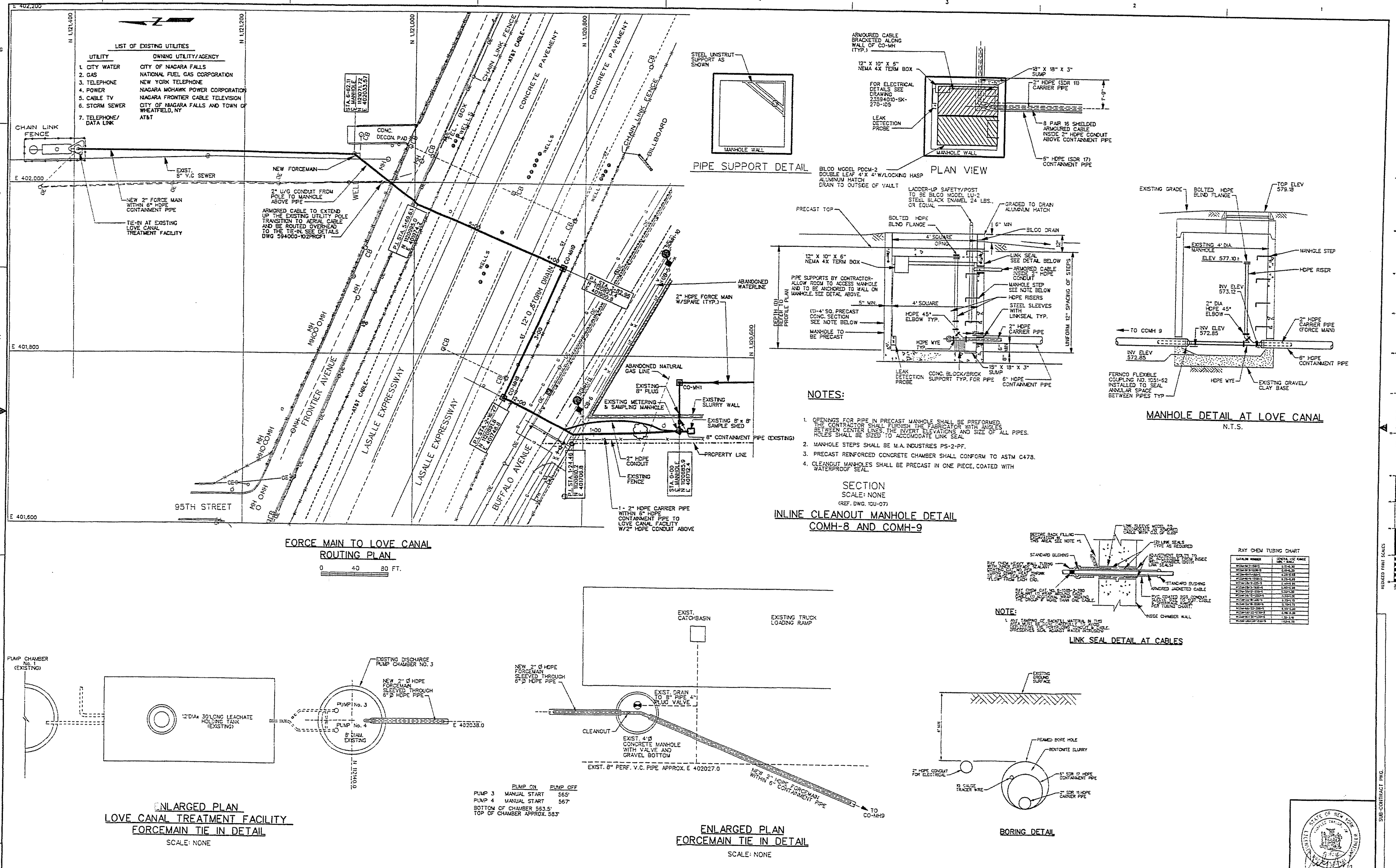
DESIGNED BY G. KURYLEC; CHECKED BY S. LAWRENCE; SUPERVISOR C. MARS; LEAD ENGR./SPEC. C. TAYLOR; PROJECT C. MARS; CLIENT OXYCHEM/OLIN

