CLAY BORROW INVESTIGATION

ROSENBAUM QUARRY

STOUGHTON CITY LANDFILL CAP

TOWN OF DUNKIRK, DANE COUNTY, WISCONSIN

Prepared for:

Ryan Inc. Central
Janesville, Wisconsin

Prepared by:

CGC, Inc.

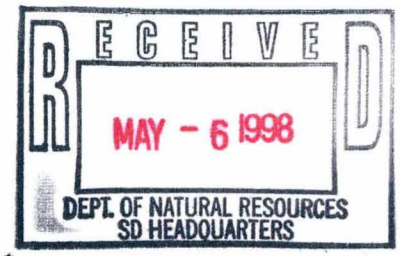
3011 Perry Street
Madison, Wisconsin

Project Number C98024

CGC, Inc.

Construction · Geotechnical
Consulting Engineering/Testing

May 6, 1998
C98024



Mr. Paul Kozol
Wisconsin Department of Natural Resources
3911 Fish Hatchery Road
Fitchburg, WI 53711

Re: Clay Borrow Investigation
Rosenbaum Quarry
Stoughton City Landfill Cap
Town of Dunkirk
Dane County, Wisconsin

Dear Mr. Kozol:

On behalf of Ryan Inc. Central, we are submitting two copies of this clay borrow study for your review and request your approval of the site as a source of cap-quality clay for the Stoughton City Landfill Cap. Our study has revealed that clay material of adequate volume and acceptable quality is available at the Rosenbaum quarry south of Stoughton on Highway 138.

Please call if you have questions or require additional information.

Sincerely,

CGC, INC.

William W. Wuellner, P.E.
Senior Geotechnical Engineer

Encl: As stated

cc: Mr. John Burt, Ryan Inc. Central (7)

3011 Perry Street, Madison, WI 53713
Telephone: 608/288-4100
FAX: 608/288-7887

CGC, Inc.

TABLE OF CONTENTS

1.0
INTRODUCTION

The Rosenbaum quarry is located about 1.5 miles south of Stoughton on Highway 138 in the NE 1/4 of Section 18, Township 5 North, Range 11 East, Town of Dunkirk, Dane County, WI (see Figure 1). The study was conducted to evaluate the soil properties of the on-site clays for use by Ryan Inc. Central in the construction of a clay cap at the Stoughton City Landfill. The clay cap was designed by Roy F. Weston, Inc. as a Superfund remedial action project under the auspices of U.S. EPA. The Wisconsin Department of Natural Resources is responsible for reviewing this report and approving the use of the Rosenbaum site as a source for clay cap material. This clay borrow study has been conducted according to the guidelines in Wisconsin Administration Code NR512.15.

The proposed site is an active commercial sand and gravel mining operation, operated by Mark and Judy Rosenbaum. The available clay material represents overburden soil which has been or will be stripped to expose the underlying sand and gravel deposits. Approximately 6000 cu yd of overburden clay from past stripping operations is stockpiled on-site. The remainder of the required clay borrow is undisturbed *in situ* clay on land adjacent to the active surface mine.

2.0
SCOPE OF INVESTIGATION

A total of 23 test pits were excavated with a backhoe provided by Ryan Inc. Central/Mark Rosenbaum during the clay borrow investigation performed on April 3, 1998. Two additional test holes were shovel-dug by hand in the sides of an existing clay stockpile. The pits were generally done to conform to WDNR NR512.15 requirements. Test pits were located about the perimeter of the existing sand and gravel quarry in areas where overburden removal will next be required to expand the quarry. The pits were extended to depths of about 5 to 14 ft to reach underlying granular soils.

A field technician from CGC observed the excavation of the test pits, which are numbered 1A through 23A, and the test holes in the stockpile, numbered 1AA and 4AA. CGC prepared boring logs and classified the soils according to the Unified Soil Classification System (ASTM 2487). Multiple bag samples were collected from each test pit and returned to our soils laboratory in Madison for subsequent laboratory testing. The laboratory test results, as well as our opinions regarding the clay suitability and a proposed borrow area development plan, are discussed in detail below.

The 23 test pits and two test holes were excavated over approximately 9.3 acres of potential clay borrow, and test pit logs for each of the test pits are included with this report. However, only about two-thirds of the area explored will be needed to provide the required clay volume, as indicated in the attached Table 1. Laboratory testing has been limited to those test pits falling within the "primary borrow areas" listed in the table.

3.0
SITE DESCRIPTION

A. Permit Status

The Rosenbaums have operated their sand and gravel pit under a "grandfathered" Non-Conforming Mineral Extraction zoning classification since they purchased the property in 1988. Prior to their purchase, it had also been operated for the same purpose since before 1965.

The Rosenbaums applied to WDNR for a stormwater discharge permit in 1991. Their application and WDNR's response is included in Appendix C. The Rosenbaums indicate in their application that stormwater runoff seeps into the ground on their property. Topographic mapping in the vicinity of the proposed clay borrow area confirms that the site drains toward the active quarry area.

The Rosenbaums have further indicated in their letter attached in Appendix C that to the best of their knowledge, there are no historical/archaeological areas or significant hydrologic features on their property.

B. Surface Characteristics

The proposed borrow area is being or has recently been used for agriculture, stockpiling of stripped overburden clay/topsoil from the existing quarry, and storage of mining equipment. The topsoil stockpiles and equipment will be relocated as needed. The existing clay stockpile will be used for clay cover construction and is included in this study. The topography of the site can be described as gently rolling, with site grades generally sloping toward the existing quarry (see Figure 3). Existing vegetation consists of grasses and corn stubble from last year's crop.

C. Subsurface and Groundwater Conditions

The test pit exploration and observation of the cut face of the existing quarry show a typical soil profile as follows:

- 0.5 to 2 ft of TOPSOIL;
- 2.5 to 12 ft of lean to fat CLAY;
- Underlain by SAND and GRAVEL at an average depth of about 7.5 ft.

The clay layer has a USCS symbol ranging from CL to CH and averages about 5 ft in thickness within the primary borrow areas. As indicated in the individual test pit logs in Appendix A, deviations from this typical profile exist in some locations due to past filling, cutting or natural variations in the processes of soil deposition. The test pit findings are summarized on Table 2.

Groundwater was not encountered in the shallow test pits and apparently exists within the sand and gravel layer, well below the bottom of the clay.

4.0
LABORATORY TEST RESULTS

As mentioned above, samples were obtained of the soil strata observed in the test pits and taken to CGC's geotechnical laboratory for testing. A laboratory testing program, consisting of natural moisture contents, Atterberg limits, grain size analyses including hydrometers, Proctor moisture-density curves and hydraulic conductivity (falling head permeability) tests, was conducted by CGC. Three compaction versus permeability curves were also developed. The laboratory program satisfies or exceeds testing frequency requirements outlined in NR512.15. Two samples were tested from each test pit in the primary borrow area. Results of these tests are presented in Appendix B and summarized in Table 3 at the end of this report. Spatial, elevation and textural parameters were considered during selection of samples for testing. For example, the samples selected for permeability and Proctor testing represent the low (Test Pit 1A) and high end of the plasticity range (Test Pit 4A), as well as intermediate values (Stockpile Samples 1AA and 4AA).

5.0
SITE EVALUATION

A. Clay Quality

As indicated in Table 3, laboratory tests of the potential cover quality clay observed at the proposed borrow site indicate compliance with project requirements for USCS soil classification P200, plasticity characteristics (liquid limit and plasticity index) and permeability. Calculation of standard deviations for the clay properties suggest that the deposit shows a high degree of uniformity in quality. Average test results and project specified clay properties are summarized below:

Soil Parameter	Average Test Results	Project Requirements
USCS Classification:	CL	CL/CH
Liquid Limit (LL):	48%	≥27%, Min. 25%
Plasticity Index (PI):	28%	≥12%, Min. 10%
P200 Content:	98%	≥50%
Clay Content (5-micron size):	31%	-
Permeability, cm/sec:	8.5×10^{-9}	$\leq 1 \times 10^{-7}$

The typical clay quality is therefore anticipated to satisfy project criteria for cover quality clay, with a fairly comfortable margin between the minimum requirements and the average soil properties.

B. Clay Volume

The anticipated clay volume available in the primary borrow area (Areas A through G on Table 1 and Figure 2) is approximately 63,000 cu yd, compared to a required volume of about 50,000 cu yd for the clay barrier layer at the landfill. An additional 22,000 cu yd of clay has been identified in the reserve borrow areas on the west end of the sand and gravel pit. Due to the uniformity of the deposit, the clay quality in the reserve areas should be very similar to the tested clay.

C. Quality Control Procedures

The nature of the clay deposit (i.e., a windblown, weathered loess) is such that it is a relatively uniform stratum, and there is generally a fairly distinct boundary between the clay and the underlying sand and gravel. Therefore, the distinction between the two soil types will be obvious. The following steps will be taken to avoid mixing the clay with the underlying sand and gravel during its removal from the borrow area:

- The clay material will be excavated with a backhoe and loaded into trucks for hauling to the landfill. Therefore, construction traffic is not expected to mix the two materials to any significant extent since vehicles will be traveling well above the interface between the clay and sand.

- The backhoe operator will leave a thin layer (0.5 to 1 ft thick) of clay above the sand and gravel so that incorporation of sand and gravel during clay removal is minimized.

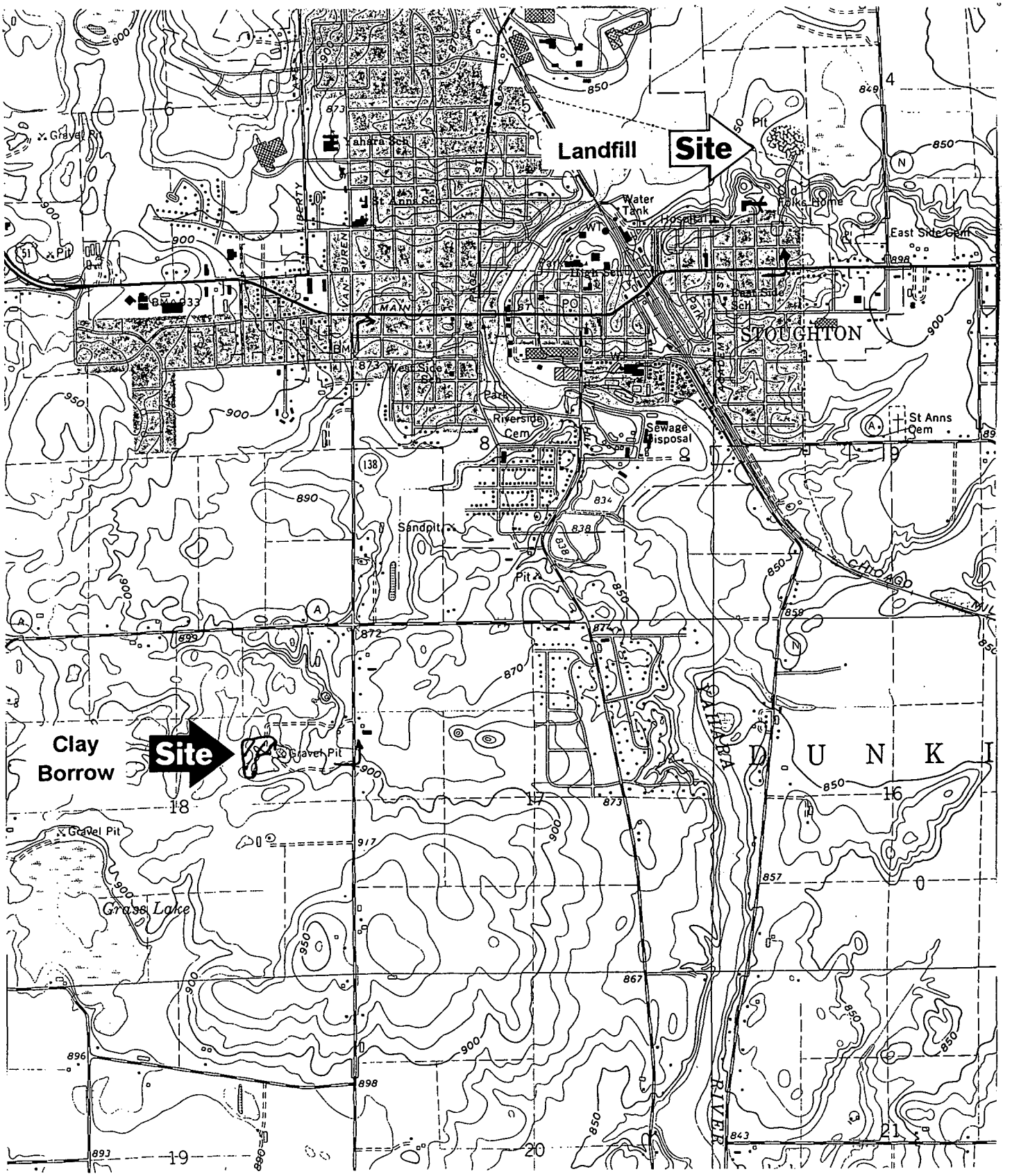
As a further precaution, the clay delivered to the site will be routinely screened and visually classified by CGC, Ryan and Weston personnel to check for potential variations in the clay quality. If necessary, loads will be diverted to other uses (e.g., cover soils) and adjustments will be made at the borrow site to avoid seams or pockets of unsuitable material, if any.

6.0
CLOSING

In conclusion, this borrow study, conducted in accordance with NR512.15, has shown that clay cap material of adequate volume and acceptable quality is available at the Rosenbaum quarry. We recommend approval of the site for use as a borrow source for clay material for the Stoughton City Landfill Cap.

We trust that the information contained in this report addresses your present needs. If you have questions, please call.

FIGURES



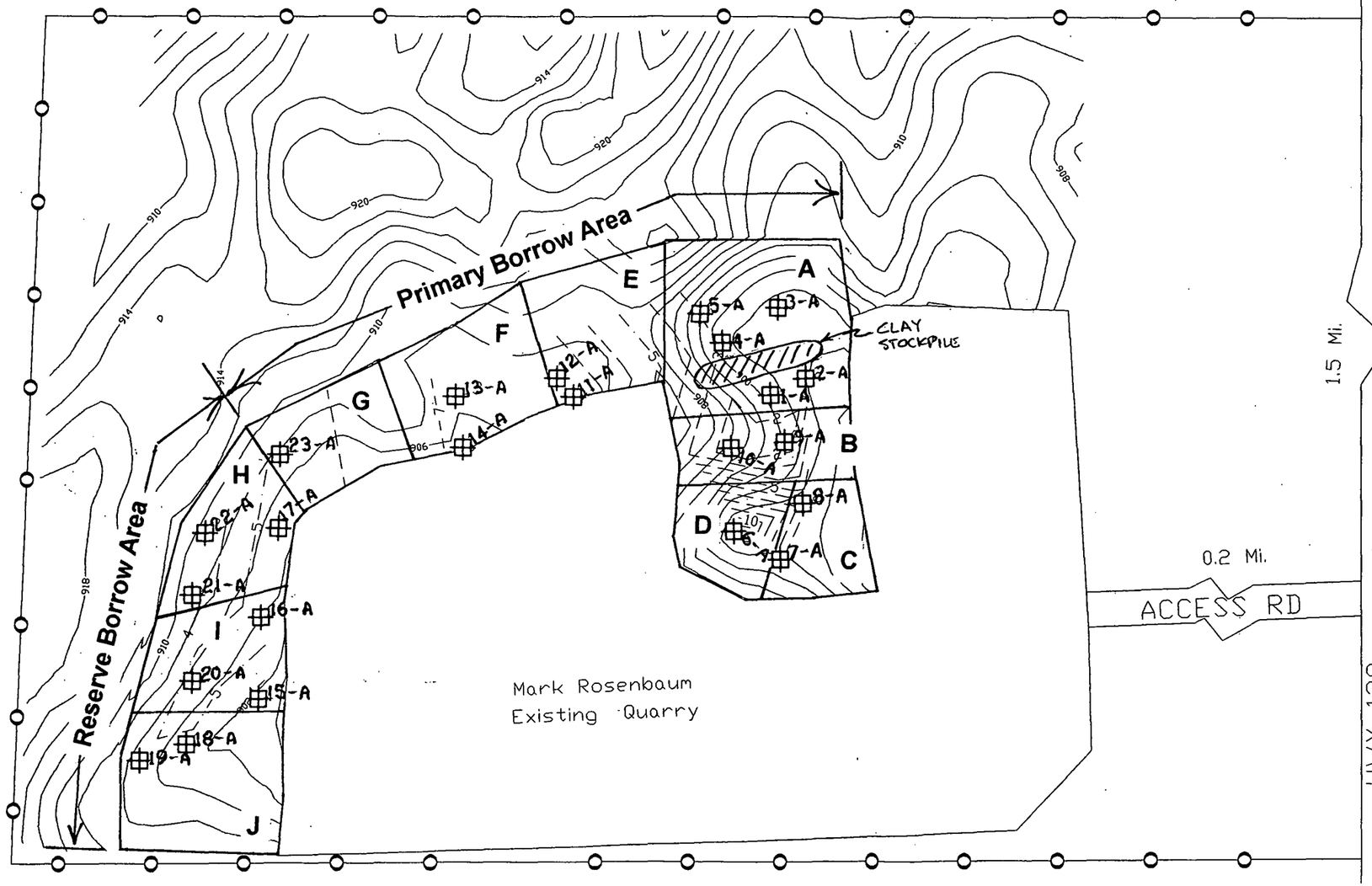
Scale: 1 in. = 2000 ft

DWN: -	APP'D: WWW	Date: 4/98	C98024

CGC, Inc.

FIGURE 1
SITE LOCATION MAP
Rosenbaum Clay Borrow Site
Town of Dunkirk, Dane Co., WI

City of Stoughton



LEGEND

- 900 — TOPOGRAPHIC CONTOUR
- ⊕1-A — TEST PIT LOCATION
- FENCE
- 4 — DEPTH OF CLAY

NOTES:

1. ELEVATIONS BASED ON CITY OF STOUGHTON DATUM.
2. TEST PITS PERFORMED BY C.G.C. OF MADISON WISC. ON APRIL 3, 1998.

RYAN INC

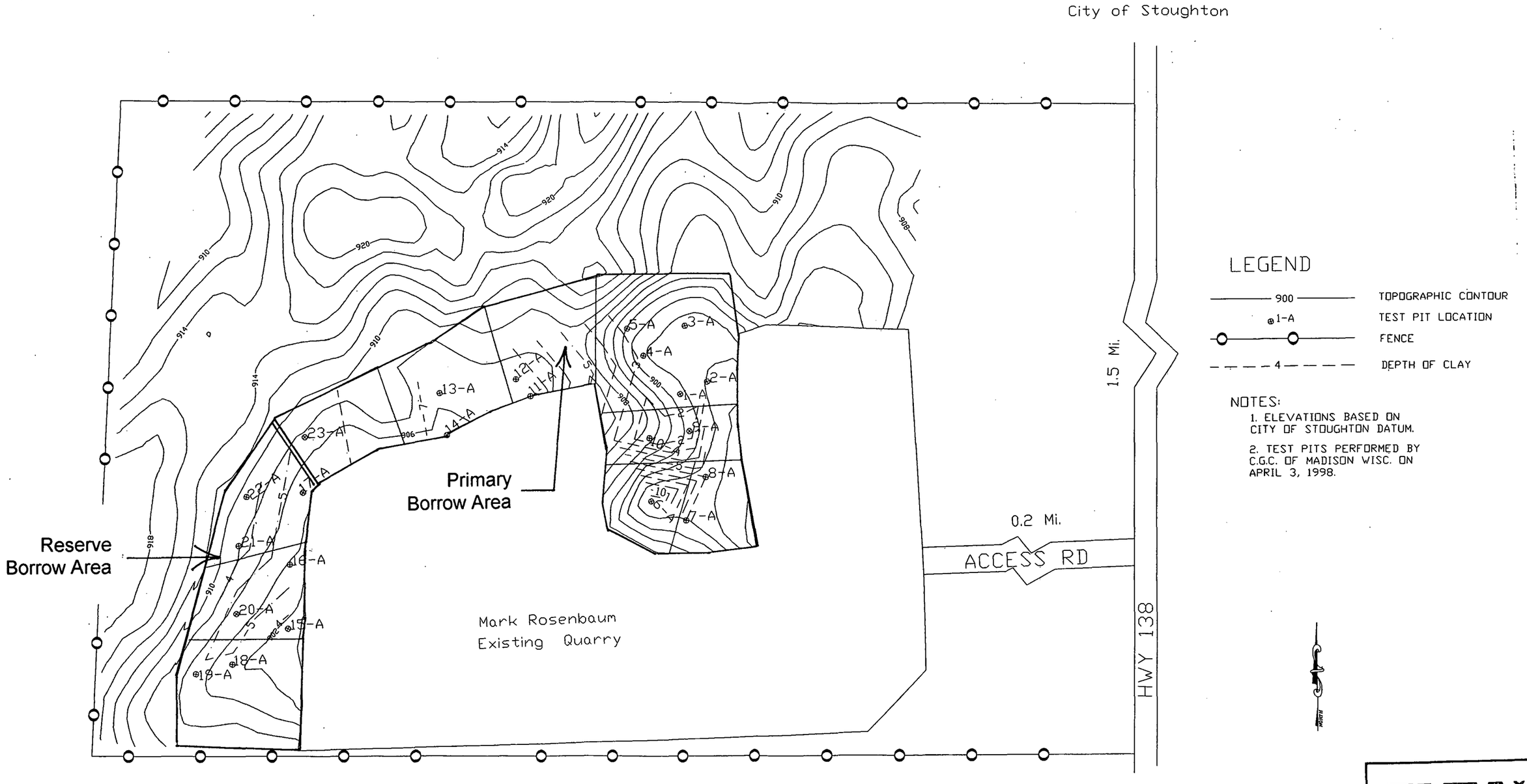
Scale: 1 in. = 200 ft

Notes: Base map provided by Ryan Inc. Central dated 4/3/98.

	APP'D: WWW	Date: 5/98	C98024

CGC, Inc.

FIGURE 2
Test Pit & Borrow Area Location Map
Rosenbaum Clay Borrow Site
Stoughton, Wisconsin



RYAN INC

Scale: 1 in. = 200 ft

Notes: Base map provided by Ryan Inc. Central dated 4/3/98.

