DATE
STARTED 5-13-88
FINISHED 5-16-88
SHEET 1 OF 1

EMPIRE SOILS INVESTIGATIONS INC. SUBSURFACE LOG

HOLE NO. GMW-2
SURF. ELEV.
G. W. DEPTH See Note #1

PROJECT Monitor Well Installation
LOCATION Kingsbury Landfill

DEPTH (ft)	SAMPLES	SAMPLE NO	BLOWS ON SAMPLER 0/6	6/12	12/18	N	BLOW ON CASING C	SOIL OR ROCK CLASSIFICATION	NOTES
0		1	1	2		3		Brown fine to medium SAND	Note #1: At completion of boring, a 2" PVC groundwater monitor well was installed per the attached "Monitor Well Detail" sheet.
			1	2					
		2	4	5		13			
			8	11					
5		3	6	13		24			
			11	10					
		4	11	8		16			
			8	7					
		5	9	6		13			
10			7	8					
		6	4	3		7		-becomes wet, grades fine SAND	
			4	6					
		7	3	3		6			
			3	5					
15		8	2	2		5			
			3	5					
		9	2	4		8			
			4	3					
		10	5	3		7		-grades Some Silt	
20			4	2					
		11	4	4		9			
			5	9					
		12	5	4		10			
			6	5					
25		13	2	2		6			
			4	3					
		14	WOH	1		3			
			2	2					
		15							Note #2: Driller reports extreme running sand conditions from 28.0'.
30		16							
		17						-Clay noted @ approx. 33.0' (Moist to Wet-Firm to Loose)	
35								END OF BORING @ 34.0'	
40									

N = No blows to drive 2 " spoon 12 " with 140 lb. pin wt. falling 30 "per blow.
C = No blows to drive ____ " casing ____ " with ____ lb. weight falling ____ "per blow.

CLASSIFICATION Visual by Driller

METHOD OF INVESTIGATION 4¼" I.D. Hollow Stem Auger

DATE STARTED 5-16-88
FINISHED 5-17-88
SHEET 1 OF 2

EMPIRE SOILS INVESTIGATIONS INC — SUBSURFACE LOG

HOLE NO. GMW-3
SURF. ELEV.
G. W. DEPTH See Note #1

PROJECT Monitor Well Installation
LOCATION Kingsbury Landfill

DEPTH IN FEET	SAMPLES	SAMPLE NO	BLOWS ON SAMPLER 0/6	6/12	12/18	N	BLOW ON CASING C	SOIL OR ROCK CLASSIFICATION	NOTES
0									
		1	1	1		3		Brown fine to medium SAND	Note #1: At completion of boring, a 2" PVC groundwater monitor well was installed per the attached "Monitor Well Detail" sheet.
			2	3					
		2	2	2		6			
			4	2					
5		3	4	5		8			
			3	3					
		4	4	5		10		-becomes wet	
			5	5					
		5	3	3		7			
10			4	5				-grades Some Silt	
		6	2	1		4			
			3	2					
		7	2	1		3			
			2	2				(Moist to Wet-Loose)	
15		8	1	WOH		WOH		Gray CLAY	Note #2: WOH - indicates split spoon advanced six (6) inches by weight of drill rods and 140 lb. hammer.
			WOH	1					
		9	6	7		14			
			7	9					
		10	6	11		21		-grades CLAY and SILT, with seams of fine sand	
20			10	12					
		11	WOR	WOR		1		-grades SILT and fine SAND	WOR - indicates split spoon advanced six (6) inches by weight of drill rods alone.
			1	2					
		12	3	3		7			
			4	1					
25		13	1	1		3		-grades gray SILT and CLAY, with seams of fine sand	
			2	2					
		14	3	4		7			
			3	4					
		15	5	2		6			
30			4	2					
		16	2	2		4			
			2	2					
		17	3	1		4			
			3	2					
35		18	3	3		6			
			3	4					
		19	5	3		7			
			4	3					
		20	2	4		8			
40			4	5					

N = No blows to drive 2 " spoon 12 " with 140 lb. pin wt. falling 30 "per blow.
C = No blows to drive ____ " casing ____ " with ____ lb. weight falling ____ "per blow.

CLASSIFICATION Visual by Driller

METHOD OF INVESTIGATION 4½" I.D. Hollow Stem Auger

DATE
STARTED 5-16-88
FINISHED 5-17-88
SHEET 2 OF 2

EMPIRE SOILS INVESTIGATIONS INC — SUBSURFACE LOG

HOLE NO. GMW-3
SURF. ELEV.
G. W. DEPTH

PROJECT Monitor Well Installation
LOCATION Kingsbury Landfill

DEPTH FEET	SAMPLES	SAMPLE NO	BLOWS ON SAMPLER 0/6	6/12	12/18	N	BLOW ON CASING C	SOIL OR ROCK CLASSIFICATION	NOTES
40									
	/	21	WOH	1		3			
			2	1					
	/	22	2	1		2			
			1	1					
45	/	23	WOH	WOH		WOH			
			WOH	1					
	/	24	1	2		5			
			3	3					
	/	25	WOH	3		6			
			3	3				(Wet-Very Soft to Medium)	
50								END OF BORING @ 50.0'	
55									

N = No blows to drive 2 " spoon 12 " with 140 lb. pin wt. falling 30 "per blow.
C = No blows to drive " casing " with lb. weight falling "per blow.

CLASSIFICATION Visual by Driller

METHOD OF INVESTIGATION 4½" I.D. Hollow Stem Auger

DATE
STARTED 5-17-88
FINISHED 5-17-88
SHEET 1 OF 1

EMPIRE SOILS INVESTIGATIONS INC SUBSURFACE LOG

HOLE NO. GMW-4
SURF. ELEV.
G. W. DEPTH See Note #1

PROJECT Monitor Well Installation
LOCATION Kingbury Landfill

DEPTH FEET	SAMPLES	SAMPLE NO	BLOWS ON SAMPLER 0/6	6/12	12/18	N	BLOW ON CASING C	SOIL OR ROCK CLASSIFICATION	NOTES
0		1	1	1		3		Brown fine to medium SAND	Note #1: At completion of boring, a 2" PVC groundwater monitor well was installed per the attached "Monitor Well Detail" sheet.
			2	1					
		2	2	2		3			
			1	2					
5		3	3	4		6		-grades Some Silt, becomes wet	
			2	2					
		4	2	3		6			
			3	3					
		5	6	5		11		-clay seams noted	
10			6	6				(Moist to Wet-Loose to Firm)	
		6	6	4		11		Brown SILT and CLAY	
			7	7					
		7	8	5		11			
			6	8					
15		8	6	5		11		-seams of fine SAND noted	
			6	8					
		9	4	3		7		-grades brown CLAY	
			4	4				(Wet-Medium)	
								END OF BORING @ 18.0'	
20									

N = No. blows to drive 2 " spoon 12 " with 140 lb. pin wt. falling 30 "per blow. CLASSIFICATION Visual by Driller

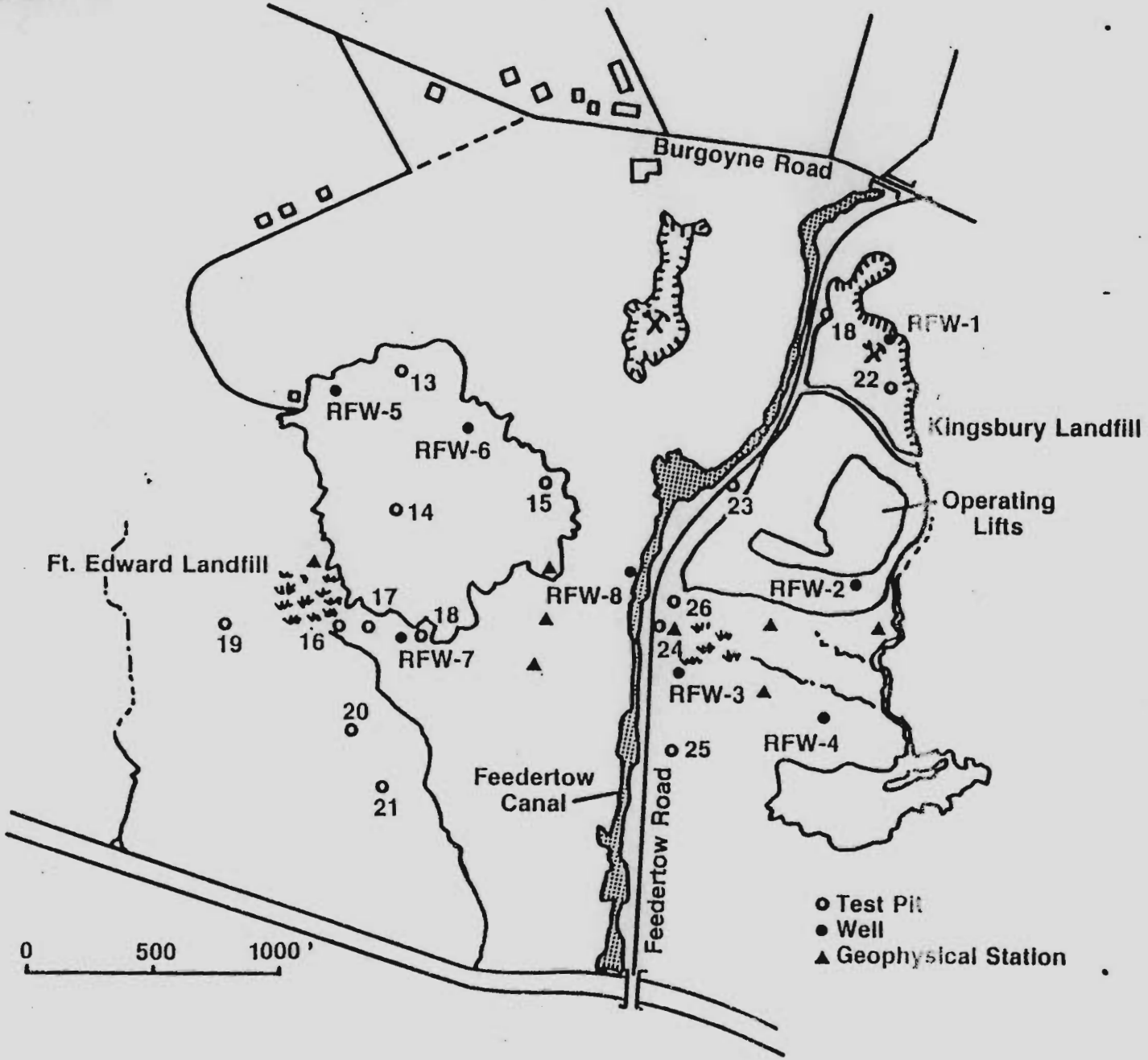


FIGURE 3A-12 GENERAL LOCATION MAP
FT. EDWARD/KINGSBURY L
LANDFILL

RFW-3

Depth	Thickness	Description
0 - 20	20	Light brown and gray clay
20		Casing set with 10 feet of field slots

RFW-4

Depth	Thickness	Description
0 - 20	20	Blue-gray clay
20		Set casing with 10 feet of field slots

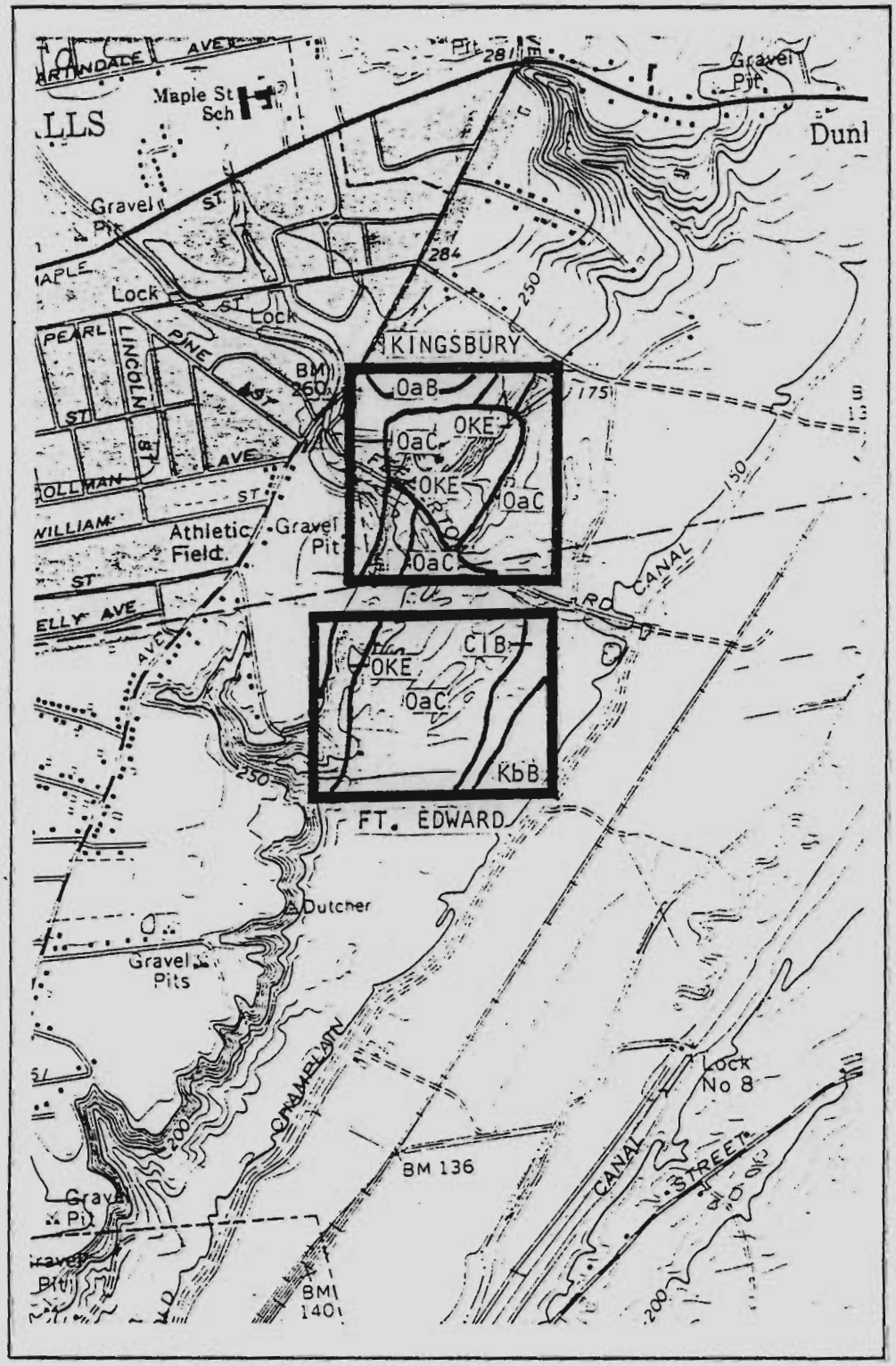


FIGURE 3A-13 DETAILED SOIL MAP OF FT. EDWARD/KINGSBURY LANDFILLS

E.C. JORDAN Co.

MW-90-14

Project KINGSBURY LANDFILL		**Site** KINGSBURY, NEW YORK		**Project No.** 6196-23
Client NYSDEC		**Logged By** LT	**Checked By** WGC	**Ground Ele** 183.06
Drilling Contractor MATHES	**Driller's Name** S. KOVELESKY	**Rig Type** ATV	**Start Date** 11/29/90	**Finish Date** 11/29/90
Drilling Method HOLLOW STEM AUGER	**Protection Level** D DERMAL	**P.I.D. (eV)** 10.6	**Casing Size** N/A	**Auger Size** 4.25"

Soil Drilled	**Rock Drilled**	**Total Depth**	**Depth to Groundwater/Date**	**Piez.**	**Boring**	**Well**
45.0'	N/A	45.0'	12.0' on 12/2/90	☐	☐	☒

DEPTH (FEET)	SAMPLE NO. & PENETRATION / RECOVERY (Ft)	SAMPLE TYPE	SPT BLOWS/6" OR CORE REC/RQD (%)	SPT-N (BLOWS/FT)	GRAPHIC LOG	SAMPLE DESCRIPTION	USCS GROUP SYMBOL	NOTES ON DRILLING	P.I.D. PPM: PI METER FIELD SCAN	P.I.D. PPM: PI METER HEAD SPACE	WELL DIAGRAM	LAB TESTS
	S-1 2.0/1.6		1 1 2 6	3		Brown fine sandy SILT, little to trace organics, poorly-graded, non-plastic, very loose, moist (0.0' - 0.2') -TOPSOIL- Brown fine SAND, little to trace silt, poorly-graded, non-plastic, very loose, moist (0.2' - 0.8'), with brown silty clay lense with trace fine sand 0.8' - 1.3' -GLACIOLACUSTRINE-	ML SP SP		BKG	2.3		
5	S-2 2.0/1.8		4 6 11 12	17		Brown fine SAND, little silt, poorly-graded, non-plastic, medium dense, wet, with clayey silt lenses (1/8" - 1/16") at 5.8', 6.0', and 6.6', color change to rust brown 6.4' - 6.6' -GLACIOLACUSTRINE-	SP		BKG	3.6		
10	S-3 2.0/1.5		1 2 4 4	6		Brown fine SAND, some silt, poorly-graded, non-plastic, loose, saturated, rust brown pocket at 10.4', with gray silty clay lenses (1/8" - 1/4" at 11.2' and 11.6') -GLACIOLACUSTRINE-	SP-SM		BKG	3.9		
15	S-4 2.0/1.3		2 4 8 16	12		Brown fine SAND, little to some silt, poorly-graded, non-plastic, medium dense, saturated (15.0' - 15.5') -GLACIOLACUSTRINE- Gray fine SAND, little silt, poorly-graded, non-plastic, medium dense, saturated (15.5' - 17.0')	SP-SM		BKG	4.6		
	S-5 2.0/1.2		5 8 18 18	26		-GLACIOLACUSTRINE- Gray fine SAND, little silt, poorly-graded, non-plastic, medium dense, saturated, with 1/16" brown silty clay lense at 18.0' -GLACIOLACUSTRINE-	SP		BKG	3.2		
	S-6		5 6	16		Gray fine SAND, little to some silt, poorly-graded, non-plastic, medium dense, saturated, silty from 19.8'	SP		BKG	7.6		

E.C. JORDAN Co. | **MW-90-14**

Project: KINGSBURY LANDFILL | Site: KINGSBURY, NEW YORK | Project No.: 6196-23

DEPTH (FEET)	SAMPLE NO. & PENETRATION / RECOVERY (Ft.)	SAMPLE TYPE	SPT BLOWS/6" OR CORE REC./RQD (%)	SPT-N (BLOWS/FT)	GRAPHIC LOG	SAMPLE DESCRIPTION	USCS GROUP SYMBOL	NOTES ON DRILLING	P.I.D. PPM: PI METER FIELD SCAN	P.I.D. PPM: PI METER HEAD SPACE	WELL DIAGRAM	LAB TESTS
	2.0/1.5		10 13			- 20.0', with 1/4" - 1/8" brown silty clay lense at 20.0' -GLACIOLACUSTRINE-						
	S-7 2.0/0.9		4 9 12 15	21		Brown fine SAND, little silt, poorly-graded, non-plastic, medium dense, saturated, with rust brown and gray streaks, silty zone 21.0' - 21.2' -GLACIOLACUSTRINE-	SP		BKG	9.3		
	S-8 2.0/1.0		5 9 12 23	21		Brown fine SAND, little silt, poorly-graded, non-plastic, medium dense, saturated, with rust brown and gray streaks -GLACIOLACUSTRINE-	SP		BKG	7.5		
25	S-9 2.0/1.6		6 10 16 14	26		Gray fine SAND, little to some silt, poorly-graded, non-plastic, medium dense, saturated, with silty clay lenses up to 1", stratified -GLACIOLACUSTRINE-	SP-SM		BKG	21.0		
	S-10 2.0/1.2		5 7 15 26	22		Gray fine SAND, little to some silt, poorly-graded, non-plastic, medium dense, saturated, stratified -GLACIOLACUSTRINE-	SP-SM		BKG	5.6		
30	S-11 2.0/1.5		9 9 16 20	25		Gray fine SAND, little to some silt, poorly-graded, non-plastic, medium dense, saturated, with silty clay lenses up to 1", stratified -GLACIOLACUSTRINE-	SP-SM		BKG	6.1		
	S-12 2.0/1.4		10 15 25 31	40		Gray fine SAND, little to some silt, poorly-graded, non-plastic, dense, saturated, with silty clay lenses up to 1", stratified -GLACIOLACUSTRINE-	SP-SM		BKG	3.7		
	S-13 2.0/2.0		13 11 15 19	26		Gray fine SAND, little to some silt, poorly-graded, non-plastic, dense, saturated, with silty clay lenses up to 1", stratified -GLACIOLACUSTRINE-	SP-SM		BKG	7.0		
35	S-14 2.0/2.0		6 4 4 6	8		Gray fine SAND, little to some silt, poorly-graded, non-plastic, loose, saturated, with silty clay lenses up to 1", stratified -GLACIOLACUSTRINE-	CL		BKG	3.7		
	S-15 2.0/2.0		2 2 3 3	5		Gray silty CLAY, poorly-graded, slightly-plastic, firm, saturated, with silty fine sand lenses 1/8" every 1" -GLACIOLACUSTRINE- Gray silty CLAY, poorly-graded, slightly-plastic, soft to firm, saturated, with silty fine sand lenses 1/8" every 1"	CL		BKG	7.1		
40	S-16 2.0/2.0		3 4 5 6	9		-GLACIOLACUSTRINE- Gray silty CLAY, poorly-graded, slightly-plastic, firm, saturated, with vertical silty fine sand lenses observed throughout sample -GLACIOLACUSTRINE-	CL		BKG	5.2		
	S-17 2.0/2.0		5 4 6 6	10		Gray silty CLAY, poorly-graded, slightly-plastic, stiff, saturated, with numerous silty fine sand lenses -GLACIOLACUSTRINE-	CL		BKG	6.3		
	S-18 2.0/2.0		2 2 2 4	4		Gray silty CLAY, poorly-graded, slightly-plastic, soft, saturated, with occasional silty fine sand lenses less than 1/16" every 1" - 2" -GLACIOLACUSTRINE-	CL		BKG	7.8		

ENGINEERING REPORT

KINGSBURY SITE REMEDIAL PROGRAM

JULY 1990

BLASLAND & BOUCK ENGINEERS, P.C.
6723 TOWPATH ROAD
SYRACUSE, NEW YORK 13214

TABLE OF CONTENTS

SECTION 1 - ENGINEERING REPORT

1.1 Introduction

This Engineering Report presents a summary of the construction services provided by Blasland & Bouck Engineers, P.C. (Blasland & Bouck), during the Kingsbury Site Remedial Program. This report also presents: 1) a listing of all contract modifications and associated costs incurred to date during construction of the Kingsbury site cap and ground-water cutoff wall; 2) a compilation of pertinent technical Quality Assurance/Quality Control (QA/QC) data for the landfill cap and ground-water cutoff wall; and 3) "as-built" drawings of the capped landfill and the installed monitoring wells and relief wells. The purpose of this report is to document the construction activities associated with implementation of the Remedial Program.