OXYCHEM/OLIN
REMEDIAL DESIGN
102nd STREET LANDFILL SITE
NIAGARA FALLS, NEW YORK

FORCE MAIN ROUTING PLAN

SCALE 1"=80' DRAWING NUMBER 594010-10U-07 REV. 6

MANUAL CHANGES MADE - YES ☐ NO ☐ DWG. FILE UPDATED - YES ☐ NO ☐ MODEL UPDATED - YES ☐ NO ☐ CADD DRAWING No. 10U07.DGN



LIST OF EXISTING UTILITIES
UTILITY / OWNING UTILITY/AGENCY
1. CITY WATER — CITY OF NIAGARA FALLS
2. GAS — NATIONAL FUEL GAS CORPORATION
3. TELEPHONE — NEW YORK TELEPHONE
4. POWER — NIAGARA MOHAWK POWER CORPORATION
5. CABLE TV — NIAGARA FRONTIER CABLE TELEVISION
6. STORM SEWER — CITY OF NIAGARA FALLS AND TOWN OF WHEATFIELD, NY
7. TELEPHONE/DATA LINK — AT&T
CHAIN LINK FENCE
NEW FORCEMAIN
CONC. DECON. PAD
EXIST. 8" V.C SEWER
NEW 2" FORCE MAIN WITHIN 6" HDPE CONTAINMENT PIPE
TIE-IN AT EXISTING LOVE CANAL TREATMENT FACILITY
2" U/G CONDUIT FROM POLE TO MANHOLE ABOVE PIPE
ARMORED CABLE TO EXTEND UP THE EXISTING UTILITY POLE TRANSITION TO AERIAL CABLE AND BE ROUTED OVERHEAD TO THE TIE-IN. SEE DETAILS DWG 594000-10ZPROF1
CONCRETE PAVEMENT
12" Ø STORM DRAIN
FRONTIER AVENUE
LASALLE EXPRESSWAY
BUFFALO AVENUE
95TH STREET
BILLBOARD
ABANDONED WATERLINE
2" HDPE FORCE MAIN W/SPARE (TYP.)
ABANDONED NATURAL GAS LINE
EXISTING 8" PLUG
EXISTING METERING & SAMPLING MANHOLE
EXISTING SLURRY WALL
EXISTING 8' x 8' SAMPLE SHED
8" CONTAINMENT PIPE (EXISTING)
PROPERTY LINE
2" HDPE CONDUIT
EXISTING FENCE
1 - 2" HDPE CARRIER PIPE WITHIN 6" HDPE CONTAINMENT PIPE TO LOVE CANAL FACILITY W/2" HDPE CONDUIT ABOVE
E 402,200
E 402,000
E 401,800
E 401,600
N 1,121,400
N 1,121,200
N 1,121,000
N 1,120,800
N 1,120,600
FORCE MAIN TO LOVE CANAL ROUTING PLAN
0 40 80 FT.
STEEL UNISTRUT SUPPORT AS SHOWN
MANHOLE WALL
PIPE SUPPORT DETAIL
ARMOURED CABLE BRACKETED ALONG WALL OF CO-MH (TYP.)
12" X 10" X 6" NEMA 4X TERM BOX
FOR ELECTRICAL DETAILS SEE DRAWING 23594010-SK-270-105
LEAK DETECTION PROBE
18" X 18" X 3" SUMP
2" HDPE (SDR 11) CARRIER PIPE
8 PAIR 16 SHIELDED ARMOURED CABLE INSIDE 2" HDPE CONDUIT ABOVE CONTAINMENT PIPE
6" HDPE (SDR 17) CONTAINMENT PIPE
BILCO MODEL PDCM-2 DOUBLE LEAF 4' X 4' W/LOCKING HASP ALUMINUM HATCH DRAIN TO OUTSIDE OF VAULT
PLAN VIEW
LADDER-UP SAFETY/POST TO BE BILCO MODEL LU-2 STEEL BLACK ENAMEL 24 LBS., OR EQUAL
PRECAST TOP
BOLTED HDPE BLIND FLANGE
GRADED TO DRAIN ALUMINUM HATCH
BILCO DRAIN
4' SQUARE OPNG.
LINK SEAL SEE DETAIL BELOW
ARMORED CABLE INSIDE 2" HDPE CONDUIT
MANHOLE STEP SEE NOTE BELOW
HDPE RISERS
STEEL SLEEVES WITH LINKSEAL TYP.
2" HDPE CARRIER PIPE
PIPE SUPPORTS BY CONTRACTOR-ALLOW ROOM TO ACCESS MANHOLE AND TO BE ANCHORED TO WALL ON MANHOLE. SEE DETAIL ABOVE.
(3)-4' SQ. PRECAST CONC. SECTION SEE NOTE BELOW
MANHOLE TO BE PRECAST
HDPE 45° ELBOW TYP.
HDPE WYE TYP.
18" X 18" X 3" SUMP
6" HDPE CONTAINMENT PIPE
LEAK DETECTION PROBE
CONC. BLOCK/BRICK SUPPORT TYP. FOR PIPE
UNIFORM 12" SPACING OF STEPS
NOTES:
1. OPENINGS FOR PIPE IN PRECAST MANHOLE SHALL BE PREFORMED. THE CONTRACTOR SHALL FURNISH THE FABRICATOR WITH ANGLES BETWEEN CENTER LINES, THE INVERT ELEVATIONS AND SIZE OF ALL PIPES. HOLES SHALL BE SIZED TO ACCOMODATE LINK SEAL.
2. MANHOLE STEPS SHALL BE M.A. INDUSTRIES PS-2-PF.
3. PRECAST REINFORCED CONCRETE CHAMBER SHALL CONFORM TO ASTM C478.
4. CLEANOUT MANHOLES SHALL BE PRECAST IN ONE PIECE, COATED WITH WATERPROOF SEAL.
SECTION
SCALE: NONE
(REF. DWG. 10U-07)
INLINE CLEANOUT MANHOLE DETAIL COMH-8 AND COMH-9
EXISTING GRADE
BOLTED HDPE BLIND FLANGE
TOP ELEV 579.18
EXISTING 4' DIA. MANHOLE
ELEV 577.10±
MANHOLE STEP
HDPE RISER
INV ELEV 573.12
2" DIA HDPE 45° ELBOW
INV ELEV 572.85
TO COMH 9
2" HDPE CARRIER PIPE (FORCE MAIN)
6" HDPE CONTAINMENT PIPE
FERNCO FLEXIBLE COUPLING NO. 1051-62 INSTALLED TO SEAL ANNULAR SPACE BETWEEN PIPES TYP
HDPE WYE
EXISTING GRAVEL/CLAY BASE
MANHOLE DETAIL AT LOVE CANAL
N.T.S.
STANDARD BUSHING
ARMORED JACKETED CABLE
INSIDE CHAMBER WALL
NOTE:
LINK SEAL DETAIL AT CABLES
RAY CHEM TUBING CHART
PUMP CHAMBER No. 1 (EXISTING)
12'DIA. 30'LONG LEACHATE HOLDING TANK (EXISTING)
EXISTING DISCHARGE PUMP CHAMBER NO. 3
NEW 2" Ø HDPE FORCEMAIN SLEEVED THROUGH 6" Ø HDPE PIPE
PUMP No. 3
PUMP No. 4
8' DIAM. EXISTING
E 402038.0
PUMP ON / PUMP OFF
PUMP 3 MANUAL START 565'
PUMP 4 MANUAL START 567'
BOTTOM OF CHAMBER 563.5'
TOP OF CHAMBER APPROX. 583'
ENLARGED PLAN LOVE CANAL TREATMENT FACILITY FORCEMAIN TIE IN DETAIL
SCALE: NONE
EXIST. CATCHBASIN
EXISTING TRUCK LOADING RAMP
NEW 2" Ø HDPE FORCEMAIN SLEEVED THROUGH 6" Ø HDPE PIPE
EXIST. DRAIN TO 8" PIPE 4" PLUG VALVE
CLEANOUT
EXIST. 4'Ø CONCRETE MANHOLE WITH VALVE AND GRAVEL BOTTOM
EXIST. 8" PERF. V.C. PIPE APPROX. E 402027.0
NEW 2" HDPE FORCEMAIN WITHIN 6" CONTAINMENT PIPE
TO CO-MH9
ENLARGED PLAN FORCEMAIN TIE IN DETAIL
SCALE: NONE
EXISTING GROUND SURFACE
REAMED BORE HOLE
BENTONITE SLURRY
2" HDPE CONDUIT FOR ELECTRICAL
6" SDR 17 HDPE CONTAINMENT PIPE
2" SDR 11 HDPE CARRIER PIPE
BORING DETAIL
8-13-99