	APP'D: WWW	Date: 5/98	C98024

CGC, Inc.

FIGURE 3
Topographic/Clay Thickness Map
Rosenbaum Clay Borrow Site
Stoughton, Wisconsin

TABLES

Table 1

Clay Borrow Volumes by Source Area
Rosenbaum Quarry
Stoughton City Landfill

Area Designation	Area, acres	Test Pits	Avg Clay Thickness, ft	Clay Volume, cu yd
Primary Borrow Areas				
A	1.8	1A, 2A, 3A, 4A, 5A	2.75	8,000
B	0.7	9A, 10A	1.25	1,400
C	0.6	7A, 8A	6.0	5,800
D	0.6	6A	12.0	11,600
E	0.9	11A, 12A	7.75	11,400
F	1.0	13A, 14A	7.25	12,000
G	0.8	23A	5.5	6,800
Stockpile		1AA, 4AA		6,000
Subtotal	6.4	17 test pits	5.1 (avg)	63,000
Reserve Borrow Areas				
H	0.8	15A, 21A, 22A	3.5	4,500
I	0.9	16A, 17A, 20A	5.83	8,500
J	1.2	18A, 19A	4.75	9,200
Subtotal	2.9	8 test pits	4.7 (avg)	22,200

Table 2

Summary of Test Pit Findings
Rosenbaum Quarry
Stoughton City Landfill

Test Pit	Thickness, ft			Depth to Sand and Gravel, ft
	Clay fill	Topsoil	Clay	
Primary Borrow Areas				
1A		1.0	3.0	4.0
2A	1.0	4.5	1.0	6.5
3A		6.0	4.0	10.0
4A		1.0	3.0	4.0
5A		1.0	3.0	4.0
6A		0.5	12.0	12.5
7A		3.5	4.5	8.0
8A	4.0	1.5	7.5	13.0
9A		3.0	0.0	3.0
10A		1.0	2.5	3.5
11A		0.0	6.0	6.0
12A		1.5	9.5	11.0
13A		1.5	5.0	6.5
14A		0.5	9.5	10.0
23A		1.5	5.5	7.0
Avg	*2.5*	*1.9*	*5.1*	*7.3*
Min	*1.0*	*0.0*	*0.0*	*3.0*
Max	*4.0*	*6.0*	*12.0*	*13.0*
Reserve Borrow Areas				
15A		7.0	6.0	13.0
16A		2.0	8.5	10.5
17A		1.0	4.5	5.5
18A		2.5	7.5	10.0
19A		1.0	2.0	3.0
20A		1.0	3.0	4.0
21A		1.0	3.0	4.0
22A		1.0	3.0	4.0

Table 3

Summary of Laboratory Tests on Clay Borrow Samples
Rosenbaum Quarry, Town of Dunkirk, Dane County, WI
Stoughton City Landfill Cap

Borrow Area	Test Pit	Depth, ft	Natural Moisture Content, %	Liquid Limit (LL), %	Plasticity Index (PI), %	P200 Content, %	5 Micron Clay Content, %	USCS Symbol	Max Density / Opt M.C.	Hydraulic Conductivity, cm/sec (1)
Project Requirements			--	>25	>10	>50	--	CL/CH	--	<1E-07
A	1A	1.0	28.7	43	22	96.4	24.2	CL	110 PCF	9.8E-09
A	1A	3.0	27.1	44	23	83.5	23.0	CL	@ 16%	@ 95% C
A	2A	1.0	27.4	51	28	95.4	23.9	CH		
A	2A	6.5	26.4	48	27	93.3	24.4	CL		
A	3A	6.0	33.1	48	28	98.8	32.9	CL		
A	3A	9.0	27.7	48	29	99.1	29.2	CL		
A	4A	2.0	27.5	53	31	99.3	33.7	CH	107 PCF	6.6E-09
A	4A	3.5	27.2	48	28	99.4	28.3	CL	@ 17%	@ 95% C
A	5A	2.0	26.9	56	33	98.8	28.5	CH		
A	5A	3.0	36.4	49	29	99.5	31.6	CL		
D	6A	3.0	30.7	49	30	99.1	41.3	CL		
D	6A	8.0	30.2	50	29	99.2	24.0	CL		
C	7A	5.0	27.1	46	28	99.1	24.3	CL		
C	7A	7.0	31.2	48	28	99.0	28.6	CL		
C	8A	4.0	27.2	47	29	98.6	30.8	CL		
C	8A	10.0	30.3	49	31	98.9	27.9	CL		
B	9A	3.0	26.4	48	28	98.9	33.5	CL		
B	9A	4.0	26.0	48	29	99.1	31.5	CL		

Table 3

Summary of Laboratory Tests on Clay Borrow Samples
Rosenbaum Quarry, Town of Dunkirk, Dane County, WI
Stoughton City Landfill Cap

Borrow Area	Test Pit	Depth, ft	Natural Moisture Content, %	Liquid Limit (LL), %	Plasticity Index (PI), %	P200 Content, %	5 Micron Clay Content, %	USCS Symbol	Max Density / Opt M.C.	Hydraulic Conductivity, cm/sec (1)
B	10A	2.0	22.6	46	26	98.9	33.4	CL		
B	10A	3.0	30.1	47	26	98.9	33.7	CL		
E	11A	3.0	29.0	50	27	99.3	33.6	CL		
E	11A	5.0	27.9	47	26	98.5	30.6	CL		
E	12A	3.0	31.7	49	28	98.8	32.7	CL		
E	12A	8.0	31.9	48	28	99.3	30.5	CL		
F	13A	3.0	30.3	49	28	99.0	34.4	CL		
F	13A	4.5	28.7	49	25	98.9	30.6	CL		
F	14A	4.0	29.2	49	27	99.2	30.7	CL		
F	14A	8.0	29.0	45	28	99.2	28.5	CL		
G	23A	3.0	29.2	47	26	99.0	35.0	CL		
G	23A	6.0	28.7	45	25	98.7	35.0	CL		
Stockpile	1AA	stockpile	28.5	46	26	97.7	35.1	CL	106 PCF	9.4E-09
Stockpile	4AA	stockpile	27.1	46	26	99.0	32.8	CL	@ 18%	@ 95% C
Minimum			*22.6*	*43.0*	*22.0*	*83.5*	*23.0*	*CL*	*106.0*	*6.6E-09*
Maximum			*36.4*	*56.0*	*33.0*	*99.5*	*41.3*	*CH*	*110.0*	*9.8E-09*
Average			*28.8*	*48.0*	*27.6*	*98.1*	*30.6*	*CL*	*107.7*	*8.5E-09* (2)
Std Dev			*2.50*	*2.49*	*2.21*	*2.96*	*4.18*			
Project Requirements			**- -**	**>25**	**>10**	**>50**	**- -**	**CL/CH**	**- -**	**<1E-07**

Note: (1) "Hydraulic conductivity" is used interchangeably with "permeability".
(2) Average value for permeability is the geometric mean, rather than the arithmetic mean.

APPENDIX A
LOGS OF TEST PITS (25)
UNIFIED SOIL CLASSIFICATION SYSTEM
LOG OF TEST BORING - GENERAL NOTES

CGC Inc.

LOG OF SOIL TEST PIT

Project: Stoughton Landfill Borrow
Site Rosenbaum Quarry
Location: Stoughton, Wisconsin

Pit No. 1A
Surface Elevation 899.0
Job No. C98024
Sheet 1 of 1

3011 PERRY STREET, MADISON, WIS. 53713 (608) 288-4100, FAX (608) 288-7887

SAMPLE						VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES				
No.	TYPE	Rec (in.)	Moist	N	Depth (ft)		qu (qa) (tsf)	W	LL	PL	Probe in.
1A						Brown Lean CLAY, Trace Fine Sand (CL)					
						Some 4 in. thick topsoil seams (FILL)					
1A											
					5	Brown SAND and GRAVEL (SP/GP)					
						End Test Pit at 6 ft					
					10						
					15						
					20						

WATER LEVEL OBSERVATIONS

While Drilling ▽ NW Upon Completion of Drilling
Time After Drilling
Depth to Water ▼
Depth to Cave in

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start 4/3/98 End 4/3/98
Driller Chief Rig
Logger DWA Editor WWW
Equip. Used: BACKHOE

CGC Inc.

LOG OF SOIL TEST PIT

Project: Stoughton Landfill Borrow
Site Rosenbaum Quarry
Location: Stoughton, Wisconsin

Pit No. 1AA
Surface Elevation -
Job No. C98024
Sheet 1 of 1

3011 PERRY STREET, MADISON, WIS. 53713 (608) 288-4100, FAX (608) 288-7887

SAMPLE No.	TYPE	Rec (in.)	Moist	N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES qu (qa) (tsf)	W	LL	PL	Probe in.
1AA						Brown Lean CLAY, Trace Fine Sand (CL) STOCKPILE SAMPLES					
						Samples shovel dug to a depth of 3 ft into sidewall					
					5						
					10						
					15						
					20						

WATER LEVEL OBSERVATIONS

While Drilling ▽ NW Upon Completion of Drilling _____
Time After Drilling _____
Depth to Water _____ ▼
Depth to Cave in _____

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start 4/3/98 End 4/3/98
Driller _____ Chief _____ Rig _____
Logger DWA Editor WWW
Equip. Used: Shovel Dug

CGC Inc.

LOG OF SOIL TEST PIT

Project: Stoughton Landfill Borrow
Site Rosenbaum Quarry
Location: Stoughton, Wisconsin

Pit No. 2A
Surface Elevation 896.0
Job No. C98024
Sheet 1 of 1

3011 PERRY STREET, MADISON, WIS. 53713 (608) 288-4100, FAX (608) 288-7887

SAMPLE No.	TYPE	Rec (in.)	Moist	N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	qu (qa) (tsf)	W	LL	PL	Probe in.
						Brown Fat CLAY, Trace Fine Sand (CH)					
2A						Black TOPSOIL					
2A					5						
						Brown Lean CLAY, Little Fine Sand (CL)					
2A						Brown SAND and GRAVEL (SP/GP)					
						End Test Pit at 7.5 ft					
					10						
					15						
					20						

WATER LEVEL OBSERVATIONS

While Drilling ▽ NW Upon Completion of Drilling
Time After Drilling
Depth to Water ▼
Depth to Cave in

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start 4/3/98 End 4/3/98
Driller Chief Rig
Logger DWA Editor WWW
Equip. Used: BACKHOE

CGC Inc.

LOG OF SOIL TEST PIT

Project: Stoughton Landfill Borrow
Site Rosenbaum Quarry
Location: Stoughton, Wisconsin

Pit No. 3A
Surface Elevation 898.0
Job No. C98024
Sheet 1 of 1

3011 PERRY STREET, MADISON, WIS. 53713 (608) 288-4100, FAX (608) 288-7887

SAMPLE						VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES				
No.	TYPE	Rec (in.)	Moist	N	Depth (ft)		qu (qa) (tsf)	W	LL	PL	Probe in.
3A					0	Black TOPSOIL					
					5						
3A						Brown Lean CLAY, Trace Fine Sand (CL)					
3A					10	Brown SAND and GRAVEL (SP/GP)					
						End Test Pit at 11 ft					
					15						
					20						

WATER LEVEL OBSERVATIONS

While Drilling ▽ NW Upon Completion of Drilling
Time After Drilling
Depth to Water ▼
Depth to Cave in

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start 4/3/98 End 4/3/98
Driller Chief Rig
Logger DWA Editor WWW
Equip. Used: BACKHOE

CGC Inc.

LOG OF SOIL TEST PIT

Project: Stoughton Landfill Borrow Site Rosenbaum Quarry
Location: Stoughton, Wisconsin

Pit No. 4A
Surface Elevation 899.0
Job No. C98024
Sheet 1 of 1

3011 PERRY STREET, MADISON, WIS. 53713 (608) 288-4100, FAX (608) 288-7887

SAMPLE						VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES				
No.	TYPE	Rec (in.)	Moist	N	Depth (ft)		qu (qa) (tsf)	W	LL	PL	Probe in.
					0	Black Topsoil					
4A						Brown Fat to Lean CLAY, Trace Fine Sand (CL/CH)					
4A											
					4	Brown SAND and GRAVEL (SP/GP)					
					5	End Test Pit at 5 ft					
					10						
					15						
					20						

WATER LEVEL OBSERVATIONS

While Drilling ▽ NW Upon Completion of Drilling
Time After Drilling
Depth to Water ▼
Depth to Cave in

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start 4/3/98 End 4/3/98
Driller Chief Rig
Logger DWA Editor WWW
Equip. Used: BACKHOE

CGC Inc.

LOG OF SOIL TEST PIT

Project: Stoughton Landfill Borrow Site Rosenbaum Quarry
Location: Stoughton, Wisconsin

Pit No. 4AA
Surface Elevation -
Job No. C98024
Sheet 1 of 1

3011 PERRY STREET, MADISON, WIS. 53713 (608) 288-4100, FAX (608) 288-7887

SAMPLE						VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES				
No.	TYPE	Rec (in.)	Moist	N	Depth (ft)		qu (qa) (tsf)	W	LL	PL	Probe in.
4AA						Brown Lean CLAY, Trace Fine Sand (CL) STOCKPILE SAMPLES					
						Samples shovel dug to a depth of 3 ft into sidewall					
					5						
					10						
					15						
					20						

WATER LEVEL OBSERVATIONS

While Drilling ▽ NW Upon Completion of Drilling
Time After Drilling
Depth to Water
Depth to Cave in

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start 4/3/98 End 4/3/98
Driller Chief Rig
Logger DWA Editor WWW
Equip. Used: Shovel Dug

CGC Inc.

LOG OF SOIL TEST PIT

Project: Stoughton Landfill Borrow
Site Rosenbaum Quarry
Location: Stoughton, Wisconsin

Pit No. 5A
Surface Elevation 902.0
Job No. C98024
Sheet 1 of 1

3011 PERRY STREET, MADISON, WIS. 53713 (608) 288-4100, FAX (608) 288-7887

SAMPLE						VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES				
No.	TYPE	Rec (in.)	Moist	N	Depth (ft)		qu (qa) (tsf)	W	LL	PL	Probe in.
					0	Black Topsoil					
5A						Brown Fat to Lean CLAY, Trace Fine Sand (CL/CH)					
5A											
					5	Brown SAND and GRAVEL (SP/GP)					
						End Test Pit at 5 ft					
					10						
					15						
					20						

WATER LEVEL OBSERVATIONS

While Drilling ▽ NW Upon Completion of Drilling
Time After Drilling
Depth to Water ▼
Depth to Cave in

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start 4/3/98 End 4/3/98
Driller Chief Rig
Logger DWA Editor WWW
Equip. Used: BACKHOE

CGC Inc.

LOG OF SOIL TEST PIT

Project: Stoughton Landfill Borrow
Site Rosenbaum Quarry
Location: Stoughton, Wisconsin

Pit No. 6A
Surface Elevation 895.0
Job No. C98024
Sheet 1 of 1

3011 PERRY STREET, MADISON, WIS. 53713 (608) 288-4100, FAX (608) 288-7887

SAMPLE No.	TYPE	Rec (in.)	Moist	N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	qu (qa) (tsf)	W	LL	PL	Probe in.
6A						Brown Fat to Lean CLAY, Trace Fine Sand (CL/CH) (Highly Mottled)					
					5						
6A											
					10						
						Brown SAND and GRAVEL (SP-GP)					
						End Test Pit at 13.5 ft					
					15						
					20						

WATER LEVEL OBSERVATIONS

While Drilling ▽ NW Upon Completion of Drilling
Time After Drilling
Depth to Water ▼
Depth to Cave in

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start 4/3/98 End 4/3/98
Driller Chief Rig
Logger DWA Editor WWW
Equip. Used: BACKHOE

CGC Inc.

LOG OF SOIL TEST PIT

Project: Stoughton Landfill Borrow
Site Rosenbaum Quarry
Location: Stoughton, Wisconsin

Pit No. 7A
Surface Elevation 896.0
Job No. C98024
Sheet 1 of 1

3011 PERRY STREET, MADISON, WIS. 53713 (608) 288-4100, FAX (608) 288-7887

SAMPLE						VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES				
No.	TYPE	Rec (in.)	Moist	N	Depth (ft)		qu (qa) (tsf)	W	LL	PL	Probe in.
						Black Topsoil					
7A					5	Brown Lean CLAY, Trace Fine Sand (CL)					
7A						Brown SAND and GRAVEL (SP/GP)					
					10	End Test Pit at 9 ft					
					15						
					20						

WATER LEVEL OBSERVATIONS

While Drilling ▽ NW Upon Completion of Drilling
Time After Drilling
Depth to Water ▼
Depth to Cave in

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start 4/3/98 End 4/3/98
Driller Chief Rig
Logger DWA Editor WWW
Equip. Used: BACKHOE

CGC Inc.

LOG OF SOIL TEST PIT

Project: Stoughton Landfill Borrow Site Rosenbaum Quarry
Location: Stoughton, Wisconsin

Pit No. 8A
Surface Elevation 895.0
Job No. C98024
Sheet 1 of 1

3011 PERRY STREET, MADISON, WIS. 53713 (608) 288-4100, FAX (608) 288-7887

SAMPLE						VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES				
No.	TYPE	Rec (in.)	Moist	N	Depth (ft)		qu (qa) (tsf)	W	LL	PL	Probe in.
						Brown Lean CLAY, Trace Fine Sand (CL)					
8A					5	Black Topsoil					
						Brown Lean CLAY, Trace Fine Sand (CL)					
8A					10						
						Brown SAND and GRAVEL (SP/GP)					
					15	End Test Pit at 14 ft					
					20						

WATER LEVEL OBSERVATIONS

While Drilling ▽ NW Upon Completion of Drilling
Time After Drilling
Depth to Water ▼
Depth to Cave in

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start 4/3/98 End 4/3/98
Driller Chief Rig
Logger DWA Editor WWW
Equip. Used: BACKHOE

CGC Inc.

LOG OF SOIL TEST PIT

Project: Stoughton Landfill Borrow
Site Rosenbaum Quarry
Location: Stoughton, Wisconsin

Pit No. 9A
Surface Elevation 899.0
Job No. C98024
Sheet 1 of 1

3011 PERRY STREET, MADISON, WIS. 53713 (608) 288-4100, FAX (608) 288-7887

SAMPLE						VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES				
No.	TYPE	Rec (in.)	Moist	N	Depth (ft)		qu (qa) (tsf)	W	LL	PL	Probe in.
					0	Black Topsoil					
						Brown Lean CLAY, Trace Fine Sand (CL)					
9A											
9A						Brown SAND and GRAVEL (SP/GP)					
					5	End Test Pit at 5 ft					
					10						
					15						
					20						

WATER LEVEL OBSERVATIONS

While Drilling ▽ NW Upon Completion of Drilling _____
Time After Drilling _____
Depth to Water _____ ▼
Depth to Cave in _____

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start 4/5/98 End 4/5/98
Driller _____ Chief _____ Rig _____
Logger DWA Editor WWW
Equip. Used: HAND AUGER

CGC Inc.

LOG OF SOIL TEST PIT

Project: Stoughton Landfill Borrow
Site Rosenbaum Quarry
Location: Stoughton, Wisconsin

Pit No. 10A
Surface Elevation 905.0
Job No. C98024
Sheet 1 of 1

3011 PERRY STREET, MADISON, WIS. 53713 (608) 288-4100, FAX (608) 288-7887

SAMPLE						VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES				
No.	TYPE	Rec (in.)	Moist	N	Depth (ft)		qu (qa) (tsf)	W	LL	PL	Probe in.
					0	Black Topsoil					
10A						Brown Lean CLAY, Trace Fine Sand (CL)					
10A											
						Brown SAND and GRAVEL (SP/GP)					
					5	End Test Pit at 4.5 ft					
					10						
					15						
					20						

WATER LEVEL OBSERVATIONS

While Drilling ▽ NW Upon Completion of Drilling
Time After Drilling
Depth to Water ▼
Depth to Cave in

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start 4/3/98 End 4/3/98
Driller Chief Rig
Logger DWA Editor WWW
Equip. Used: BACKHOE

CGC Inc.

LOG OF SOIL TEST PIT

Project: Stoughton Landfill Borrow
Site Rosenbaum Quarry
Location: Stoughton, Wisconsin

Pit No. 11A
Surface Elevation 907.0
Job No. C98024
Sheet 1 of 1

3011 PERRY STREET, MADISON, WIS. 53713 (608) 288-4100, FAX (608) 288-7887

SAMPLE						VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES				
No.	TYPE	Rec (in.)	Moist	N	Depth (ft)		qu (qa) (tsf)	W	LL	PL	Probe in.
						Brown Fine to Lean CLAY, Trace Fine Sand (CL/CH)					
11A											
11A					5						
						Brown SAND and GRAVEL (SP/GP)					
						End Test Pit at 7 ft					
					10						
					15						
					20						

WATER LEVEL OBSERVATIONS

While Drilling ▽ NW Upon Completion of Drilling
Time After Drilling
Depth to Water ▼
Depth to Cave in

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start 4/3/98 End 4/3/98
Driller Chief Rig
Logger DWA Editor WWW
Equip. Used: BACKHOE

CGC Inc.

LOG OF SOIL TEST PIT

Project: Stoughton Landfill Borrow
Site Rosenbaum Quarry
Location: Stoughton, Wisconsin

Pit No. 12A
Surface Elevation 907.0
Job No. C98024
Sheet 1 of 1

3011 PERRY STREET, MADISON, WIS. 53713 (608) 288-4100, FAX (608) 288-7887

SAMPLE No.	TYPE	Rec (in.)	Moist	N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES qu (qa) (tsf)	W	LL	PL	Probe in.
						Black Topsoil					
12A					5	Brown Lean CLAY, Trace Fine Sand (CL)					
12A					10	Brown SAND and GRAVEL (SP/GP)					
						End Test Pit at 12 ft					
					15						
					20						

WATER LEVEL OBSERVATIONS

While Drilling ▽ NW Upon Completion of Drilling
Time After Drilling
Depth to Water ▼
Depth to Cave in

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start 4/3/98 End 4/3/98
Driller Chief Rig
Logger DWA Editor WWW
Equip. Used: BACKHOE

CGC Inc.