The Kingsbury Site includes a former landfill covering approximately 18 acres and is located in the village of Hudson Falls, New York. The contents of the landfill are reported to be municipal waste and a quantity of industrial waste which includes polychlorinated biphenyls (PCBs) and industrial solvents. Between 1987 and 1989, the Kingsbury Site underwent closure to isolate the landfill contents from the surrounding environment. Closure activities included the installation of a ground-water cutoff wall around the perimeter of the landfill and the placement of a low-permeability compacted soil cap over the entire 18-acre area.

1.2 Construction Services

In accordance with the Agreement for Engineering Services dated March 26, 1986, between the Owner [New York State Department of Environmental Conservation (NYSDEC)] and the Engineer [Blasland & Bouck], Blasland &

Bouck provided construction-related engineering services during the implementation of the Remedial Program at the Kingsbury Site. In general, the primary services performed by Blasland & Bouck during construction of the Remedial Program were field and office services.

1.2.1 Field Services

The field services provided by Blasland & Bouck during implementation of the Remedial Program included: 1) setting control lines and elevations; 2) reviewing all contractor submittals; 3) providing an on-site observer during construction; and 4) providing a geologist during the installation of the ground-water cutoff wall. The purpose of these services was to ensure that remedial activities were performed in accordance with the Contract Documents dated August 1986 for construction of the landfill cap and cutoff wall.

A summary of cutoff-wall quality assurance testing standards and the specifications followed by the Contractor during cap and cutoff wall construction have been included in Appendix A. The results of field and laboratory testing of the cap material, the cutoff wall slurry, and the cutoff wall backfill are presented in Appendix B.

1.2.2 Office Services

During cap and cutoff wall construction, events occurred which necessitated modifications to the original contract between the Owner and the Contractor [Yolam Construction, Inc., of Loudonville, New York]. In accordance with the Agreement for Engineering Services, Blasland & Bouck prepared contract modifications and cost estimates for these modifications. The overall cost impact of the modifications on the original contract is discussed in Section 1.4 - Contract Modification

Analysis. Contract modifications and their associated costs are summarized in Table 1.

1.2.3 Drawings

A record drawing depicting a plan view of the project site has been prepared in accordance with the Agreement for Engineering Services and is presented in Figure 1. Record drawings showing ground-water cutoff wall profiles are presented in Figures 2 through 6. Installation details of monitoring wells and relief wells (installed by a subcontractor, Empire Soils Investigations, Inc., of Albany, New York) are included in Appendix C.

1.3 Additional Construction Activities

During the construction phase of the Kingsbury Site Remedial Program, additional construction activities were necessary due to site conditions and requirements by the New York State Department of Transportation (NYSDOT). The following paragraphs provide a summary of each additional construction activity.

1.3.1 Additional Ground-Water Cutoff Wall Area

It was determined during construction of the ground-water cutoff wall that what was previously considered to be a significant clay stratum, based on a hydrogeologic investigation of the site performed by O'Brien & Gere Engineers, Inc., of Syracuse, New York (as specified in a February 1983 report for the General Electric Company), was actually an intermittent clay lense between wall stations 1+25 and 6+45. Therefore, the contractor was required to return to previously constructed sections of the cutoff wall and re-excavate to greater depths using a crane and clamshell. The additional excavation was necessary to obtain the

specified clay key invert for the cutoff wall. Subsequently, additional soil/bentonite was required to construct the cutoff wall to the deeper invert.

1.3.2 Construct Access Road Extension/Backfill Canal Lock No. 5

In a letter from NYSDEC dated December 9, 1986, Blasland & Bouck was informed of NYSDOT's request for access to the Glens Falls Feeder Canal for its maintenance equipment. To fulfill this request, the construction of an access road extension along the western section of the project site perimeter was required. The access road extension connected the previously designed northern, eastern, and southern access road sections, producing a continuous loop around the project site. The extension consists of a 20-foot wide clear section outside the site security fence which contains a 12-foot wide driving surface. The construction of the access road extension necessitated the modification of proposed final grade lines around the existing stone walls of historical Canal Lock No. 5 in the southwestern corner of the site. Modifications were required to protect the lock walls during the placement of backfill within the canal area. In addition, the drainage ditch on the western edge of the site was rerouted to avoid interference with the lock walls and to accommodate the access road installation.

1.3.3 Landfill Ground-Water Seepage Collection and Treatment

After completion of the ground-water cut-off wall, a ground-water seep area appeared within ten feet to the inside of the completed cutoff wall, between wall stations 1+00 and 6+00. To reduce the ground-water elevation within the landfill, a trench/drain system was installed during October and November 1988, along the seep area. The trench/drain system (designated the deep drain) consists of a six-inch diameter,

perforated, plastic pipe encapsulated with granular fill and filter fabric. The pipe is installed at elevation 190 (approximately 12 to 17 feet below the top of the cutoff wall) and slopes to a 6'- 6" diameter deep drain manhole.

Ground water collected by the deep drain system was pumped to a Temporary Leachate Treatment System (TLTS). The intent of the TLTS was to reduce/control the ground-water elevation within the landfill and prevent seepage of ground water over the cutoff wall. The TLTS was put into operation on March 6, 1989, and the process consisted of aeration, clarification, solids filtration, and carbon filtration to remove metals, volatile organics, and PCBs. Shortly thereafter, a flocculant feed system was installed to augment the solids settling in the clarifier. In addition, as per a NYSDEC request during the second week of April 1989, a second trench/drain system (designated as the shallow drain) was installed between April 24 and April 28, 1989, at elevation 198 (approximately 4 to 11 feet below the top of the cutoff wall). Piping for this system was "plowed in" and consisted of a six-inch diameter, flexible, perforated plastic pipe in a fabric sleeve. The shallow drain was installed to obtain better water quality in the TLTS influent, and on May 1, 1989, the shallow drain system was put in operation.

Based on a meeting on August 21, 1989, between NYSDEC and Blasland & Bouck, the existing TLTS was redesignated as the Interim Leachate Treatment System (ILTS). In January through April 1990, modifications requested by NYSDEC were made to the ILTS, including installation of a flocculation tank with a slow mixer, installation of two additional bag filters, installation of two clarifier solids collection tanks and a clarifier solids transfer pump, upgrading of the existing filter feed

pumps, installation of telephone and potable water service to the ILTS, upgrading of the existing electrical supply, and the addition of a recycle system to pump ILTS effluent back to the landfill during start-up procedures. Additionally, a structure was built onto the existing ILTS building to house all process equipment in order to winterize the ILTS. The basis of design and start-up and operating instructions for the ILTS are presented in a separate document entitled "Operation and Maintenance Manual - Kingsbury Site Interim Leachate Treatment System" (Blasland & Bouck, July 1990).

1.3.4 Drainage Ditch

In order to improve drainage and reduce future site maintenance, an upper drainage swale, a mid-slope stone ditch and a drainage ditch adjacent to the access road, all connected by three down-spout swales, were installed. The drainage ditch is comprised of rip-rap and geotextile fabric. This drainage system also expedited the establishment of vegetative growth and thus reduced site erosion.

1.4 Contract Modification Analysis

The original contract price between the owner and contractor was $5,774,125.00. To date, a total of 24 contract modifications have been initiated during the Kingsbury Site Remedial Program. Of the 24 contract modifications, 5 were initiated by the Owner, 11 by the Contractor, and 2 by the Engineer. Additionally, 3 modifications have been declared void and 3 are pending at the time of this report.

To date, the total cost of the contract modifications is $1,702,601.88 bringing the total project cost to $7,476,762.88. The modifications represent

a 29 percent increase in total project cost. The cost of modifications associated with each initiator is as follows:

Initiator	Total Number of Modifications	Total Cost of Modifications to Date
Contractor	11	$1,202,423.74
Engineer	2	149,392.14
Owner	5	350,786.00
Subtotal	18	$1,702,601.88
Void	3	
Pending	3	
Total	24	

1.5 Certificate of Substantial Completion

The Certification of Substantial Completion of Contract No. 1 is found in Appendix D.

Tables

TABLE 1

KINGSBURY SITE CONTRACT MODIFICATIONS

TABLE 1
KINGSBURY SITE CONTRACT MODIFICATIONS

Modification No.	Reason for Modification	Initiated By	Contractor's Proposal Price	Net Cost
1	a. Delete one permanent air-monitoring station and add two temporary air-monitoring stations to provide better coverage during construction. b. Additional fencing and generator to protect the additional temporary monitoring station. c. Maintenance costs for air-monitoring equipment can best be paid for on a time and material basis.	Owner	$4,369.68	$4,369.68
2	NYSDOT had requested, after time of bid, access to the canal for its maintenance equipment. This caused grade changes to the site and additional culverts, fencing, and ditch excavation.	Owner	$141,365.32	$6,116.32
3	A previously unknown refuse area was discovered by Contractor during construction operations.	Contractor	$34,235.00	$34,235.00
4	A previously unknown refuse area was discovered by Contractor during construction operations.	Contractor	$18,886.51	$18,886.51
5	VOID			
6	PENDING - Addition liability insurance premiums.	Contractor		
7	Recent OSHA Regulations call for special employee training.	Contractor	$23,829.73	$23,102.54
8	Test borings required along center line of proposed ground-water cutoff wall to verify whether or not the top of the clay stratum was at the elevation anticipated.	Engineer	$3,268.14	$3,268.14

TABLE 1
KINGSBURY SITE CONTRACT MODIFICATIONS

Modification No.	Reason for Modification	Initiated By	Contractor's Proposal Price	Net Cost
9	It was determined during construction of the cutoff wall that what was previously considered to be a significant clay stratum was actually a clay lense between Stations 1 + 25 to Stations 6 + 45. The Contractor was subsequently required to return to previously constructed sections of the cutoff wall and re-excavate to greater depths using the crane and clamshell method. The backhoe which was leading the excavation operation and crews related to excavation procedures (mixing, transporting, placing backfill material) incurred idle time due to reduction in excavation production.	Contractor	$244,154.56	$72,199.82
10	Additional excavation was necessary during construction of ground-water cutoff wall to obtain an acceptable clay key invert.	Engineer	$146,124.00	$146,124.00
11	Provide access for ground-water level monitoring within the ground-water cutoff wall.	Owner	$10,300.00	$10,300.00
12	VOID			
13	Temporary ground-water treatment system installation	Contractor	$373,353.28	$360,568.33
14	VOID			
15	As a result of extra work provided for in Modification No. 2 resultant Contractor Unit Price Item credits were anticipated because of a reduction in the area of the ground-water cutoff wall. However, after construction of the cutoff wall no area reduction was realized.	Owner	--	$107,000.00

TABLE 1
KINGSBURY SITE CONTRACT MODIFICATIONS

Modification No.	Reason for Modification	Initiated By	Contractor's Proposal Price	Net Cost
16	Installation of an upper drainage swale, a mid-slope stone ditch and a drainage ditch adjacent to the access road, all connected by three down-spout swales to improve site drainage, to expedite establishment of vegetative growth, and to reduce future site erosion.	Contractor	$97,853.13	$97,765.43
17	Necessary to stabilize drainage ditch, though the addition of rip-rap and geotextile because of site conditions.	Contractor	$36,502.03	$37,332.20
18	Installation and interim operation (12/14/88-5/31/89) of a Temporary Leachate Treatment System	Contractor	$254,821.47	$254,821.46
19	Continued interim operations of the Temporary Leachate Treatment System (6/1/89-9/30/89)	Contractor	$129,795.53	$129,795.53
20	PENDING - construction time extension.			
21	a. Regrading of existing subgrade, replacement and compaction of existing stockpiled clay and installation of HDPE geogrid b. Investigation/Repair of east clay cap c. Investigation/Repair of north clay cap	Contractor	$17,421.44	$17,421.45
22	Continued ILTS operation (10/1/89 - 12/31/89).	Owner	$223,000.00	$223,000.00
23	ILTS winterization and equipment modifications.	Contractor	$303,512.45	$303,512.45
24	PENDING - final contract estimated quantity variance.			

Figures

FIGURE 1

KINGSBURY SITE REMEDIAL PROGRAM
RECORD DRAWING

FIGURE 2

GROUND-WATER CUTOFF WALL PROFILE
RECORD DRAWING 0+00+6+00 (RD-1)

FIGURE 3

GROUND-WATER CUTOFF WALL PROFILE
RECORD DRAWING 6+00-12+00 (RD-2)

FIGURE 4

GROUND-WATER CUTOFF WALL PROFILE
RECORD DRAWING 12+00-18+00 (RD-3)

FIGURE 5

GROUND-WATER CUTOFF WALL PROFILE
RECORD DRAWING 18+00-23+80 (RD-4)

FIGURE 6

GROUND-WATER CUTOFF WALL PROFILE
RECORD DRAWING 23+80-34+40 (RD-5)

Appendices

APPENDIX A

KINGSBURY SITE REMEDIAL PROGRAM
MATERIAL AND PERFORMANCE SPECIFICATIONS FOR:

- CUTOFF WALL QUALITY ASSURANCE TESTING
- EMBANKMENT MATERIAL - SECTION 02004
- CAP MATERIALS AND INSTALLATION - SECTION 02006
- GROUND-WATER CUTOFF WALL - SECTION 02007
- TOPSOIL AND SEEDING - SECTION 02008

KINGSBURY SITE REMEDIAL PROGRAM
SUMMARY OF CUTOFF WALL
QUALITY ASSURANCE TESTING STANDARDS

KINGSBURY SITE REMEDIAL PROGRAM
SUMMARY OF CUTOFF WALL QUALITY ASSURANCE TESTING

MATERIAL	TEST	METHOD OF TESTING	LOCATION	FREQUENCY	STANDARD
Fresh Slurry	Viscosity	API Code, RP 13B	Discharge to Trench Holding Ponds	Hourly Twice/Day	≥ 40 sec. ≥ 40 sec.
	Density	Same as Above.	Discharge to Trench and Holding Ponds	Twice/Day Twice/Day	65 PCF 65 PCF
	Fluid Loss	Same as Above.	Holding Ponds	Twice/Day	15 ML/100 PSI in 30 Minutes
Trench Slurry	Fluid Loss	Same as Above.	Top mid-point and 10 ft. from bottom at a location in the vertical plane of the toe of backfill.	Three/Day	15 ML/100 PSI in 30 Minutes
	Density	Same as Above.	Same as Above.		Minimum 65 PCF, See NOTE [3]
Backfill	Slump	ASTM 143-74	Mixing Pad	Two /Batch [1]	4-6 inches
	Unit Weight	API Code RP 13B	Mixing Pad [2]	Once/Batch [1]	100 to 115 PCF
	Permeability:				
	o Field Permeability	Filter press to be per specs.	Mixing Pad	Once/Day	See NOTE [2]
	o Offsite Permeability		In Lab	Once/3,000 cy	$1x10^{-7}$ cm/sec
	Sieve Analysis	ASTM C117-76,C136-76	Mixing Pad	Once/2Batch[1]	Design Mix
	Moisture Content	ASTM 02216-80	Mixing Pad	Once/Batch [1]	Design Mix
TRENCH ALIGNMENT	HORIZONTAL	ESTABLISHED SURVEY BASE LINE		ONCE PER DAY Every 10 lf along completed trench bottom, observation and sampling of trench cuttings from bottom every 20 lf and samples preserved every 200 lf.	
	VERTICAL	APPROVED DEPTH MEASUREMENT DEVICE			Min. 6ft. into clay.

NOTES: [1] One Batch = 200 to 300/cy.
[2] Field permeability standard shall be established in the laboratory using the design mix.
[3] 85 PCF start desanding, at 90 PCF stop backfilling operations.

KINGSBURY SITE REMEDIAL PROGRAM
CONTRACT SPECIFICATIONS

MATERIALS AND PERFORMANCE

~~SILTY LOAM MATERIAL AND INSTALLATION - SECTION 02017~~
EMBANKMENT - SECTION 02004
(ADDENDUM No. 2 SUBPART J)

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work Specified
   1. Earth embankments shall be constructed to establish lines and grades at the locations shown on the Contract Drawings and as directed by the Engineer. Embankment materials shall be obtained from acceptable soils within the Contract Work Area or approved off-site sources.
   2. Embankment materials shall be free from frost, stumps, trees, roots, sods, muck, marl, vegetable matter or other unsuitable material and shall be suitable for compaction as described in the following provisions.
   3. Embankments shall be constructed to such elevations as to make allowance for any settlement that may occur.
   4. The embankment material source(s) may require Mining Permit(s) prior to removal of any material. If required, all provisions of the Permit(s) shall be adhered to by the Contractor. If not required, all disturbed borrow areas shall be, at a minimum, graded and reseeded at the completion of the work.

B. Related Work Specified Elsewhere
   1. Cap Materials and Installation: Section 02006
   2. Topsoil and Seeding: Section 02008
   3. Embankment: Section 02004

1.02 TESTING

A. All soil compaction testing including field and laboratory services required for completion of this Contract shall be provided by the Contractor under supervision of the Engineer.

1.03 SUBMITTALS

A. Source(s) of borrow materials
B. Location(s) of spoil area(s)

PART 3 - EXECUTION

3.01 PLACEMENT AND COMPACTION

A. Surfaces on which embankments are to be placed shall be compacted to the required density of the embankment prior to any fill being placed.
B. Materials shall be placed in lifts not greater than 12 inches of thickness unless greater thicknesses are allowed by the Engineer upon demonstration by the Contractor that the materials and compaction efforts are adequate to obtain the required density.

MATERIALS AND PERFORMANCE

CAP MATERIALS AND INSTALLATION - SECTION 02006

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work Specified
Excavation, backfilling, and compacting include the loosening, removing, working, transporting, storage, fill and disposal of all cap materials necessary for construction of the cap, as shown or specified, or as directed by the Engineer.

B. Related Work Specified Elsewhere
1. Ground-water Cutoff Wall: Section 02007
2. Topsoil and Seeding: Section 02008

1.02 TESTING

A. All soil testing services necessary for the Contractor to obtain an approved cap material shall be provided by the Contractor. All cap density testing including field and laboratory services required during cap installation shall be provided by the Contractor under the supervision of the Engineer.

B. Each lift of cap material that is placed and compacted shall be tested for density and moisture content at a minimum of four tests per acre. No lift of cap material shall be covered by subsequent lifts without the Engineer's prior approval.

1.03 SUBMITTALS

A. Source of borrow materials with final grading plans.
B. Location of spoils area(s).
C. Proposed soils testing laboratory.
D. Laboratory certification of the capping material as specified herein.

PART 2 - PRODUCTS

2.01 CAP MATERIAL

A. Capping material shall be obtained from a source approved by the Engineer.

B. The capping material shall have a remolded saturated hydraulic conductivity (permeability) of a maximum of 1×10^{-7} cm/sec (0.0000001 cm/sec) as identified by laboratory permeability tests using triaxial apparatus with backpressure. A minimum of three (3) such permeability tests shall be required on representative samples taken from each borrow area. The compactive effort required on the soils prior to conducting the permeability tests shall be equivalent to a minimum of 90 percent of the maximum density achieved during the modified proctor density test.

C. The Contractor shall submit testing methods (prior to conducting test), test results, and a certification from the approved soils testing laboratory that the cap material meets the requirements of B above. In addition, the Contractor shall submit compaction curves (ASTM D-698-78 Method C) for the proposed cap material. The results of all soils testing specified herein shall be submitted to the Department for approval.

MATERIALS AND PERFORMANCE

CAP MATERIALS AND INSTALLATION - SECTION 02006

2. Material shall be placed in a uniform lift and thoroughly compact to the specified modified proctor denisty using a sheepsfoot roller of sufficient weight to meet the compacted material density requirements. A minimum of two compaction coverages is required for each lift.
3. No cap material shall be placed where leachate is standing on the surface of the site where cap material is to be placed. Cap material shall not be compacted if leachate is standing on the surface of the site. A suitable working surface shall be obtained as outlined in Part 3 - Execution, Subpart 3.01 B. In addition, cap materials shall not be placed in a frozen condition or on top of frozen material.
4. Balls or clumps of cap material shall not exceed two inches in greatest diameter. Any materials exceeding these dimensions, measured along any face shall be removed from the cap materials prior to cap placement and shall be considered spoil.
5. Lifts which do not meet the compaction requirements of this Section shall be removed at the Contractor's expense.
6. Where required, the contractor shall add sufficient offsite water during the compaction effort to assure proper density. If due to rain or other causes, the material exceeds the optimum moisture content range for satisfactory compaction, it shall be allowed to dry, assisted by discing or harrowing, if necessary, before compaction is resumed.
7. If the compacted surface of any lift is too wet for proper compaction of the succeeding layer, the Contractor shall remove the lift, allow it to dry or work the material with suitable equipment to reduce the water content to the allowable water content range. The lift must then be recompacted before placement of a succeeding lift.
8. Where lifts of cap material are to be placed against a sloping surface or natural soil the Contractor shall bench the existing surface so that the new lifts overlie the existing material for a 12-inch horizontal distance.
9. The Contractor shall be required to seal the working surface from surface water infiltration at the end of each day or when a rain is expected. Sealing shall be accomplished by rolling the cap material with a smooth drum roller. Surface ponding of runoff on the cap surface will not be allowed.
10. Whenever the Contractor has sealed a lift, prior to placement of the next lift, the Contractor shall scarify the surface to a depth of 2 inches with a harrow scarifier of other suitable equipment to provide a satisfactory surface for each succeeding lift.
11. Compaction or consolidation achieved by traveling trucks, machines or other equipment shall not be accepted unless such procedures are approved by the Engineer and the compaction requirement of this Section are achieved.
12. Upon acceptance by the Engineer of the final lift of cap material in an area, the area shall immediately be covered with silty loam material in accordance with Section 02017.

MATERIALS AND PERFORMANCE

GROUND-WATER CUTOFF WALL - SECTION 02007

PART 1 - GENERAL

1.01 DESCRIPTION

A. The Contractor shall construct a continuous, stable barrier consisting of either a mixture of soil and bentonite to the lines and grades indicated on the Contract Drawings. The cutoff wall shall have essentially vertical walls. The soil bentonite wall shall have a minimum width of 30 inches. The cutoff wall shall extend through all overburden materials to a depth of 6 feet into the underlying silt and clay subsoil. The resulting barrier shall have a permeability of less than 1×10^{-7} cm/sec (0.0000001 cm/sec). All efforts shall be made to provide a continuous, homogeneous soil and bentonite cutoff wall within the trench, and the occurrence f "windows" of materials having a permeability of greater than 1×10^{-7} cm/sec (0.0000001 cm/sec) shall not be allowed.

1.02 TESTING SERVICES

A. All ground-water cutoff wall testing services including field and laboratory services required prior to and during installation of the ground-water cutoff wall shall be provided by the Contractor and shall be conducted under the supervision of the Department.

1.03 SOIL BENTONITE BACKFILL LABORATORY TESTING PROCEDURES

A. The Contractor shall perform laboratory testing on the Contractor's proposed cutoff wall materials of construction. The purpose of this testing is to provide an evaluation of the permeability and to demonstrate to the Engineer that the proposed cutoff wall will meet the requirements of this Section.