REV.	DATE	REVISION DESCRIPTION	DES. CHK.	APPROVED	DWG.NO.	REFERENCE DRAWINGS
0		ISSUED FOR APPROVAL	GZK		594010-10U-07	FORCE MAIN ROUTING PLAN
1		REVISED PER OXY'S 12/1/97 COMMENTS			594000-30K-08	API COLLECTION SYSTEM SECTIONS AND DETAILS
2		ISSUED FOR CIVIL PACKAGE CONSTRUCTION				
3		REVISED PER AGENCIES COMMENTS				
4		AS BUILT, ISSUED FOR CLOSEOUT REPORT				

FLUOR DANIEL

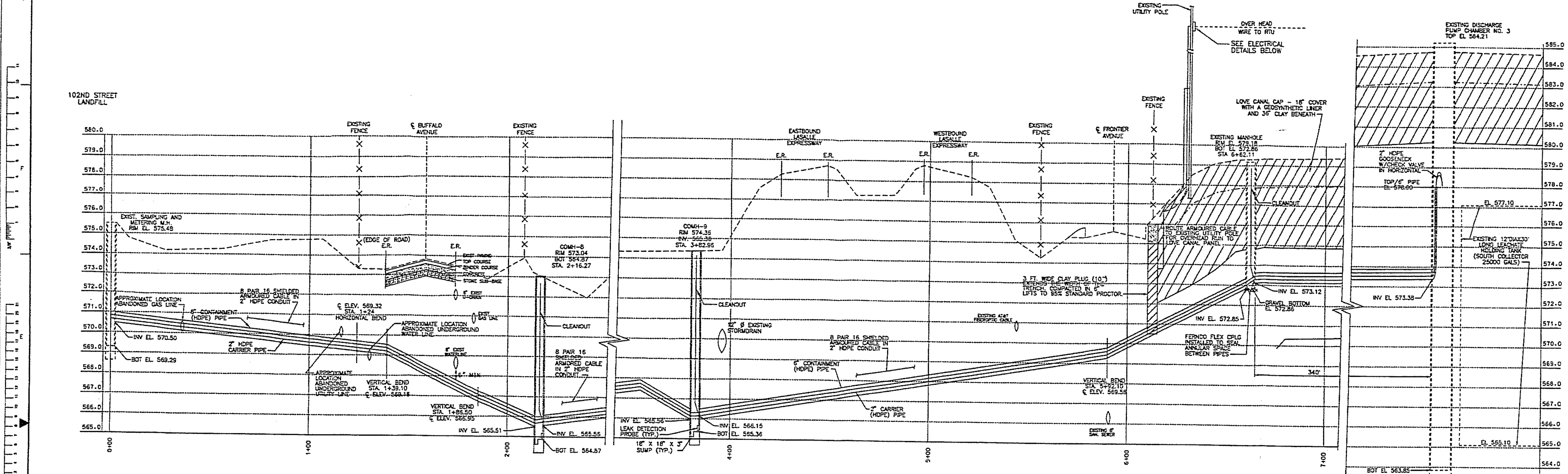
DESIGNED BY	G. KURYLEC
CHECKED BY	S. LAWRENCE
SUPERVISOR	C. MARS
LEAD ENGR./SPEC.	C. TAYLOR
PROJECT	C. MARS
CLIENT	OXYCHEM/OLIN