LOG OF SOIL TEST PIT

Project: Stoughton Landfill Borrow
Site Rosenbaum Quarry
Location: Stoughton, Wisconsin

Pit No. 13A
Surface Elevation 907.0
Job No. C98024
Sheet 1 of 1

3011 PERRY STREET, MADISON, WIS. 53713 (608) 288-4100, FAX (608) 288-7887

SAMPLE						VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES				
No.	TYPE	Rec (in.)	Moist	N	Depth (ft)		qu (qa) (tsf)	W	LL	PL	Probe in.
						Black Topsoil					
13A						Brown Lean CLAY, Trace Fine Sand (CL)					
13A					5						
						Brown SAND and GRAVEL (SP/GP)					
						End Test Pit at 7.5 ft					
					10						
					15						
					20						

WATER LEVEL OBSERVATIONS

While Drilling ▽ NW Upon Completion of Drilling
Time After Drilling
Depth to Water ▼
Depth to Cave in

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start 4/3/98 End 4/3/98
Driller Chief Rig
Logger DWA Editor WWW
Equip. Used: BACKHOE

CGC Inc.

LOG OF SOIL TEST PIT

Project: Stoughton Landfill Borrow
Site Rosenbaum Quarry
Location: Stoughton, Wisconsin

Pit No. 14A
Surface Elevation 906.0
Job No. C98024
Sheet 1 of 1

3011 PERRY STREET, MADISON, WIS. 53713 (608) 288-4100, FAX (608) 288-7887

SAMPLE No.	TYPE	Rec (in.)	Moist	N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES qu (qa) (tsf)	W	LL	PL	Probe in.
14A					5	Brown Lean CLAY, Trace Fine Sand (CL)					
14A					10	Brown SAND and GRAVEL (SP/GP)					
						End Test Pit at 11 ft					
					15						
					20						

WATER LEVEL OBSERVATIONS

While Drilling	▽ NW	Upon Completion of Drilling		
Time After Drilling				
Depth to Water				▼
Depth to Cave in				

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start 4/3/98 End 4/3/98
Driller Chief Rig
Logger DWA Editor WWW
Equip. Used: BACKHOE

CGC Inc.

LOG OF TEST BORING

Project: Stoughton Landfill Borrow
Site Rosenbaum Quarry
Location: Stoughton, Wisconsin

Boring No. 15A
Surface Elevation 901.0
Job No. C98024
Sheet 1 of 1

3011 PERRY STREET, MADISON, WIS. 53713 (608) 288-4100, FAX (608) 288-7887

SAMPLE						VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES				
No.	TYPE	Rec (in.)	Moist	N	Depth (ft)		qu (qa) (tsf)	W	LL	PL	LI
					0	Black Topsoil					
					5						
15A						Brown Lean CLAY, Trace Fine Sand (CL)					
					10						
15A						Brown SAND and GRAVEL (SP/GP)					
					15	End Test Pit at 14 ft					
					20						

WATER LEVEL OBSERVATIONS

While Drilling ▽ NW Upon Completion of Drilling
Time After Drilling
Depth to Water ▼
Depth to Cave in

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start 4/3/98 End 4/3/98
Driller Chief Rig
Logger DWA Editor WWW
Drill Method BACKHOE

CGC Inc.

LOG OF SOIL TEST PIT

Project: Stoughton Landfill Borrow
Site Rosenbaum Quarry
Location: Stoughton, Wisconsin

Pit No. 16A
Surface Elevation 904.0
Job No. C98024
Sheet 1 of 1

3011 PERRY STREET, MADISON, WIS. 53713 (608) 288-4100, FAX (608) 288-7887

SAMPLE No.	TYPE	Rec (in.)	Moist	N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES qu (qa) (tsf)	W	LL	PL	Probe in.
						Black Topsoil					
16A						Brown Lean CLAY, Trace Fine Sand (CL)					
					5						
16A											
					10						
						Brown Sand and Gravel (SP/GP)					
						End Test Pit at 11.5 ft					
					15						
					20						

WATER LEVEL OBSERVATIONS

While Drilling	NW	Upon Completion of Drilling		
Time After Drilling				
Depth to Water				
Depth to Cave in				

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start 4/3/98 End 4/3/98
Driller Chief Rig
Logger DWA Editor WWW
Equip. Used: BACKHOE

CGC Inc.

LOG OF SOIL TEST PIT

Project: Stoughton Landfill Borrow
Site Rosenbaum Quarry
Location: Stoughton, Wisconsin

Pit No. 17A
Surface Elevation 905.0
Job No. C98024
Sheet 1 of 1

3011 PERRY STREET, MADISON, WIS. 53713 (608) 288-4100, FAX (608) 288-7887

SAMPLE						VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES				
No.	TYPE	Rec (in.)	Moist	N	Depth (ft)		qu (qa) (tsf)	W	LL	PL	Probe in.
					0	Black Topsoil					
17A						Brown Lean CLAY, Trace Fine Sand (CL)					
17A					5	Brown SAND and GRAVEL (SP/GP)					
						End Test Pit at 6.5 ft					
					10						
					15						
					20						

WATER LEVEL OBSERVATIONS

While Drilling ▽ NW Upon Completion of Drilling
Time After Drilling
Depth to Water ▼
Depth to Cave in

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start 4/3/98 End 4/3/98
Driller Chief Rig
Logger DWA Editor WWW
Equip. Used: BACKHOE

CGC Inc.

LOG OF SOIL TEST PIT

Project: Stoughton Landfill Borrow
Site Rosenbaum Quarry
Location: Stoughton, Wisconsin

Pit No. 18A
Surface Elevation 903.0
Job No. C98024
Sheet 1 of 1

3011 PERRY STREET, MADISON, WIS. 53713 (608) 288-4100, FAX (608) 288-7887

SAMPLE No.	TYPE	Rec (in.)	Moist	N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES qu (qa) (tsf)	W	LL	PL	Probe in.
						Black Topsoil					
18A						Brown Lean CLAY, Trace Fine Sand (CL)					
18A					5						
					10	Brown SAND and GRAVEL (SP/GP)					
						End Test Pit at 11 ft					
					15						
					20						

WATER LEVEL OBSERVATIONS

While Drilling ▽ NW Upon Completion of Drilling
Time After Drilling
Depth to Water ▼
Depth to Cave in

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start 4/3/98 End 4/3/98
Driller Chief Rig
Logger DWA Editor WWW
Equip. Used: BACKHOE

CGC Inc.

LOG OF TEST BORING

Project: Stoughton Landfill Borrow
Site Rosenbaum Quarry
Location: Stoughton, Wisconsin

Boring No. 19A
Surface Elevation 905.0
Job No. C98024
Sheet 1 of 1

3011 PERRY STREET, MADISON, WIS. 53713 (608) 288-4100, FAX (608) 288-7887

SAMPLE						VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES				
No.	TYPE	Rec (in.)	Moist	N	Depth (ft)		qu (qa) (tsf)	W	LL	PL	LI
					0	Black Topsoil					
19A						Brown Lean CLAY, Trace Fine Sand (CL)					
						Brown SAND and GRAVEL (SP/GP)					
					5	End Test Pit at 4 ft					
					10						
					15						
					20						

WATER LEVEL OBSERVATIONS

While Drilling ▽ NW Upon Completion of Drilling
Time After Drilling
Depth to Water ▼
Depth to Cave in

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start 4/3/98 End 4/3/98
Driller Chief Rig
Logger DWA Editor WWW
Drill Method BACKHOE

CGC Inc.

LOG OF SOIL TEST PIT

Project: Stoughton Landfill Borrow
Site Rosenbaum Quarry
Location: Stoughton, Wisconsin

Pit No. 20A
Surface Elevation 905.0
Job No. C98024
Sheet 1 of 1

3011 PERRY STREET, MADISON, WIS. 53713 (608) 288-4100, FAX (608) 288-7887

SAMPLE						VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES				
No.	TYPE	Rec (in.)	Moist	N	Depth (ft)		qu (qa) (tsf)	W	LL	PL	Probe in.
					0	Black Topsoil					
						Brown Lean CLAY, Trace Fine Sand (CL)					
						Brown SAND and GRAVEL (SP/GP)					
					5	End Test Pit at 5 ft					
					10						
					15						
					20						

WATER LEVEL OBSERVATIONS

While Drilling ▽ NW Upon Completion of Drilling _____
Time After Drilling _____
Depth to Water _____ ▼
Depth to Cave in _____

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start 4/3/98 End 4/3/98
Driller _____ Chief _____ Rig _____
Logger DWA Editor WWW
Equip. Used: BACKHOE

LOG OF TEST BORING

CGC Inc.

Project: Stoughton Landfill Borrow
Site Rosenbaum Quarry
Location: Stoughton, Wisconsin

Boring No. 21A
Surface Elevation 908.0
Job No. C98024
Sheet 1 of 1

3011 PERRY STREET, MADISON, WIS. 53713 (608) 288-4100, FAX (608) 288-7887

SAMPLE						VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES				
No.	TYPE	Rec (in.)	Moist	N	Depth (ft)		qu (qa) (tsf)	W	LL	PL	LI
					0	Black Topsoil					
						Brown Lean CLAY, Trace Fine Sand (CL)					
						Brown SAND and GRAVEL (SP/GP)					
					5	End Test Pit at 5 ft					
					10						
					15						
					20						

WATER LEVEL OBSERVATIONS

While Drilling ▽ NW Upon Completion of Drilling
Time After Drilling
Depth to Water ▼
Depth to Cave in

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start 4/3/98 End 4/3/98
Driller Chief Rig
Logger DWA Editor WWW
Drill Method BACKHOE

CGC Inc.

LOG OF SOIL TEST PIT

Project: Stoughton Landfill Borrow
Site Rosenbaum Quarry
Location: Stoughton, Wisconsin

Pit No. 22A
Surface Elevation 909.0
Job No. C98024
Sheet 1 of 1

3011 PERRY STREET, MADISON, WIS. 53713 (608) 288-4100, FAX (608) 288-7887

SAMPLE						VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES				
No.	TYPE	Rec (in.)	Moist	N	Depth (ft)		qu (qa) (tsf)	W	LL	PL	Probe in.
					0	Black Topsoil					
						Brown Lean CLAY, Trace Fine Sand (CL)					
22A											
22A						Brown SAND and GRAVEL (SP/GP)					
					5						
						End Test Pit at 5 ft					
					10						
					15						
					20						

WATER LEVEL OBSERVATIONS

While Drilling ▽ NW Upon Completion of Drilling
Time After Drilling
Depth to Water ▼
Depth to Cave in

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start 4/3/98 End 4/3/98
Driller Chief Rig
Logger DWA Editor WWW
Equip. Used: BACKHOE

CGC Inc.

LOG OF SOIL TEST PIT

Project: Stoughton Landfill Borrow
Site Rosenbaum Quarry
Location: Stoughton, Wisconsin

Pit No. 23A
Surface Elevation 908.0
Job No. C98024
Sheet 1 of 1

3011 PERRY STREET, MADISON, WIS. 53713 (608) 288-4100, FAX (608) 288-7887

SAMPLE						VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES				
No.	TYPE	Rec (in.)	Moist	N	Depth (ft)		qu (qa) (tsf)	W	LL	PL	Probe in.
					0	Black Topsoil					
23A						Brown Lean CLAY, Trace Fine Sand (CL)					
					5						
23A						Brown SAND and GRAVEL (SP/GP)					
						End Test Pit at 8 ft					
					10						
					15						
					20						

WATER LEVEL OBSERVATIONS

While Drilling ▽ NW Upon Completion of Drilling
Time After Drilling
Depth to Water ▼
Depth to Cave in

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start 4/3/98 End 4/3/98
Driller Chief Rig
Logger DWA Editor WWW
Equip. Used: BACKHOE

UNIFIED SOIL CLASSIFICATION SYSTEM

COARSE-GRAINED SOILS

(More than half of material is larger than No. 200 seive size.)

GRAVELS More than half of coarse fraction larger than No. 4 sieve size	**Clean Gravels** (Little or no fines)	
	GW	Well-graded gravels, gravel-sand mixtures, little or no fines
	GP	Poorly graded gravels, gravel-sand mixtures, little or no fines
	Gravels with Fines (Appreciable amount of fines)	
	GM^{d}_{u}	Silty gravels, gravel-sand-silt mixtures
	GC	Clayey gravels, gravel-sand-clay mixtures
SANDS More than half of coarse fraction smaller than No. 4 sieve size	**Clean Sands** (Little or no fines)	
	SW	Well-graded sands, gravelly sands, little or no fines
	SP	Poorly graded sands, gravelly sands, little or no fines
	Sands with Fines (Appreciable amount of fines)	
	SM^{d}_{u}	Silty sands, sand-silt mixtures
	SC	Clayey sands, sand-clay mixtures

FINE-GRAINED SOILS

(More than half of material is smaller than No. 200 sieve.)

SILTS AND CLAYS Liquid limit less than 50%	ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity
	CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
	OL	Organic silts and organic silty clays of low plasticity
SILTS AND CLAYS Liquid limit greater than 50%	MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
	CH	Inorganic clays of high plasticity, fat clays
	OH	Organic clays of medium to high plasticity, organic silts
HIGHLY ORGANIC SOILS	PT	Peat and other highly organic soils

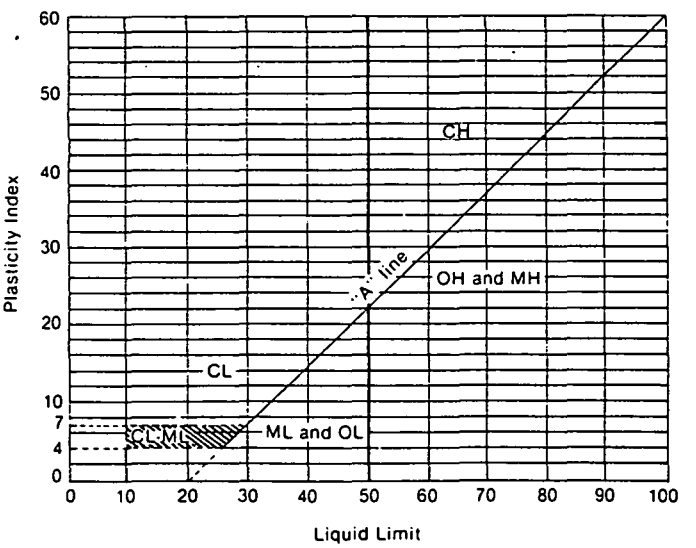
LABORATORY CLASSIFICATION CRITERIA

GW	$C_u = \frac{D_{60}}{D_{10}}$ greater than 4; $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3	
GP	Not meeting all gradation requirements for GW	
GM	Atterberg limits below "A" line or P.I. less than 4	Above "A" line with P.I. between 4 and 7 are borderline cases requiring use of dual symbols
GC	Atterberg limits above "A" line with P.I. greater than 7	
SW	$C_u = \frac{D_{60}}{D_{10}}$ greater than 6; $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3	
SP	Not meeting all gradation requirements for SW	
SM	Atterberg limits below "A" line or P.I. less than 4	Limits plotting in hatched zone with P.I. between 4 and 7 are borderline cases requiring use of dual symbols.
SC	Atterberg limits above "A" line with P.I. greater than 7	

Determine percentages of sand and gravel from grain-size curve. Depending on percentage of fines (fraction smaller than No. 200 sieve size), coarse-grained soils are classified as follows:

Less than 5 per cent	GW, GP, SW, SP
More than 12 per cent	GM, GC, SM, SC
5 to 12 per cent	Borderline cases requiring dual symbols

PLASTICITY CHART



For classification of fine-grained soils and fine fraction of coarse-grained soils.

Atterberg Limits plotting in hatched area are borderline classifications requiring use of dual symbols.

Equation of A-line: PI = 0.73 (LL - 20)

CGC, Inc.

LOG OF TEST BORING
General Notes

Descriptive Soil Classification

GRAIN SIZE TERMINOLOGY

Soil Fraction	Particle Size	U.S. Standard Sieve Size
Boulders	Larger than 12"	Larger than 12"
Cobbles	3" to 12"	3" to 12"
Gravel: Coarse	3/4" to 3"	3/4" to 3"
Fine	4.76 mm to 3/4"	#4 to 3/4"
Sand: Coarse	2.00 mm to 4.76 mm	#10 to #4
Medium	0.42 to mm to 2.00 mm	#40 to #10
Fine	0.074 mm to 0.42 mm	#200 to #40
Silt	0.005 mm to 0.074 mm	Smaller than #200
Clay	Smaller than 0.005 mm	Smaller than #200

Plasticity characteristics differentiate between silt and clay.

GENERAL TERMINOLOGY

Physical Characteristics
Color, moisture, grain shape, fineness, etc.
Major Constituents
Clay, silt, sand, gravel
Structure
Laminated, varved, fibrous, stratified, cemented, fissured, etc.
Geologic Origin
Glacial, alluvial, eolian, residual, etc.

RELATIVE DENSITY

Term	"N" Value
Very Loose	0-4
Loose	4-10
Medium Dense	10-30
Dense	30-50
Very Dense	Over 50

RELATIVE PROPORTIONS OF OF COHESIONLESS SOILS

Proportional Term	Defining Range by Percentage of Weight
Trace	0%-5%
Little	5%-12%
Some	12%-35%
And	35%-50%

CONSISTENCY

Term	q_u-tons/sq. ft.
Very Soft	0.0 to 0.25
Soft	0.25 to 0.50
Medium	0.50 to 1.0
Stiff	1.0 to 2.0
Very Stiff	2.0 to 4.0
Hard	Over 4.0

ORGANIC CONTENT BY COMBUSTION METHOD

Soil Description	Loss on Ignition
Non Organic	Less than 4%
Organic Silt/Clay	4-12%
Sedimentary Peat	12-50%
Fibrous and Woody Peat	More than 50%

PLASTICITY

Term	Plastic Index
None to Slight	0-4
Slight	5-7
Medium	8-22
High to Very High	Over 22

The penetration resistance, N, is the summation of the number of blows required to effect two successive 6" penetrations of the 2" split-barrel sampler. The sampler is driven with a 140 lb. weight falling 30" and is seated to a depth of 6" before commencing the standard penetration test.

SYMBOLS

DRILLING AND SAMPLING

CS--Continuous Sampling
RC--Rock Coring: Size AW, BW, NW, 2"W
RQD--Rock Quality Designator
RB--Rock Bit
FT--Fish Tail
DC--Drove Casing
C--Casing: Size 2 1/2", NW, 4", HW
CW--Clear Water
DM--Drilling Mud
HSA--Hollow Stem Auger
FA--Flight Auger
HA--Hand Auger
COA--Clean-Out Auger
SS--2" Diameter Split-Barrel Sample
2ST--2" Diameter Thin-Walled Tube Sample
3ST--3" Diameter Thin-Walled Tube Sample
PT--3" Diameter Piston Tube Sample
AS--Auger Sample
WS--Wash Sample
PTS--Peat Sample
PS--Pitcher Sample
NR--No Recovery
S--Sounding
PMT--Borehole Pressuremeter Test
VS--Vane Shear Test
WPT--Water Pressure Test

LABORATORY TESTS

q_a--Penetrometer Reading, tons/sq. ft.
q_u--Unconfined Strength, tons/sq. ft.
W--Moisture Content, %
LL--Liquid Limit, %
PL--Plastic Limit, %
SL--Shrinkage Limit, %
LI--Loss on Ignition, %
D--Dry Unit Weight, lbs/cu. ft.
pH--Measure of Soil Alkalinity or Acidity
FS--Free Swell, %

WATER LEVEL MEASUREMENT

∇ --Water Level at time shown
NW--No Water Encountered
WD--While Drilling
BCR--Before Casing Removal
ACR--After Casing Removal
CW--Caved and Wet
CM--Caved and Moist

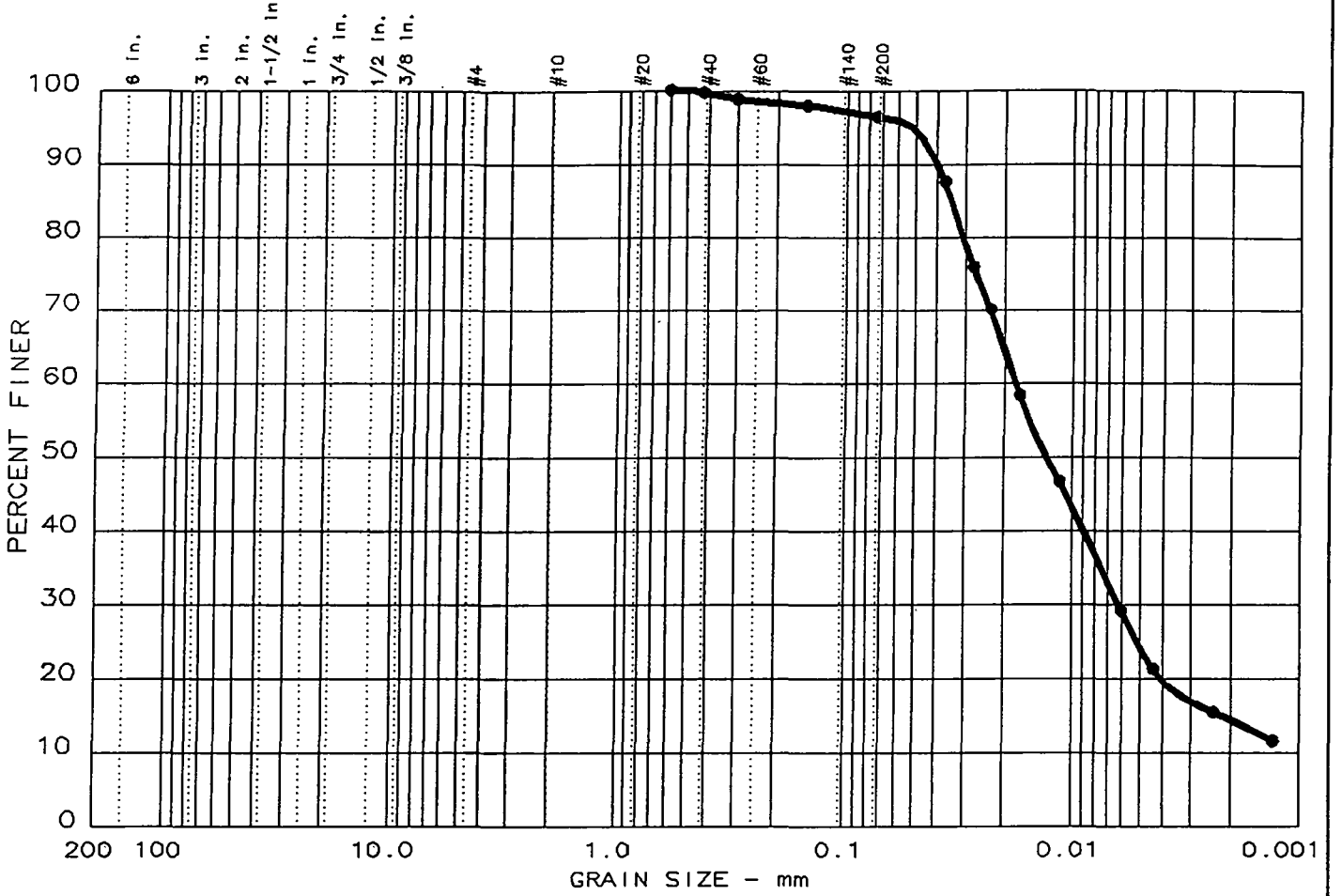
Note: Water level measurements shown on the boring logs represent conditions at the time indicated and may not reflect static levels, especially in cohesive soils.