B. The Contractor shall have the testing performed using the actual types and mixtures of materials of construction to be used during installation of the ground-water cutoff wall including:

- Representative soils from the proposed location of the ground-water cutoff wall
- Contractor's proposed bentonite
- Contractor's proposed backfill
- Contractor's proposed water source (Water)
- Ground water from within the proposed location of the cutoff wall (Leachate)

C. The Contractor shall be responsible for obtaining quantities of the representative soils, and leachate from the ground-water cutoff wall area, as noted above. The Engineer must approve the locations and times of all samples to be taken on the site.

MATERIALS AND PERFORMANCE

GROUND-WATER CUTOFF WALL - SECTION 02007

1.04 SUBMITTALS

A. The Contractor shall submit a Field Quality Control Assurance Program detailing field quality control procedures with his Bid. The Field Quality Control Assurance Program shall insure that the cutoff wall is constructed in a manner which satisfies the design requirements set forth in this specification. For the soil bentonite cutoff wall, the program shall include, but not be limited to, checks on the excavation and backfilling procedures, cutoff wall depths and alignment, cutoff wall continuity, and testing of slurry and backfill for conformance with the proposed mix. (Submit with Bid.)

B. Name of proposed testing laboratory or independent organization certifying laboratory test results.

C. The Contractor may submit with his bid a proposal to utilize alternative methodology and/or materials of construction of the ground-water cutoff wall, if he can demonstrate that such alternative methods and/or materials would be more appropriate to this specific site.

D. The Contractor is advised that remote mixing using auger-type equipment is required. The Contractor shall submit a proposed location and design of the remote mixing facility and auger mixing method.

E. Proposed method of construction of the cutoff wall including types and sources of materials to be used to construct the cutoff wall, construction procedures and procedures for handling and disposing of contaminated materials (bentonite handling and disposing of contaminated materials (bentonite slurry, backfill, ground-water and/or soils removed during excavation of the slurry trench) (Submit with Bid.)

F. After award of the Contract and prior to cutoff wall installation, the successful Contractor shall submit all laboratory test results to the Engineer for approval. , The Contractor shall also submit an independent certification that the laboratory tests were conducted in accordance with the specified laboratory testing program.

G. If at any time during the contract the Engineer requests further testing to insure that the characteristics of the construction mate-

MATERIALS AND PERFORMANCE

GROUND-WATER CUTOFF WALL - SECTION 02007

PART 3 - EXECUTION

3.01 GENERAL REQUIREMENTS

A. The ground-water cutoff wall shall be constructed to achieve a maximum permeability rate of 1×10^{-7} cm/sec (0.0000001 cm/sec) as determined by the specified laboratory testing program.

3.02 BATCHING PLANT

A. A bentonite slurry batch plant and slurry hydration pond and/or tank shall be provided by the Contractor as necessary to meet the requirement of this Section. Each shall be placed at a location approved by the Engineer. Note: No slurry shall be made in the trench.

B. The batching plant shall be of sufficient size not to cause an interruption of work.

3.03 BENTONITE SLURRY - BACKFILL MIXING

A. Bentonite and backfill shall be mixed and blended using auger equipment into a soil bentonite mixture in such a manner as to meet the requirements of this Section. The soil bentonite backfill shall have the same bentonite content as utilized in the laboratory testing program and approved by the Engineer. The soil bentonite backfill shall have a slump (when tested by a conventional concrete slump cone test) as determined by the laboratory testing program and approved by the Engineer. The backfill shall not be mixed next to the trench, but at an on-site, remote location using auger-type equipment (refer to Paragraph 1.04 D. of this Section).

3.04 SLURRY TRENCH INSTALLATION

A. A method for excavating the slurry trench shall be proposed as part of the Contractor's construction procedures to be submitted with his bid. Bentonite slurry shall be introduced into the slurry trench at the same time slurry trench excavation is begun and shall be maintained in the slurry trench during excavation until backfilled with soil bentonite backfill. The contractor shall maintain the stability of the excavated slurry trench at all times for its full depth. The level of the bentonite slurry in the slurry trench shall not be permitted to drop more than two feet below existing grade except as approved by the Engineer. Dilution of the bentonite slurry by surface waters shall be prevented.

B. The Contractor shall waste the bottom six feet (6') of silt and clay soil excavated from the slurry trench to a location within the limits of the ground-water cutoff wall. Upon approval of the Engineer, this soil may be used in the soil bentonite backfill.

MATERIALS AND PERFORMANCE

TOPSOIL AND SEEDING - SECTION 02008

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work Specified
   1. The furnishing of topsoil, fertilizer, seed, and mulch; the preparation of the subgrade and the placing of the topsoil, fertilizer, seed and mulch.
   2. The maintenance required until acceptance.

B. Related Work Specific Elsewhere
   1. Embankment: Section 02004
   2. Cap Materials and Installation: Section 02006

1.02 SUBMITTALS

A. The Contractor shall submit for approval by the Engineer a written statement giving location of properties from which topsoil is to be obtained, names and addresses of owners, depth to be stripped and the crops grown during the past two years. The written statement shall include a laboratory certification of the actual gradation of the topsoil material.

B. The Contractor shall submit seed vendor's certified statement for the grass seed mixture required, stating common name, percentage by weight, and percentages of purity and germination.

C. The Contractor shall submit for approval by the Engineer all data concerning hydroseeding equipment (if used) including all material application rates.

PART 2 - PRODUCTS

2.01 TOPSOIL

Topsoil shall be unfrozen fertile, friable, natural loam. surface soil, and shall be free of suboil, clay and clay lumps, brush, weeds, and other litter and free of roots, stumps, stones larger than 2 inches in any dimension, and other extraneous matter.

Topsoil shall meet the following requirements:

1. The pH of the material shall be between 5.5 and 7.6.
2. The organic content shall be not less than 2% nor more than 20%.
3. Gradation:

Sieve Size	Percent Passing by Weight
2 inch	100
1 inch	85 to 100
1/4 inch	65 to 90
No. 200 mesh	20 to 80

The Contractor may amend natural topsoil with approved materials and by approved methods to meet the above specifications.

MATERIALS AND PERFORMANCE

TOPSOIL AND SEEDING - SECTION 02008

C. The fertilizer shall be applied uniformly with a mechanical spreader at the rate of 20 pounds per 1000 square feet. Following the application of the fertilizer and prior to application of the seed, the surface shall be scarified to a depth of 2 inches with a disk or other suitable method.
D. The seed mixture shall be applied uniformly upon the prepared surface with a mechanical spreader at a rate of not less than five pounds per 1000 square feet. The seed shall be raked lightly into the surface and rolled. Seeding shall be suspended when wind velocities exceed 5 miles per hour or as directed by the Engineer.
E. Seeded areas shall then be covered by application of a uniform continuous 2" thick blanket of mulch. Excessive amounts or bunching of mulch will not be permitted. Mulch shall be left in place and allowed to disintegrate and shall be anchored as required by a method approved by the Engineer. Any anchorage or mulch that has not disintegrated at time of first mowing shall be removed.
F. Following application of the mulch, the seed bed shall be moistened. A muddy soil condition will not be acceptable.
G. Seeded areas shall be watered as often as required to obtain germination and to obtain and maintain a satisfactory growth. Watering shall be done in such a manner as to prevent washing out of seed and damaging of cap.
H. The stand of grass resulting from the seeding shall not be considered satisfactory until accepted by the Engineer. If areas are determined to be unacceptable, the remaining mulch will be removed and all areas shall be reseeded, refertilized and remulched as per the above application procedures at the Contractor's expense. Any areas that are damaged by activities of the Contractor after topsoil and seeding shall be repaired to the satisfaction of the Engineer.
I. Hydroseeding may be accepted as a method of applying fertilizer, seed and mulch. The Contractor must submit all data regarding materials and application rates to the Engineer for approval if hydroseeding is proposed by the Contractor.

3.03 MAINTENANCE

A. The Contractor shall begin maintenance period immediately after planting of landscape materials.
B. The Contractor shall maintain grass areas, for the periods required to establish an acceptable growth, but not less than 60 days, after date of substantial completion. If seeded in the fall and not given a full 60 days of maintenance, or if not considered acceptable by the Engineer at that time, continue maintenance during following spring until acceptable grass stand is established.
C. Seeded areas shall be watered as often as required to obtain germination and to obtain and maintain a satisfactory sod growth. Watering shall be in such a manner as to prevent washing out of seed.

- END OF SECTION -

APPENDIX B

KINGSBURY SITE REMEDIAL PROGRAM
FIELD AND LABORATORY TEST RESULTS

- TRIAXIAL PERMEABILITY TESTING
- SLURRY QUALITY CONTROL TESTING
- SLURRY WALL BACKFILL TESTING
- IN-PLACE DENSITY/MOISTURE TESTING OF LANDFILL CAP
- PROCTOR CURVES FOR CAP MATERIAL

KINGSBURY SITE REMEDIAL PROGRAM
TRIAXIAL PERMEABILITY TEST RESULTS

TRIAXIAL PERMEABILITY TEST RESULTS

Sample	Date	Normal Pressure (PSI)	Confining Pressure (PSI)	Back Pressure (PSI)	Permeability* (CM/SEC)
Slurry Wall Field Sample	9/15/87	90	95	80	1.76×10^{-8}
Slurry Wall Field Sample	8/31/87	90	95	80	1.20×10^{-8}
Slurry Wall Field Sample #1		90	95	80	1.23×10^{-8}
Sta. 20 + 30		85	95	80	1.11×10^{-8}
Slurry Wall Field Sample #2		90	95	80	1.47×10^{-8}
Slurry Wall Field Sample #3		90	95	80	1.59×10^{-8}
Mix Design 85% "Soil," 15% Clay		85	95	80	4.80×10^{-8}
& Bentonite Slurry to Obtain		90	95	80	4.74×10^{-8}
3 1/4" Slump					
Proposed Cap Material - TP-1 @ 6'		85	95	80	2.25×10^{-9}
		90	95	85	2.15×10^{-9}
Proposed Cap Material TP-3 @ 4'		85	95	80	2.65×10^{-9}
		90	95	80	2.43×10^{-9}
Proposed Cap Material TP-4 @ 6.5'		85	95	80	1.84×10^{-9}
		90	95	80	2.15×10^{-9}
Soil/Slurry Mix w/40% Natural		90	95	80	1.69×10^{-8}
Fines, 4" Slump		90	95	80	2.97×10^{-8}

***Note: Maximum allowable permeability = 1×10^{-7} cm/sec**

5/10/89
189171J

KINGSBURY SITE REMEDIAL PROGRAM
SLURRY QUALITY CONTROL TEST RESULTS

SLURRY QUALITY CONTROL TESTING

		Slurry Pond			Trench Slurry			
Date	Time	Marsh Funnel (sec)	Filtrate Loss	Density (PCF)	Marsh Funnel (sec)	Filtrate Loss	Density (PCF)	Station
Required	Range	≥40	-	65-85	≥40	-	65-85	
7/28/87	12:30p	44	9.5	65.5				
	2:00p	43	-	-				
	2:45p	41	-	-		No Backfill Placed		
	4:00p	43	-	-				
	4:45p	40	10.5	65.0				
7/29/87	8:00a	43	10.0	65.0				
	9:00a	41	-	-				
	10:00a	40	-	-		No Backfill Placed		
	3:00p	41	-	-				
	4:00p	40	10.5	65.0				
7/30/87	7:30a	42	9.5	65.0				
	8:30a	41	-	-				
	9:30a	40	-	-				
	11:00a	40	-	-		No Backfill Placed		
	1:00p	41	10.0	65.0				
	2:00p	40	-	-				
	3:00p	40	-	-				
	4:00p	41	-	-				
	4:30p	40	-	-				
7/31/87	7:15a	40	-	65.0				
	8:30a	42	-	-				
	9:30a	40	-	-				
	11:00a	40	-	-				
	3:00p	44	-	-				
	4:00p	43	-	-				
	5:00p	43	-	-				
8/3/87	7:15a	41	-	65.0				
	8:30a	40	-	-				
	9:30a	41	-	-				
	11:00a	40	-	-				
	1:00p	40	-	-				
	2:00p	42	-	-				
	3:00p	41	-	-				
	4:00p	42	-	-				
	5:00p	42	-	-				
8/4/87	7:30a	42	-	65.5				
	8:30a	40	-	-				
	9:30a	40	-	-	51.0	10.5	71.8	22+20
	11:00a	41	-	-				

SLURRY QUALITY CONTROL TESTING
(Cont'd.)

		Slurry Pond			Trench Slurry			
Date	Time	Marsh Funnel	Filtrate Loss	Density (PCF)	Marsh Funnel	Filtrate Loss	Density (PCF)	Station
Required	Range	≥40	-	65-85	≥40	-	65-85	
	12:00p	40	-	-				
	1:15p	42	-	65.0				
	2:15p	41	-	-	55.7	10.0	75.8	23+20
	4:30p	-	-	-	56.3	10.7	75.3	23+00
8/5/87	8:00a	40	11	65.0				
	9:00a	41	-	-	58.3			
	10:30a	41	-	-				
	11:30a	41	-	-				
	1:30p	50	-	68.5				
	2:00p	-	-	-	57.7	10.7	79.5	
	4:00p	-	-	-	58.3	10.5	79.7	
8/6/87	8:00a	42	11.0	65.0	59.7	9.7	78.8	
	9:00a	40	-	-				
	10:00a	40	-	-				
	1:00p	41	-	-	59.3	10.8	80.8	23+70
	3:00p	40	-	-	59.3	10.5	80.8	
8/11/87	8:00a	42	10.0	65.0	64.7	10.7	81.3	
	9:00a	42	-	-				
	10:00a	43	-	-				
	11:00a	42	-	-	51.0	12.3	75.3	
	1:00p	44	-	-				
	2:00p	42	10.0	65.0				
	3:00p	42	-	-	56.0	12.2	71.7	
	4:00p	44	-	-				
8/12/87	8:00a	43	10.0	65.0	62.0	12.8	72.0	
	9:00a	42	-	-				
	10:00a	42	-	-				
	11:00a	41	-	-				
	1:00p	44	-	-	50.0	12.0	74.3	
	2:00p	43	10.0	65.0				
	3:00p	44	-	-				
8/13/87	8:00a	43	-	66.0				
	9:00a	42	-	-	53.3	12.2	73.7	
	10:00a	44	-	66.5				
	11:00a	43	-	-				
	1:00p	42	-	-				
	2:00p	-	-	-	51.0	12.3	71.5	
	4:00p	-	-	-	65.5	11.8	78.0	
8/14/87	8:00a	41	10.0	65.0	55.0	11.8	83.5	
	9:00a	42	-	-				
	10:00a	41	-	-				

SLURRY QUALITY CONTROL TESTING
(Cont'd.)

Date	Time	Slurry Pond Marsh Funnel	Slurry Pond Filtrate Loss	Slurry Pond Density (PCF)	Trench Slurry Marsh Funnel	Trench Slurry Filtrate Loss	Trench Slurry Density (PCF)	Station
Required	Range	≥40	-	65-85	≥40	-	65-85	
	11:00a	43	-	-				
	1:00p	42	-	-				
	2:00p	44	10.0	65.0	60.5	10.8	75.0	
	3:00p	42	-	-				
	4:00p	-	-	-	54.3	11.3	75.7	
	5:00p	-	-	-				
8/17/87	8:00a	41	10.5	65.0	45.0	12.5	71.5	
	9:00a	41	-	-				
	10:00a	43	-	-				
	11:00a	42	-	-	49.5	13.5	81.0	
	1:00p	43	10.0	66.0				
	2:00p	42	-	-				
	3:00p	44	-	-	54.0	13.3	80.3	
8/18/87	8:00a	40	11.0	65.0	51.0	13.0	80.3	
	9:00a	41	-	-				
	10:00a	41	-	-				
	11:00a	42	-	-	56.7	13.5	84.7	
	1:00p	41	-	-				
	2:00p	43	-	-				
	3:00p	43	10.0	66.0				
	4:00p	42	-	-	56.7	12.7	85.0	
	5:00p	42	-	-				
8/19/87	8:00a	43	-	-	60.0	50.3	80.3	
	9:00a	42	10.0	65.0				
	10:00a	42	-	-				
	11:00a	41	-	-	56.3	12.0	82.3	
	4:00p	-	-	-	48.3	12.0	78.3	
8/20/87	8:00a	42	-	-	53.0	10.7	79.0	
	9:00a	42	-	-				
	10:00a	41	10.0	65.0				
	11:00a	43	-	-	49.3	13.5	78.3	
	1:00p	42	-	-				
	2:00p	41	-	-				
	3:00p	42	10.5	66.0	53.3	12.7	82.0	
	4:00p	42	-	-				
8/21/87	8:00a	-	-	-	56.7	12.8	83.0	
	11:00a	-	10.5	66.0	55.7	12.3	81.7	32+70
	3:00p	-	11.5	66.0	57.3	12.3	83.0	
8/22/87	8:00a	42	-	-	60.3	11.8	81.7	33+40
	9:00a	42	12.0	65.0				

SLURRY QUALITY CONTROL TESTING
(Cont'd.)

Date	Time	Slurry Pond Marsh Funnel	Slurry Pond Filtrate Loss	Slurry Pond Density (PCF)	Trench Slurry Marsh Funnel	Trench Slurry Filtrate Loss	Trench Slurry Density (PCF)	Station
Required	Range	≥40	-	65-85	≥40	-	65-85	
8/24/87	8:00a	42	11.5	66.0	58.7	12.5	82.7	33+70
	9:00a	42	-	-				
	10:00a	41	-	-				
	11:00a	41	-	-	54.7	12.5	78.7	0+30
	1:00p	42	-	-				
	2:00p	43	-	-				
	3:00p	43	-	-				
	4:00p	42	11.5	66.0	55.0	13.5	76.7	
	5:00p	42	-	-				
8/25/87	8:00a	42	-	-	64.3	12.0	80.7	0+50
	9:00a	42	-	-				
	10:00a	43	-	-				
	11:00a	42	11.5	66.0	58.3	13.2	80.7	0+90
	1:00p	41	-	-	-			
	2:00p	43	-	-				
	3:00p	43	-	-				
	4:00p	41	11.5	65.0	57.3	12.3	79.7	1+10
	5:00p	42	-	-				
8/26/87	8:00a	43	-	-				
	9:00a	42	11.5	66.0	53.0	13.2	79.0	1+20
	10:00a	42	-	-				
	11:00a	43	-	-	59.7	12.8	80.0	1+20
	1:00p	41	-	-				
	2:00p	42	11.5	66.0				
	3:00p	42	-	-	56.0	12.5	80.7	
	4:00p	43	-	-				
8/27/87	8:00a	42	-	-	62.3	11.7	80.7	1+60
	9:00a	41	-	-				
	10:00a	42	11.5	65.0				
	11:00a	42	-	-	62.3	11.2	81.3	2+40
	1:00p	43	-	-				
	2:00p	42	-	-				
	3:00p	42	11.5	65.0	53.7	12.2	80.7	
	4:00p	41	-	-				
	5:00p	-	-	-				
8/28/87	11:00a	42	10.5	66.0				
	1:00p	42	10.5	66.0				
8/31/87	8:00a	41	-	-	50.7	12.0	78.7	2+20
	9:00a	41	-	-				
	10:00a	42	10.5	66.0				
	11:00a	41	-	-	51.7	13.2	79.0	3+20
	1:00p	43	-	-				

SLURRY QUALITY CONTROL TESTING
(Cont'd.)

		Slurry Pond			Trench Slurry			
Date	Time	Marsh Funnel	Filtrate Loss	Density (PCF)	Marsh Funnel	Filtrate Loss	Density (PCF)	Station
Required	Range	≥40	-	65-85	≥40	-	65-85	
	2:00p	42	-	-				
	3:00p	42	11.0	66.0				
	4:00p	43	-	-	54.0	12.7	80.3	3+20
	5:00p	42	-	-				
9/1/87	8:00a	40	-	-	52.7	13.2	81.0	3+20
	9:00a	40	-	-				
	10:00a	41	10.0	65.0				
	11:00a	42	-	-	52.3	13.3	81.0	3+50
	1:00p	41	-	-				
	2:00p	41	-	-				
	3:00p	42	10.5	66.0				
	4:00p	42	-	-				
9/2/87	8:00a	41	-	-	58.3	11.8	83.0	3+50
	9:00a	41	-	-				
	10:00a	42	10.5	66.0				
	11:00a	42	-	-	57.0	11.8	83.0	
	1:00p	41	-	-				
	2:00p	42	10.5	66.0				
	3:00p	42	-	-	54.5	11.3	80.5	
	4:00p	42						
9/3/87	8:00a	43	-	-	53.5	11.8	81.5	4+00
	9:00a	43	-	-				
	10:00a	42	10.5	66.0				
	11:00a	42	-	-	58.0	12.5	84.3	4+10
	1:00p	41	-	-				
	2:00p	41	-	-				
	3:00p	41	10.0	65.0				
	4:00p	41	-	-	50.5	11.8	82.5	4+00
9/4/87	9:00a	41	-	-	49.3	13.0	80.3	4+50
	10:00a	43	-	-				
	11:00a	42	10.5	66.0				
	1:00p	41	-	-				
	2:00p	42	-	-	49.3	12.5	80.0	
9/8/87	8:00a	41	-	-	50.7	12.7	81.3	4+70
	9:00a	41	10.5	65.0				
	10:00a	41	-	-				
	11:00a	42	-	-	51.3	12.7	82.3	4+90
	1:00p	42	10.5	66.0				
	2:00p	43	-	-				
	3:00p	42	-	-				
	4:00p	43	-	-	50.7	13.3	82.7	4+90

SLURRY QUALITY CONTROL TESTING
(Cont'd.)

Date	Time	Slurry Pond Marsh Funnel	Slurry Pond Filtrate Loss	Slurry Pond Density (PCF)	Trench Slurry Marsh Funnel	Trench Slurry Filtrate Loss	Trench Slurry Density (PCF)	Station
Required	Range	≥40	-	65-85	≥40	-	65-85	
9/10/87	9:00a	40	10.0	65.0	44.0	13.3	76.7	5+00
	10:00a	40	-	-				
	11:00a	40	-	-	45.7	13.8	79.3	5+00
	1:00p	40	-	-				
	2:00p	40	-	-				
	3:00p	41	10.5	66.0				
	4:00p	42	-	-	44.7	13.8	80.0	5+10
9/11/87	9:00a	42	-	-				
	10:00a	42	10.5	66.0	46.0	13.0	78.7	
	11:00a	43	-	-				
	12:00p	43	-	-				
	1:00p	43	-	-				
	2:00p	43	-	-	47.0	12.7	79.3	
9/14/87	9:00a	42	-	-	47.3	12.8	79.0	6+40
	10:00a	43	-	-				
	11:00a	42	10.5	66.0	45.0	13.3	79.7	6+70
	12:00p	43	-	-				
	1:00p	43	-	-				
	2:00p	42	10.5	66.0	44.0	13.3	80.3	6+80
	3:00p	43	-	-				
9/15/87	9:00a	42	-	-	49.3	13.2	82.3	7+30
	10:00a	42	-	-				
	11:00a	43	10.5	65.0				
	12:00p	43	-	-	49.7	13.5	83.7	7+30
	1:00p	43	-	-				
	2:00p	42	10.5	65.0				
	3:00p	43	-	-				
	4:00p	43	-	-	52.0	13.5	85.3*	
9/16/87	9:00a	43	-	-	52.7	13.8	86.0*	7+60
	10:00a	43	10.5	65.0				
	11:00a	43	-	-	53.3	14.0	87.3*	7+60
	1:00p	42	-	-				
	2:00p	42	10.0	65.0				
	3:00p	43	-	-				
	4:00p	42	-	-	51.7	13.2	87.0*	8+50
9/17/87	8:00a	43	-	-	51.2	13.7	85.5*	8+20
	9:00a	43	-	-				
	10:00a	42	10.5	65.0	45.7	13.5	84.5	8+50
	11:00a	43	-	-				
	1:00p	43	10.5	66.0				
	2:00p	42	-	-				

*Outside required range

SLURRY QUALITY CONTROL TESTING
(Cont'd.)