OXYCHEM/OLIN
REMEDIAL DESIGN
102nd STREET LANDFILL SITE
NIAGARA FALLS, NEW YORK

FORCE MAIN FROM MET/SAMP MH TO L.C. FACILITY
PLAN & DETAILS

SCALE: AS NOTED — DRAWING NUMBER: 594010-30K-08A — REV. 4

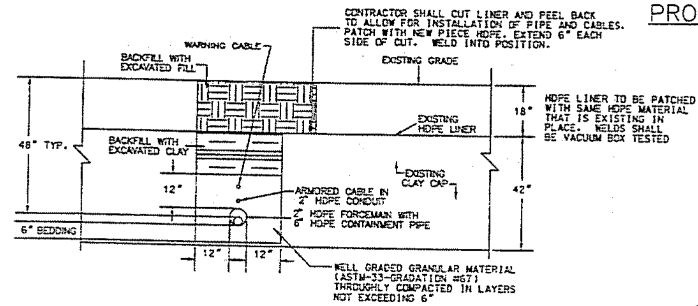
MANUAL CHANGES MADE - YES ☐ NO ☐ — DWG. FILE UPDATED - YES ☐ NO ☐ — MODEL UPDATED - YES ☐ NO ☐ — CADD DRAWING No. 30K08A.DGN



PROFILE - FORCEMAIN FROM METERING AND SAMPLING MH TO LOVE CANAL FACILITY

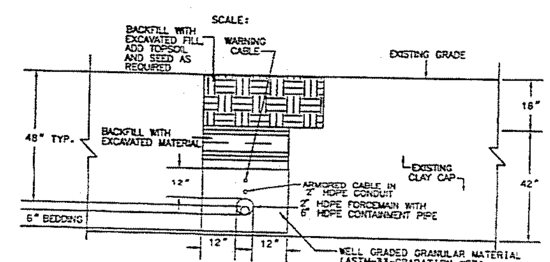
STA. 0+00 TO STA. 7+00

SCALE: 1" = 20' HORIZONTAL
1" = 2' VERTICAL



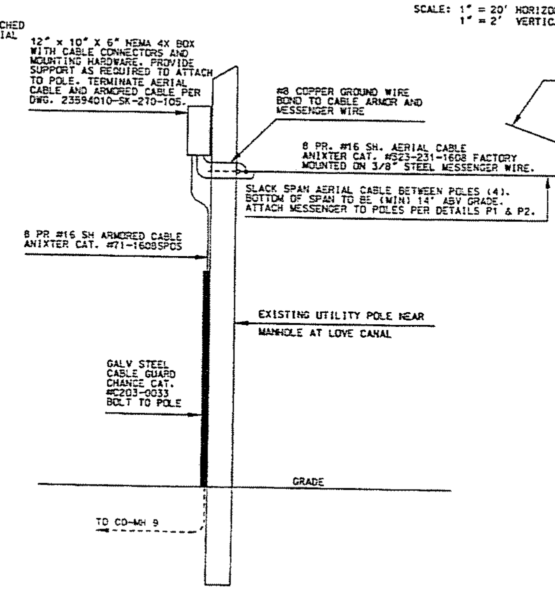
CROSS SECTION OF NEW FORCEMAIN AT LOVE CANAL
OPEN CUT INSTALLATION ONLY

1/2" = 1'



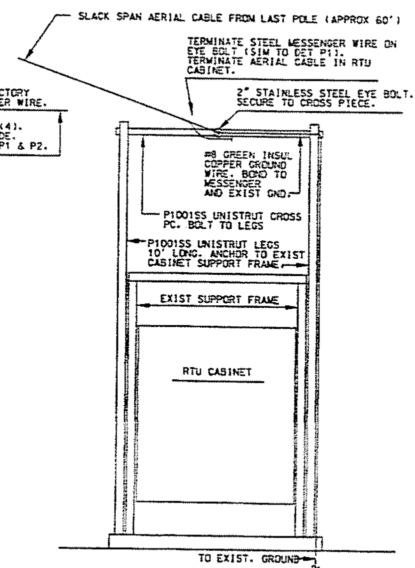
CROSS SECTION OF NEW FORCEMAIN
OPEN CUT INSTALLATION ONLY

1/2" = 1'