APPENDIX B

LABORATORY TEST RESULTS

- GRAIN SIZE DISTRIBUTION CURVES,
  ATTERBERG LIMITS & MOISTURE CONTENTS
- STANDARD PROCTOR TESTS
- FALLING HEAD PERMEABILITY TESTS
- COMPACTION VS PERMEABILITY CURVES

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	1	0.0	0.0	3.6	72.2	24.2

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	43	22			0.013	0.006	0.0022			

MATERIAL DESCRIPTION	USCS	AASHTO
● Dark Brown Lean CLAY, Trace Fine Sand Natural Moisture Content = 28.7%	CL	A-7-6

Project No.: 98024
Project: Stoughton Landfill Clay Borrow Site
● Location: Test Pit:# 1A @ 1.0 ft Rosenbaum Site

Date: April 15, 1998

GRAIN SIZE DISTRIBUTION TEST REPORT

CGC, Inc.

Remarks:

Tested By: DWA

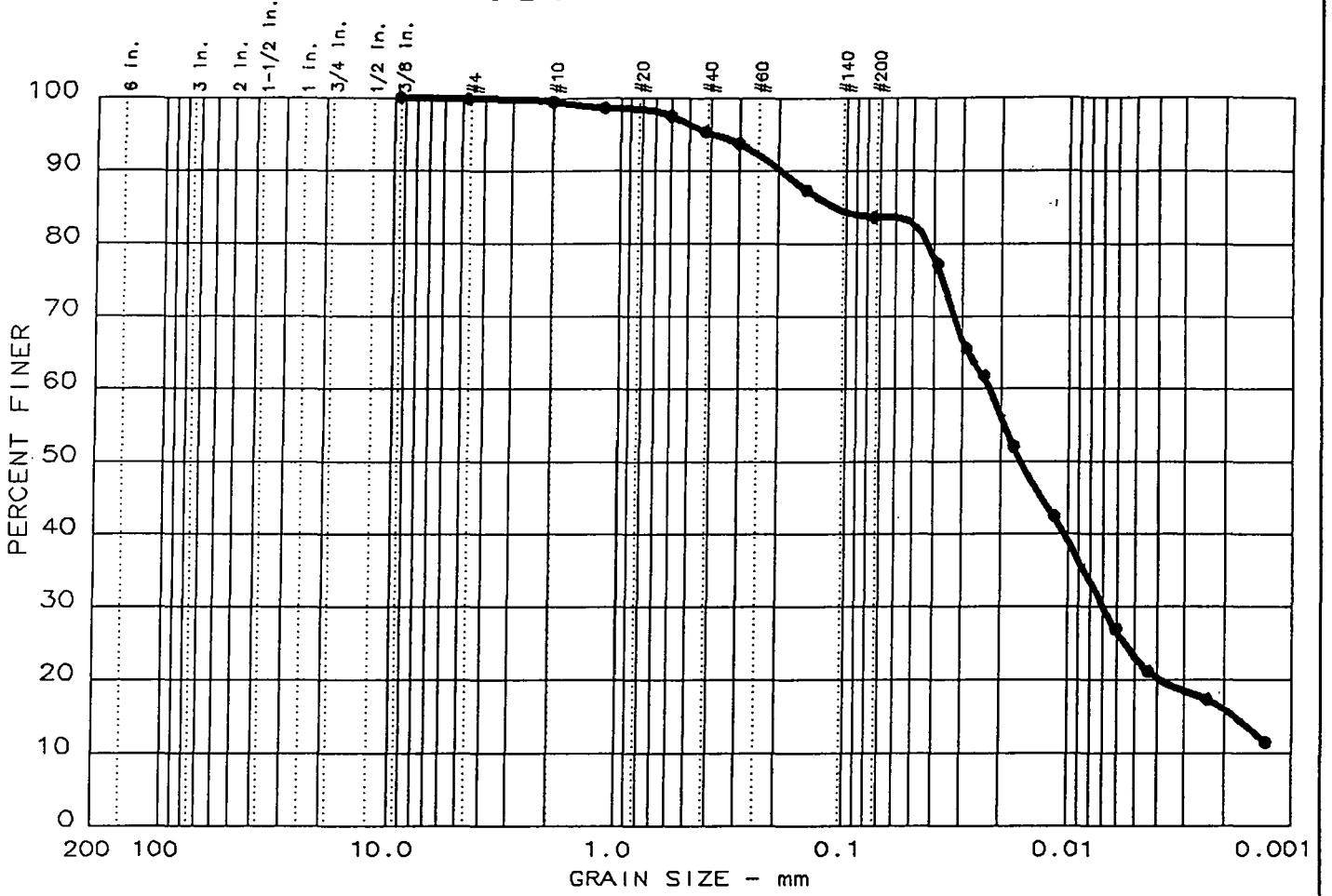
Input By : DWA

Checked By : WWW

Approved By : WWW

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	2	0.0	0.1	16.4	60.5	23.0

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	44	23	0.114		0.016	0.007	0.0018			

MATERIAL DESCRIPTION	USCS	AASHTO
● Dark Brown Lean CLAY, Some Sand Natural Moisture Content = 27.1%	CL	A-7-6

Project No.: 98024
Project: Stoughton Landfill Clay Borrow Site
● Location: Test Pit:# 1A @ 3.0 ft Rosenbaum Site

Date: April 15, 1998

GRAIN SIZE DISTRIBUTION TEST REPORT

CGC, Inc.

Remarks:

Tested By: DWA

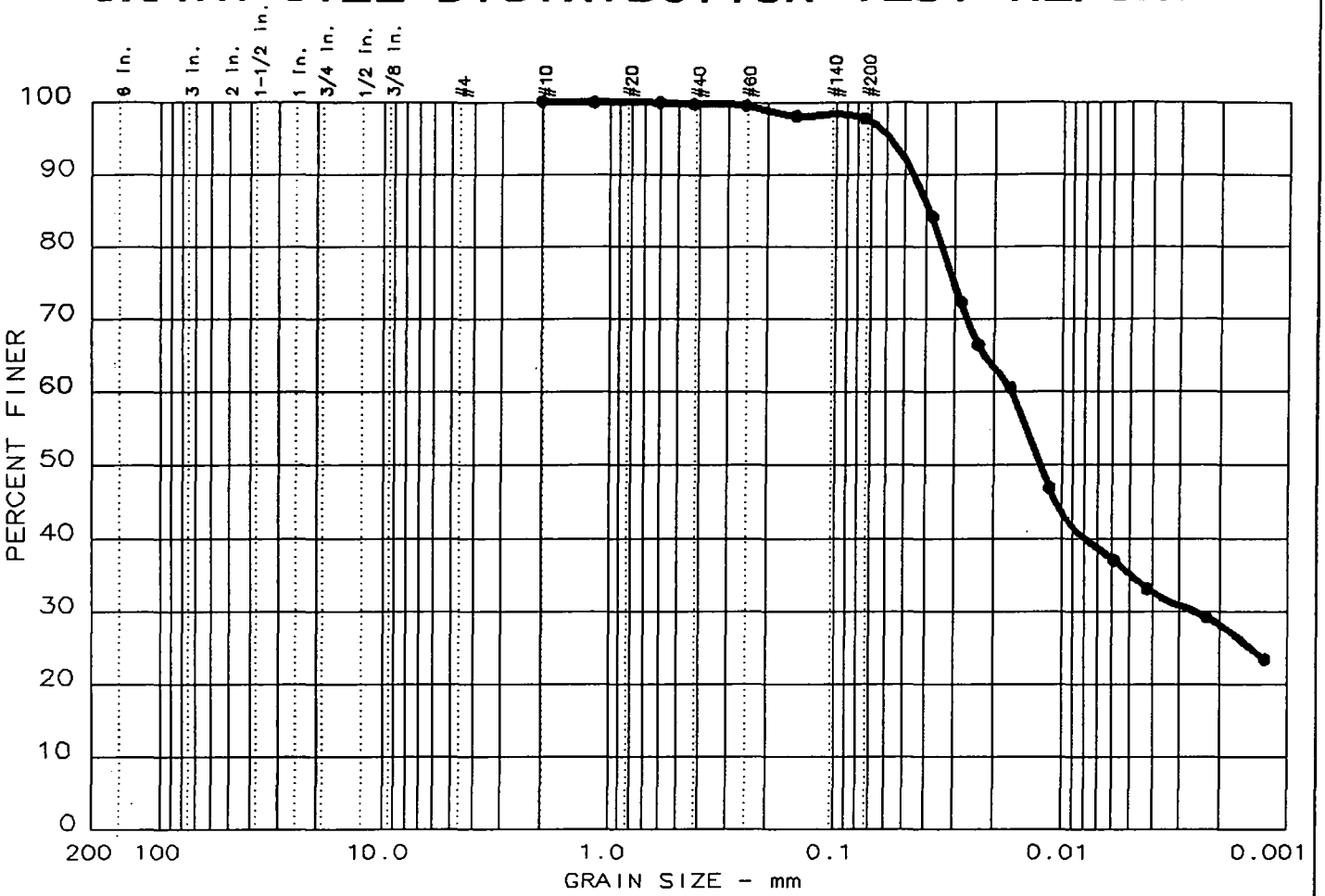
Input By : DWA

Checked By : WWW

Approved By : WWW

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	11	0.0	0.0	2.3	62.6	35.1

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	46	26			0.012	0.003				

MATERIAL DESCRIPTION	USCS	AASHTO
● Brown Lean CLAY, Trace Sand Natural Moisture Content = 28.5%	CL	A-7-6

Project No.: 98024
Project: Stoughton Landfill Clay Borrow Site
● Location: Stock Pile Sample:#1AA Rosenbaum Site

Date: April 15, 1998

GRAIN SIZE DISTRIBUTION TEST REPORT

CGC, Inc.

Remarks:

Tested By: DWA

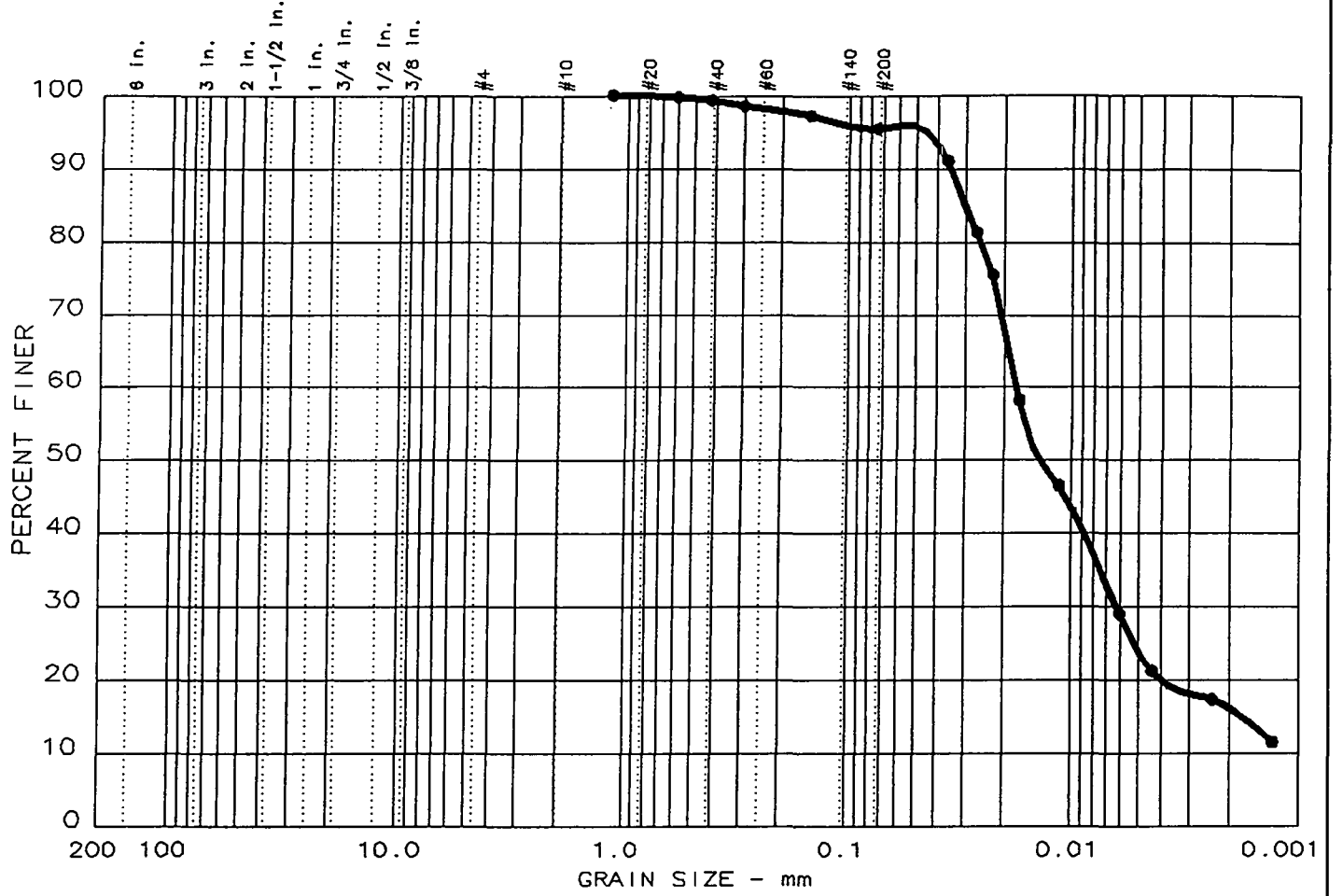
Input By : DWA

Checked By : WWW

Approved By : WWW

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	3	0.0	0.0	4.6	71.5	23.9

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	51	28			0.014	0.006	0.0018			

MATERIAL DESCRIPTION	USCS	AASHTO
● Brown Fat CLAY, Trace Fine Sand Natural Moisture Content = 27.4 %	CH	A-7-6

Project No.: 98024

Project: Stoughton Landfill Clay Borrow Site

● Location: Test Pit:# 2A @ 1.0 ft Rosenbaum Site

Date: April 15, 1998

GRAIN SIZE DISTRIBUTION TEST REPORT

CGC, Inc.

Remarks:

Tested By: DWA

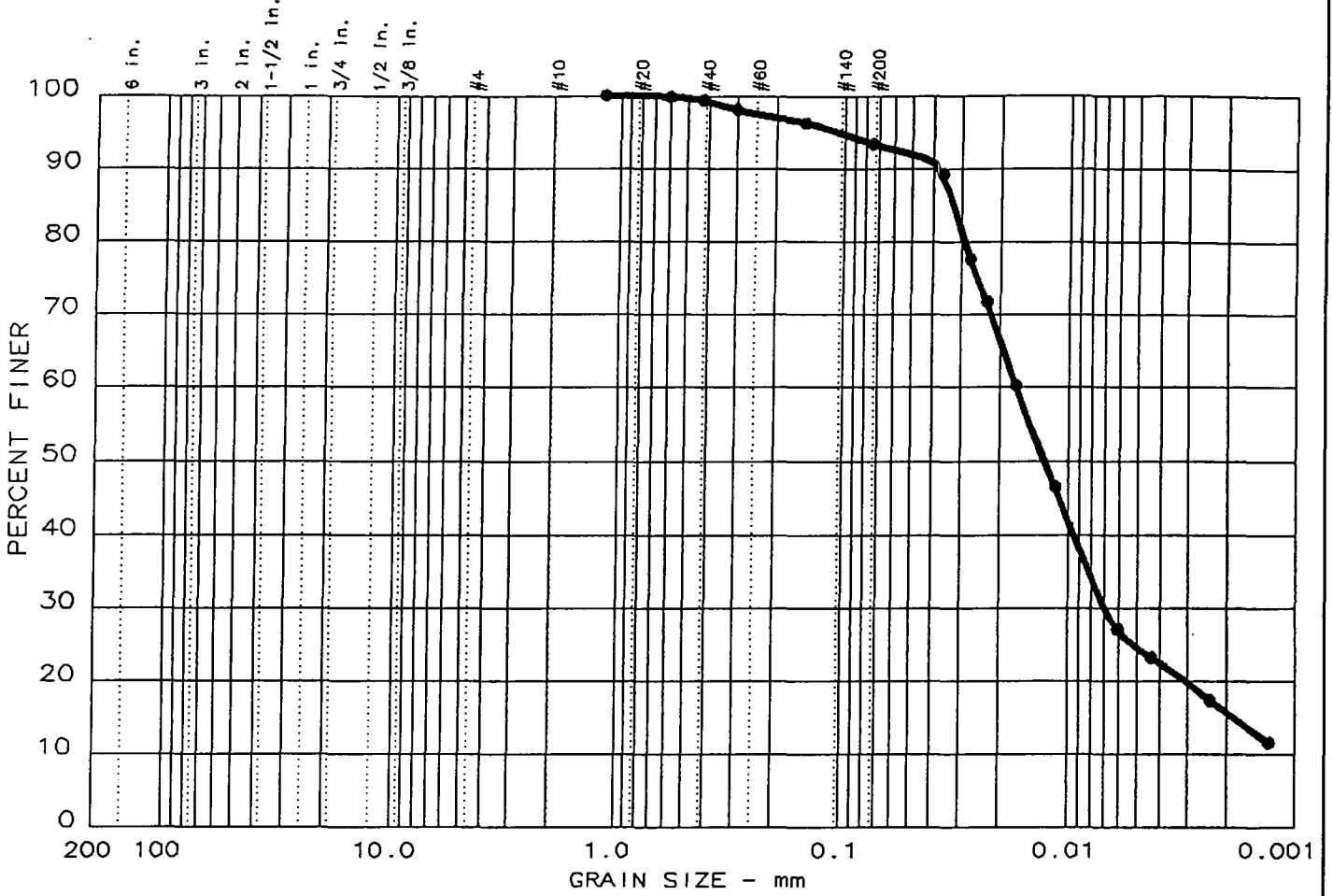
Input By : DWA

Checked By : WWW

Approved By : WWW

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	4	0.0	0.0	6.7	68.9	24.4

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	48	27			0.013	0.007	0.0019			

MATERIAL DESCRIPTION	USCS	AASHTO
● Brown Lean CLAY, Little Sand Natural Moisture Content = 26.4%	CL	A-7-6

Project No.: 98024

Project: Stoughton Landfill Clay Borrow Site

● Location: Test Pit:# 2A @ 6.5 ft Rosenbaum Site

Date: April 15, 1998

GRAIN SIZE DISTRIBUTION TEST REPORT

CGC, Inc.

Remarks:

Tested By: DWA

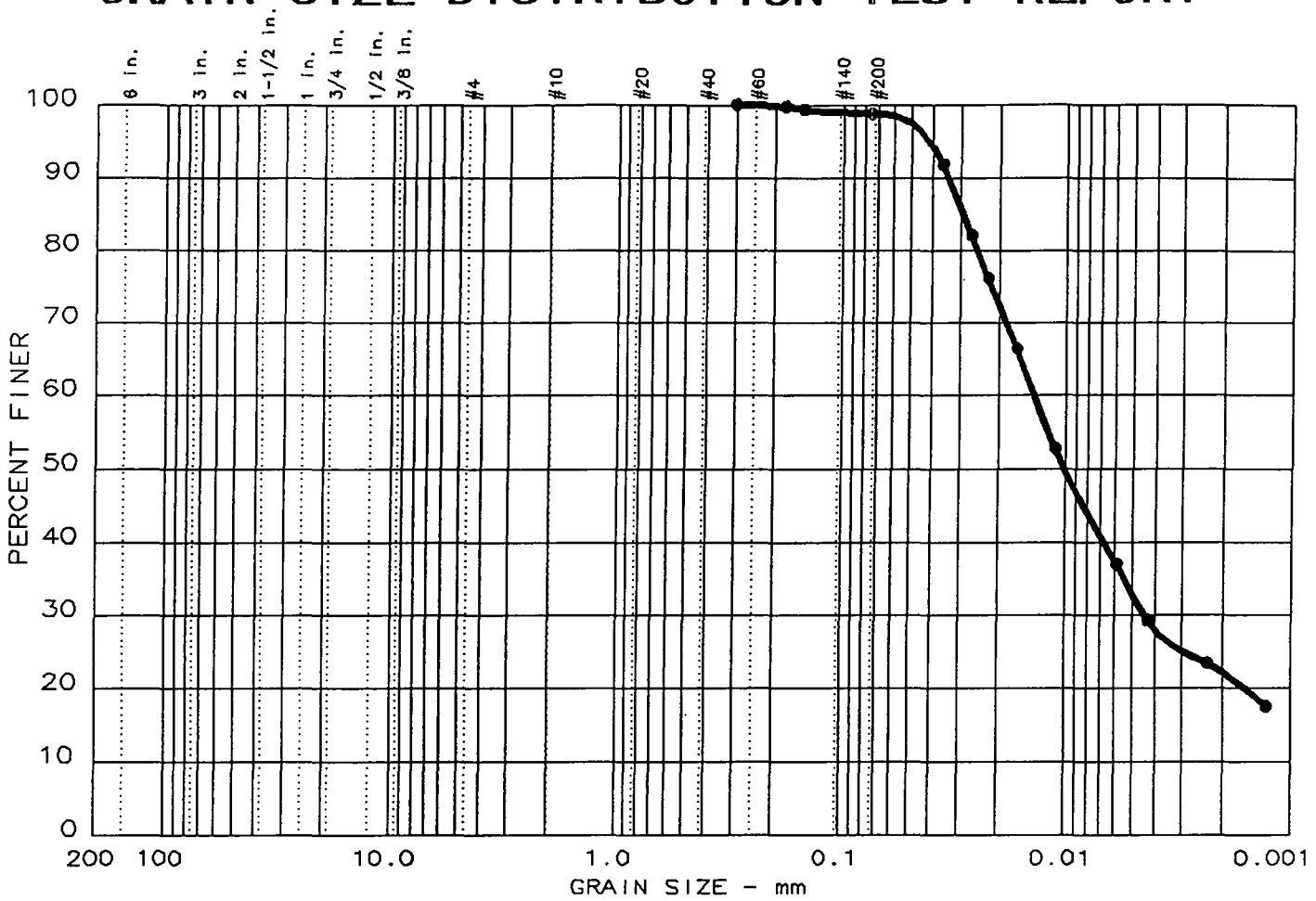
Input By : DWA

Checked By : WWW

Approved By : WWW

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	5	0.0	0.0	1.2	65.9	32.9

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	48	28			0.010	0.004				

MATERIAL DESCRIPTION	USCS	AASHTO
● Brown Lean CLAY, Trace Sand Natural Moisture Content = 33.1 %	CL	A-7-6

Project No.: 98024
Project: Stoughton Landfill Clay Borrow Site
● Location: Test Pit:# 3A @ 6.0 ft Rosenbaum Site

Date: April 15, 1998

GRAIN SIZE DISTRIBUTION TEST REPORT

CGC, Inc.