Date	Time	Slurry Pond Marsh Funnel	Slurry Pond Filtrate Loss	Slurry Pond Density (PCF)	Trench Slurry Marsh Funnel	Trench Slurry Filtrate Loss	Trench Slurry Density (PCF)	Station
Required	Range	≥40	-	65-85	≥40	-	65-85	
	3:00p	42	-	-				
	4:00p	42	-	-				
9/21/87	9:00a	43	-	-				
	10:00a	42	10.5	66.0	43.7	14.2	82.0	9+00
	11:00	42	-	-				
	1:00p	42	-	-	49.3	14.0	83.3	8+50
	2:00p	43	-	-				
	3:00p	42	-	-				
	4:00p	43	-	-				
9/22/87	8:00a	42	-	-	48.7	13.7	85.0	9+00
	9:00a	42	10.5	66.0				
	10:00a	42	-	-				
	11:00a	43	-	-				
	1:00p	43	-	-	54.0	10.0	82.0	21+00
	2:00p	43	-	-				
	3:00p	43	10.0	66.0				
	4:00p	42	-	-				
9/23/87	8:00a	43	-	-				
	9:00a	43	10.0	66.0	61.0	10.5	83.5	19+80
	10:00a	43	-	-				
	11:00a	42	-	-				
	1:00p	42	-	-				
	2:00p	43	-	-	59.0	10.3	83.5	19+60
	3:00p	43	-	-				
	4:00p	42	10.5	65.0				
9/24/87	8:00a	43	-	-	51.5	12.3	83.5	19+60
	9:00a	42	10.0	65.0				
	10:00a	43	-	-	63.5	11.0	88.0*	19+40
	11:00a	43	-	-				
	1:00p	43	-	-	56.0	-	92.0*	8+70
	2:00p	42	10.0	65.0				
	3:00p	42	-	-				
	4:00p	42	-	-	50.0	14.0	87.3*	9+00
9/25/87	8:00a	42	-	-				
	9:00a	42	10.5	65.0				
	10:00a	42	-	-				
	11:00a	43	-	-	48.5	10.8	85.0	18+90
	1:00p	43	-	-				
	2:00p	43	-	-				
	3:00p	43	10.5	66.0				
	4:00p	43	-	-				

*Outside required range

SLURRY QUALITY CONTROL TESTING
(Cont'd.)

Date	Time	Slurry Pond Marsh Funnel	Slurry Pond Filtrate Loss	Slurry Pond Density (PCF)	Trench Slurry Marsh Funnel	Trench Slurry Filtrate Loss	Trench Slurry Density (PCF)	Station
Required	Range	≥40	-	65-85	≥40	-	65-85	
9/28/87	8:00a	41	-	-				
	9:00a	41	-	-	50.5	10.3	84.0	18+90
	10:00a	42	10.5	65.0				
	11:00a	42	-	-	48.0	13.2	83.0	18+90
	1:00p	42	10.5	65.0	45.5		77.5	18+90
	2:00p	41	-	-	44.0	11.5	76.7	8+90
	3:00p	43	-	-	43.0		78.0	8+90
	4:00p	43	-	-	43.3	11.7	75.3	9+00
9/29/87	8:00a	43	-	-	45.0	12.8	76.0	9+00
	9:00a	43	-	-	47.0	12.8	81.0	9+00
	11:00a	43	10.0	66.0	50.3	13.2	76.0	9+20
					53.0	12.3	78.5	18+20
9/30/87	9:00a	43	-	-	49.0	12.2	80.0	9+30
	11:00a	43	10.5	66.0				
10/6/87	-	-	-	-	43.0	11.8	72.3	17+20
10/7/87	-	-	-	-	44.7	13.2	73.0	9+80
	-	-	-	-	44.7	13.1	73.3	9+80
	-	-	-	-	46.5	10.2	76.0	17+20
	-	-	-	-	44.7	13.2	79.7	10+20
10/8/87	-	-	-	-	49.0	12.5	76.3	9+80
	-	-	-	-	43.0	13.0	75.0	16+60
	-	-	-	-	52.3	13.5	80.0	9+80
	-	-	-	-	42.5	13.5	75.0	16+30
	-	-	-	-			87.0*	9+50
10/9/87	-	-	-	-	58.0		87.0*	10+20
	-	-	-	-	69.0		95.0*	10+00
	-	-	-	-	44.3	13.2	76.7	16+20
	-	-	-	-	43.0	13.8	77.0	15+10
10/10/87	10:00a	43	10.5	65.0			84.0	9+60
	-	-	-	-	43.2	12.7	79.0	15+10
	-	-	-	-	42.7	14.2	75.7	15+10
10/12/87	-	-	-	-	49.7	11.7	77.3	9+70
	-	-	-	-	49.7	12.2	77.7	10+00
	-	-	-	-	48.7	11.3	80.0	10+00
	-	-	-	-	44.7	12.2	77.7	15+40
10/13/87	-	-	-	-	46.3	13.0	74.3	10+50
	-	-	-	-	50.7	11.5	77.7	10+50
	-	-	-	-	44.0	13.7	76.7	15+40

*Outside required range

SLURRY QUALITY CONTROL TESTING
(Cont'd.)

Date	Time	Slurry Pond Marsh Funnel	Slurry Pond Filtrate Loss	Slurry Pond Density (PCF)	Trench Slurry Marsh Funnel	Trench Slurry Filtrate Loss	Trench Slurry Density (PCF)	Station
Required	Range	≥40	-	65-85	≥40	-	65-85	
10/14/87	-	-	-	-	52.5	11.5	84.5	10+50
	-	-	-	-	48.3	11.3	86.0	10+70
	-	-	-	-	43.0	11.8	83.0	15+00
	-	-	-	-	47.0	12.5	87.5	15+90
10/16/87	-	-	-	-	46.0		85.5	15+00
	-	-	-	-	43.0	9.7	84.0	11+10
10/19/87	-	-	-	-	48.0	13.2	84.0	11+20
	-	-	-	-	44.3	13.2	84.7	11+20
	-	-	-	-	44.0	14.0	85.3*	11+20
10/20/87	-	-	-	-	47.7	13.7	84.0	11+60
	-	-	-	-	43.3	14.8	82.7	12+10
	-	-	-	-	45.7		85.7*	12+50
10/21/87	-	-	-	-	48.7	14.7	86.0*	13+50
	-	-	-	-	47.0	14.3	88.3*	13+50
	-	-	-	-	46.0		86.3*	14+10
10/22/87	-	-	-	-	47.7	13.2	85.7*	13+70
	-	-	-	-	50.0	14.2	85.0	13+70
10/23/87	-	-	-	-	50.3		87.0*	
10/26/87	-	-	-	-	53.5	12.3	89.0*	12+70
	-	-	-	-	47.0		84.5	12+70
10/27/87	-	-	-	-	52.0	14.0	89.0*	12+00
	-	-	-	-	54.5	13.8	84.5	
10/29/87	-	-	-	-	46.0	14.3	84.5	10+50
	-	-	-	-	53.5	14.8	89.5*	10+50
10/30/87	-	-	-	-	61.0		94.0*	10+30

*Outside required range

KINGSBURY SITE REMEDIAL PROGRAM
SLURRY WALL BACKFILL TESTING RESULTS

BACKFILL TESTING

Date	AM/PM	Gradiation - % Passing 3/8"	#40	#200	Average Slump (IN)	Filtrate Loss (%)	Moisture Content (%)	Wet Density (PCF)
Required Range		65-100	30-70	20-40	4-6			≥100
8/3/87	AM	100	68	35.4	4	-	-	110
8/3/87	PM	100	66	36.0	5 1/2	-	-	110
8/4/87	AM	96	66	22.9	4	-	-	109
8/5/87	AM	98	69	29.0	4	-	-	110
8/5/87	PM	100	68	30.7	3 3/4*	-	-	110
8/6/87	AM	100	67	33.2	4 1/2	-	-	113
8/6/87	PM	100	69	35.1	4	-	-	113
8/11/87	AM	94	69	34.7	4 1/4	-	24.0	109
8/12/87	AM	100	66	27.0	4 1/4	-	26.5	-
8/12/87	PM	100	68	40.0	4 1/4	-	23.4	-
8/13/87	AM	100	70	40.3	4 1/2	-	27.0	112
8/13/87	PM	99	66	35.2	4 1/2	-	27.0	100
8/14/87	AM	100	68	30.4	4 1/2	-	26.7	112
8/14/87	PM	99	67	39.0	4 1/2	-	26.5	111
8/17/87	AM	100	67	40.0	4 1/2	-	25.9	115
8/17/87	PM	100	67	38.2	4 1/2	-	26.0	115
8/18/87	AM	100	69	36.2	4 3/4	-	28.7	110
8/18/87	PM	100	63	36.5	4 3/4	-	28.7	110
8/19/87	AM	99	70	26.0	4 1/2	-	26.0	110
8/19/87	PM	100	69	38.6	4 1/2	-	26.0	110
8/20/87	AM	100	68	31.4	5	-	24.9	115
8/21/87	AM	100	65	38.2	5 1/2	-	28.7	114

*Outside required range

BACKFILL TESTING
(Cont'd.)

Date	AM/PM	Gradiation - % Passing 3/8"	#40	#200	Average Slump (IN)	Filtrate Loss (%)	Moisture Content (%)	Wet Density (PCF)
Required Range		65-100	30-70	20-40	4-6			≥100
8/21/87	PM	100	69	27.1	5 1/2	-	29.0	114
8/22/87	PM	99	67	39.5	-	-	-	-
8/24/87	AM	100	67	39.8	4 3/4	-	31.5	116
8/24/87	PM	100	68	32.2	4 3/4	-	28.3	116
8/25/87	AM	100	66	39.3	5 1/4	-	27.6	114
8/25/87	PM	99	69	28.4	5 1/4	-	30.7	114
8/26/87		100	67	39.4	4 7/8	-	27.8	-
8/27/87	AM	100	67	29.4	4 1/2	-	26.7	114
8/27/87	PM	100	69	27.0	5	-	29.6	114
8/31/87	AM	100	64	30.8	5 1/2	-	30.0	115
8/31/87	PM	100	68	27.3	5 1/2	-	25.7	115
9/1/87	AM	100	64	23.0	4 1/2	-	26.5	114
9/1/87	PM	100	66	23.5	4 1/4	-	24.2	114
9/2/87	AM	100	68	26.5	4 1/4	-	23.4	115
9/2/87	PM	100	67	24.8	3*	-	22.8	115
9/3/87	AM	100	68	26.9	4	-	24.6	115
9/3/87	PM	99	66	24.6	4 1/2	-	24.6	115
9/4/87	AM	94	65	30.3	3 3/4*	-	25.9	-
9/8/87	AM	100	70	29.7	4 1/4	-	27.2	115
9/10/87	AM	98	69	39.9	4 3/4	9.5	27.4	112
9/10/87	PM	99	69	39.7	4 1/2	-	-	112
9/11/87	AM	100	68	34.0	4 1/4	8.0	28.8	114
9/14/87	AM	100	69	31.2	4 1/2	6.5	27.3	114

*Outside required range

BACKFILL TESTING
(Cont'd.)

Date	AM/PM	Gradiation - % Passing 3/8"	#40	#200	Average Slump (IN)	Filtrate Loss (%)	Moisture Content (%)	Wet Density (PCF)
Required Range		65-100	30-70	20-40	4-6			≥100
9/14/87	PM	100	66	37.5	5 3/4	-	24.9	114
9/15/87	AM	100	70	37.4	4	7.0	26.5	115
9/15/87	PM	100	69	26.4	5	-	23.0	-
9/15/87	PM	100	68	35.1	5	-	30.2	-
9/16/87	AM	98	69	25.1	4 1/4	16.5	22.6	115
9/16/87	PM	95	61	24.2	4 1/4	-	22.0	-
9/17/87	AM	98	69	31.5	4	9.5	26.4	115
9/17/87	PM	99	69	29.1	4 1/2	-	27.6	-
9/21/87	AM	99	68	36.5	4 1/2	-	27.4	115
9/22/87	AM	99	68	35.8	4	16.5	23.8	114
9/23/87	AM	100	69	39.7	4	13.0	24.3	115
9/23/87	PM	100	68	39.2	4 1/2	-	24.9	-
9/23/87	PM	99	68	26.4	4 3/4	-	24.3	-
9/24/87	AM	100	63	23.6	4	12.5	16.1	115
9/24/87	PM	100	63	23.8	4 3/4	-	22.3	-
9/25/87	AM	100	65	24.8	4 3/4	8.5	24.7	114
9/25/87	PM	100	69	27.5	4 3/4	-	21.3	-
9/28/87	AM	97	67	27.7	4	11.0	21.5	114
9/28/87	PM	100	70	39.0	4 3/4	-	23.8	-
9/29/87	AM	100	67	24.6	4 1/8	15.0	21.9	-
9/29/87	PM	99	59	21.6	4	-	21.9	-
9/30/87	PM	99	62	25.1	4 3/4	11.0	22.7	115
10/1/87	AM	99	65	27.3	4 1/4	12.5	27.5	115

BACKFILL TESTING
(Cont'd.)

Date	AM/PM	Gradiation - % Passing 3/8"	#40	#200	Average Slump (IN)	Filtrate Loss (%)	Moisture Content (%)	Wet Density (PCF)
Required Range		65-100	30-70	20-40	4-6			≥100
10/1/87	PM	100	65	29.2	4 3/4	-	23.7	-
10/5/87	AM	100	65	25.4	4 1/2	-	24.7	115
10/5/87	PM	100	64	24.9	4 1/2	-	23.9	115
10/6/87	AM	100	64	24.5	4 1/4	-	25.7	115
10/6/87	PM	100	64	23.9	4 1/2	-	24.9	-
10/7/87	AM	100	65	27.6	4 1/4	10.0	23.9	115
10/7/87	PM	99	55	21.5	4 3/8	-	20.8	115
10/8/87	AM	99	64	23.6	4 3/8	19.0	21.4	115
10/8/87	PM	100	66	31.4	4 3/8	-	25.6	-
10/9/87	AM	100	63	27.6	4	9.5	25.2	115
10/9/87	PM	100	58	21.7	4 1/8	-	20.6	-
10/10/87	AM	100	69	26.6	4	14.0	20.9	115
10/10/87	PM	99	68	26.8	4	-	23.1	-
10/12/87	AM	99	66	22.5	4 1/4	19.0	20.8	115
10/12/87	PM	99	68	24.4	4 1/8	19.0	24.1	-
10/13/87	AM	99	61	21.0	4 1/4	13.5	19.5	115
10/13/87	PM	100	63	23.7	4 1/2	-	20.9	-
10/13/87	PM	100	66	22.0	4	-	20.7	-
10/14/87	AM	100	63	23.6	4 1/2	22.0	20.4	115
10/14/87	PM	100	64	21.3	4	-	20.7	-
10/14/87	PM	99	62	24.1	4 1/4	-	23.0	-
10/15/87	AM	100	69	23.2	4	19.0	20.6	114
10/15/87	PM	100	67	25.4	4 3/8	-	21.9	-
10/16/87	AM	100	64	28.3	4 1/4	17.0	23.6	115

BACKFILL TESTING
(Cont'd.)

Date	AM/PM	Gradiation - % Passing 3/8"	#40	#200	Average Slump (IN)	Filtrate Loss (%)	Moisture Content (%)	Wet Density (PCF)
Required Range		65-100	30-70	20-40	4-6			≥100
10/16/87	PM	99	62	22.0	4 1/4	-	19.9	-
10/19/87	AM	99	63	22.6	4 1/8	16.0	20.8	115
10/19/87	PM	99	65	22.9	3 7/8*	-	20.5	-
10/20/87	AM	99	67	28.6	4 1/4	9.5	22.7	115
10/20/87	PM	100	65	23.9	4 1/2	-	21.7	-
10/21/87	AM	100	64	22.9	4 1/4	17.0	20.7	115
10/21/87	PM	100	66	22.0	4 1/4	-	21.5	-
10/21/87	PM	100	66	24.7	3 7/8*	-	20.9	-
10/22/87	AM	100	67	27.4	3 7/8*	13.5	21.4	114
10/22/87	PM	98	64	23.9	4	-	23.9	-
10/22/87	PM	99	64	26.8	4 1/4	-	19.8	-
10/26/87	AM	100	66	28.9	3 7/8*	9.0	-	115
10//27/87	AM	99	67	31.8	3 7/8*	8.0	25.1	114
10/27/87	PM	99	67	31.8	4	-	22.3	-
10/29/87	AM	100	63	26.3	4 1/4	10.5	24.0	115
10/29/87	PM	99	64	30.6	4 1/8	-	24.9	-
10/30/87	AM	100	64	30.4	4 1/8	-	-	115

*Outside required range

KINGSBURY SITE REMEDIAL PROGRAM
IN-PLACE DENSITY/MOISTURE TESTING OF LANDFILL CAP

IN-PLACE DENSITY/MOISTURE TESTING OF LANDFILL CAP

Date	Grid Location North	Grid Location East	Depth Below Final Grade (ft)	In-Place Density (PCF)	In-Place Moisture (%)	Maximum Density (PCF)	Optimum Moisture Content (%)	Percent Compaction
5/8/87	1+65	17+15	Elev. 192	112.4	1.3	118.0	12.9	95.3
5/8/87	2+40	17+60	Elev. 194	114.6	2.0	118.0	12.9	97.1
5/8/87	3+45	17+10	Elev. 196	113.8	3.0	118.0	12.9	96.4
5/8/87	4+75	17+05	Elev. 197	115.8	3.6	118.0	12.9	98.2
5/8/87	5+95	17+20	Elev. 200	114.5	2.3	118.0	12.9	97.0
5/8/87	6+80	16+80	Elev. 201	108.3	3.1	118.0	12.9	91.8
5/8/87	7+80	16+00	Elev. 202	114.2	1.9	118.0	12.9	96.8
5/8/87	8+85	16+20	Elev. 204	111.8	2.5	118.0	12.9	94.7
5/8/87	9+75	15+40	Elev. 205	114.0	2.8	118.0	12.9	96.9
5/8/87	10+35	14+70	Elev. 204	114.8	2.3	118.0	12.9	97.3
5/8/87	10+45	14+00	Elev. 204	112.9	2.8	118.0	12.9	95.7
5/4/87	2+40	17+40	Elev. 193	111.0	2.6	118.0	12.9	94.0
5/4/87	3+30	17+60	Elev. 193	118.2	2.1	118.0	12.9	100.0
5/4/87	4+60	16+90	Elev. 194	107.9	3.0	118.0	12.9	91.4
5/4/87	5+90	16+90	Elev. 195	114.2	1.8	118.0	12.9	96.7
5/4/87	7+10	16+20	Elev. 197	109.5	2.1	118.0	12.9	92.7
5/4/87	7+80	15+90	Elev. 198	108.0	1.9	118.0	12.9	92.2
5/4/87	8+75	16+15	Elev. 199	117.7	4.7	118.0	12.9	99.7
5/4/87	9+50	15+85	Elev. 200	109.6	4.3	118.0	12.9	92.9
5/4/87	10+25	15+80	Elev. 201	118.8	3.0	118.0	12.9	100.0
5/4/87	10+50	14+70	Elev. 201	117.6	2.3	118.0	12.9	99.6
5/4/87	10+90	14+10	Elev. 202	112.0	1.9	118.0	12.9	94.9
5/6/87	1+80	17+00	Elev. 195	108.4	5.2	118.0	12.9	91.9

IN-PLACE DENSITY/MOISTURE TESTING OF LANDFILL CAP

Date	Grid Location North	Grid Location East	Depth Below Final Grade (ft)	In-Place Density (PCF)	In-Place Moisture (%)	Maximum Density (PCF)	Optimum Moisture Content (%)	Percent Compaction
5/6/87	2+55	17+35	Elev. 195	113.8	2.7	118.0	12.9	96.4
5/6/87	3+50	17+20	Elev. 197	109.6	3.2	118.0	12.9	92.8
5/6/87	4+70	17+00	Elev. 197	107.2	4.7	118.0	12.9	90.8
5/6/87	5+90	16+95	Elev. 199	111.2	2.5	118.0	12.9	94.2
5/6/87	7+25	16+30	Elev. 199	114.6	3.6	118.0	12.9	97.1
5/6/87	8+60	15+90	Elev. 200	115.4	4.7	118.0	12.9	97.7
5/6/87	9+25	15+55	Elev. 200	114.0	2.9	118.0	12.9	96.6
5/6/87	10+60	14+90	Elev. 201	120.4	3.0	118.0	12.9	100.0
5/6/87	10+85	14+10	Elev. 205	118.6	2.1	118.0	12.9	100.0
5/6/87	1+80	17+00	Elev. 195	108.4	5.2	118.0	12.9	91.9
5/6/87	2+55	17+35	Elev. 195	113.8	2.7	118.0	12.9	96.4
5/6/87	3+50	17+20	Elev. 197	109.6	3.2	118.0	12.9	92.8
5/6/87	4+70	17+00	Elev. 197	107.2	4.7	118.0	12.9	90.8
5/6/87	5+90	16+95	Elev. 199	111.2	2.5	118.0	12.9	94.2
5/6/87	7+25	16+30	Elev. 199	114.6	3.6	118.0	12.9	97.1
5/6/87	8+60	15+90	Elev. 200	115.4	4.7	118.0	12.9	97.7
5/6/87	9+25	15+55	Elev. 200	114.0	2.9	118.0	12.9	96.6
5/6/87	10+60	14+90	Elev. 201	120.4	3.0	118.0	12.9	100.0
5/6/87	10+85	14+10	Elev 205	118.6	2.1	118.0	12.9	100.0
4/28/87	1+35	17+30	Elev. 191	108.0	1.3	118.0	12.9	91.5
4/28/87	2+50	17+70	Elev. 192	108.7	4.2	118.0	12.9	92.1
4/28/87	3+25	17+20	Elev. 193	110.2	5.1	118.0	12.9	93.4
4/28/87	4+35	17+10	Elev. 193	110.8	5.5	118.0	12.9	93.8