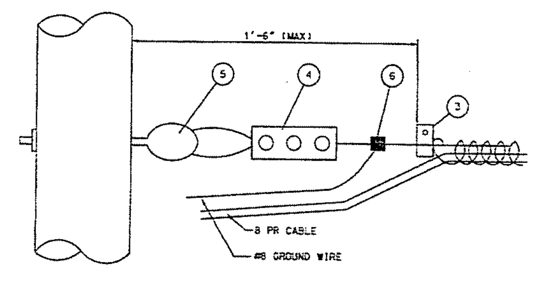
ARMORED TO AERIAL CABLE DETAIL

SCALE NONE



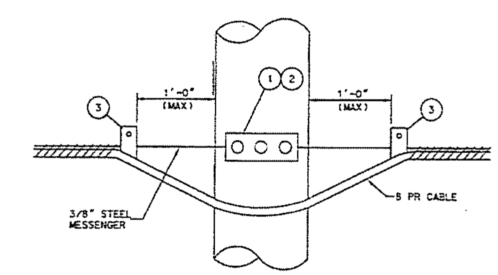
AERIAL CABLE TO EXISTING RTU

SCALE NONE



DETAIL P1

SCALE: NONE



DETAIL P2

SCALE: NONE

ITEM	DESCRIPTION
	BILL OF MATERIAL (DETAILS P1 & P2)
1	3 BOLT STRAIGHT SUSPENSION CLAMP W/ BOLTS AND NUTS CHANCE CAT #7903 OR EQUAL
2	THROUGH BOLT 5/8" DIA W/NUT, WASHER & SPACER, LENGTH TO SUIT CHANCE CAT #85** (LENGTH) OR EQUAL
3	LASHING WIRE CLAMP W/ BOLTS, NUTS AND WASHERS CHANCE CAT #9000 OR EQUAL
4	3 BOLT GUY CLAMP W/ BOLTS AND NUTS CHANCE CAT #6461 OR EQUAL
5	THIMBLEYE BOLT 5/8" DIA W/ NUT AND WASHER, LENGTH TO SUIT CHANCE CAT #50** (LENGTH) OR EQUAL
6	BURNDY UNIVERSAL PARALLEL CLAMP CAT #UC5W26-L OR EQUAL

NOTES:

1. ALL ELECTRICAL WORK SHALL COMPLY WITH THE LATEST PROVISIONS OF THE NATIONAL ELECTRICAL CODE, THE NATIONAL ELECTRICAL SAFETY CODE AND ANY STATE AND LOCAL CODES HAVING JURISDICTION.

8-13-99

REV.	DATE	REVISION DESCRIPTION	DES. CHK.	APPROVED
1	[illegible]	ISSUED FOR CIVIL PACKAGE CONSTRUCTION		
2	[illegible]	ADDED ELECTRICAL DETAILS		
3	[illegible]	REVISED PER AGENCIES COMMENTS		
4	[illegible]	AS BUILT, ISSUED FOR CLOSEOUT REPORT		

FLUOR DANIEL

DESIGNED BY K. UPHAM
CHECKED BY S. LAWRENCE
SUPERVISOR C. MARS
LEAD ENGR./SPEC. C. TAYLOR
PROJECT C. MARS
CLIENT OXYCHEM / OLIN