Remarks:

Tested By: DWA

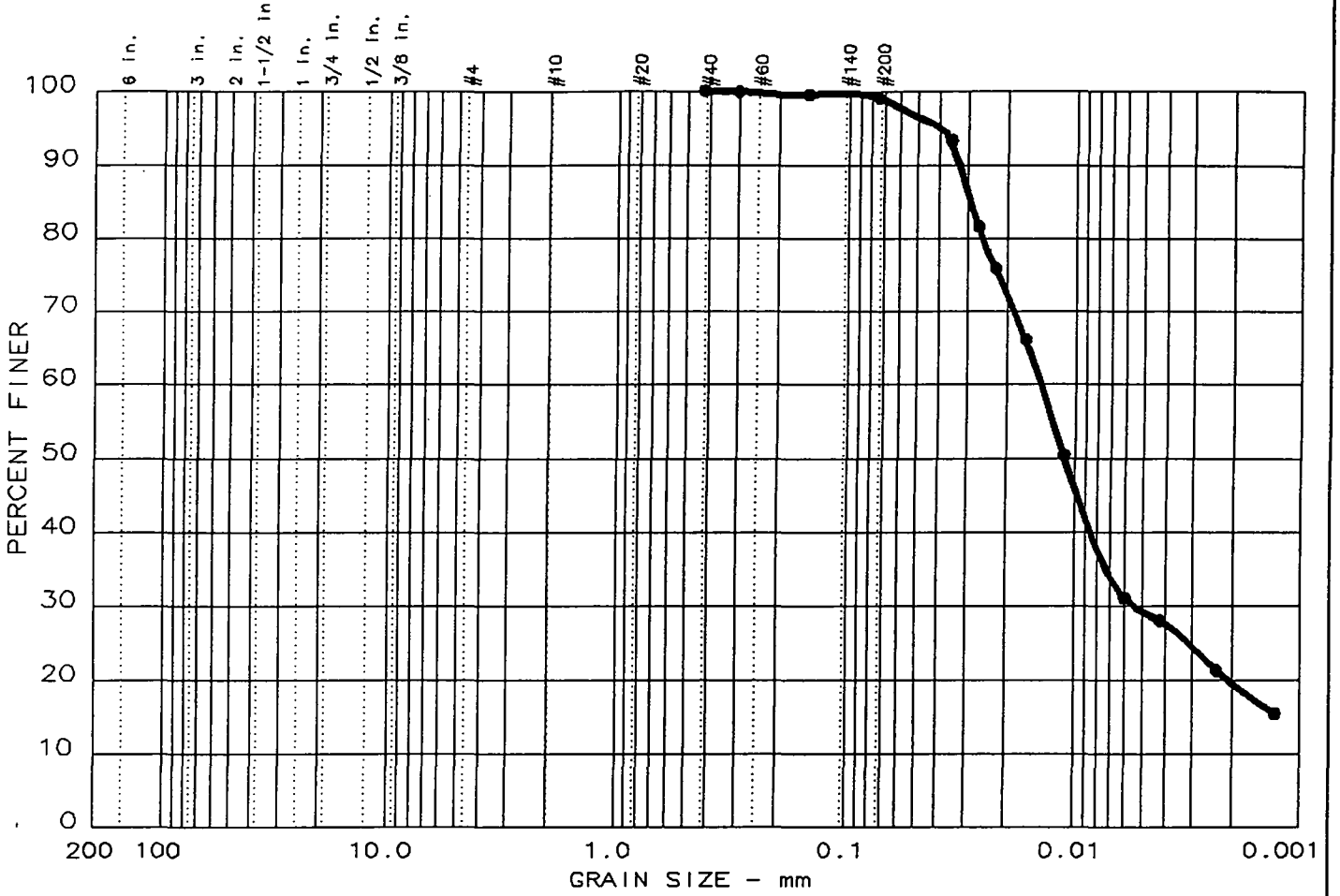
Input By : DWA

Checked By : WWW

Approved By : WWW

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	6	0.0	0.0	0.9	69.9	29.2

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	48	29			0.011	0.005				

MATERIAL DESCRIPTION	USCS	AASHTO
● Brown Lean CLAY, Trace Sand Natural Moisture Content = 27.7%	CL	A-7-6

Project No.: 98024
Project: Stoughton Landfill Clay Borrow Site
● Location: Test Pit:# 3A @ 9.0 ft Rosenbaum Site

Date: April 15, 1998

GRAIN SIZE DISTRIBUTION TEST REPORT

CGC, Inc.

Remarks:

Tested By: DWA

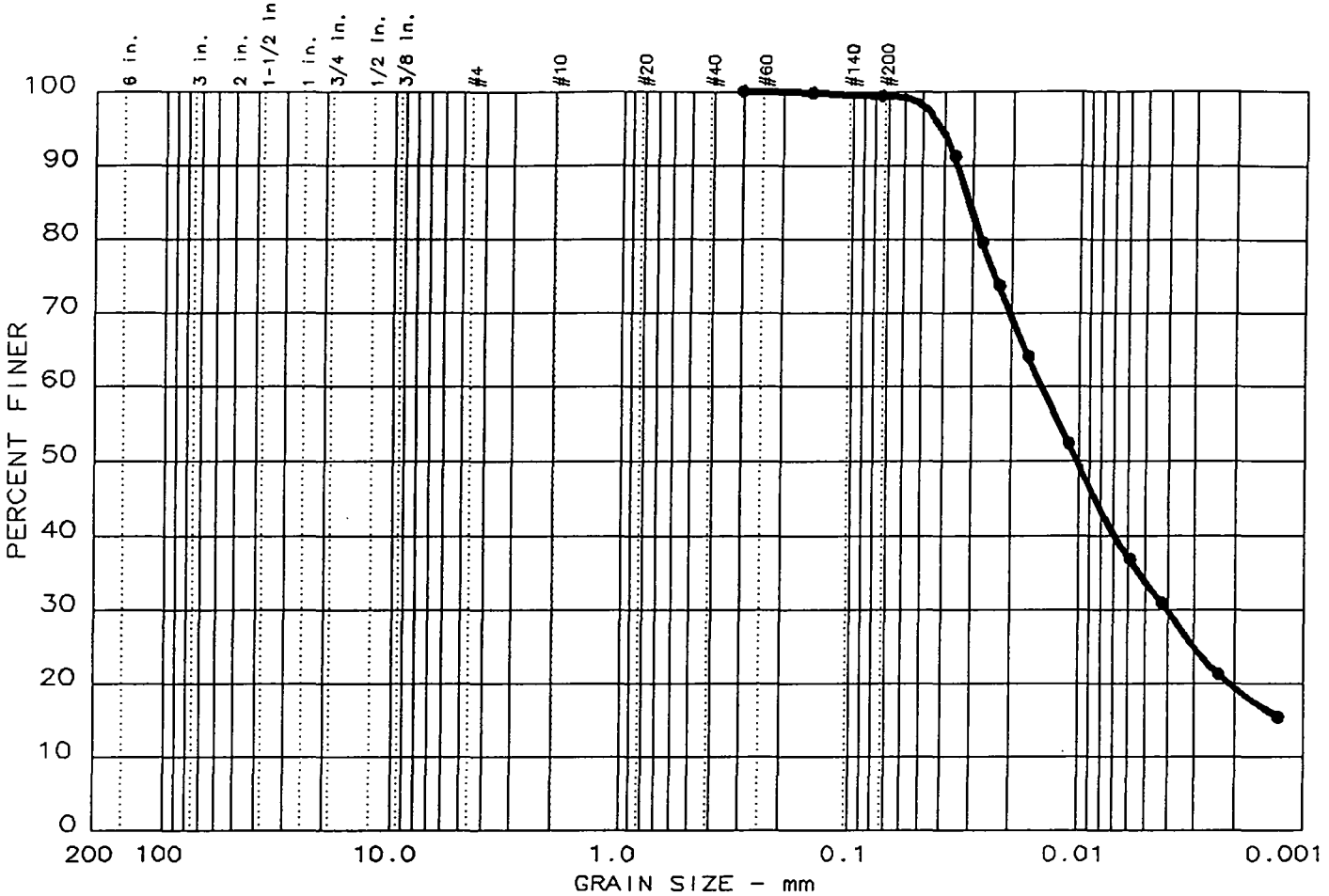
Input By : DWA

Checked By : WWW

Approved By : WWW

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	7	0.0	0.0	0.7	65.6	33.7

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	53	31			0.010	0.004				

MATERIAL DESCRIPTION	USCS	AASHTO
● Brown Fat CLAY, Trace Sand Natural Moisture Content = 27.5%	CH	A-7-6

Project No.: 98024
Project: Stoughton Landfill Clay Borrow Site
● Location: Test Pit:# 4A @ 2.0 ft Rosenbaum Site

Date: April 15, 1998

GRAIN SIZE DISTRIBUTION TEST REPORT

CGC, Inc.

Remarks:

Tested By: DWA

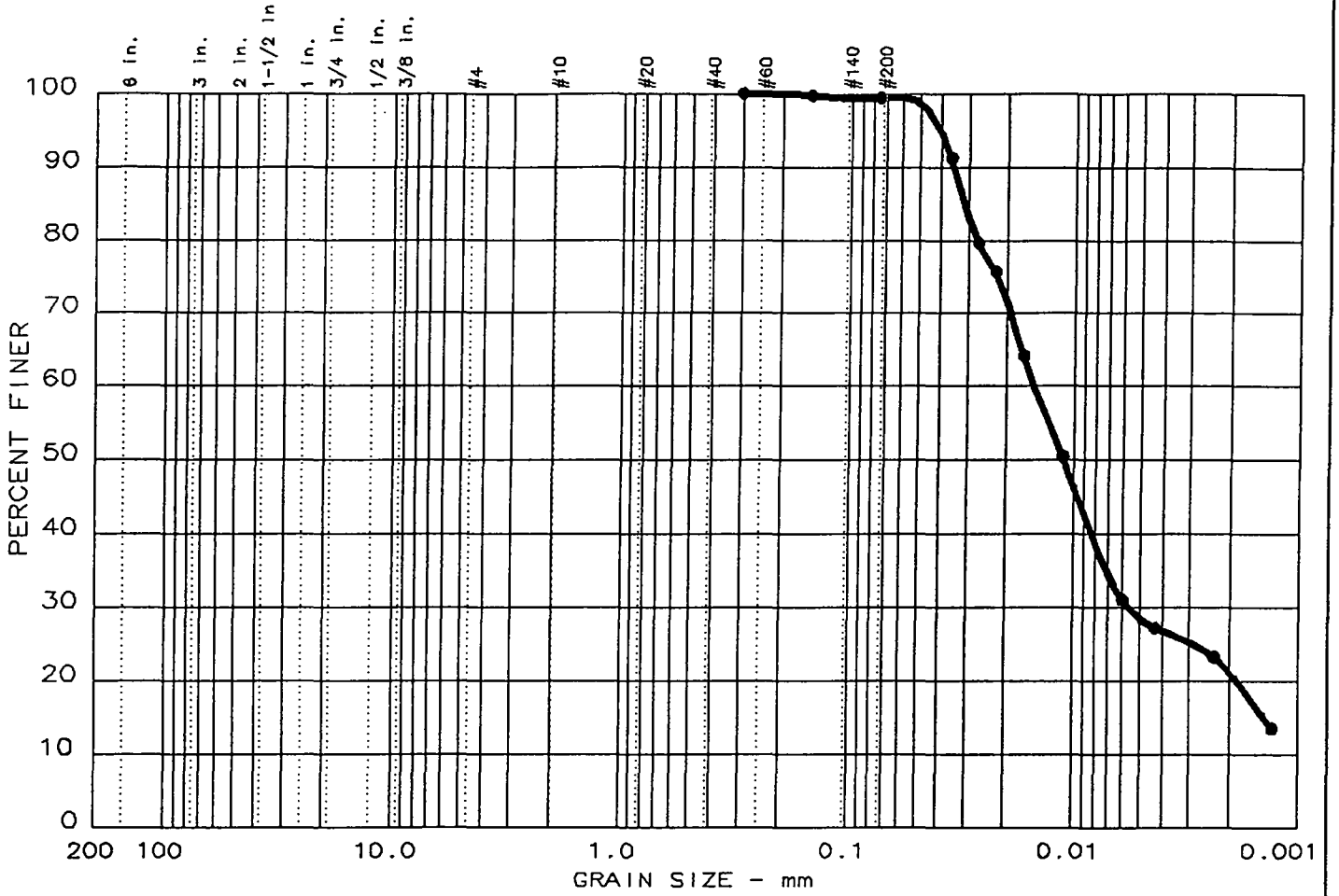
Input By : DWA

Checked By : WWW

Approved By : WWW

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	8	0.0	0.0	0.6	71.1	28.3

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	48	28			0.011	0.006	0.0014			

MATERIAL DESCRIPTION	USCS	AASHTO
● Brown Lean CLAY, Trace Sand Natural Moisture Content = 27.2%	CL	A-7-6

Project No.: 98024
Project: Stoughton Landfill Clay Borrow Site
● Location: Test Pit:# 4A @ 3.5 ft Rosenbaum Site

Date: April 15, 1998

GRAIN SIZE DISTRIBUTION TEST REPORT

CGC, Inc.

Remarks:

Tested By: DWA

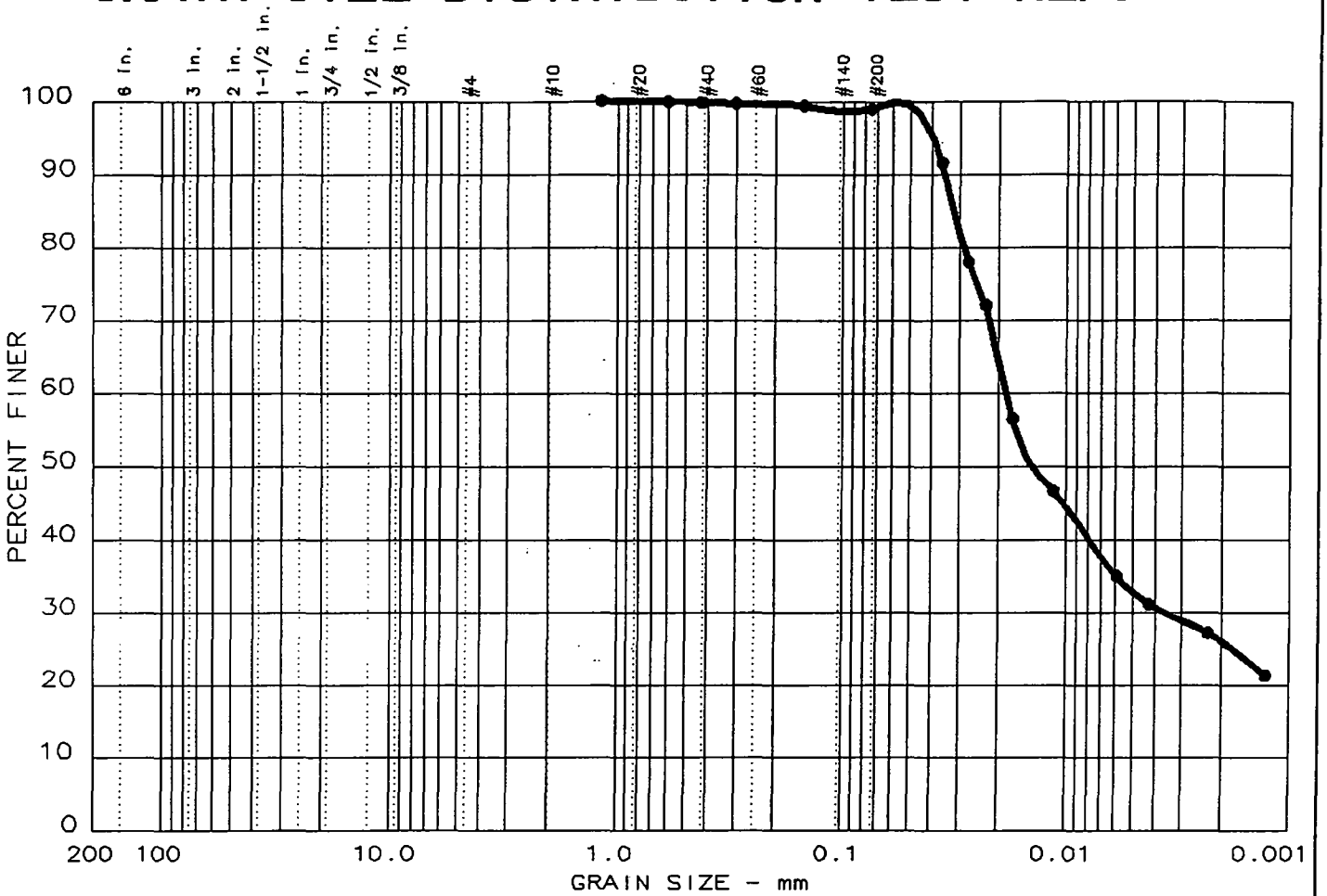
Input By : DWA

Checked By : WWW

Approved By : WWW

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	12	0.0	0.0	1.0	66.2	32.8

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	46	26			0.014	0.004				

MATERIAL DESCRIPTION	USCS	AASHTO
● Brown Lean CLAY, Trace Sand Natural Moisture Content = 27.1%	CL	A-7-6

Project No.: 98024
Project: Stoughton Landfill Clay Borrow Site
● Location: Stock Pile Sample:#4AA Rosenbaum Site

Date: April 15, 1998

GRAIN SIZE DISTRIBUTION TEST REPORT

CGC, Inc.

Remarks:

Tested By: DWA

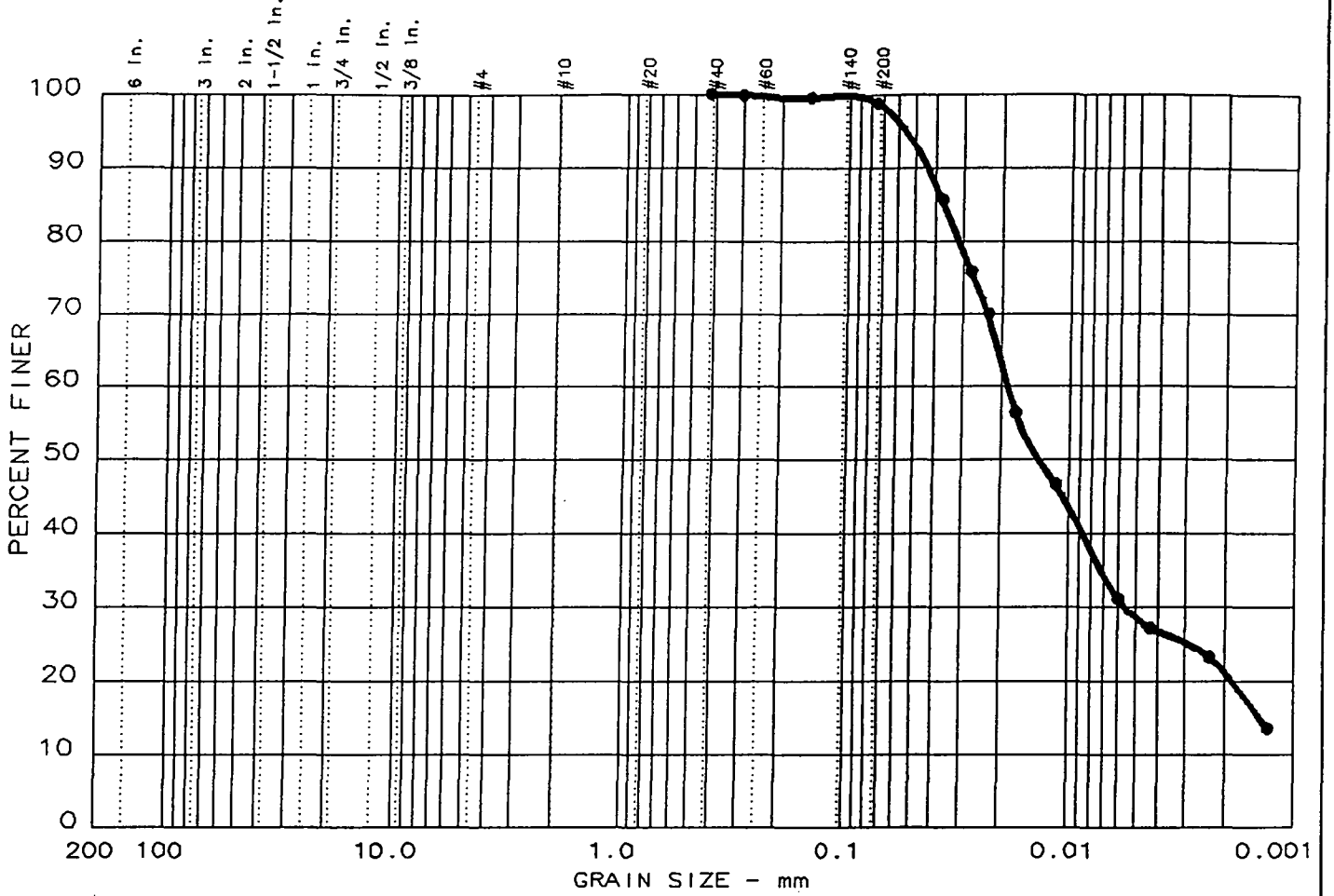
Input By : DWA

Checked By : WWW

Approved By : WWW

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	9	0.0	0.0	1.2	70.3	28.5

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	56	33			0.014	0.006	0.0014			

MATERIAL DESCRIPTION	USCS	AASHTO
● Brown Fat CLAY, Trace Sand Natural Moisture Content = 26.9%	CH	A-7-6

Project No.: 98024
Project: Stoughton Landfill Clay Borrow Site
● Location: Test Pit:# 5A @ 2.0 ft Rosenbaum Site

Date: April 15, 1998

GRAIN SIZE DISTRIBUTION TEST REPORT

CGC, Inc.