IN-PLACE DENSITY/MOISTURE TESTING OF LANDFILL CAP

Date	Grid Location North	Grid Location East	Depth Below Final Grade (ft)	In-Place Density (PCF)	In-Place Moisture (%)	Maximum Density (PCF)	Optimum Moisture Content (%)	Percent Compaction
4/28/87	5+40	16+80	Elev. 193	110.7	4.4	118.0	12.9	93.8
4/28/87	6+30	16+95	Elev. 193	113.2	2.4	118.0	12.9	95.9
4/28/87	7+55	16+50	Elev. 194	112.6	4.1	118.0	12.9	95.4
4/28/87	8+80	15+80	Elev. 195	114.7	4.8	118.0	12.9	97.2
4/28/87	9+35	15+25	Elev. 195	115.3	3.5	118.0	12.9	97.7
4/28/87	10+55	15+25	Elev. 193	114.0	3.1	118.0	12.9	96.6
4/30/87	1+30	17+70	Elev. 192	113.8	4.1	118.0	12.9	96.4
4/30/87	1+90	17+00	Elev. 192	110.4	3.2	118.0	12.9	93.5
4/30/87	3+15	17+20	Elev. 192	113.0	2.3	118.0	12.9	95.8
4/30/87	4+60	16+70	Elev. 194	111.0	3.1	118.0	12.9	94.1
4/30/87	5+35	17+25	Elev. 194	112.2	1.7	118.0	12.9	95.1
4/30/87	6+65	16+40	Elev. 194	115.6	4.4	118.0	12.9	97.9
4/30/87	7+45	16+05	Elev. 195	115.1	6.2	118.0	12.9	97.5
4/30/87	8+60	16+40	Elev. 195	112.1	5.2	118.0	12.9	95.0
4/30/87	9+80	15+90	Elev. 196	115.4	3.6	118.0	12.9	97.8
4/30/87	10+60	14+90	Elev. 197	113.2	5.2	118.0	12.9	95.9
4/30/87	10+45	14+15	Elev. 198	112.2	4.3	118.0	12.9	95.1
4/8/87	12+10	0+20	18.0	115.6	5.6	118.0	12.9	98.0
4/8/87	8+40	15+80	18.0	117.0	7.9	118.0	12.9	99.1
4/8/87	8+00	16+00	18.0	115.5	6.5	118.0	12.9	97.9
4/8/87	7+30	16+00	18.0	114.4	5.0	118.0	12.9	96.9
4/8/87	8+90	on wall	18.0	106.5	5.7	118.0	12.9	90.2
4/8/87	8+35	on wall	18.0	113.5	5.2	118.0	12.9	96.2

IN-PLACE DENSITY/MOISTURE TESTING OF LANDFILL CAP

Date	Grid Location North	Grid Location East	Depth Below Final Grade (ft)	In-Place Density (PCF)	In-Place Moisture (%)	Maximum Density (PCF)	Optimum Moisture Content (%)	Percent Compaction
4/8/87	7+75	on wall	18.0	112.4	4.0	118.0	12.9	95.2
4/20/87	1+70	17+30	Elev. 182	112.2	3.7	118.0	12.9	95.1
4/20/87	3+85	17+10	Elev. 185	108.5	3.7	118.0	12.9	92.0
4/20/87	4+85	16+35	Elev. 186	113.9	1.4	118.0	12.9	96.5
4/20/87	6+20	16+90	Elev. 187	111.2	3.1	118.0	12.9	94.2
4/20/87	7+10	16+65	Elev. 188	108.6	1.7	118.0	12.9	92.0
4/20/87	8+00	16+25	Elev. 190	111.5	1.4	118.0	12.9	94.4
4/20/87	8+60	15+90	Elev. 193	113.6	3.0	118.0	12.9	96.3
4/20/87	10+05	15+25	Elev. 192	118.0	1.7	118.0	12.9	100.0
4/20/87	1+75	17+20	Elev. 182	111.9	2.9	118.0	12.9	94.8
4/22/87	2+60	17+75	Elev. 183	112.8	1.9	118.0	12.9	95.6
4/22/87	3+95	16+85	Elev. 184	109.8	9.2	118.0	12.9	93.0
4/22/87	5+00	16+45	Elev. 184	111.0	4.2s	118.0	12.9	94.0
4/22/87	6+60	16+45	Elev. 184	108.6	8.2	118.0	12.9	92.0
4/22/87	7+70	16+05	Elev. 184	112.2	6.9	118.0	12.9	95.0
4/22/87	8+75	16+05	Elev. 184	113.9	3.9	118.0	12.9	96.5
4/22/87	10+00	15+85	Elev. 184	112.9	9.0	118.0	12.9	95.6
4/24/87	1+30	17+70	Elev. 184	111.7	2.0	118.0	12.9	94.7
4/24/87	2+70	17+65	Elev. 184	113.0	2.2	118.0	12.9	95.8
4/24/87	3+25	17+50	Elev. 186	110.5	5.5	118.0	12.9	94.6
4/24/87	4+30	17+25	Elev. 187	109.6	3.5	118.0	12.9	92.9
4/24/87	5+40	16+90	Elev. 188	109.3	4.3	118.0	12.9	92.6
4/24/87	6+50	16+70	Elev. 189	112.3	2.3	118.0	12.9	95.2

IN-PLACE DENSITY/MOISTURE TESTING OF LANDFILL CAP

Date	Grid Location North	Grid Location East	Depth Below Final Grade (ft)	In-Place Density (PCF)	In-Place Moisture (%)	Maximum Density (PCF)	Optimum Moisture Content (%)	Percent Compaction
4/24/87	7+80	16+15	Elev. 193	112.4	5.5	118.0	12.9	95.3
4/24/87	9+00	15+80	Elev. 196.5	110.7	3.4	118.0	12.9	93.0
4/24/87	10+10	15+80	Elev. 194	109.8	2.0	118.0	12.9	93.0
4/24/87	10+90	15+10	Elev. 194.0	109.8	2.6	118.0	12.9	93.0
4/17/87	1+50	17+90	21.0	111.6	2.0	118.0	12.9	94.5
4/17/87	2+25	17+40	21.0	109.8	1.5	118.0	12.9	93.0
4/17/87	3+00	17+15	18.0	114.9	1.4	118.0	12.9	97.4
4/17/87	3+90	17+45	21.0	114.6	2.4	118.0	12.9	97.1
4/17/87	5+50	16+95	21.0	104.8	1.4	118.0	12.9	88.8
4/17/87	6+20	16+35	21.0	115.8	2.0	118.0	12.9	98.1
4/17/87	7+35	16+60	21.0	105.2	1.2	118.0	12.9	89.2
4/17/87	8+00	16+50	21.0	108.4	1.5	118.0	12.9	91.8
4/17/87	8+75	15+90	21.0	113.2	2.8	118.0	12.9	95.9
4/17/87	10+25	15+50	21.0	112.1	1.8	118.0	12.9	95.0
4/17/87	8+75	8+25	25.3	110.1	2.3	118.0	12.9	93.3
4/17/87	9+75	9+50	25.3	106.2	1.2	118.0	12.9	90.0
4/17/87	7+75	7+60	25.3	110.2	2.0	118.0	12.9	93.4
6/2/88	4+00-6+00	11+00-13+00	4.5	99.9	17.5	106.9	21.3	93.4
6/2/88	4+00-6+00	11+00-13+00	4.5	96.0	18.7	106.9	21.3	89.8
6/2/88	4+00-6+00	11+00-13+00	4.5	94.4	19.3	106.9	21.3	88.3
6/2/88	4+00-6+00	11+00-13+00	4.5	101.8	17.1	106.9	21.3	95.2
6/2/88	4+00-6+00	9+00-11+00	4.5	98.4	18.1	106.9	21.3	92.0
6/2/88	4+00-6+00	9+00-11+00	4.5	99.5	12.6	106.9	21.3	93.1

IN-PLACE DENSITY/MOISTURE TESTING OF LANDFILL CAP

Date	Grid Location North	Grid Location East	Depth Below Final Grade (ft)	In-Place Density (PCF)	In-Place Moisture (%)	Maximum Density (PCF)	Optimum Moisture Content (%)	Percent Compaction
6/2/88	4+00-6+00	9+00-11+00	4.5	89.6	21.6	106.9	21.3	83.8
6/2/88	4+00-6+00	9+00-11+00	4.5	93.6	20.2	106.9	21.3	87.5
6/2/88	4+00-6+00	7+00-9+00	4.5	98.5	16.8	106.9	21.3	92.2
6/2/88	4+00-6+00	7+00-9+00	4.5	91.9	20.0	106.9	21.3	85.9
6/2/88	4+00-6+00	7+00-9+00	4.5	92.9	20.1	106.9	21.3	86.8
6/2/88	4+00-6+00	7+00-9+00	4.5	92.8	19.7	106.9	21.3	86.7
6/2/88	3+00-6+00	6+00-7+00	4.5	87.6	27.9	106.9	21.3	81.9
6/2/88	3+00-6+00	6+00-7+00	4.5	90.1	23.5	106.9	21.3	84.3
6/2/88	3+00-6+00	6+00-7+00	4.5	90.1	25.1	106.9	21.3	84.3
6/2/88	3+00-6+00	6+00-7+00	4.5	95.1	18.4	106.9	23.0	89.0
6/2/88	3+00-4+00	7+00-11+00	4.5	91.8	19.7	106.9	23.0	85.9
6/2/88	3+00-4+00	7+00-11+00	4.5	91.3	19.7	106.9	23.0	85.4
6/2/88	3+00-4+00	7+00-11+00	4.5	88.8	18.6	106.9	23.0	83.0
6/2/88	3+00-4+00	7+00-11+00	4.5	91.2	19.0	106.9	23.0	85.3
6/2/88	2+00-4+00	11+00-13+00	4.5	84.8	23.7	106.9	23.0	79.3
6/2/88	2+00-4+00	11+00-13+00	4.5	91.1	22.1	106.9	23.0	85.2
6/2/88	2+00-4+00	11+00-13+00	4.5	89.8	25.6	106.9	23.0	84.0
6/2/88	2+00-4+00	11+00-13+00	4.5	95.1	19.3	106.9	23.0	89.0
6/2/88	6+00-8+00	11+00-13+00	4.5	99.6	16.1	106.9	23.0	93.1
6/2/88	6+00-8+00	11+00-13+00	4.5	96.7	23.3	106.9	23.0	90.5
6/2/88	6+00-8+00	11+00-13+00	4.5	101.3	16.5	106.9	23.0	94.7
6/2/88	6+00-8+00	11+00-13+00	4.5	99.8	18.0	106.9	23.0	93.4
6/2/88	6+00-8+00	9+00-11+00	4.5	94.9	20.3	106.9	23.0	88.7

IN-PLACE DENSITY/MOISTURE TESTING OF LANDFILL CAP

Date	Grid Location North	Grid Location East	Depth Below Final Grade (ft)	In-Place Density (PCF)	In-Place Moisture (%)	Maximum Density (PCF)	Optimum Moisture Content (%)	Percent Compaction
6/2/88	6+00-8+00	9+00-11+00	4.5	91.2	25.9	106.9	23.0	85.2
6/2/88	6+00-8+00	11+00-9+00	4.5	101.4	19.0	106.9	21.3	94.8
6/2/88	6+00-8+00	11+00-9+00	4.5	100.9	17.5	106.9	21.3	94.3
6/2/88	8+00-10+00	13+00-11+00	4.5	96.6	21.9	106.9	21.3	90.4
6/2/88	8+00-10+00	13+00-11+00	4.5	97.9	16.3	106.9	21.3	91.5
6/2/88	8+00-10+00	13+00-11+00	4.5	99.5	20.3	106.9	21.3	93.0
6/2/88	8+00-10+00	13+00-11+00	4.5	97.2	18.5	106.9	21.3	90.9
6/2/88	6+00-8+00	11+00-9+00	4.0	101.7	18.2	106.9	21.3	95.1
6/7/88	6+00-8+00	11+00-9+00	4.0	96.6	16.6	106.9	21.3	90.3
6/7/88	6+00-8+00	11+00-9+00	4.0	101.3	21.0	106.9	21.3	94.8
6/7/88	6+00-8+00	11+00-9+00	4.0	97.7	19.6	106.9	21.3	91.4
6/7/88	7+00-9+00	13+00-11+00	4.0	97.5	18.4	106.9	21.3	91.2
6/7/88	7+00-9+00	13+00-11+00	4.0	101.0	15.3	106.9	21.3	94.4
6/7/88	7+00-9+00	13+00-11+00	4.0	90.0	24.1	106.9	21.3	84.2
6/7/88	7+00-9+00	13+00-11+00	4.0	97.2	18.7	106.9	21.3	91.5
6/11/88	5+50-9+50	10+00-11+00	3.0	94.1	18.7	104.8	22.6	89.8
6/11/88	5+50-2+50	11+00-12+00	3.5	93.9	25.9	104.8	22.6	89.6
6/11/88	5+50-2+50	12+00-13+00	3.5	96.9	22.4	104.8	22.6	92.5
6/11/88	5+50-2+50	12+00-13+00	3.5	95.3	21.9	104.8	22.6	90.9
6/11/88	5+50-2+50	12+00-13+00	3.5	93.8	17.4	104.8	22.6	89.4
6/11/88	5+50-2+50	12+00-13+00	3.5	95.8	21.3	104.8	22.6	90.4
6/11/88	5+50-2+00	14+00-15+00	4.0	104.3	14.0	104.8	22.6	104.3
6/11/88	5+50-2+00	14+00-15+00	4.0	105.4	16.3	104.8	22.6	100.6

IN-PLACE DENSITY/MOISTURE TESTING OF LANDFILL CAP

Date	Grid Location North	Grid Location East	Depth Below Final Grade (ft)	In-Place Density (PCF)	In-Place Moisture (%)	Maximum Density (PCF)	Optimum Moisture Content (%)	Percent Compaction
6/11/88	5+50-2+00	14+00-15+00	4.0	98.3	19.2	104.8	22.6	93.8
6/11/88	5+50-2+00	14+00-15+00	4.0	101.4	18.5	104.8	22.6	96.7
6/11/88	2+00-5+00	15+00-16+50	4.0	100.6	17.9	104.8	22.6	96.0
6/11/88	2+00-5+00	15+00-16+50	4.0	93.3	21.7	104.8	22.6	89.0
6/11/88	2+00-5+00	15+00-16+50	4.0	94.7	23.4	104.8	22.6	90.4
6/11/88	2+00-5+00	15+00-16+50	4.0	101.0	16.8	104.8	22.6	96.3
6/13/88	5+50-8+50	16+00-14+50	4.0	105.8	16.7	104.8	22.6	100
6/13/88	5+50-8+50	16+00-14+50	4.0	96.3	15.7	104.8	22.6	91.9
6/11/88	5+50-9+50	10+00-11+00	3.0	93.4	20.8	104.8	22.6	89.1
6/11/88	5+50-9+50	10+00-11+00	3.0	93.8	23.0	104.8	22.6	89.5
6/11/88	5+50-9+50	10+00-11+00	3.0	95.2	21.7	104.8	22.6	90.8
6/11/88	9+50-5+50	9+00-10+00	3.0	94.6	25.7	104.8	22.6	90.2
6/11/88	9+50-5+50	9+00-10+00	3.0	96.1	21.7	104.8	22.6	91.7
6/11/88	9+50-5+50	9+00-10+00	3.0	96.2	27.0	104.8	22.6	91.8
6/11/88	9+50-5+50	9+00-10+00	3.0	94.0	27.0	104.8	22.6	89.7
6/11/88	3+00-5+50	9+00-10+00	3.5	94.0	23.2	104.8	22.6	89.7
6/11/88	3+00-5+50	9+00-10+00	3.5	96.8	19.2	104.8	22.6	92.3
6/11/88	3+50-5+50	10+00-11+00	3.5	95.0	22.4	104.8	22.6	90.7
6/11/88	3+50-5+50	10+00-11+00	3.5	96.2	21.8	104.8	22.6	91.8
6/11/88	3+50-5+50	10+00-11+00	3.5	96.1	21.5	104.8	22.6	91.7
6/11/88	5+50-2+50	11+00-12+00	3.5	95.3	24.6	104.8	22.6	90.9
6/11/88	5+50-2+50	11+00-12+00	3.5	93.4	22.1	104.8	22.6	93.4
6/11/88	5+50-2+50	11+00-12+00	3.5	97.5	19.9	104.8	22.6	93.0

IN-PLACE DENSITY/MOISTURE TESTING OF LANDFILL CAP

Date	Grid Location North	Grid Location East	Depth Below Final Grade (ft)	In-Place Density (PCF)	In-Place Moisture (%)	Maximum Density (PCF)	Optimum Moisture Content (%)	Percent Compaction
6/13/88	5+50-8+50	14+50-16+00	4.0	84.9	17.7	104.8	22.6	81.0
6/13/88	5+50-8+50	14+50-16+00	4.0	96.1	11.0	104.8	22.6	91.7
6/13/88	7+50-6+00	9+00-6+50	3.5	100.7	17.7	104.8	22.6	96.1
6/13/88	7+50-6+00	9+00-6+50	3.5	94.9	19.8	104.8	22.6	90.5
6/13/88	7+50-6+00	9+00-6+50	3.5	89.9	23.5	104.8	22.6	85.7
6/13/88	7+50-6+00	9+00-6+50	3.5	85.8	27.8	104.8	22.6	81.9
6/14/88	5+50-8+50	16+00-14+50	4.0	97.8	16.1	104.8	22.6	93.2
6/14/88	7+50-6+00	9+00-6+50	3.0	95.1	22.9	104.8	22.6	90.7
6/14/88	7+50-6+00	9+00-6+50	3.0	94.8	20.8	104.8	22.6	90.4
6/14/88	3+00-6+00	6+00-9+00	3.0	89.1	20.9	104.8	22.6	85.0
6/14/88	3+00-6+00	6+00-9+00	3.0	96.8	18.9	104.8	22.6	92.3
6/14/88	3+00-6+00	6+00-9+00	3.0	96.7	18.7	104.8	22.6	92.2
6/14/88	3+00-6+00	6+00-9+00	3.0	94.7	19.4	104.8	22.6	90.4
6/14/88	3+00-6+00	6+00-9+00	3.0	93.6	25.3	104.8	22.6	89.3
6/14/88	3+00-6+00	6+00-9+00	3.0	94.3	17.3	104.8	22.6	90.0
6/14/88	3+00-6+00	6+00-9+00	3.0	94.2	15.1	104.8	22.6	89.9
6/15/88	5+00-2+50	9+00-11+00	3.0	97.0	17.2	104.8	22.6	92.5
6/15/88	5+00-2+50	9+00-11+00	3.0	94.4	16.2	104.8	22.6	90.0
6/15/88	5+00-2+50	9+00-11+00	3.0	93.3	20.7	104.8	22.6	89.0
6/15/88	5+00-2+50	9+00-11+00	3.0	101.0	19.2	104.8	22.6	96.4
6/15/88	5+00-2+50	11+00-13+00	3.0	96.8	14.5	104.8	22.6	92.3
6/15/88	5+00-2+50	11+00-13+00	3.0	97.5	19.8	104.8	22.6	93.0
6/15/88	5+00-2+50	11+00-13+00	3.0	98.1	22.9	104.8	22.6	93.6

IN-PLACE DENSITY/MOISTURE TESTING OF LANDFILL CAP

Date	Grid Location North	Grid Location East	Depth Below Final Grade (ft)	In-Place Density (PCF)	In-Place Moisture (%)	Maximum Density (PCF)	Optimum Moisture Content (%)	Percent Compaction
6/15/88	5+00-2+50	11+00-13+00	3.0	98.1	22.6	104.8	22.6	93.6
6/16/88	3+00-6+50	13+00-15+00	3.5	97.8	23.2	104.8	22.6	93.3
6/16/88	3+00-6+50	13+00-15+00	3.5	97.6	18.7	104.8	22.6	93.1
6/16/88	3+00-6+50	13+00-15+00	3.5	101.4	16.4	104.8	22.6	96.7
6/16/88	3+00-6+50	13+00-15+00	3.5	97.7	20.2	104.8	22.6	93.2
6/16/88	3+00-6+50	13+00-15+00	3.5	94.8	21.5	104.8	22.6	90.4
6/16/88	3+00-6+50	13+00-15+00	3.5	95.0	20.8	104.8	22.6	90.6
6/16/88	5+50-9+50	12+50-10+50	2.25	88.3	18.7	104.8	22.6	84.2
6/16/88	5+50-9+50	12+50-10+50	2.25	86.1	35.1	104.8	22.6	82.1
6/16/88	5+50-9+50	12+50-10+50	2.25	89.3	32.0	104.8	22.6	85.2
6/16/88	5+50-9+50	12+50-10+50	2.25	90.3	31.2	104.8	22.6	86.1
6/16/88	5+50-9+50	12+50-10+50	2.25	87.1	27.8	104.8	22.6	83.1
6/16/88	5+50-9+50	12+50-10+50	2.25	88.1	21.7	104.8	22.6	84.0
6/17/88	3+00-8+00	15+00-16+50	3.5	96.0	19.2	104.8	22.6	91.5
6/17/88	3+00-8+00	15+00-16+50	3.5	95.6	23.3	104.8	22.6	91.2
6/17/88	3+00-8+00	15+00-16+50	3.5	97.0	19.0	104.8	22.6	92.6
6/17/88	3+00-8+00	15+00-16+50	3.5	94.1	19.5	104.8	22.6	89.7
6/17/88	3+00-8+00	15+00-16+50	3.5	97.7	20.5	104.8	22.6	93.2
6/17/88	3+00-8+00	15+00-16+50	3.5	95.2	25.0	104.8	22.6	90.8
6/17/88	5+50-9+50	10+50-9+50	2.25	86.7	24.0	104.8	22.6	82.7
6/17/88	5+50-9+50	10+50-9+50	2.25	86.7	25.4	104.8	22.6	82.7
6/17/88	5+50-9+50	10+50-9+50	2.25	90.0	27.0	104.8	22.6	85.9
6/17/88	5+50-9+50	10+50-9+50	2.25	88.9	27.0	104.8	22.6	84.8

IN-PLACE DENSITY/MOISTURE TESTING OF LANDFILL CAP

Date	Grid Location North	Grid Location East	Depth Below Final Grade (ft)	In-Place Density (PCF)	In-Place Moisture (%)	Maximum Density (PCF)	Optimum Moisture Content (%)	Percent Compaction
6/10/88	3+00-5+00	7+50-9+50	2.25	86.1	21.6	104.8	22.6	82.2
6/10/88	3+00-5+00	7+50-9+50	2.25	84.4	13.3	104.8	22.6	80.5
6/10/88	3+00-5+00	7+50-9+50	2.25	84.5	16.0	104.8	22.6	80.6
6/10/88	3+00-5+00	7+50-9+50	2.25	85.1	13.9	104.8	22.6	81.2
6/10/88	3+00-5+00	9+50-11+50	2.25	84.9	21.1	104.8	22.6	81.0
6/10/88	3+00-5+00	9+50-11+50	2.25	89.3	24.2	104.8	22.6	85.2
6/10/88	3+00-5+00	9+50-11+50	2.25	84.9	18.1	104.8	22.6	80.9
6/10/88	3+00-5+00	9+50-11+50	2.25	88.6	18.0	104.8	22.6	84.5
6/21/88	3+00-wall	13+50-16+50	3.5	94.7	21.5	104.8	22.6	90.3
6/21/88	3+00-wall	13+50-16+50	3.5	97.0	16.7	104.8	22.6	92.6
6/21/88	3+00-wall	13+50-16+50	3.5	101.6	20.9	104.8	22.6	96.9
6/21/88	3+00-wall	13+50-16+50	3.5	97.2	17.1s	104.8	22.6	92.8
6/21/88	3+00-5+00	14+50-wall	3.0	95.7	19.8	104.8	22.6	91.3
6/21/88	3+00-5+00	14+50-wall	3.0	97.0	22.6	104.8	22.6	92.6
6/21/88	3+00-5+00	14+50-wall	3.0	94.9	24.3	104.8	22.6	90.5
6/21/88	3+00-5+00	14+50-wall	3.0	95.3	21.3	104.8	22.6	90.9
6/21/88	5+00-7+00	14+50-wall	3.0	95.7	19.5	104.8	22.6	91.3
6/21/88	5+00-7+00	14+50-wall	3.0	97.0	24.0	104.8	22.6	92.5
6/21/88	5+00-7+00	14+50-wall	3.0	94.3	24.4	104.8	22.6	89.9
6/21/88	5+00-7+00	14+50-wall	3.0	102.2	21.3	104.8	22.6	97.5
6/22/88	6+00-9+00	6+00-9+00	2.25	84.7	25.3	104.8	22.6	80.8
6/22/88	6+00-9+00	6+00-9+00	2.25	83.9	17.4	104.8	22.6	80.0
6/22/88	6+00-9+00	6+00-9+00	2.25	89.9	17.9	104.8	22.6	85.7