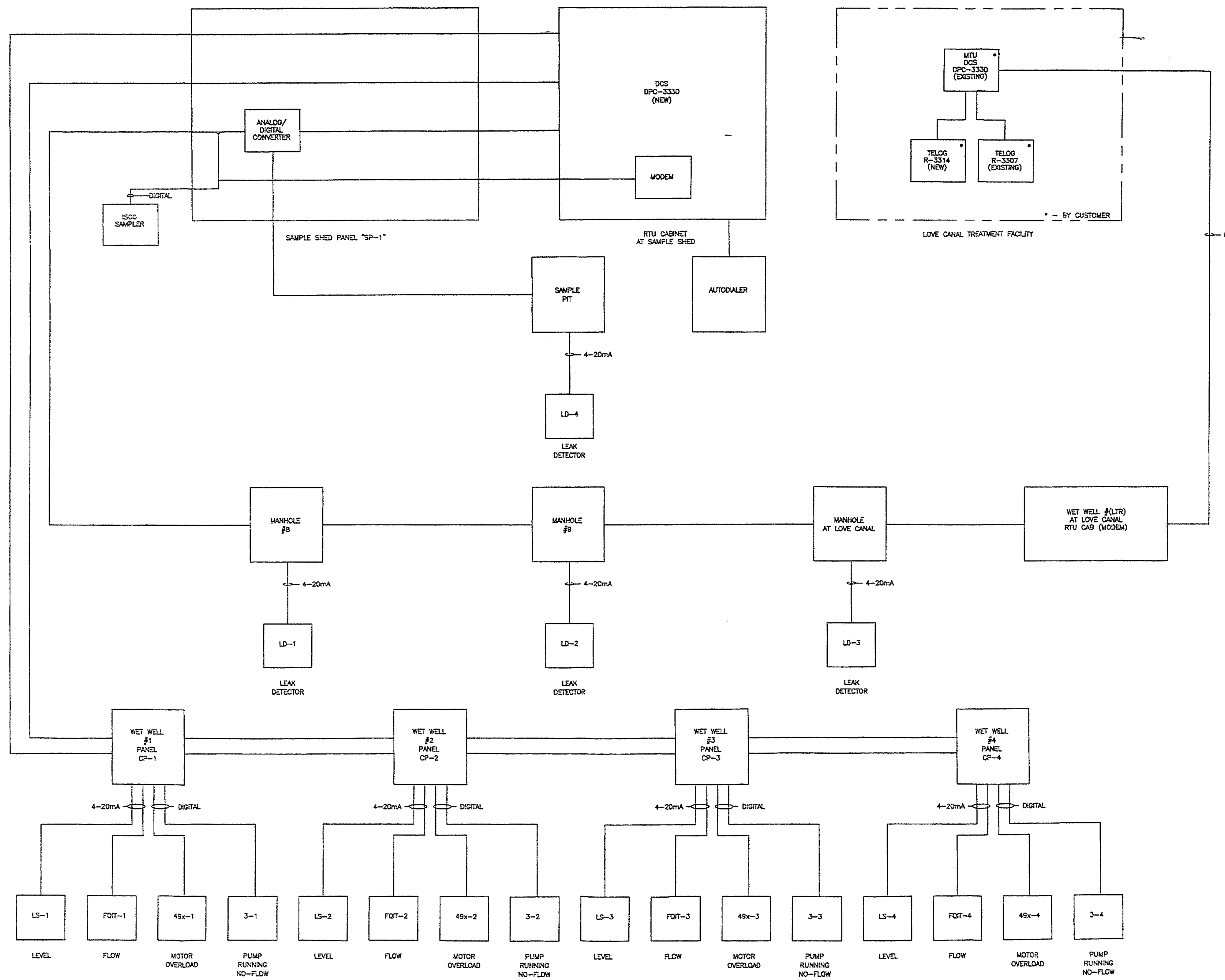
OXYCHEM / OLIN
REMEDIAL DESIGN
102nd STREET LANDFILL SITE
NIAGARA FALLS, NEW YORK

FORCEMAIN FROM METERING/SAMPLING MH TO L.C. FACILITY PROFILE

SCALE AS NOTED
DRAWING NUMBER 594000-102PROF1
REV. 4

MANUAL CHANGES MADE - YES ☐ NO ☐ DWG. FILE UPDATED - YES ☐ NO ☐ MODEL UPDATED - YES ☐ NO ☐ CADD DRAWING No. 102PROF1.DGN 12/17/97

DIST. CODE WRK. PKG.



REV.	DATE	REVISION DESCRIPTION	DES. CHK.	APPROVED
0	8/25/97	ISSUED FOR APPROVAL	JLP RAS	TMH 8/25/97
1	12/2/97	GENERAL SCOPE CHANGES	DAC RAS	
2	12/9/97	ISSUED FOR CONSTRUCTION	DJH RAS	TMH JLN 12/8/97
3	5/7/98	ADDED AUTODIALER	JSS RAS	
4	7/13/99	AS BUILT/ISSUED FOR CLOSEOUT REPORT		

DWG. NO. | REFERENCE DRAWINGS

FLUOR DANIEL

DESIGNED BY: JLP
CHECKED BY: S. LAWRENCE
ENGINEER: C. MARS — RELEASE DATE: 8/25/97
LEAD DISC. SPEC.: C. TAYLOR — JLN
PROJECT: C. MARS
CLIENT: OXYCHEM/OLIN