Remarks:

Tested By: DWA

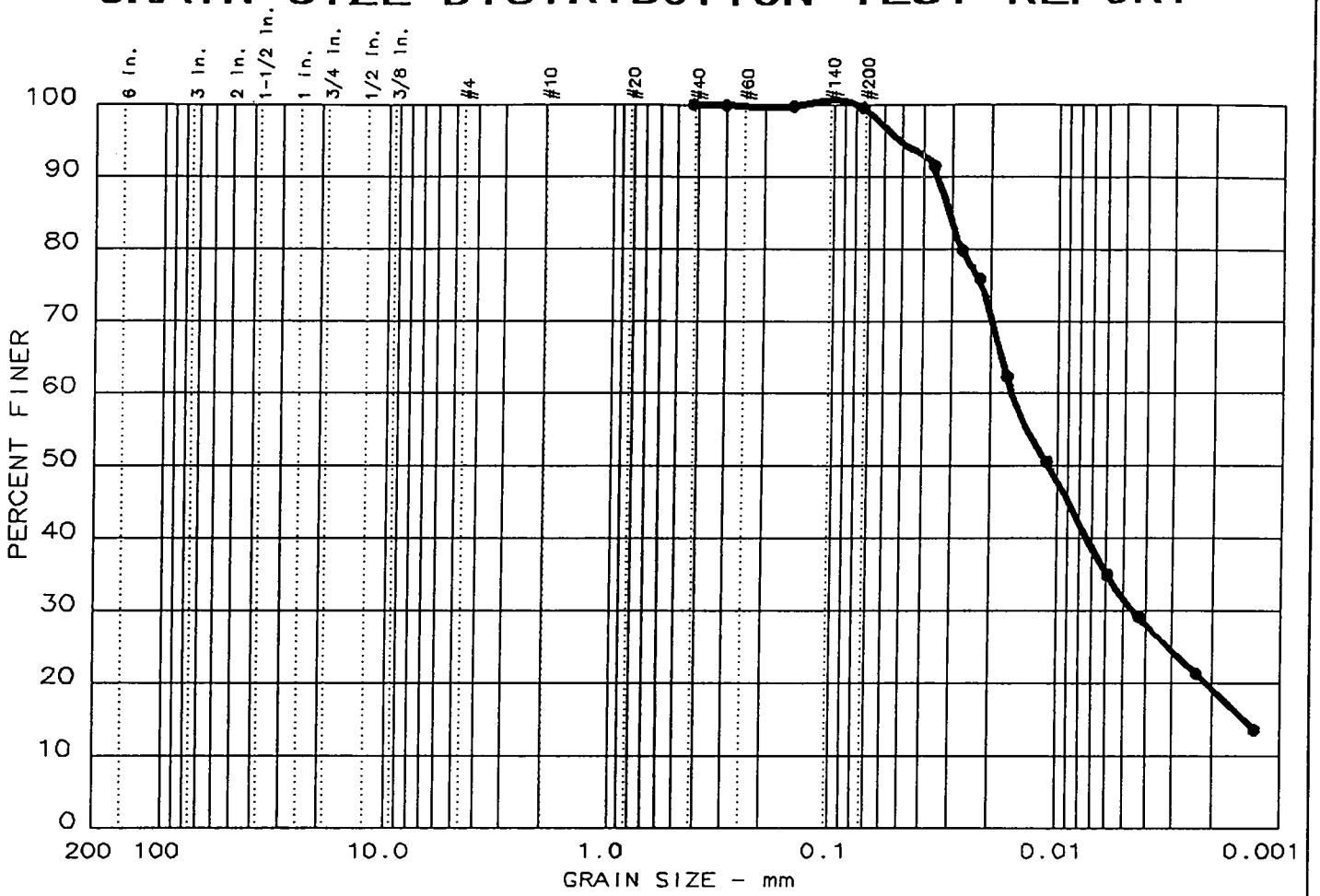
Input By : DWA

Checked By : WWW

Approved By : WWW

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	10	0.0	0.0	0.5	67.9	31.6

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	49	29			0.011	0.004	0.0014			

MATERIAL DESCRIPTION	USCS	AASHTO
● Brown Lean CLAY, Trace Sand Natural Moisture Content = 36.4%	CL	A-7-6

Project No.: 98024
Project: Stoughton Landfill Clay Borrow Site
● Location: Test Pit:# 5A @ 3.0 ft Rosenbaum Site

Date: April 15, 1998

GRAIN SIZE DISTRIBUTION TEST REPORT

CGC, Inc.

Remarks:

Tested By: DWA

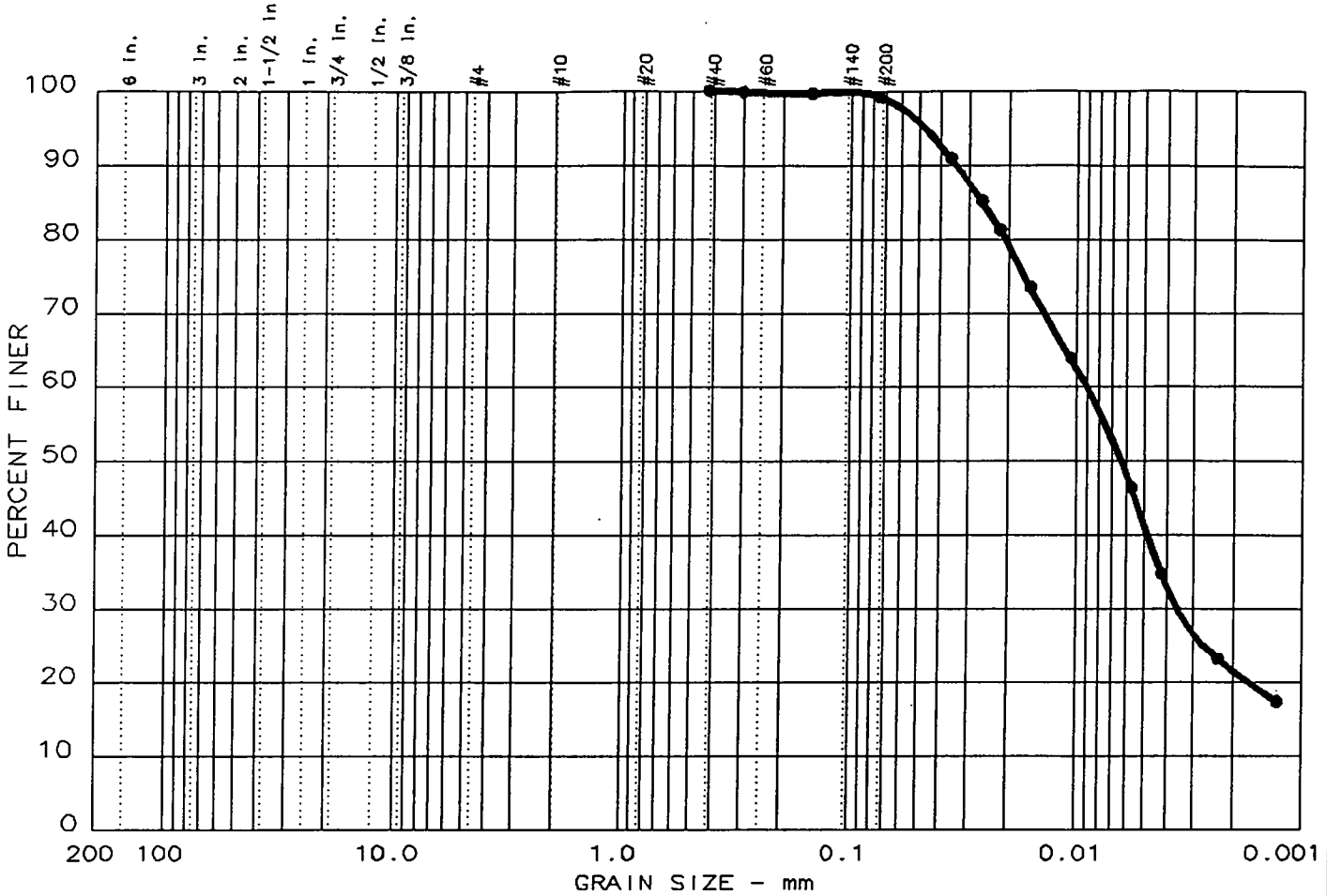
Input By : DWA

Checked By : WWW

Approved By : WWW

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	11	0.0	0.0	0.9	57.8	41.3

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	49	30			0.006	0.004				

MATERIAL DESCRIPTION	USCS	AASHTO
● Brown Lean CLAY, Trace Sand Natural Moisture Content = 30.7 %	CL	A-7-6

Project No.: 98024
Project: Stoughton Landfill Clay Borrow Site
● Location: Test Pit:# 6A @ 3.0 ft Rosenbaum Site

Date: April 15, 1998

GRAIN SIZE DISTRIBUTION TEST REPORT

CGC, Inc.

Remarks:

Tested By: DWA

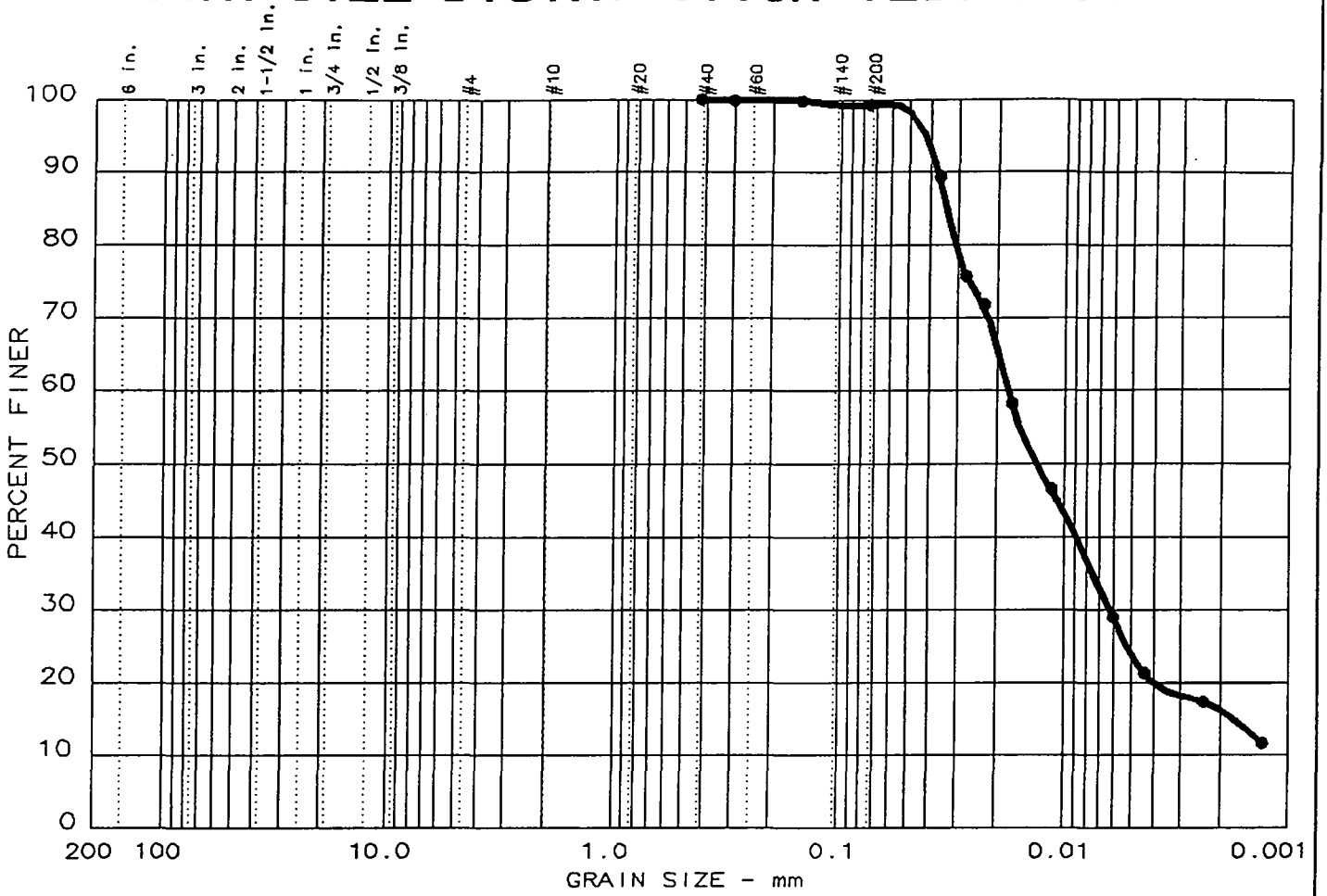
Input By : DWA

Checked By : WWW

Approved By : WWW

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	12	0.0	0.0	0.8	75.2	24.0

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	50	29			0.013	0.006	0.0017			

MATERIAL DESCRIPTION	USCS	AASHTO
● Brown Lean CLAY, Trace Sand Natural Moisture Content = 30.2%	CL	A-7-6

Project No.: 98024
Project: Stoughton Landfill Clay Borrow Site
● Location: Test Pit:# 6A @ 8.0 ft Rosenbaum Sit

Date: April 15, 1998

GRAIN SIZE DISTRIBUTION TEST REPORT

CGC, Inc.

Remarks:

Tested By: DWA

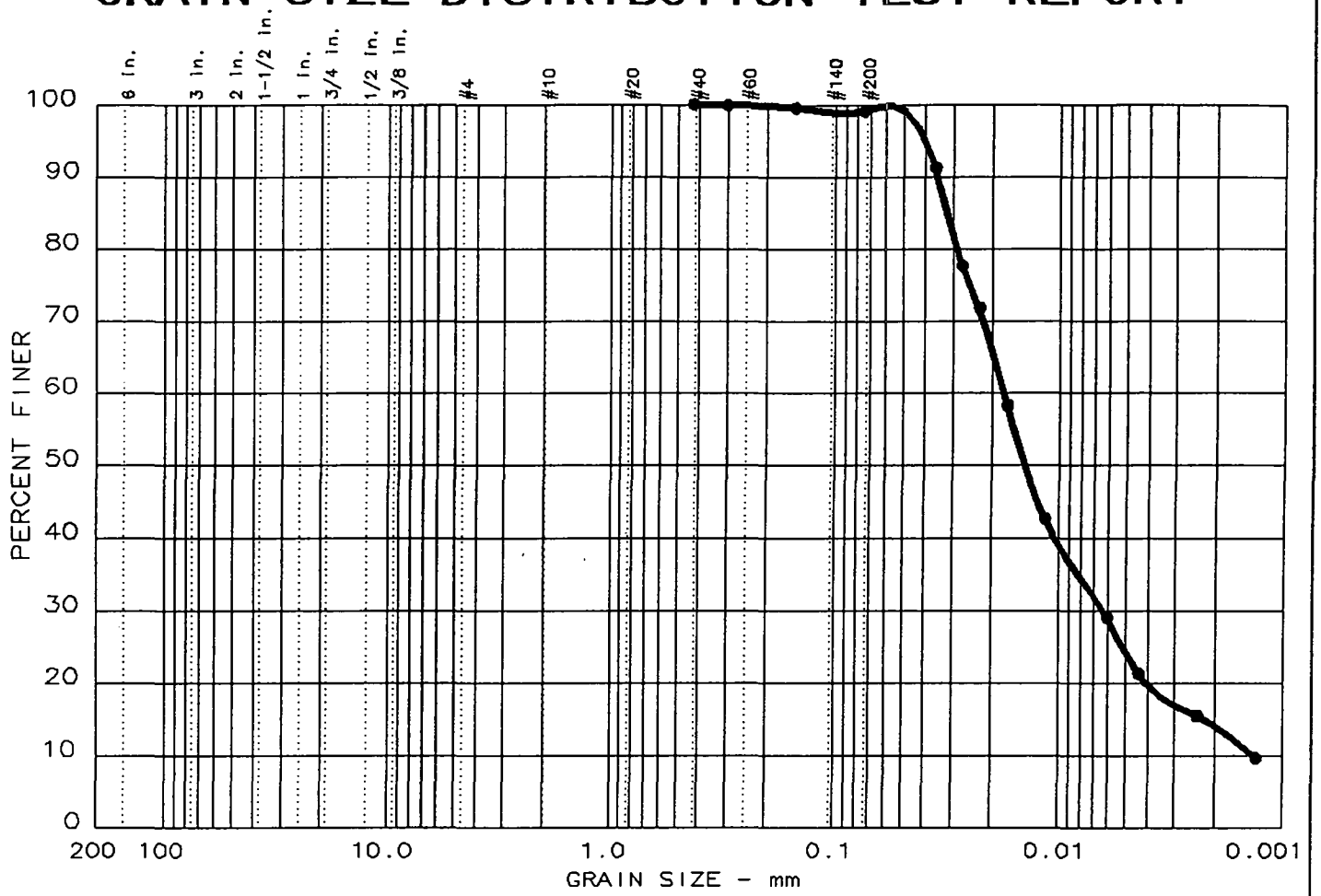
Input By : DWA

Checked By : WWW

Approved By : WWW

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	13	0.0	0.0	0.9	74.8	24.3

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	46	28			0.014	0.006	0.0022	0.0013	1.65	13.2

MATERIAL DESCRIPTION	USCS	AASHTO
● Brown Lean CLAY, Trace Sand Natural Moisture Content = 27.1%	CL	A-7-6

Project No.: 98024
Project: Stoughton Landfill Clay Borrow Site
● Location: Test Pit:# 7A @ 5.0 ft Rosenbaum Site

Date: April 15, 1998

GRAIN SIZE DISTRIBUTION TEST REPORT

CGC, Inc.

Remarks:

Tested By: DWA

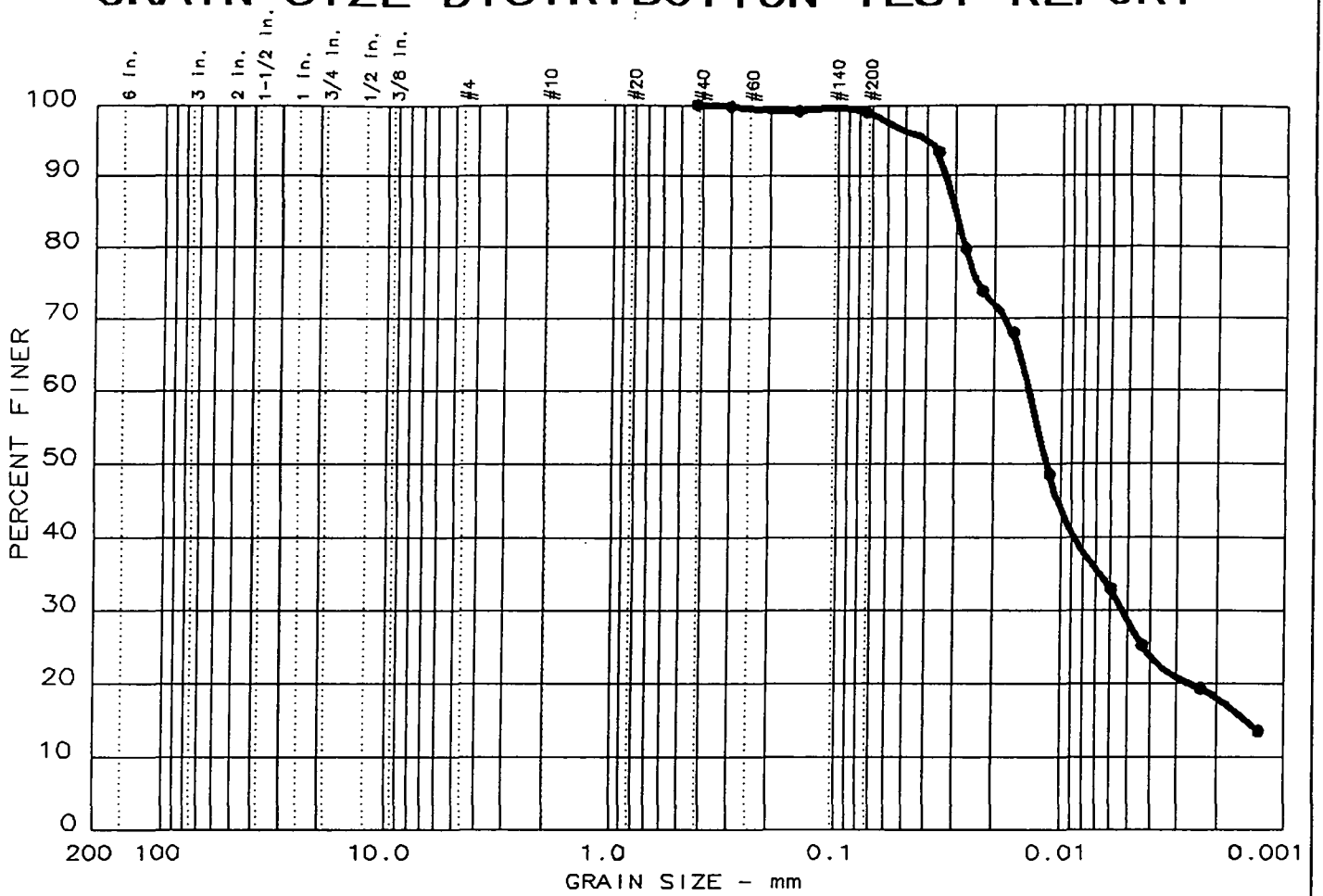
Input By : DWA

Checked By : WWW

Approved By : WWW

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	14	0.0	0.0	1.0	70.4	28.6

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	48	28			0.012	0.005	0.0015			

MATERIAL DESCRIPTION	USCS	AASHTO
● Brown Lean CLAY, Trace Sand Natural Moisture Content = 31.2%	CL	A-7-6

Project No.: 98024

Project: Stoughton Landfill Clay Borrow Site

● Location: Test Pit:# 7A @ 7.0 ft Rosenbaum Site

Date: April 15, 1998

GRAIN SIZE DISTRIBUTION TEST REPORT

CGC, Inc.