IN-PLACE DENSITY/MOISTURE TESTING OF LANDFILL CAP

Date	Grid Location North	Grid Location East	Depth Below Final Grade (ft)	In-Place Density (PCF)	In-Place Moisture (%)	Maximum Density (PCF)	Optimum Moisture Content (%)	Percent Compaction
6/22/88	6+00-9+00	6+00-9+00	2.25	89.5	13.5	104.8	22.6	85.4
6/22/88	6+00-9+00	6+00-9+00	2.25	89.4	17.5	104.8	22.6	85.3
6/22/88	6+00-9+00	6+00-9+00	2.25	87.8	20.6	104.8	22.6	83.8
6/22/88	6+00-9+00	3+00-6+00	2.25	86.7	14.1	104.8	22.6	82.7
6/22/88	6+00-9+00	3+00-6+00	2.25	87.0	30.1	104.8	22.6	83.0
6/22/88	6+00-9+00	3+00-6+00	2.25	86.6	31.1	104.8	22.6	82.6
6/22/88	6+00-9+00	3+00-6+00	2.25	89.7	13.2	104.8	22.6	85.6
6/22/88	6+00-9+00	3+00-6+00	2.25	88.3	15.8	104.8	22.6	84.2
6/22/88	6+00-9+00	3+00-6+00	2.25	85.2	33.2	104.8	22.6	81.3
6/22/88	3+00-wall	13+50-16+50	3.0	89.5	29.7	104.8	22.6	85.7
6/22/88	3+00-wall	13+50-16+50	3.0	96.1	25.5	104.8	22.6	91.7
6/22/88	3+00-wall	13+50-16+50	3.0	91.2	26.9	104.8	22.6	87.0
6/24/88	3+00-wall	13+50-16+50	3.0	96.9	21.2	104.8	22.6	92.4
6/24/88	3+00-wall	13+50-16+50	3.0	94.2	22.1	104.8	22.6	89.8
6/24/88	3+00-wall	13+50-16+50	3.0	99.2	20.1	104.8	22.6	94.6
6/24/88	3+00-wall	13+50-16+50	3.0	95.4	21.0	104.8	22.6	91.0
6/24/88	3+00-5+00	14+50-wall	3.0	84.4	23.8	104.8	22.6	80.5
6/24/88	3+00-5+00	14+50-wall	3.0	83.1	20.3	104.8	22.6	79.8
6/24/88	3+00-5+00	14+50-wall	3.0	85.9	19.1	104.8	22.6	81.9
6/24/88	3+00-5+00	14+50-wall	3.0	89.1	21.5	104.8	22.6	85.0
6/24/88	5+00-7+00	14+50-wall	3.0	86.0	16.7	104.8	22.6	82.0
6/24/88	5+00-7+00	14+50-wall	3.0	84.4	18.8	104.8	22.6	80.5
6/24/88	5+00-7+00	14+50-wall	3.0	89.4	25.7	104.8	22.6	85.3

IN-PLACE DENSITY/MOISTURE TESTING OF LANDFILL CAP

Date	Grid Location North	Grid Location East	Depth Below Final Grade (ft)	In-Place Density (PCF)	In-Place Moisture (%)	Maximum Density (PCF)	Optimum Moisture Content (%)	Percent Compaction
6/24/88	5+00-7+00	14+50-wall	3.0	88.9	21.5	104.8	22.6	84.8
6/27/88	7+00-wall	14+50-wall	4.0	94.1	23.0	104.8	22.6	89.8
6/27/88	7+00-wall	14+50-wall	4.0	94.3	24.9	104.8	22.6	89.9
6/27/89	10+00	15+00	4.0	89.8	25.9	104.8	22.6	85.7
6/27/88	3+00-wall	13+00-16+50	2.25	89.7	26.8	104.8	22.6	85.5
6/27/88	3+00-wall	13+00-16+50	2.25	87.8	30.5	104.8	22.6	83.7
6/27/88	3+00-wall	13+00-16+50	2.25	89.1	21.8	104.8	22.6	85.0
6/27/88	3+00-wall	13+00-16+50	2.25	83.6	23.0	104.8	22.6	79.7
6/29/88	3+50-7+50	12+50-10+50	1.5	85.5	20.6	104.8	22.6	81.5
6/29/88	3+50-7+50	12+50-10+50	1.5	83.7	20.1	104.8	22.6	79.9
6/29/88	3+50-7+50	12+50-10+50	1.5	89.6	23.5	104.8	22.6	85.4
6/29/88	3+50-7+50	12+50-10+50	1.5	88.6	23.7	104.8	22.6	84.5
6/29/88	7+50-9+50	12+50-10+50	1.5	89.2	21.2	104.8	22.6	85.1
6/29/88	7+50-9+50	12+50-10+50	1.5	87.9	20.4	104.8	22.6	83.9
6/29/88	7+50-9+50	12+50-10+50	1.5	89.8	19.6	104.8	22.6	85.6
6/29/88	7+50-9+50	12+50-10+50	1.5	87.8	24.2	104.8	22.6	83.1
6/29/88	5+50-7+50	10+50-8+50	1.5	88.6	18.8	104.8	22.6	84.5
6/29/88	5+50-7+50	10+50-8+50	1.5	86.0	20.9	104.8	22.6	82.0
6/29/88	5+50-7+50	10+50-8+50	1.5	85.7	21.8	104.8	22.6	81.8
6/29/88	5+50-7+50	10+50-8+50	1.5	88.5	16.2	104.8	22.6	84.4
7/6/88	wall-7+50	14+50-wall	4.0	97.0	21.6	104.8	22.6	92.5
7/6/88	wall-7+50	14+50-wall	4.0	97.2	20.7	104.8	22.6	92.7
7/6/88	15+00	10+50	4.0	88.4	23.0	104.8	22.6	84.3

IN-PLACE DENSITY/MOISTURE TESTING OF LANDFILL CAP

Date	Grid Location North	Grid Location East	Depth Below Final Grade (ft)	In-Place Density (PCF)	In-Place Moisture (%)	Maximum Density (PCF)	Optimum Moisture Content (%)	Percent Compaction
7/6/88	15+00	9+50	4.0	91.6	19.8	104.8	22.6	87.3
7/6/88	5+00-9+00	6+00-9+00	1.5	84.0	12.5	104.8	22.6	80.1
7/6/88	5+00-9+00	6+00-9+00	1.5	84.3	14.0	104.8	22.6	80.3
7/6/88	5+00-9+00	6+00-9+00	1.5	88.3	16.6	104.8	22.6	84.2
7/6/88	5+00-9+00	6+00-9+00	1.5	83.9	21.1	104.8	22.6	80.1
7/8/88	5+50-7+50	14+50-16+50	1.5	89.1	29.6	104.8	22.6	85.0
7/8/88	5+50-7+50	14+50-16+50	1.5	88.2	28.7	104.8	22.6	84.1
7/8/88	5+50-7+50	14+50-16+50	1.5	85.3	22.0	104.8	22.6	81.4
7/8/88	5+50-7+50	14+50-16+50	1.5	87.9	22.2	104.8	22.6	83.8
7/8/88	3+50-5+50	14+50-16+50	1.5	90.6	29.5	104.8	22.6	86.4
7/8/88	3+50-5+50	14+50-16+50	1.5	88.0	18.3	104.8	22.6	83.9
7/8/88	3+50-5+50	14+50-16+50	1.5	89.3	29.4	104.8	22.6	85.2
7/8/88	3+50-5+50	14+50-16+50	1.5	83.1	20.2	104.8	22.6	79.2
7/8/88	wall-3+50	12+50-16+50	1.5	89.5	17.3	104.8	22.6	85.4
7/8/88	wall-3+50	12+50-16+50	1.5	86.2	16.9	104.8	22.6	82.3
7/8/88	wall-3+50	12+50-16+50	1.5	86.5	19.0	104.8	22.6	82.5
7/8/88	wall-3+50	12+50-16+50	1.5	87.2	19.5	104.8	22.6	83.1
7/8/88	wall-3+50	12+50-16+50	1.5	90.0	18.5	104.8	22.6	85.8
7/11/88	1+50-wall	14+50-wall	3.5	99.9	21.8	104.8	22.6	95.7
7/11/88	1+50-wall	14+50-wall	3.5	98.9	19.2	104.8	22.6	94.4
7/11/88	1+50-wall	14+50-wall	3.5	96.1	20.8	104.8	22.6	91.7
7/11/88	1+50-wall	14+50-wall	3.5	98.0	22.0	104.8	22.6	93.5
7/11/88	5+00-wall	14+50-15+50	1.5	89.8	13.9	104.8	22.6	85.7

IN-PLACE DENSITY/MOISTURE TESTING OF LANDFILL CAP

Date	Grid Location North	Grid Location East	Depth Below Final Grade (ft)	In-Place Density (PCF)	In-Place Moisture (%)	Maximum Density (PCF)	Optimum Moisture Content (%)	Percent Compaction
7/11/88	5+00-wall	14+50-15+50	1.5	84.8	19.8	104.8	22.6	80.9
7/11/88	5+00-wall	14+50-15+50	1.5	86.6	15.3	104.8	22.6	82.6
7/11/88	5+00-wall	14+50-15+50	1.5	89.2	14.3	104.8	22.6	85.1
7/11/88	5+00-wall	13+50-12+50	1.5	84.8	15.2	104.8	22.6	80.9
7/11/88	5+00-wall	13+50-12+50	1.5	86.5	15.4	104.8	22.6	82.5
7/11/88	5+00-wall	13+50-12+50	1.5	87.0	17.3	104.8	22.6	83.0
7/11/88	5+00-wall	13+50-12+50	1.5	88.2	19.1	104.8	22.6	84.1
7/11/88	5+00-wall	12+50-11+50	1.5	86.6	15.9	104.8	22.6	82.6
7/11/88	5+00-wall	12+50-11+50	1.5	87.6	14.9	104.8	22.6	83.5
7/11/88	5+00-wall	12+50-11+50	1.5	88.9	15.3	104.8	22.6	84.8
7/11/88	5+00-wall	12+50-11+50	1.5	84.2	14.8	104.8	22.6	80.3
7/11/88	5+00-wall	11+50-10+50	1.5	87.5	11.6	104.8	22.6	83.5
7/11/88	5+00-wall	11+50-10+50	1.5	87.1	13.6	104.8	22.6	83.1
7/11/88	5+00-wall	11+50-10+50	1.5	89.1	13.6	104.8	22.6	85.0
7/11/88	5+00-wall	11+50-10+50	1.5	86.0	14.1	104.8	22.6	82.1
7/11/88	5+00-wall	10+50-9+50	1.5	83.8	14.1	104.8	22.6	80.0
7/11/88	5+00-wall	10+50-9+50	1.5	86.9	12.1	104.8	22.6	82.9
7/11/88	5+00-wall	10+50-9+50	1.5	89.3	16.8	104.8	22.6	85.2
7/11/88	5+00-wall	10+50-9+50	1.5	87.0	18.8	104.8	22.6	83.0
7/12/88	7+50-wall	14+50-wall	3.0	99.9	15.9	104.8	22.6	95.3
7/12/88	7+50-wall	14+50-wall	3.0	94.9	22.1	104.8	22.6	90.5
7/12/88	7+50-wall	14+50-wall	3.0	96.2	21.0	104.8	22.6	91.7
7/12/88	7+50-wall	14+50-wall	3.0	97.1	20.5	104.8	22.6	92.6

IN-PLACE DENSITY/MOISTURE TESTING OF LANDFILL CAP

Date	Grid Location North	Grid Location East	Depth Below Final Grade (ft)	In-Place Density (PCF)	In-Place Moisture (%)	Maximum Density (PCF)	Optimum Moisture Content (%)	Percent Compaction
8/2/88	9+50-15+50	12+50-10+50	0.5	112.3	14.0	126.5	10.2	88.8
8/2/88	9+50-15+50	12+50-10+50	0.5	116.8	7.5	126.5	10.2	92.3
8/2/88	9+50-15+50	12+50-10+50	0.5	116.3	7.7	126.5	10.2	91.9
8/2/88	9+50-15+50	12+50-10+50	0.5	118.1	8.2	126.5	10.2	93.3
8/10/88	8+00-wall	14+50-wall	1.5	83.9	23.7	104.8	22.6	80.0
8/10/88	8+00-wall	14+50-wall	1.5	87.8	27.5	104.8	22.6	83.7
8/10/88	8+00-wall	14+50-wall	1.5	86.1	21.7	104.8	22.6	82.2
8/10/88	8+00-wall	14+50-wall	1.5	87.6	23.7	104.8	22.6	83.6
8/10/88	5+00-7+00	12+50-10+50	0.5	111.4	9.4	126.5	10.2	88.1
8/10/88	5+00-7+00	12+50-10+50	0.5	116.7	8.9	126.5	10.2	92.2
8/10/88	5+00-7+00	12+50-10+50	0.5	109.1	11.7	126.5	10.2	86.3
8/10/88	5+00-7+00	12+50-10+50	0.5	118.6	7.4	126.5	10.2	93.7
8/10/88	7+00-wall	12+50-10+50	0.5	119.5	6.9	126.5	10.2	94.4
8/10/88	7+00-wall	12+50-10+50	0.5	115.1	9.1	126.5	10.2	90.9
8/10/88	7+00-wall	12+50-10+50	0.5	110.8	9.2	126.5	10.2	87.6
8/10/88	7+00-wall	12+50-10+50	0.5	110.0	10.5	126.5	10.2	86.9
8/10/88	5+00-7+00	10+50-8+50	0.5	116.2	6.3	126.5	10.2	91.8
8/10/88	5+00-7+00	10+50-8+50	0.5	115.1	8.6	126.5	10.2	91.0
8/10/88	5+00-7+00	10+50-8+50	0.5	114.1	8.0	126.5	10.2	90.1
8/10/88	5+00-7+00	10+50-8+50	0.5	117.6	7.1	126.5	10.2	92.9
8/10/88	7+00-wall	10+50-8+50	0.5	118.2	6.0	126.5	10.2	93.4
8/10/88	7+00-wall	10+50-8+50	0.5	115.4	10.9	126.5	10.2	91.2
8/10/88	7+00-wall	10+50-8+50	0.5	116.2	11.6	126.5	10.2	91.8

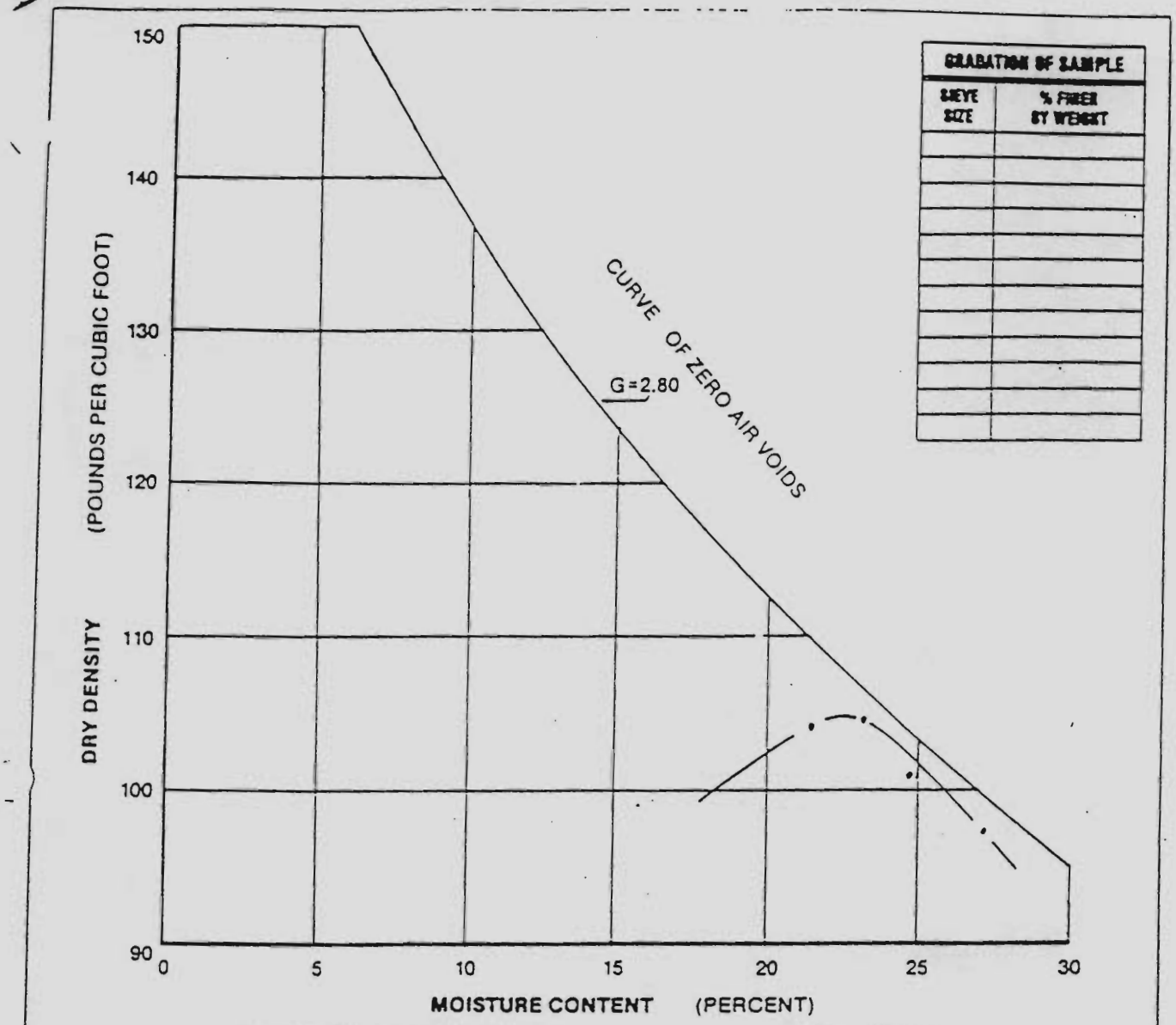
IN-PLACE DENSITY/MOISTURE TESTING OF LANDFILL CAP

Date	Grid Location North	Grid Location East	Depth Below Final Grade (ft)	In-Place Density (PCF)	In-Place Moisture (%)	Maximum Density (PCF)	Optimum Moisture Content (%)	Percent Compaction
8/10/88	7+00-wall	10+50-8+50	0.5	113.7	11.2	126.5	10.2	89.8
8/18/88	1+00-5+00	6+00-13+00	0.5	115.3	8.2	126.5	10.2	91.1
8/18/88	1+00-5+00	6+00-13+00	0.5	112.2	11.1	126.5	10.2	88.7
8/18/88	1+00-5+00	6+00-13+00	0.5	109.6	12.5	126.5	10.2	86.6
8/18/88	1+00-5+00	6+00-13+00	0.5	117.8	11.2	126.5	10.2	93.1
8/18/88	1+00-5+00	6+00-13+00	0.5	111.4	11.9	126.5	10.2	88.0
8/18/88	1+00-5+00	6+00-13+00	0.5	113.5	9.5	126.5	10.2	89.7
8/18/88	1+00-5+00	6+00-13+00	0.5	110.9	9.4	126.5	10.2	87.6
8/18/88	1+00-5+00	6+00-13+00	0.5	114.6	9.3	126.5	10.2	90.6
8/18/88	1+00-5+00	6+00-13+00	0.5	110.1	11.1	126.5	10.2	87.0
8/18/88	1+00-5+00	6+00-13+00	0.5	112.0	7.7	126.5	10.2	88.5
8/18/88	1+00-5+00	6+00-13+00	0.5	116.1	9.0	126.5	10.2	91.7
8/18/88	1+00-5+00	6+00-13+00	0.5	110.0	10.6	126.5	10.2	86.9
8/18/88	1+00-5+00	6+00-13+00	0.5	115.4	8.3	126.5	10.2	91.2
8/18/88	1+00-5+00	6+00-13+00	0.5	110.5	11.1	126.5	10.2	87.3
8/18/88	1+00-5+00	6+00-13+00	0.5	107.8	10.4	126.5	10.2	85.0
8/18/88	1+00-5+00	6+00-13+00	0.5	108.6	10.9	126.5	10.2	85.7
8/18/88	1+00-5+00	6+00-13+00	0.5	109.7	10.7	126.5	10.2	86.7
8/18/88	1+00-5+00	6+00-13+00	0.5	112.3	9.4	126.5	10.2	88.7
8/18/88	1+00-5+00	6+00-13+00	0.5	113.1	10.1	126.5	10.2	89.3
8/18/88	1+00-5+00	6+00-13+00	0.5	108.7	11.4	126.5	10.2	85.9
8/18/88	1+00-5+00	6+00-13+00	0.5	109.5	12.1	126.5	10.2	86.5
8/18/88	1+00-5+00	6+00-13+00	0.5	112.4	11.1	126.5	10.2	88.8