OXYCHEM/OLIN - REMEDIAL DESIGN
102nd STREET LANDFILL SITE
NIAGARA FALLS, NEW YORK

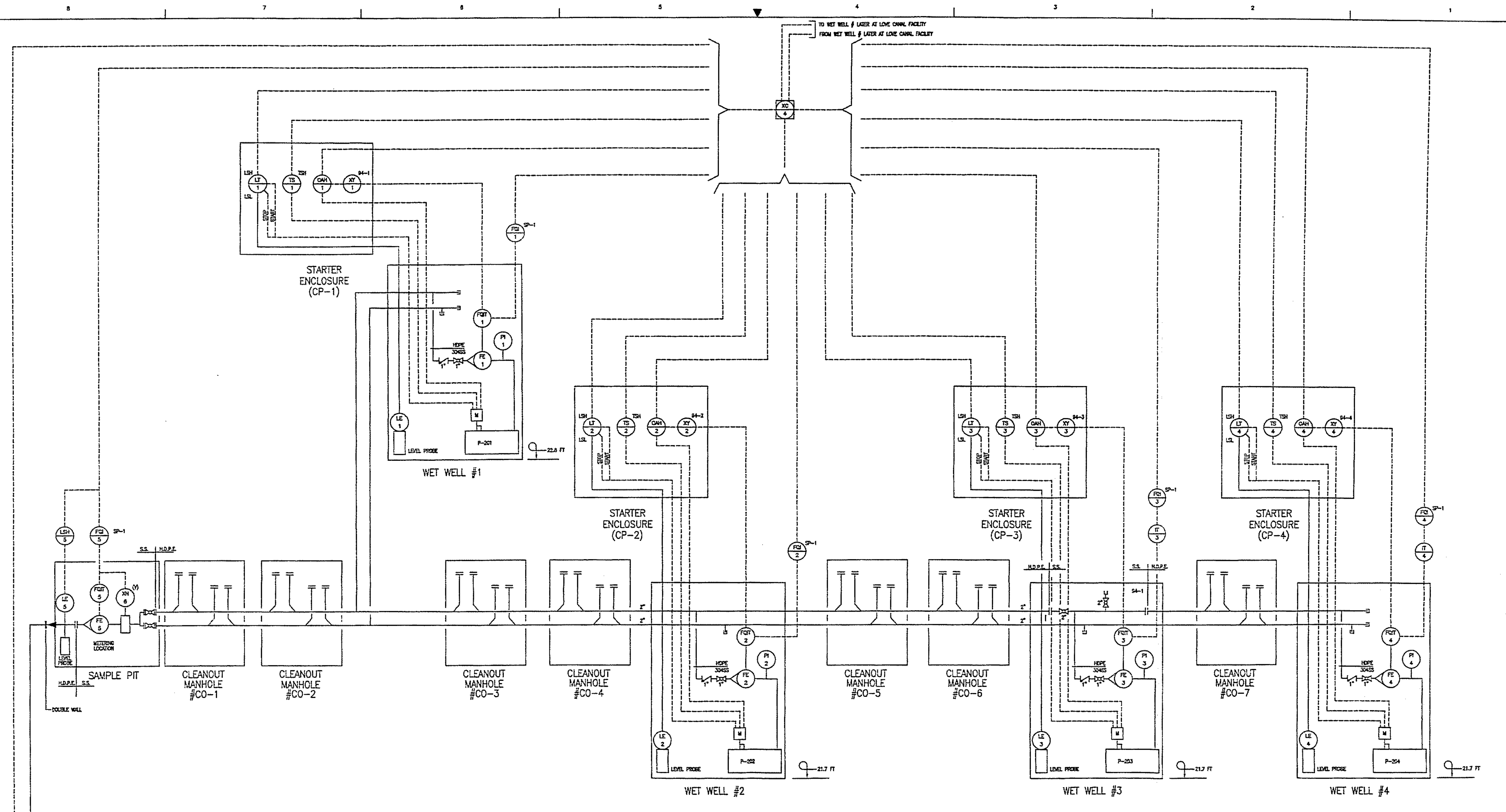
INSTRUMENT BLOCK DIAGRAM

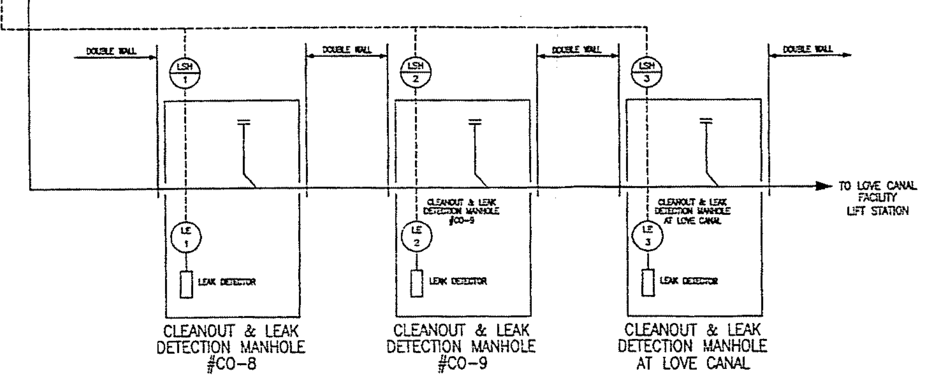
SCALE: NONE — DRAWING NUMBER: 23594010-SK-270-107 — REV. 4

*DATE*TIME* — MANUAL CHANGES MADE - YES ☐ NO ☐ — DWG. FILE UPDATED - YES ☐ NO ☐ — MODEL UPDATED - YES ☐ NO ☐ — CADD DRAWING No. SK270107 DWG

8-13-99

FDANSE.REF REV. 0


TO WET WELL # LATER AT LOVE CANAL FACILITY
FROM WET WELL # LATER AT LOVE CANAL FACILITY
STARTER ENCLOSURE (CP-1)
WET WELL #1
P-201
LEVEL PROBE
22.8 FT
STARTER ENCLOSURE (CP-2)
STARTER ENCLOSURE (CP-3)
STARTER ENCLOSURE (CP-4)
SAMPLE PIT
METERING LOCATION
CLEANOUT MANHOLE #CO-1
CLEANOUT MANHOLE #CO-2
CLEANOUT MANHOLE #CO-3
CLEANOUT MANHOLE #CO-4
CLEANOUT MANHOLE #CO-5
CLEANOUT MANHOLE #CO-6
CLEANOUT MANHOLE #CO-7
WET WELL #2
P-202
21.7 FT
WET WELL #3
P-203
21.7 FT
WET WELL #4
P-204
21.7 FT
H.D.P.E.
S.S.
DOUBLE WALL