Remarks:

Tested By: DWA

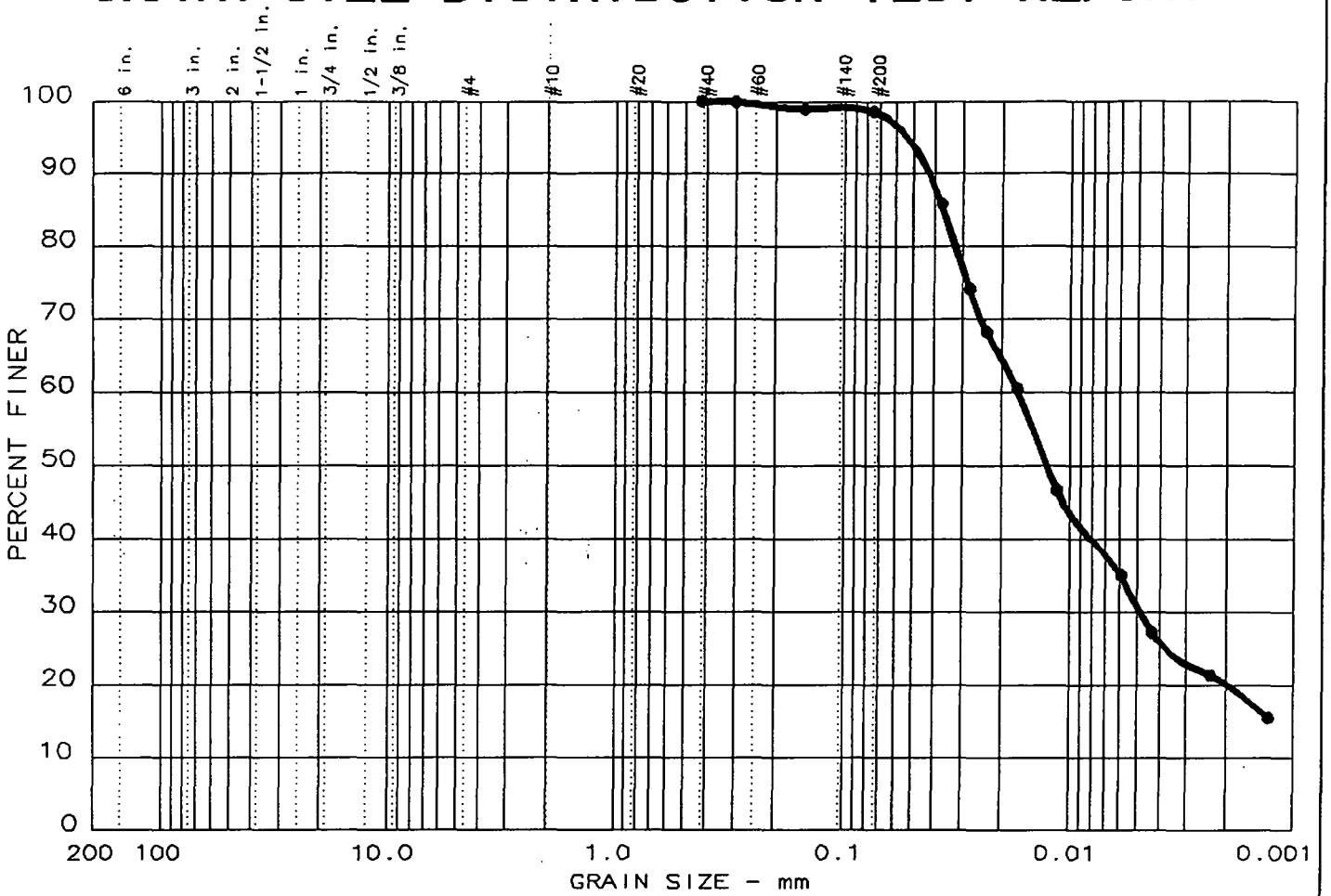
Input By : DWA

Checked By : WWW

Approved By : WWW

Figure No. ———

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	15	0.0	0.0	1.4	67.8	30.8

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	47	29			0.013	0.005				

MATERIAL DESCRIPTION	USCS	AASHTO
● Brown Lean CLAY, Trace Sand Natural Moisture Content = 27.2%	CL	A-7-6

Project No.: 98024
Project: Stoughton Landfill Clay Borrow Site
● Location: Test Pit:# 8A @ 4.0 ft Rosenbaum Site

Date: pril 15, 1998

GRAIN SIZE DISTRIBUTION TEST REPORT

CGC, Inc.

Remarks:

Tested By: DWA

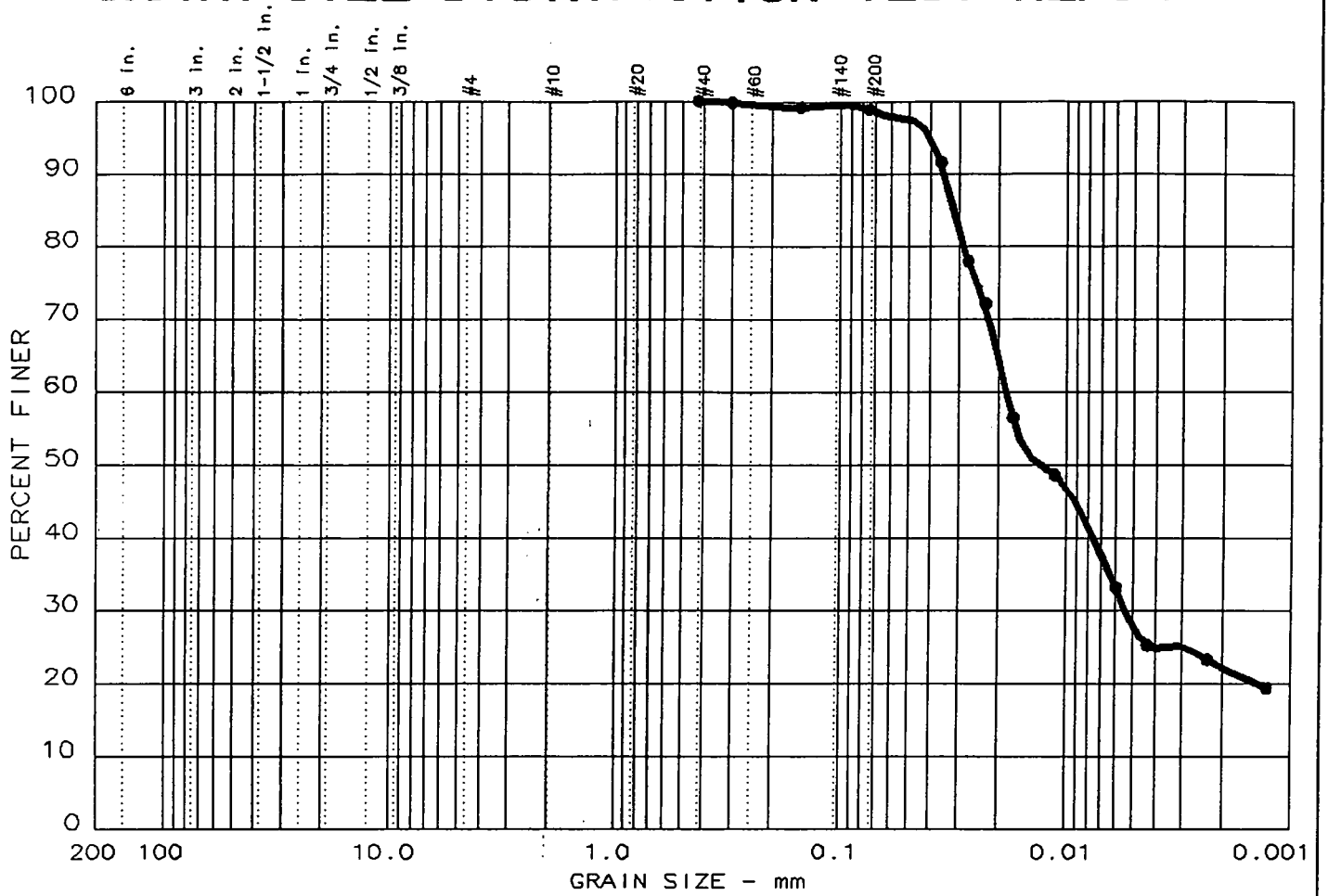
Input By : DWA

Checked By : WWW

Approved By : WWW

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	16	0.0	0.0	1.1	71.0	27.9

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	49	31			0.013	0.005				

MATERIAL DESCRIPTION	USCS	AASHTO
● Brown Lean CLAY, Trace Sand Natural Moisture Content = 30.3%	CL	A-7-6

Project No.: 98024
Project: Stoughton Landfill Clay Borrow Site
● Location: Test Pit:# 8A @ 10 ft Rosenbaum Site

Date: April 15, 1998

GRAIN SIZE DISTRIBUTION TEST REPORT

CGC, Inc.

Remarks:

Tested By: DWA

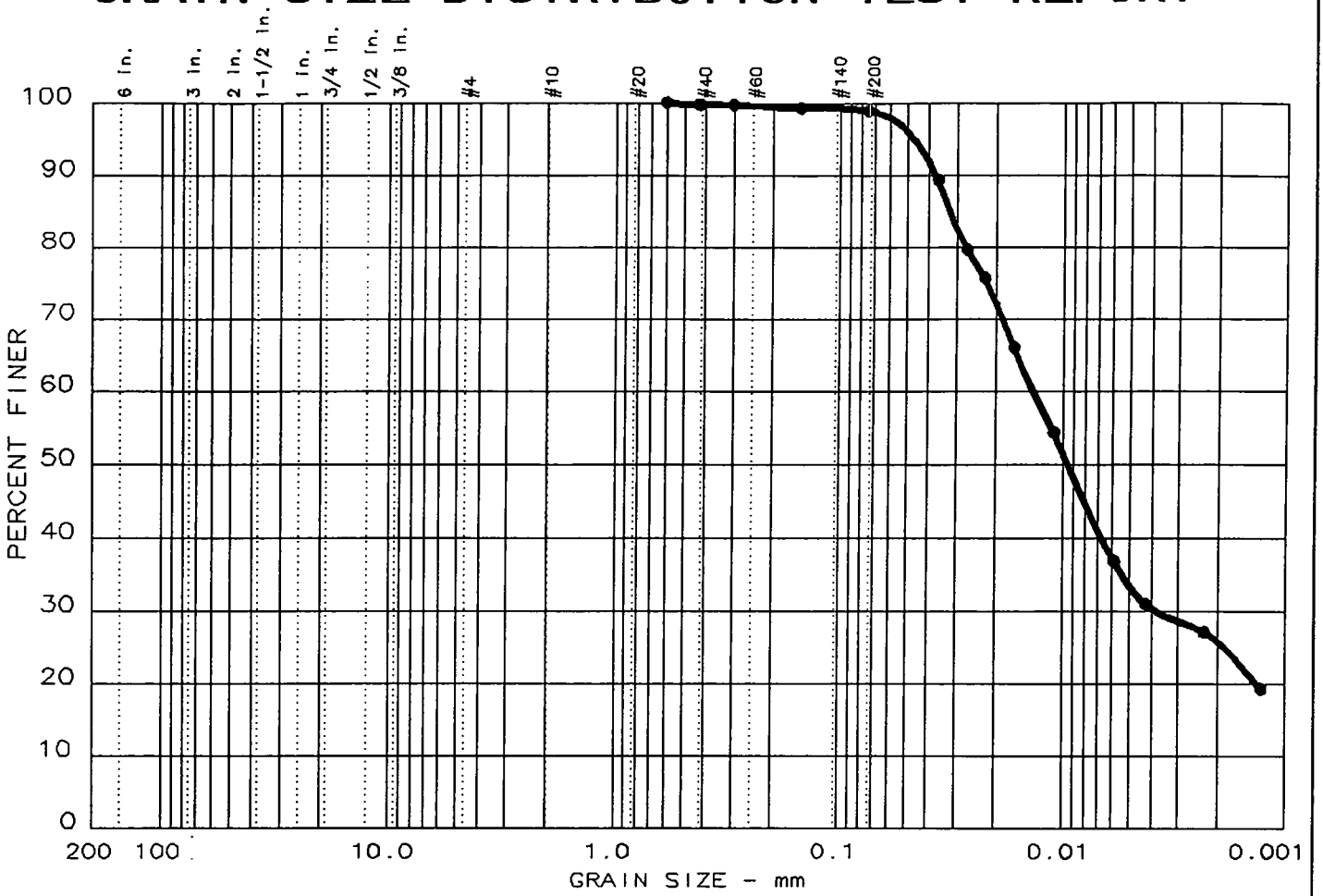
Input By : DWA

Checked By : WWW

Approved By : WWW

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	17	0.0	0.0	1.1	65.4	33.5

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	48	28			0.009	0.004				

MATERIAL DESCRIPTION	USCS	AASHTO
● Brown Lean CLAY, Trace Sand Natural Moisture Content = 26.4%	CL	A-7-6

Project No.: 98024
Project: Stoughton Landfill Clay Borrow Site
● Location: Test Pit:# 9A @ 3.3 ft Rosenbaum Site

Date: April 15, 1998

GRAIN SIZE DISTRIBUTION TEST REPORT

CGC, Inc.

Remarks:

Tested By: DWA

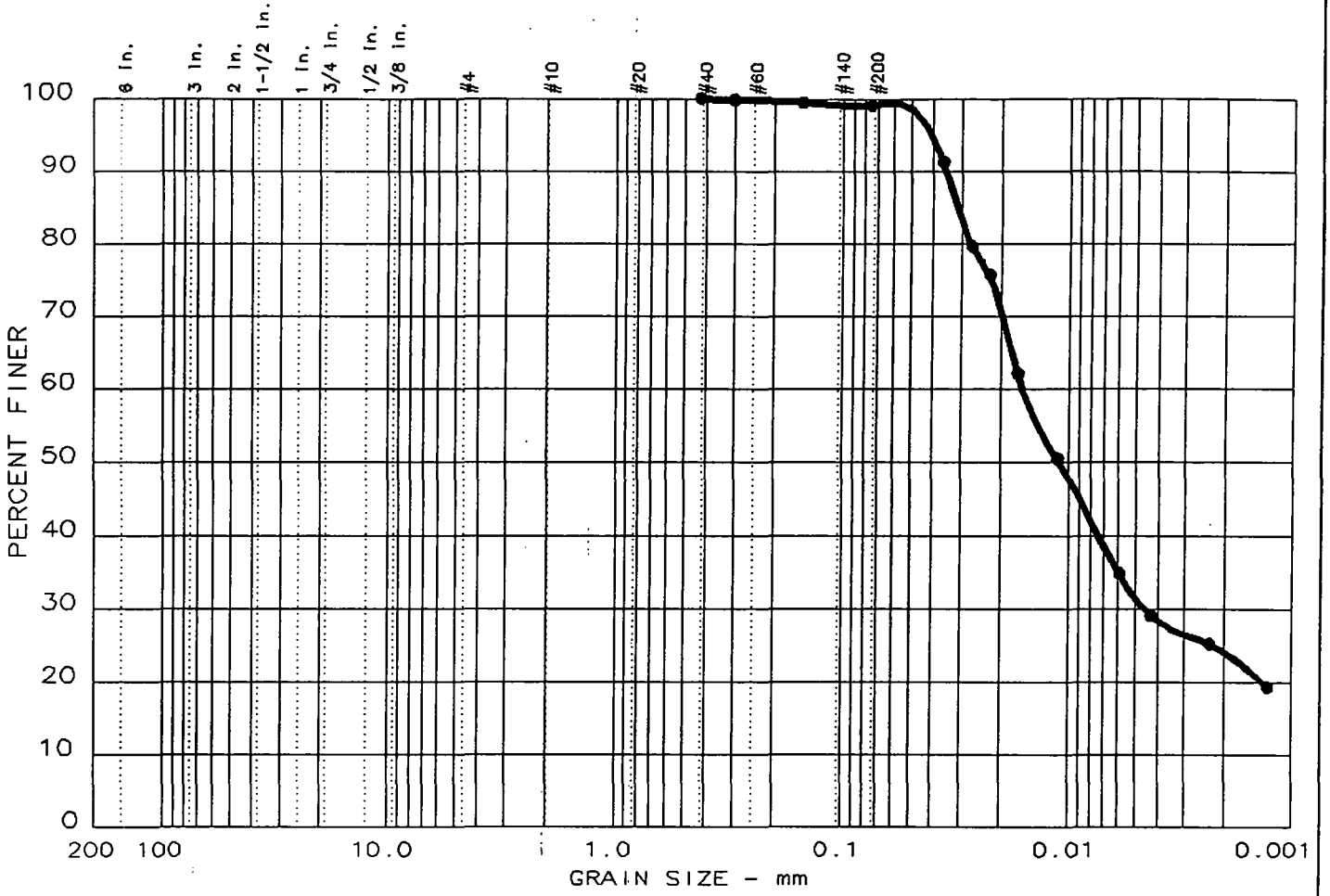
Input By : DWA

Checked By : WWW

Approved By : WWW

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	18	0.0	0.0	0.9	67.6	31.5

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	48	29			0.011	0.005				

MATERIAL DESCRIPTION	USCS	AASHTO
● Brown Lean CLAY, Trace Sand Natural Moisture Content = 26.0%	CL	A-7-6

Project No.: 98024
Project: Stoughton Landfill Clay Borrow Site
● Location: Test Pit:# 9A @ 4.0 ft Rosenbaum Site

Date: April 15, 1998

GRAIN SIZE DISTRIBUTION TEST REPORT

CGC, Inc.

Remarks:

Tested By: DWA

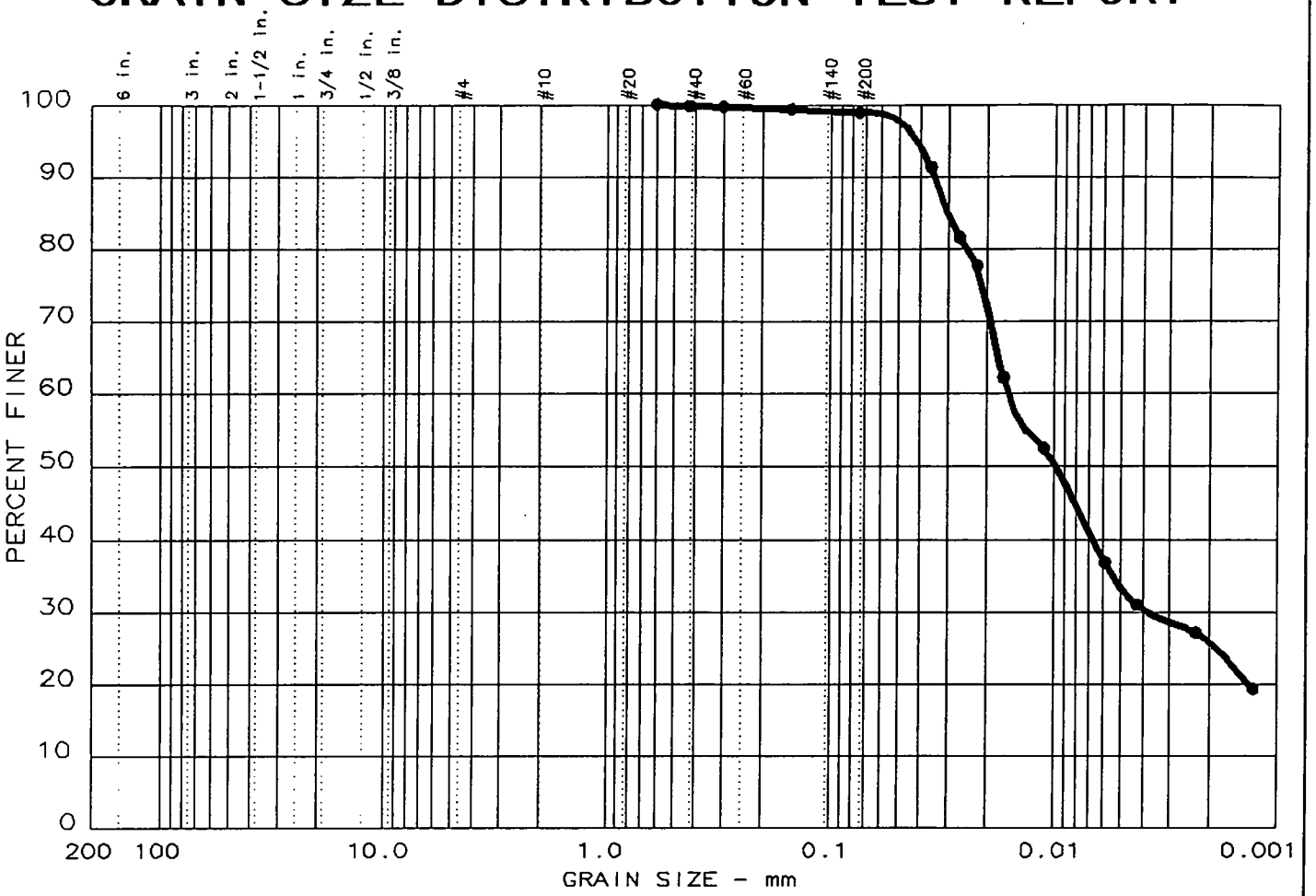
Input By : DWA

Checked By : WWW

Approved By : WWW

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	19	0.0	0.0	1.1	65.5	33.4

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	46	26			0.010	0.004				

MATERIAL DESCRIPTION	USCS	AASHTO
● Brown Lean CLAY, Trace Sand Natural Moisture Content = 22.6%	CL	A-7-6

Project No.: 98024
Project: Stoughton Landfill Clay Borrow Site
● Location: Test Pit:#10A @ 2.0 ft Rosenbaum Site

Date: April 15, 1998

GRAIN SIZE DISTRIBUTION TEST REPORT

CGC, Inc.