IN-PLACE DENSITY/MOISTURE TESTING OF LANDFILL CAP

Date	Grid Location North	Grid Location East	Depth Below Final Grade (ft)	In-Place Density (PCF)	In-Place Moisture (%)	Maximum Density (PCF)	Optimum Moisture Content (%)	Percent Compaction
8/18/88	1+00-5+00	6+00-13+00	0.5	110.1	11.7	126.5	10.2	87.0
8/18/88	1+00-5+00	6+00-13+00	0.5	117.5	6.7	126.5	10.2	92.9
9/8/88	1+00-5+00	13+00-16+00	0.5	117.6	5.5	126.5	10.2	93.0
9/8/88	1+00-5+00	13+00-16+00	0.5	118.0	6.1	126.5	10.2	93.2
9/8/88	1+00-5+00	13+00-16+00	0.5	113.5	5.3	126.5	10.2	89.7
9/8/88	1+00-5+00	13+00-16+00	0.5	108.7	5.9	126.5	10.2	85.9
9/8/88	1+00-5+00	13+00-16+00	0.5	109.6	8.0	126.5	10.2	86.6
9/8/88	1+00-5+00	13+00-16+00	0.5	119.8	6.1	126.5	10.2	94.7
9/8/88	1+00-5+00	13+00-16+00	0.5	118.0	5.6	126.5	10.2	93.3
9/8/88	1+00-5+00	13+00-16+00	0.5	115.4	6.4	126.5	10.2	91.2
9/8/88	1+00-5+00	13+00-16+00	0.5	113.0	5.7	126.5	10.2	89.3
9/8/88	1+00-5+00	13+00-16+00	0.5	116.8	6.5	126.5	10.2	92.3
9/8/88	1+00-5+00	13+00-16+00	0.5	114.0	4.6	126.5	10.2	90.1
9/8/88	1+00-5+00	13+00-16+00	0.5	114.1	5.9	126.5	10.2	90.2
9/8/88	1+00-5+00	13+00-16+00	0.5	118.1	7.1	126.5	10.2	93.4
9/8/88	1+00-5+00	13+00-16+00	0.5	117.7	7.9	126.5	10.2	93.0
9/8/88	1+00-5+00	13+00-16+00	0.5	114.5	6.0	126.5	10.2	90.5
9/8/88	1+00-5+00	13+00-16+00	0.5	115.7	10.0	126.5	10.2	91.4
9/8/88	1+00-5+00	13+00-16+00	0.5	116.0	7.7	126.5	10.2	91.6
9/8/88	1+00-5+00	13+00-16+00	0.5	113.3	7.0	126.5	10.2	89.5

KINGSBURY SITE REMEDIAL PROGRAM
PROCTOR CURVES FOR CAP MATERIAL



GRADATION OF SAMPLE	
SIEVE SIZE	% FINER BY WEIGHT

SAMPLE DESCRIPTION

Material CLAY

Color Dark Brown Source Hillview Drive Borrow Site

Sampled By RA At TP-4, 6.5'

TEST RESULTS

Maximum Dry Density 104.8 pcf

Optimum Water Content 22.6 %

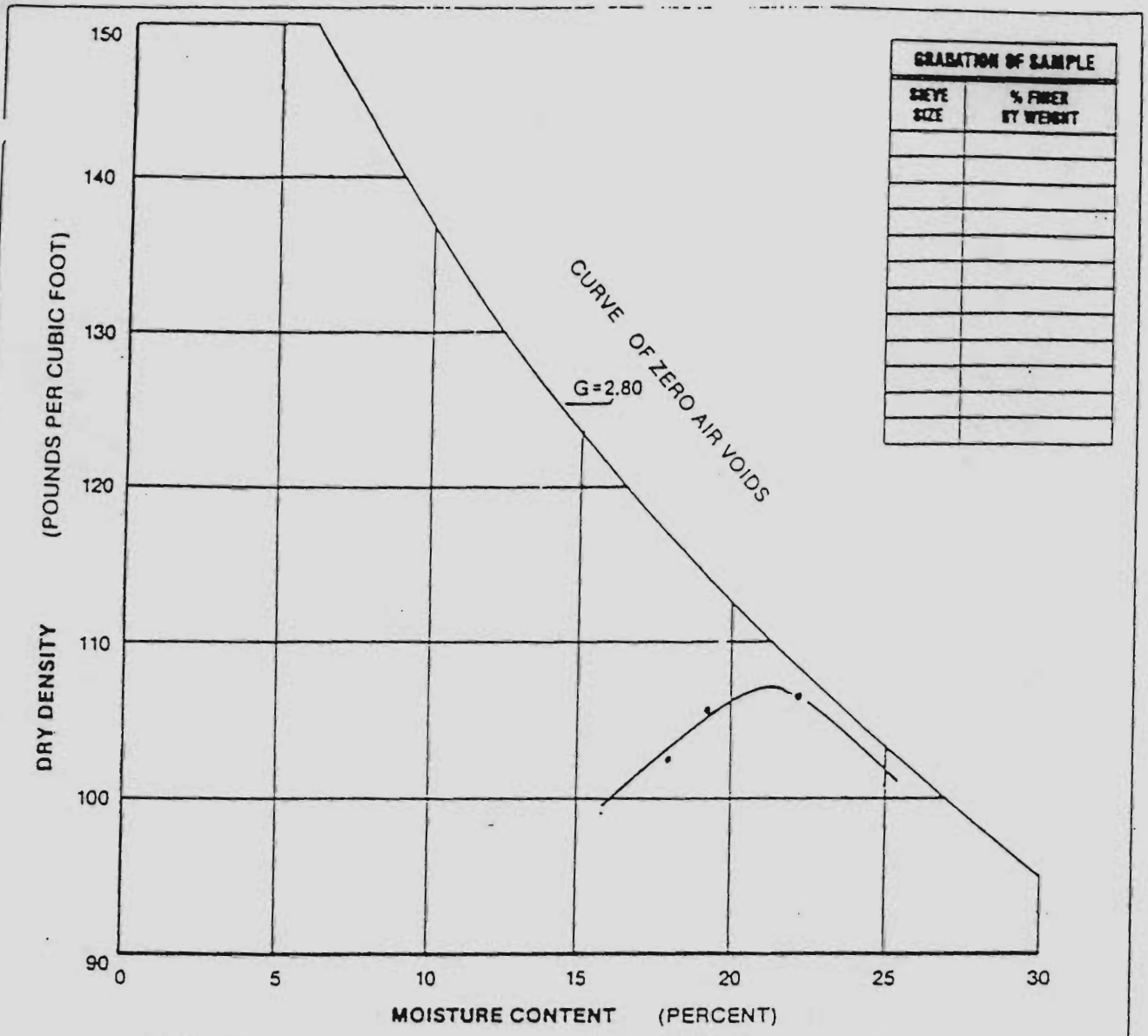
METHOD OF TEST	
STANDARD	METHOD
ASTM D1557-78	A
AASHTO	
MILITARY	

EMPIRE GEOTECHNICAL ENGINEERING, INC.

OPTIMUM MOISTURE—MAXIMUM DENSITY

KINGSBURY LANDFILL
TOWN OF KINGSBURY, NEW YORK

JOB NO. ATA-87-37



GRADATION OF SAMPLE	
SIEVE SIZE	% FINER BY WEIGHT

SAMPLE DESCRIPTION

Material CLAY, trace gravel

Color Dark Brown Source Hillview Drive Borrow Site

Sampled By RA At TP-3, 4'

TEST RESULTS

Maximum Dry Density 106.9 pcf

Optimum Water Content 21.3 %

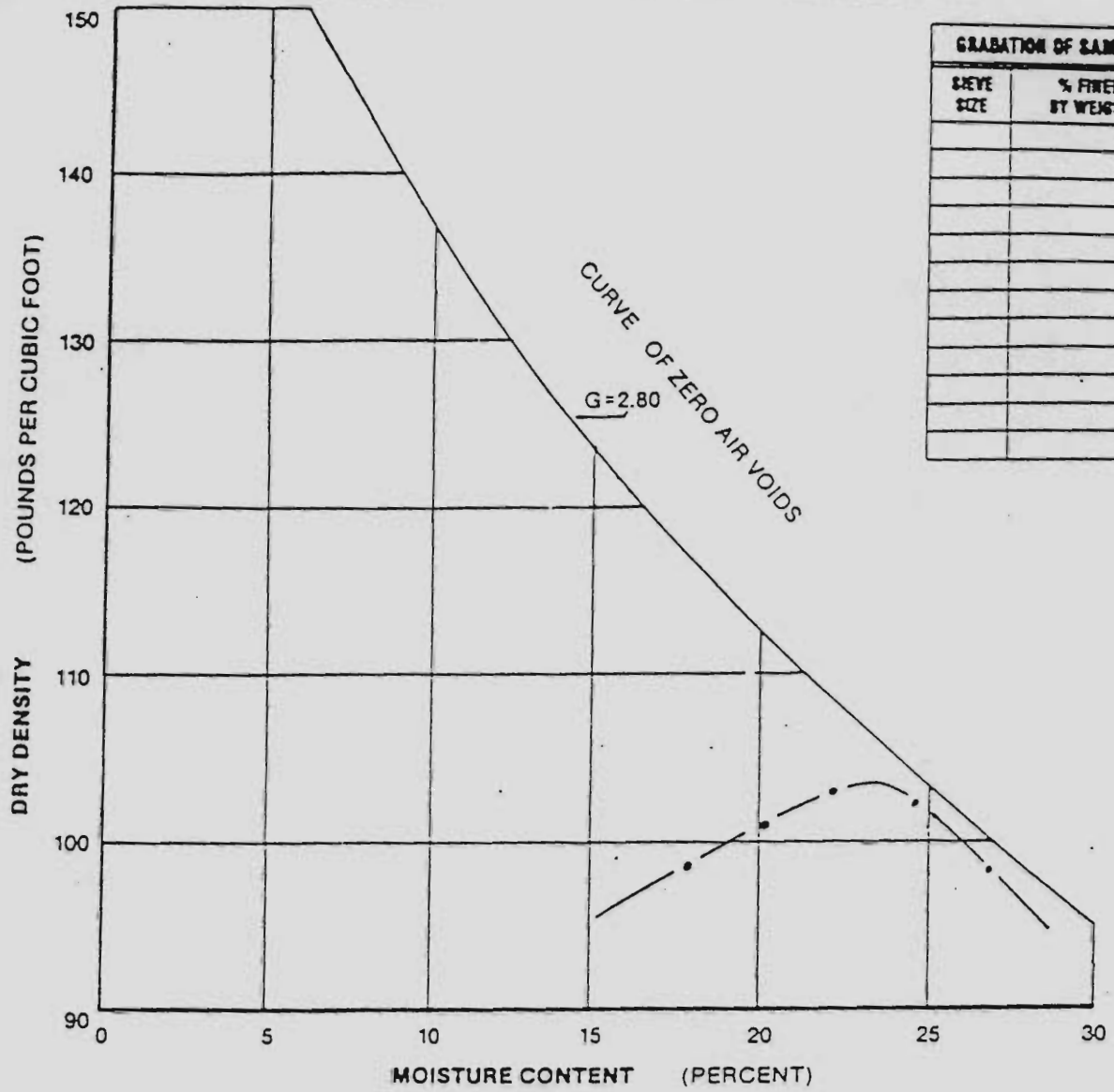
METHOD OF TEST	
STANDARD	METHOD
ASTM D1557-78	A
AASHTO	
MILITARY	
OTHER	

EMPIRE SOILS INVESTIGATIONS INC.

OPTIMUM MOISTURE—MAXIMUM DENSITY

KINGSBURY LANDFILL
TOWN OF KINGSBURY, NEW YORK

DR. BY: SB	DATE SAMPLED:	PROJ. NO. ATA-87-37



GRADATION OF SAMPLE	
SIEVE SIZE	% FINER BY WEIGHT

SAMPLE DESCRIPTION

Material CLAY

Color Dark Brown Source Hillview Drive Borrow Site

Sampled By RA At TP-1, 6'

TEST RESULTS

Maximum Dry Density 103.5 pcf

Optimum Water Content 23.2 %

METHOD OF TEST	
STANDARD	METHOD
ASTM D1557-78	A
AASHTO	
MILITARY	
OTHER	

EMPIRE SOILS INVESTIGATIONS, INC.

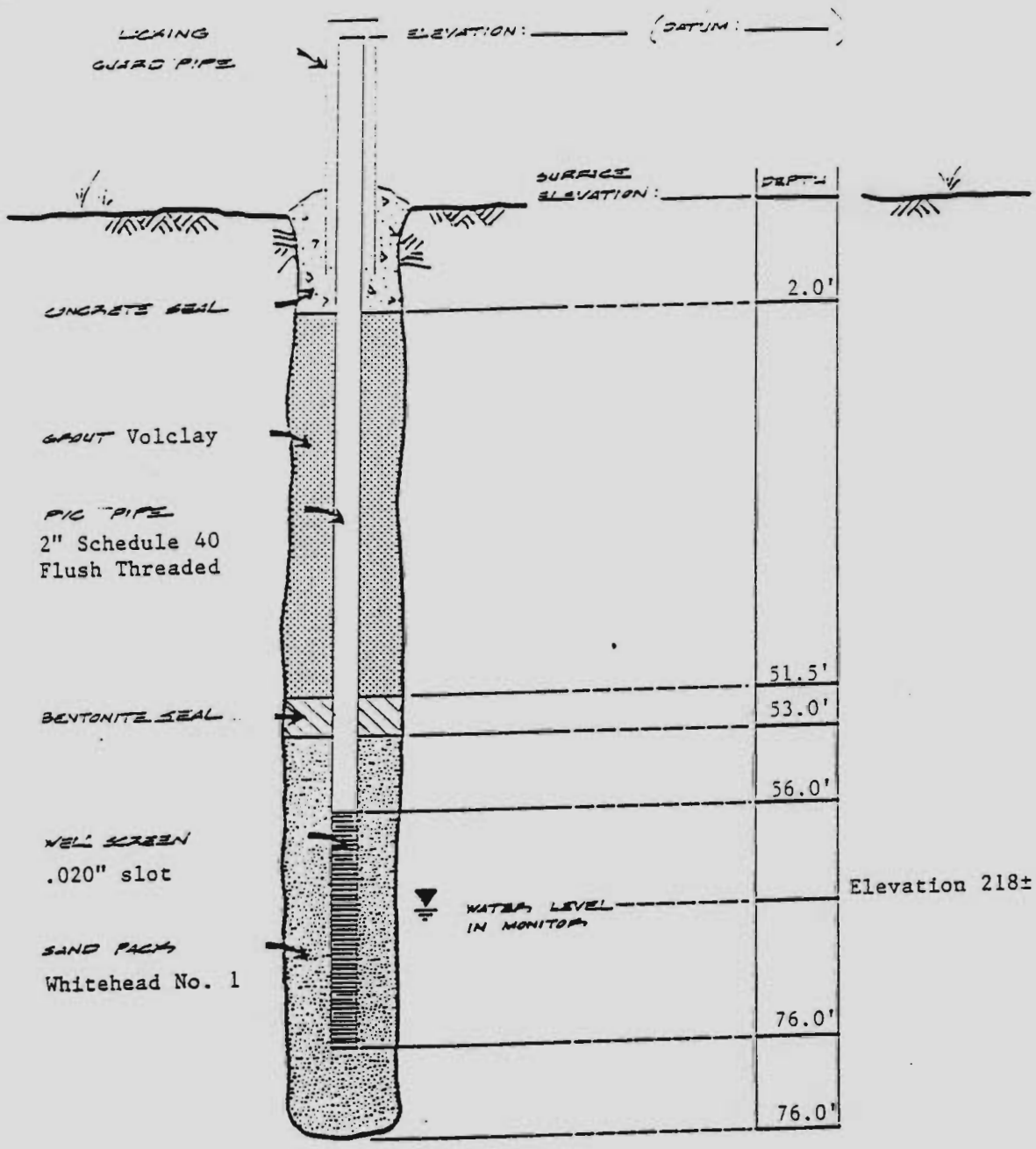
OPTIMUM MOISTURE—MAXIMUM DENSITY

KINGSBURY LANDFILL
TOWN OF KINGSBURY, NEW YORK

DR. BY: SB	DATE SAMPLED:	PROJ. NO. ATA-87-37
	TESTED BY: TW	CURVE NO. 3

APPENDIX C

KINGSBURY SITE REMEDIAL PROGRAM
MONITORING AND RELIEF WELL DETAILS



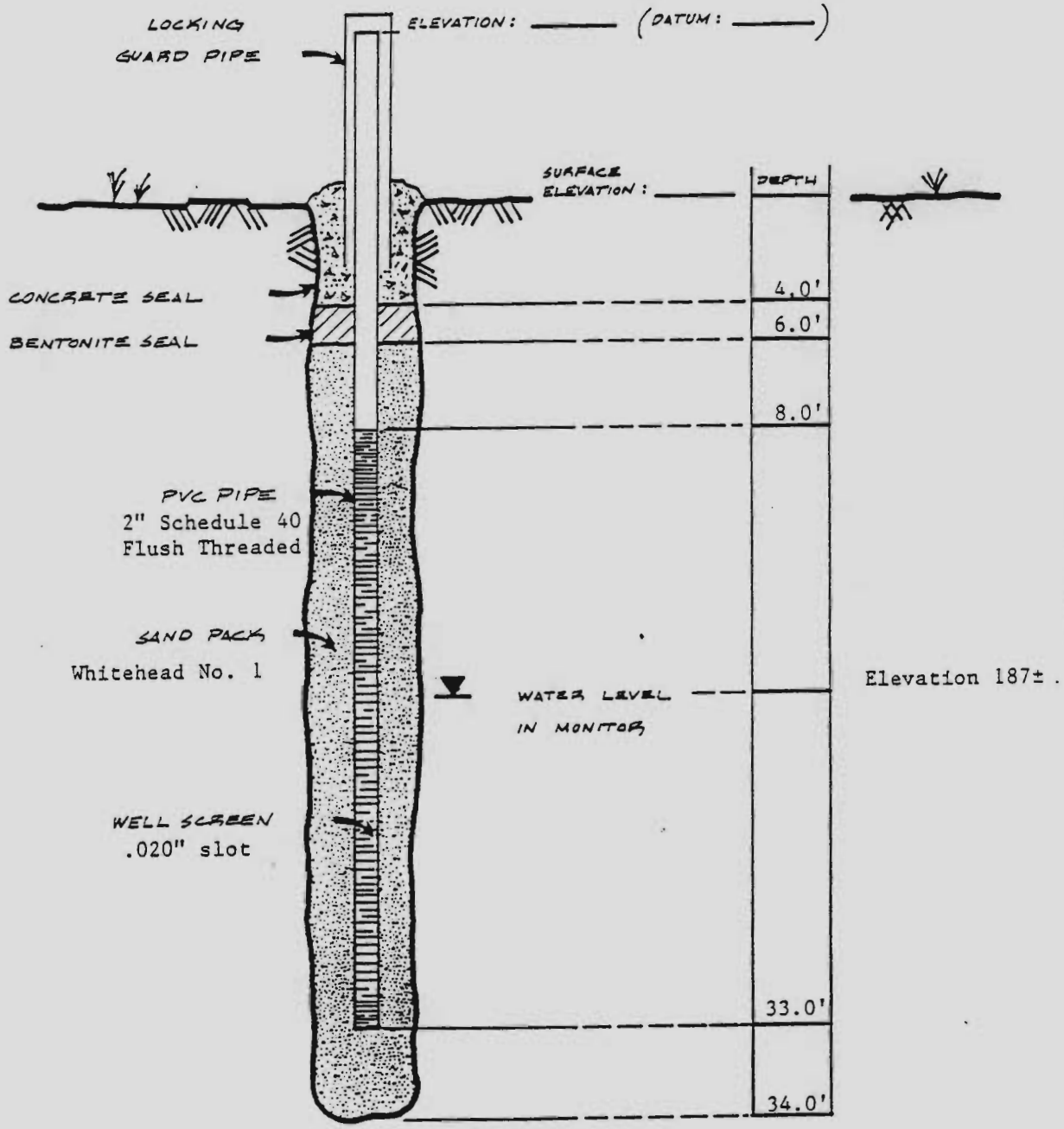
EMPIRE SOILS INVESTIGATIONS INC

MONITORING WELL DETAILS

KINGSBURY LANDFILL

WELL No. GMW-1

DR BY	JH	SCALE:	N.T.S.	PROJ. NO.	AD-86-90
CK'D BY	RWD	DATE:	6-15-88	DRWG NO	



WELL No.

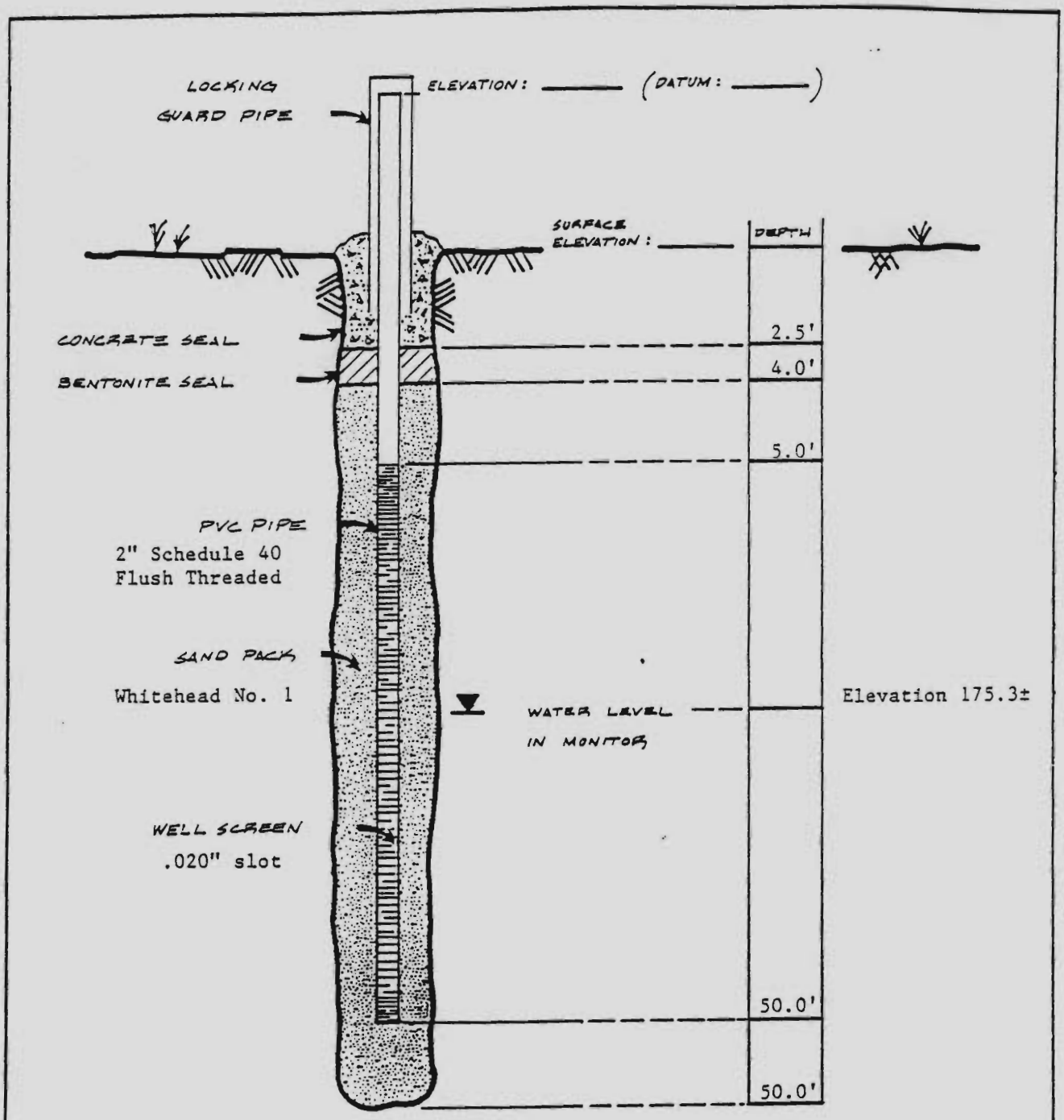
GMW-2

EMPIRE SOILS INVESTIGATIONS INC.