WET WELL #1	P-201 10 GPM @ 100 FT. 1/2HP,460,3Ø	LEVEL PROBE LP-1
WET WELL #2	P-202 10 GPM @ 100 FT. 1/2HP,460,3Ø	LEVEL PROBE LP-2
WET WELL #3	P-203 10 GPM @ 100 FT. 1/2HP,460,3Ø	LEVEL PROBE LP-3
WET WELL #4	P-204 10 GPM @ 100 FT. 1/2HP,460,3Ø	LEVEL PROBE LP-4
COMPOSITE SAMPLER	XN-5	

MANHOLE #8	LEAK DETECTOR LD-1
MANHOLE #9	LEAK DETECTOR LD-2
MANHOLE AT LOVE CANAL	LEAK DETECTOR LD-3
SAMPLE PIT	LEAK DETECTOR LD-4

NOTES:

1. LOW LEVEL IN WET WELLS CUTS POWER OFF TO THE APL PUMP IN THE WET WELL. HIGH LEVEL IN WET WELLS TURNS POWER ON TO THE APL PUMP IN THE WET WELL. HAND SWITCH IS ALSO PROVIDED TO OVERRIDE AUTOMATIC OPERATION OF APL PUMPS.
2. OFF AUTO HAND SELECTOR SWITCH ALLOWS MAINTENANCE BY-PASS OF LEVEL CONTROLS, MUST BE MANUALLY RETURNED TO THE AUTO POSITION.
3. IF ANY PUMP IS OPERATING AND THE PUMPS' ASSOCIATED FLOW METER REGISTERS LOW-LOW/NO FLOW OR IF ANY OF THE PUMP MOTORS HAVE AN OVERLOAD CONDITION A SIGNAL WILL BE SENT TO THE RTU CONTROLLER.
4. WHEN LIQUID IS DETECTED IN EITHER MANHOLE NO. 8, 9 OR MANHOLE AT LOVE CANAL OR THE SAMPLE PIT A SIGNAL WILL BE SENT TO THE RTU CONTROLLER.
5. ACTIVE LEVEL AND FLOW SIGNALS WILL BE SENT TO THE LOVE CANAL FACILITY VIA THE RTU CONTROLLER.
5. ACTIVE LEVEL AND FLOW SIGNALS WILL BE SENT TO THE LOVE CANAL FACILITY VIA THE RTU CONTROLLER.

KEY:

(V) MECHANICAL EQUIPMENT VENDOR SUPPLIED
O-A-H OFF-AUTO-HAND
CP STARTER ENCLOSURES
SP-1 SHED CONTROL PANEL

8-13-99

REV.	DATE	REVISION DESCRIPTION	DES. CHK.	APPROVED	REV.	DATE	REVISION DESCRIPTION	DES. CHK.	APPROVED
A	-29-93	ENGINEERING REPORT SUBMITTAL (PRELIMINARY/INTERMEDIATE)	ACB / JTB	DRK	4	3-21-97	ISSUED FOR APPROVAL		
B	8/26/95	FINAL ENGINEERING REPORT (DRAFT SUBMITTAL)	AFH	HLF	5	3-27-97	ISSUED FOR APPROVAL		
0	12/21/95	ISSUE FOR BIDS	DED		6	12-7-97	REDRAWN; ISSUED FOR CONSTRUCTION		
1	2/2/96	ISSUED FOR CONSTRUCTION			7	3-17-99	AS BUILT, ISSUED FOR CLOSEOUT REPORT		
2	2/26/97	ISSUED FOR AGENCY REVIEW							
3	3/11/97	ISSUED FOR REVIEW							

DWG.NO. | REFERENCE DRAWINGS | DWG.NO. | REFERENCE DRAWINGS

FLUOR DANIEL
PROJECT #23594010

DESIGNED BY: A. SEMB/K. MCNELIS
CHECKED BY: S. LAWRENCE
SUPERVISOR: C. MARS
LEAD ENG./SPEC.: C. TAYLOR
PROJECT: C. MARS
CLIENT: OXYCHEM/OLIN

OXYCHEM/OLIN - REMEDIAL DESIGN
102nd STREET LANDFILL SITE
NIAGARA FALLS, NEW YORK

P & ID APL SYSTEM

SCALE: NONE | DRAWING NUMBER: 594000-25J-02 | NO. 7

*DATE*TIME* MANUAL CHANGES MADE - YES ☐ NO ☐ DWG. FILE UPDATED - YES ☐ NO ☐ MODEL UPDATED - YES ☐ NO ☐ CADD DRAWING No. 25J02 DWG

SUB-CONTRACT PKG.
WRK. PKG.
DIST. CODE
203\210\CHICAGO\10225J02.DWG