MONITORING WELL DETAILS

KINGSBURY LANDFILL

DR BY	JH	SCALE	N.T.S.	PROJ NO	AD-86-90
CK'D BY	RWD	DATE	6-15-88	DRWG NO	



WELL No.

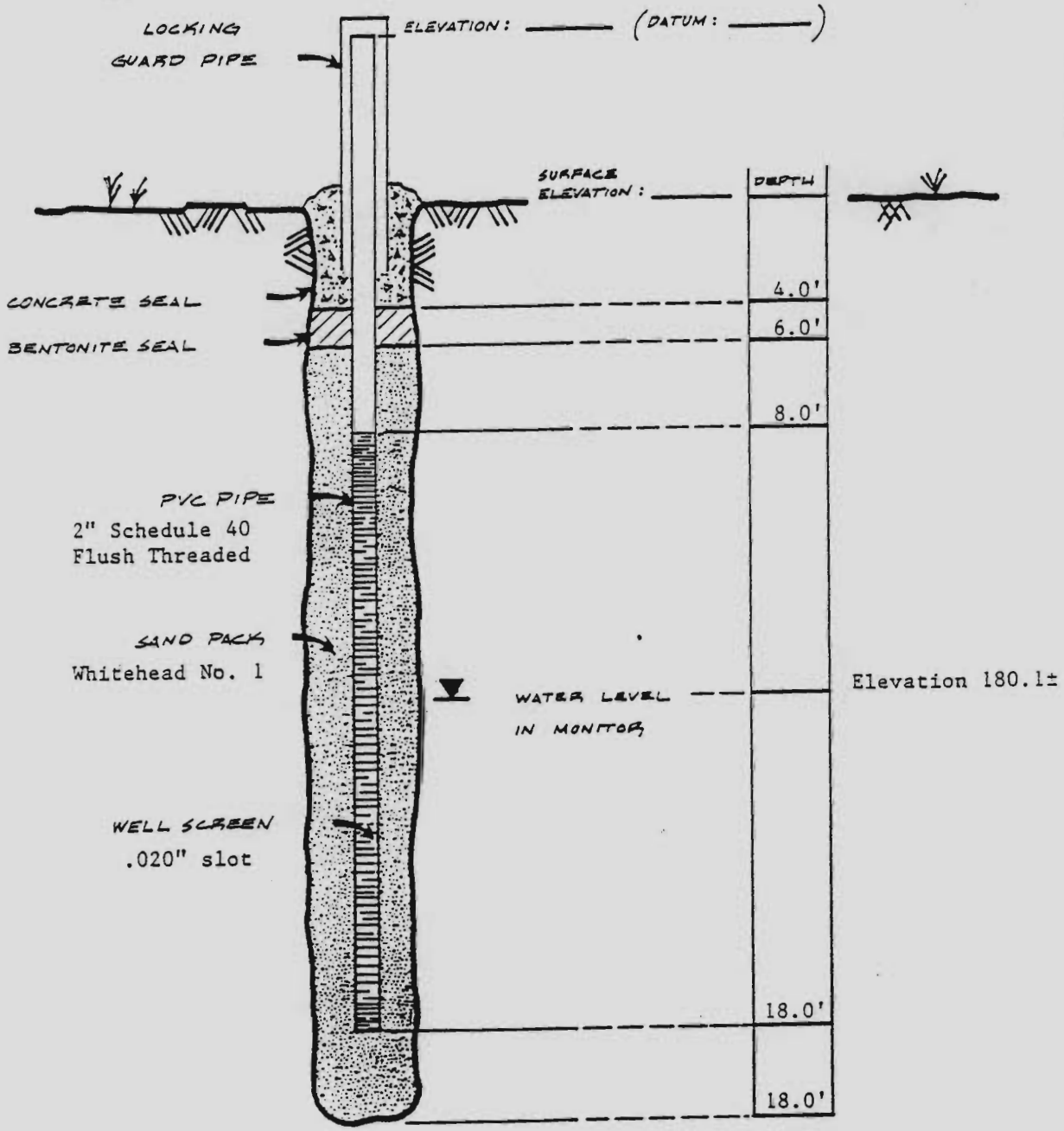
GMW-3

EMPIRE SOILS INVESTIGATION

MONITORING WELL DETAILS

KINGSBURY LANDFILL

DR BY	JH	SCALE	N.T.S.	PROJ NO	AD-86-90
CK'D BY	RWD	DATE	6-15-88	DRWG NO	



WELL No

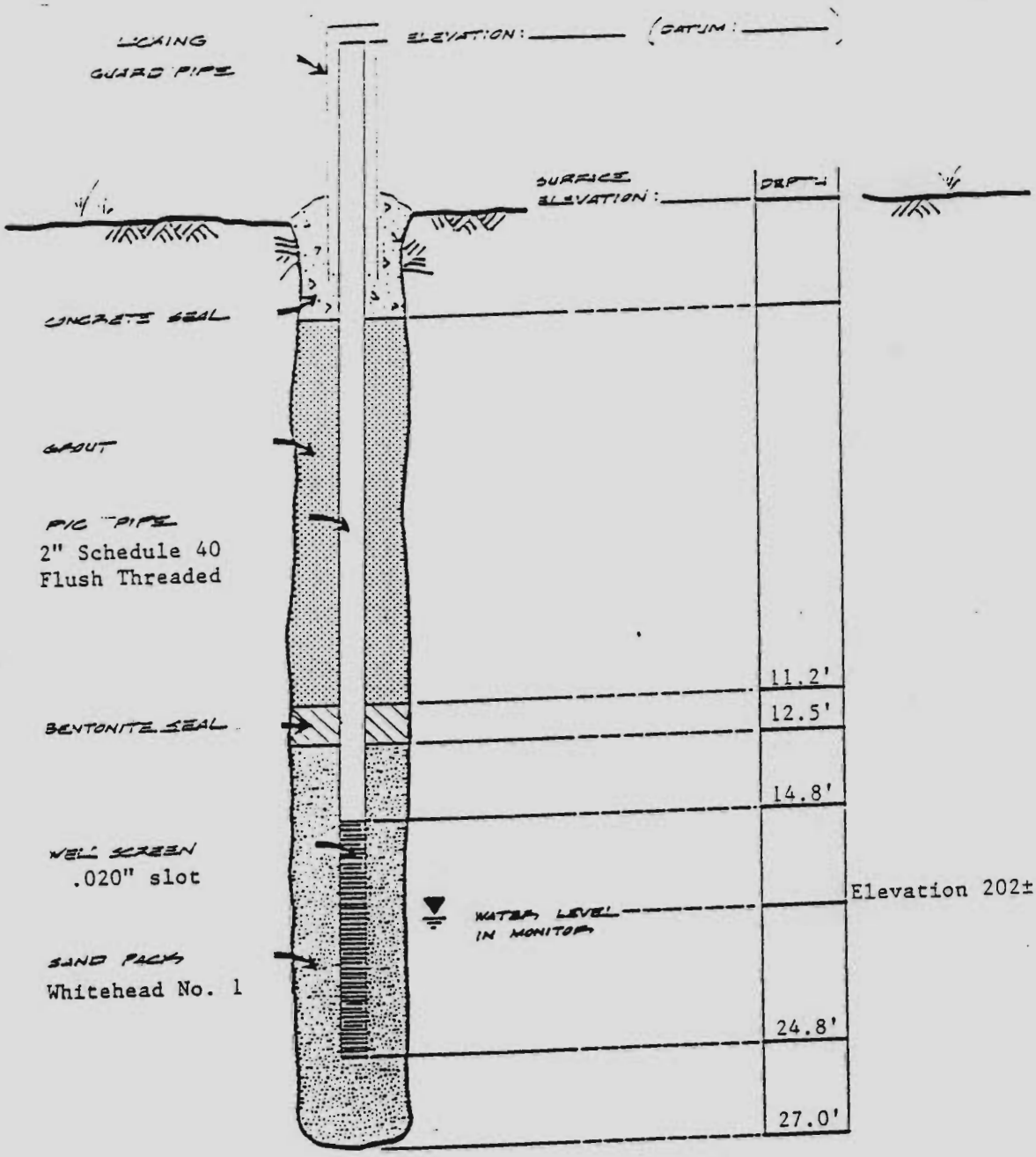
GMW-4

EMPIRE

MONITORING WELL DETAILS

KINGSBURY LANDFILL

DR BY JH	SCALE N.T.S.	PROJ NO. AD-86-90
CK'D BY RWD	DATE 6-15-88	DRWG NO



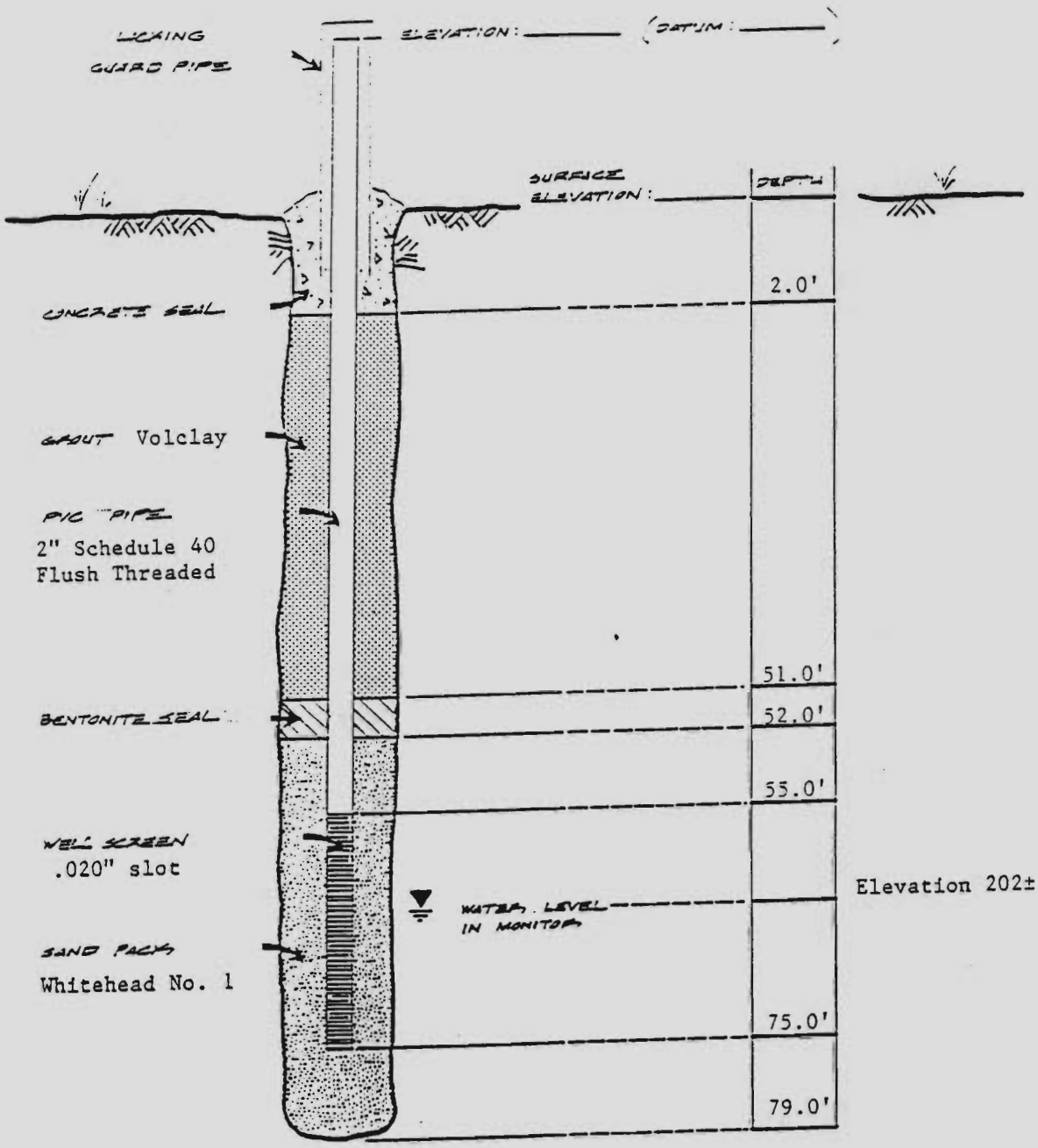
WELL No. GMW-5

EMPIRE SOILS INVESTIGATIONS INC

MONITORING WELL DETAILS

KINGSBURY LANDFILL

DR BY	JH	SCALE:	N.T.S.	PROJ. NO	AD-86-90
CHK'D		DATE:	6-16-88	DRWG NO	



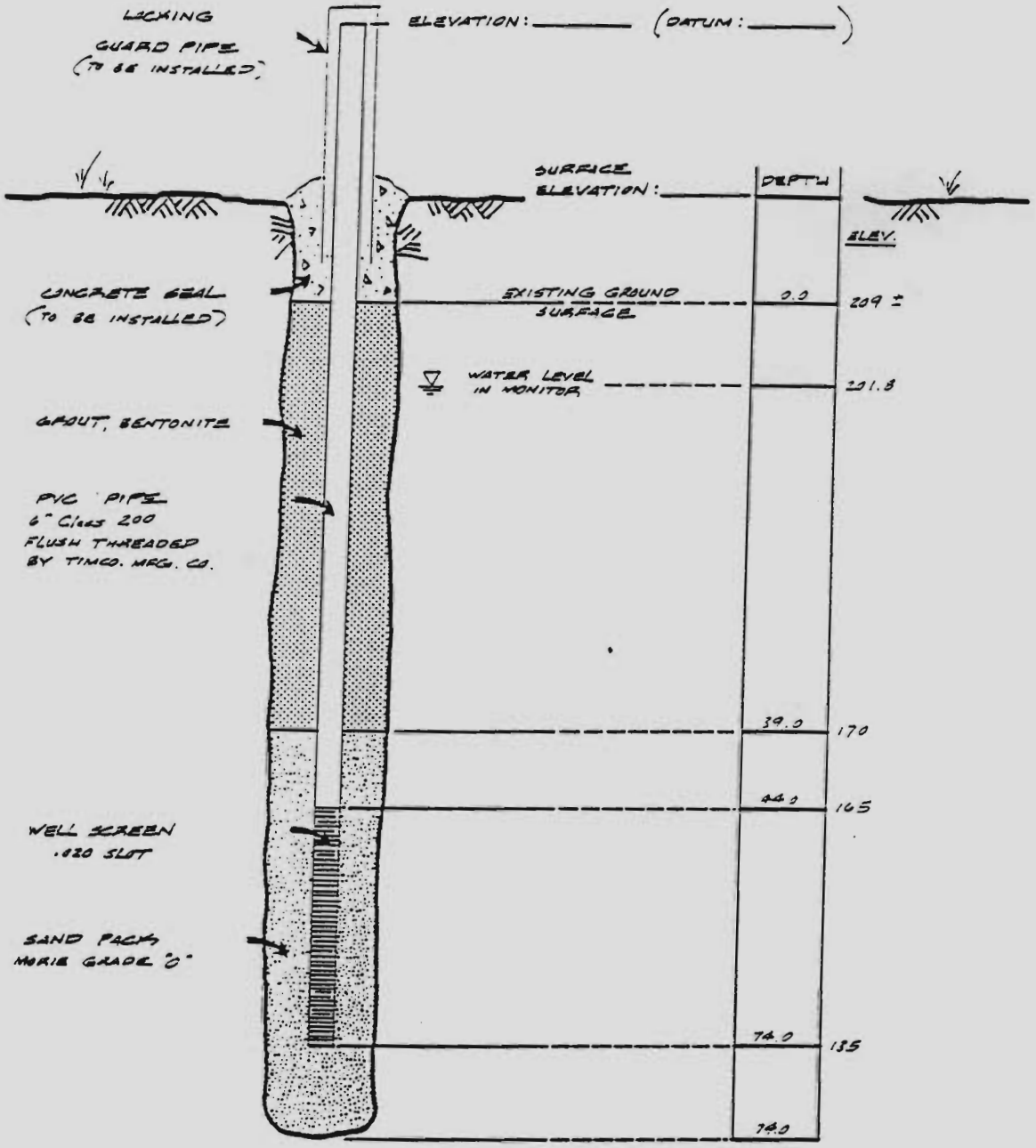
WELL No. GMW-6

EMPIRE SOILS INVESTIGATIONS INC.

MONITORING WELL DETAILS

KINGSBURY LANDFILL

DR BY	JH	SCALE:	N.T.S.	PROJ. NO.	AD-86-90
CKD BY	RWD	DATE:	6-15-88	DRWG NO	



EMPIRE
SOILS INVESTIGATIONS INC

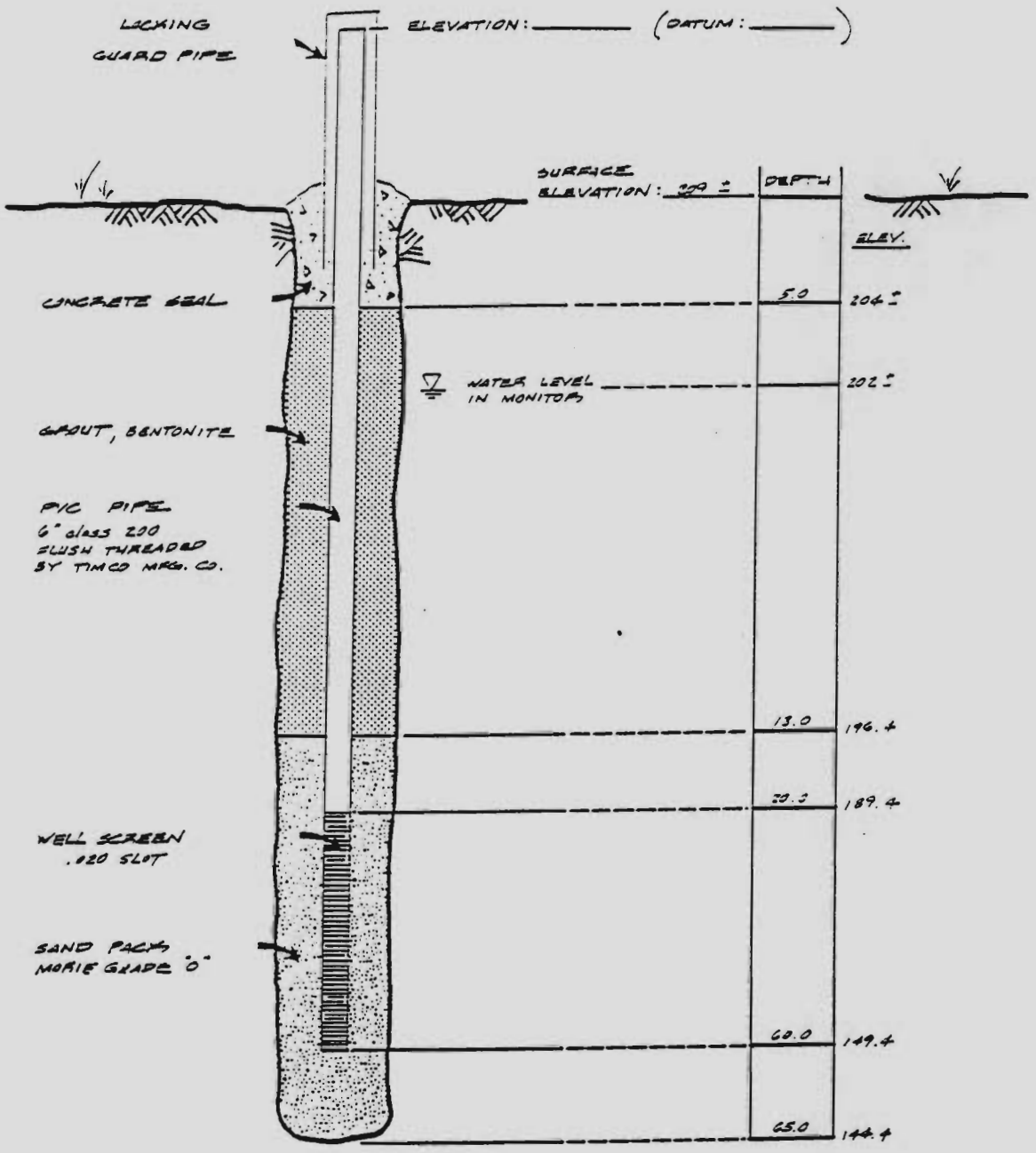
RELIEF WELL DETAILS

KINGSBURY LANDFILL

DR BY JW	SCALE N.T.S.	PROJ NO 10-86-90
CKD BY AWD	DATE 6-21-88	DRWG NO

WELL No.

RW-1



EMPIRE SOILS INVESTIGATIONS INC

RELIEF WELL DETAILS
KINGSBURY LANDFILL

DR BY	JLI	SCALE	N.T.S.	PROJ NO.	40-86-90
CHD BY	RWD	DATE	6-21-88	DRWG NO.	

WELL No.

RW-2

APPENDIX D

KINGSBURY SITE REMEDIAL PROGRAM
CERTIFICATE OF SUBSTANTIAL COMPLETION

CERTIFICATE OF SUBSTANTIAL COMPLETION

OWNER: New York State Department of Environmental Conservation

PROJECT: Kingsbury Site Remedial Program

CONTRACTOR: Yolam Construction, Inc.

ENGINEER: Blasland & Bouck Engineers, P.C.

CONTRACT: No. 1

PROJECT NO: 92.01

Project or Specified Part shall include: Substantial Completion of Contract No. 1.

Definition of Substantial Completion: Substantial Completion is defined to be the date when the Owner and the Contractor reach mutual agreement that the work is substantially complete.

Date of Substantial Completion: October 31, 1989

Written, mutual agreements upon which the date of Substantial Completion has been mutually agreed to are as follows:

1. Agreement to Substantial Completion by the Owner will in no way affect the obligations of the Contractor under the terms and provisions of the Contract with respect to uncompleted work.

2. The Contractor shall subsequently complete or correct all unfinished items in the work accepted by the Owner as substantially complete.

3. The Owner, Engineer and Contractor made an inspection of the work on November 1, 1989 and, following this inspection, the Engineer advised the Contractor of remaining items to be completed or corrected and provided the Contractor with an Estimate of Work Remaining, (attached). The Contractor shall endorse said Estimate of Work Remaining as evidence of agreement and provide the Owner with a mutually acceptable schedule for completion of the Estimate of Work Remaining.

CERTIFICATE OF SUBSTANTIAL COMPLETION

4. Warrantee/Guarantee Periods, as stipulated in the Contract Documents, are to begin upon the date of Substantial Completion.

YOLAM CONSTRUCTION, INC.

By: [illegible]

Title: [illegible]

Date: Jan. 23, 1990

BLASLAND & BOUCK ENGINEERS, P.C.

By: Joseph A. Pitts

Title: Director of Construction Services

Date: Jan. 18, 1990

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

By: James VanHoesen

Title: Assoc San. Constr. Engr.

Date: 1-24-90

92.01
1/18/90

Kingsbury Site Remedial Program

Estimate of Work Remaining

1. Demobilization of Engineer's and Contractor's Field Offices
(2 x $1,000 = $2,000)

2. Repair and maintain eroded cap areas and mid-slope stone ditch as required to correct and prevent further erosion. Repairs shall include reseeding and maintenance of slopes and ditches until establishment of final vegetative growth.
(2 x $4,000 = $8,000)