Remarks:

Tested By: DWA

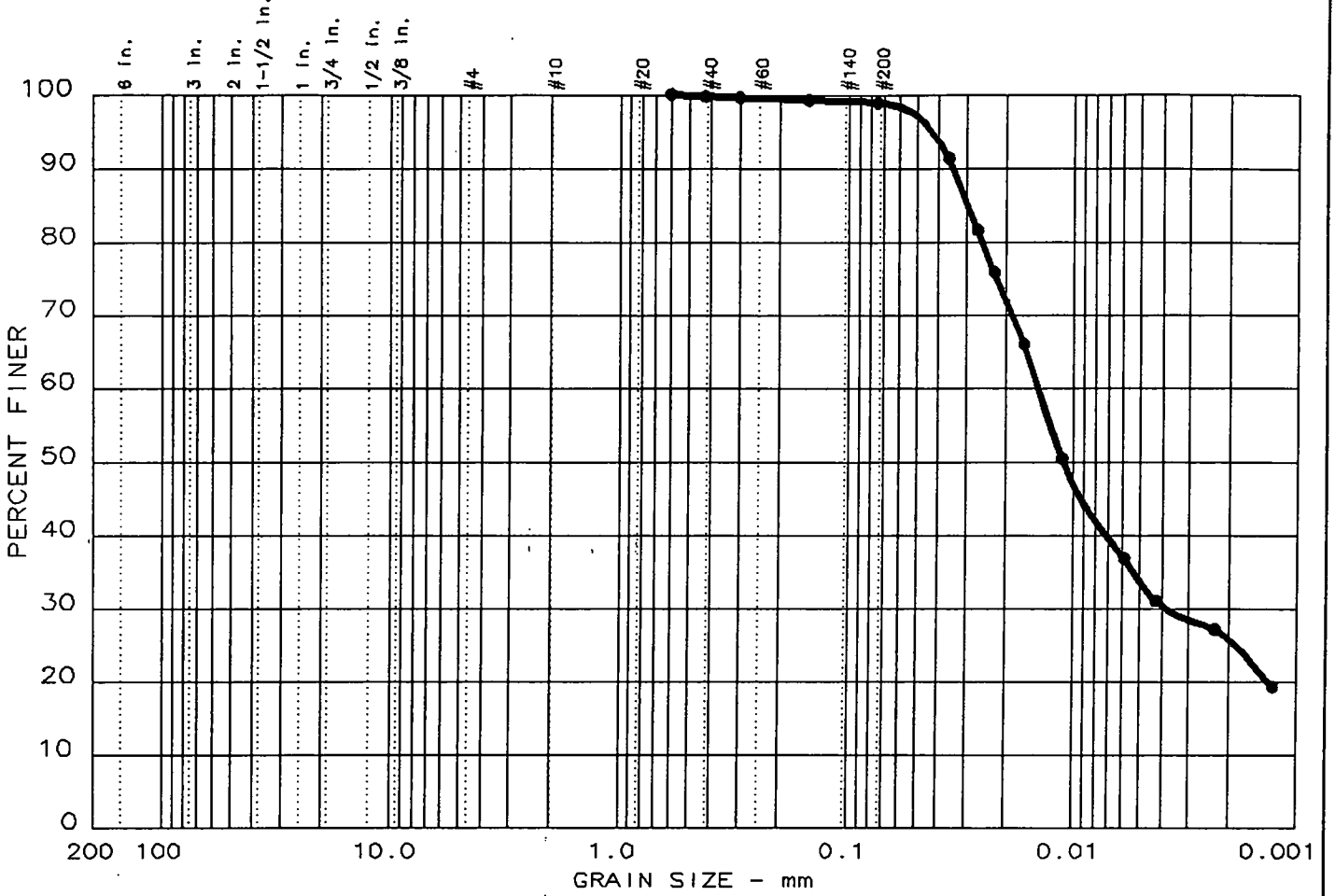
Input By : DWA

Checked By : WWW

Approved By : WWW

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	20	0.0	0.0	1.1	65.2	33.7

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	47	26			0.011	0.004				

MATERIAL DESCRIPTION	USCS	AASHTO
● Brown Lean CLAY, Trace Sand Natural Moisture Content = 30.1%	CL	A-7-6

Project No.: 98024
Project: Stoughton Landfill Clay Borrow Site
● Location: Test Pit:#10A @ 3.0 ft Rosenbaum Site

Date: April 15, 1998

GRAIN SIZE DISTRIBUTION TEST REPORT

CGC, Inc.

Remarks:

Tested By: DWA

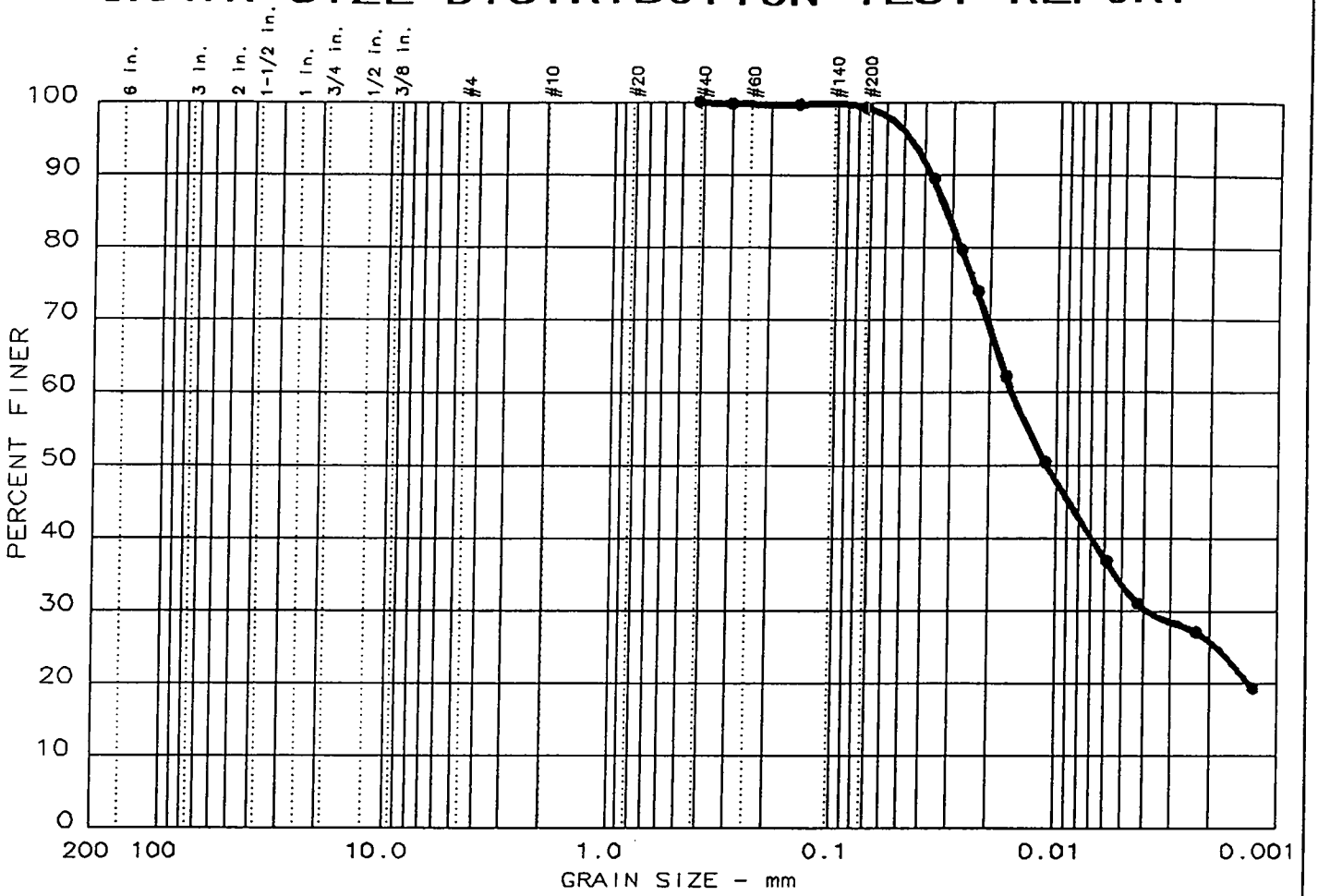
Input By : DWA

Checked By : WWW

Approved By : WWW

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	1	0.0	0.0	0.7	65.7	33.6

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	50	27			0.011	0.004				

MATERIAL DESCRIPTION	USCS	AASHTO
● Brown Lean CLAY, Trace Sand Natural Moisture Content = 29.0%	CL	A-7-6

Project No.: 98024
Project: Stoughton Landfill Clay Borrow Site
● Location: Test Pit:#11A @ 3.0 ft Rosenbaum Site

Date: April 15, 1998

GRAIN SIZE DISTRIBUTION TEST REPORT

CGC, Inc.

Remarks:

Tested By: DWA

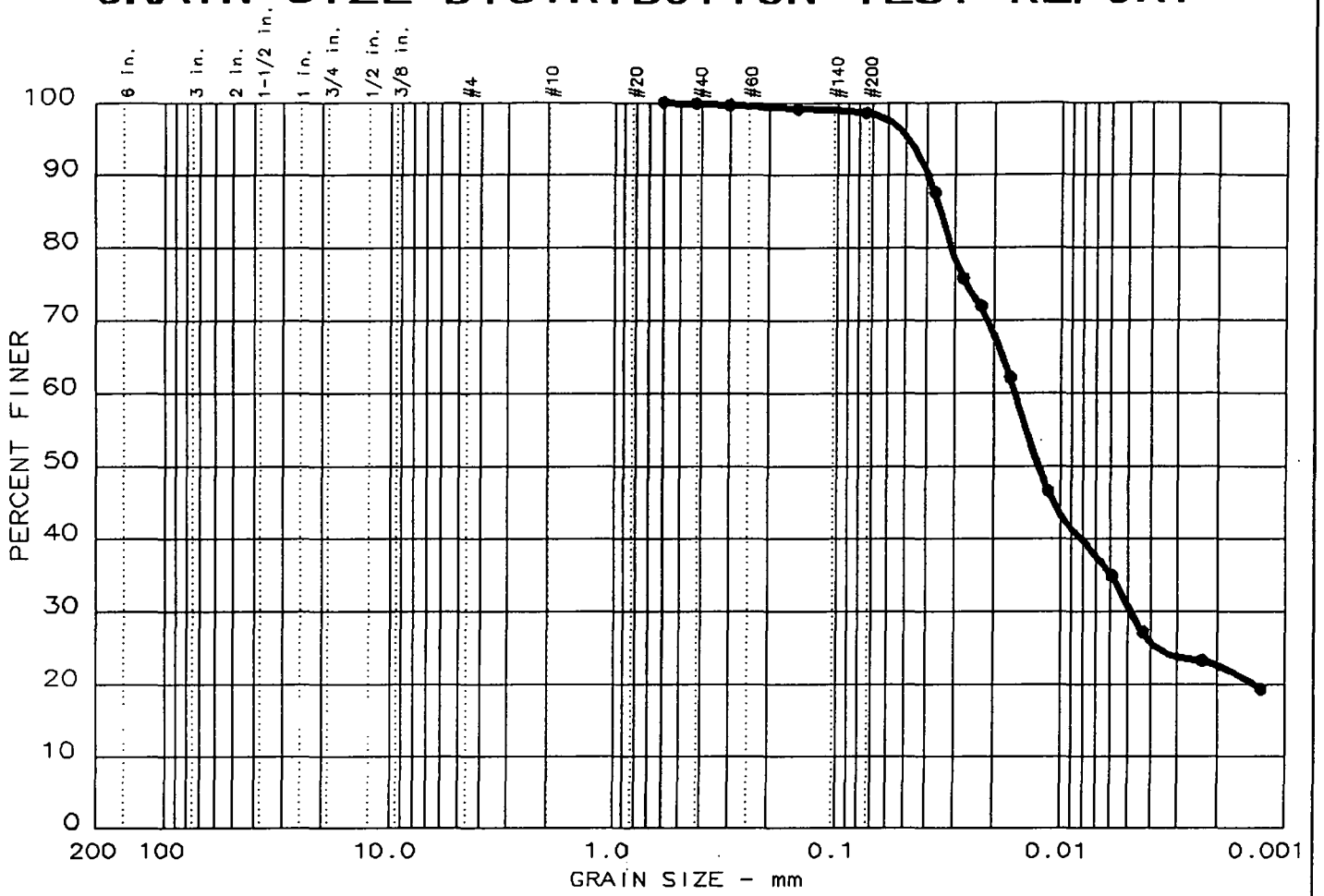
Input By : DWA

Checked By : WWW

Approved By : WWW

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	2	0.0	0.0	1.5	67.9	30.6

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	47	26			0.013	0.005				

MATERIAL DESCRIPTION	USCS	AASHTO
● Brown Lean CLAY, Trace Sand Natural Moisture Content = 27.9%	CL	A-7-6

Project No.: 98024
Project: Stoughton Landfill Clay Borrow Site
● Location: Test Pit:#11A @ 5.0 ft Rosenbaum Site

Date: April 15, 1998

GRAIN SIZE DISTRIBUTION TEST REPORT

CGC, Inc.

Remarks:

Tested By: DWA

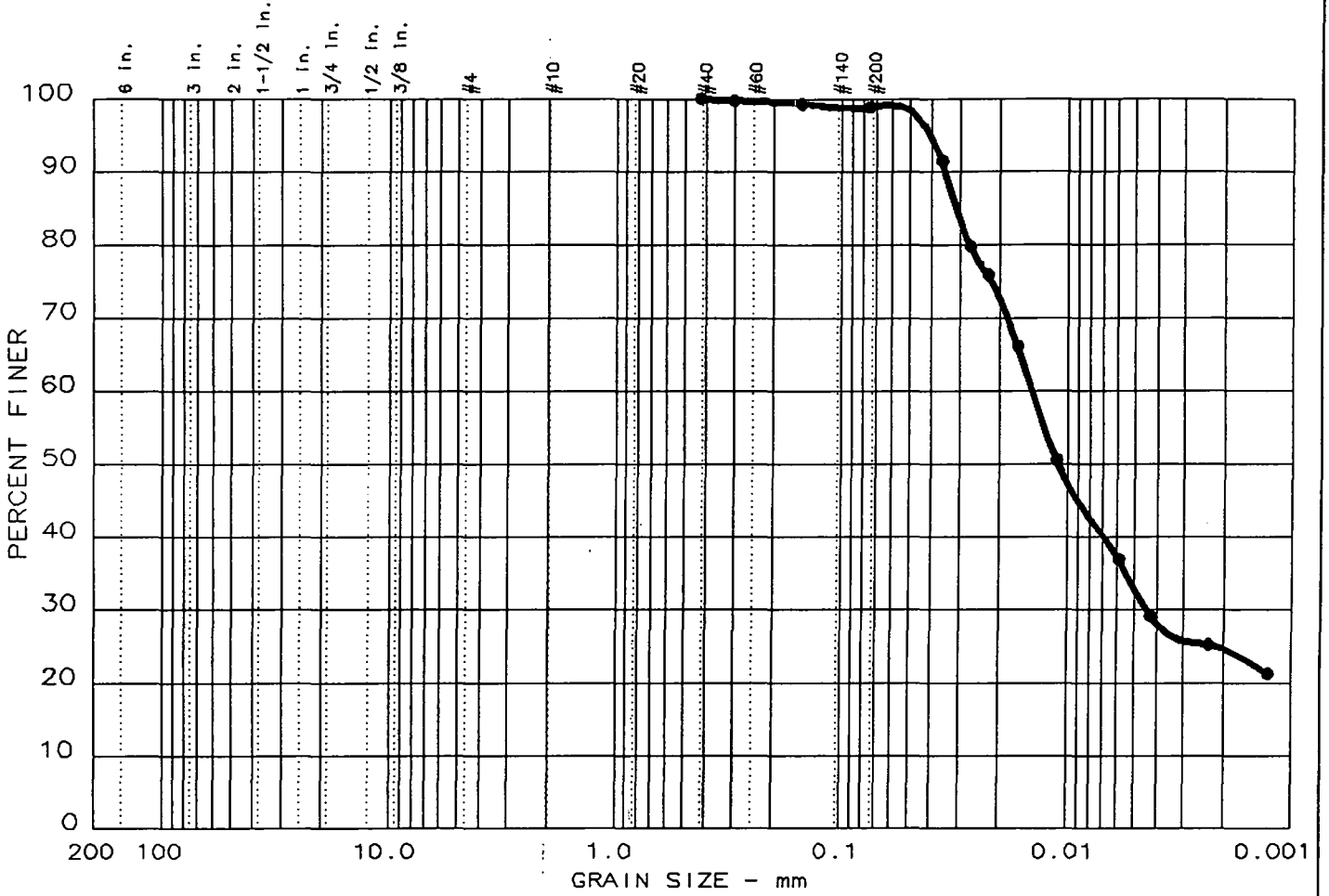
Input By : DWA

Checked By : WWW

Approved By : WWW

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	3	0.0	0.0	1.2	66.1	32.7

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	49	28			0.011	0.004				

MATERIAL DESCRIPTION	USCS	AASHTO
● Brown Lean CLAY, Trace Sand Natural Moisture Content = 31.7%	CL	A-7-6

Project No.: 98024
Project: Stoughton Landfill Clay Borrow Site
● Location: Test Pit:#12A @ 3.0 ft Rosenbaum Site

Date: April 15, 1998

GRAIN SIZE DISTRIBUTION TEST REPORT

CGC, Inc.

Remarks:

Tested By: DWA

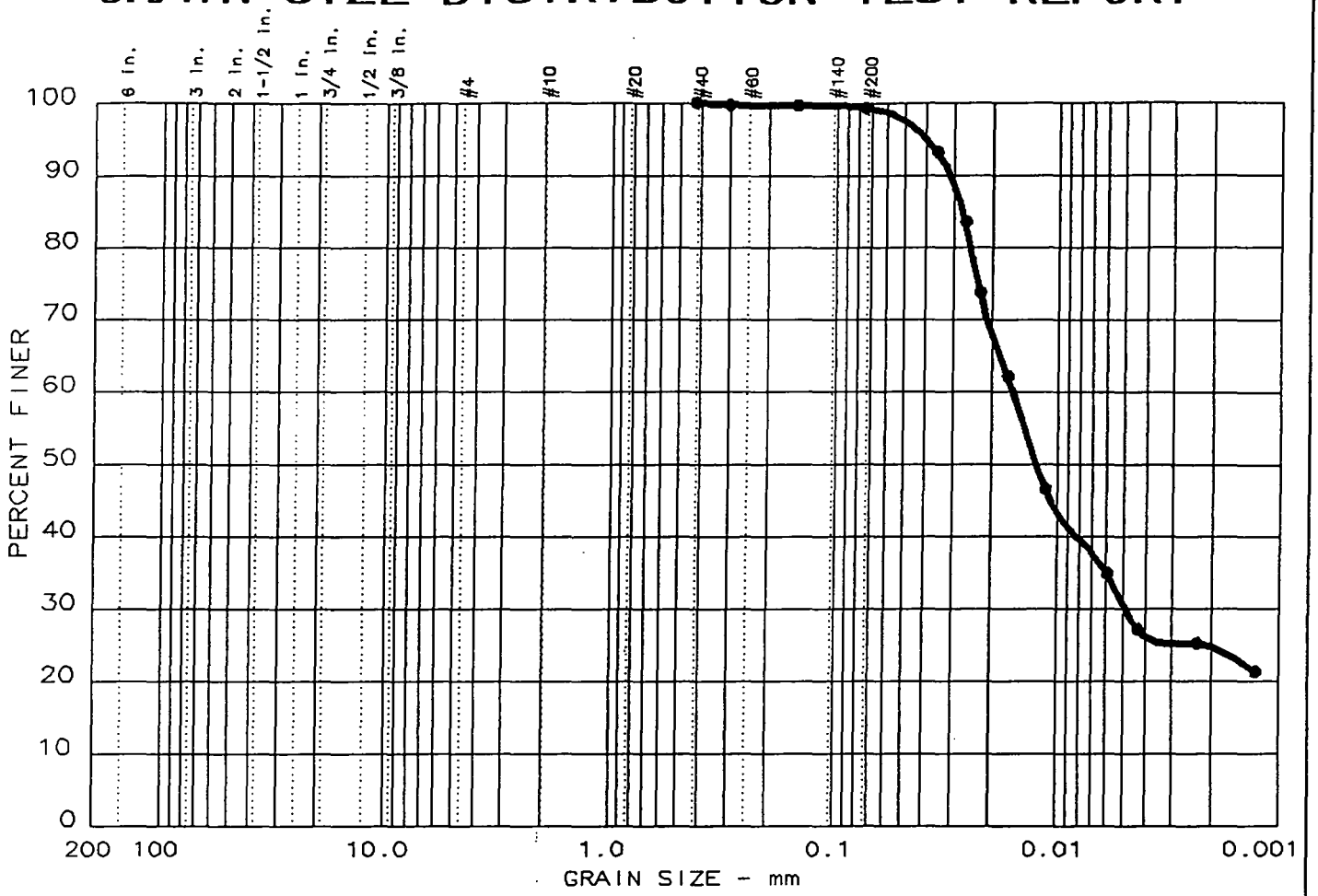
Input By : DWA

Checked By : WWW

Approved By : WWW

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	4	0.0	0.0	0.7	68.8	30.5

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	48	28			0.013	0.005				

MATERIAL DESCRIPTION	USCS	AASHTO
● Brown Lean CLAY, Trace Sand Natural Moisture Content = 31.9%	CL	A-7-6

Project No.: 98024
Project: Stoughton Landfill Clay Borrow Site
● Location: Test Pit:#12A @ 8.0 ft Rosenbaum Site

Date: April 15, 1998

GRAIN SIZE DISTRIBUTION TEST REPORT

CGC, Inc.

Remarks:

Tested By: DWA

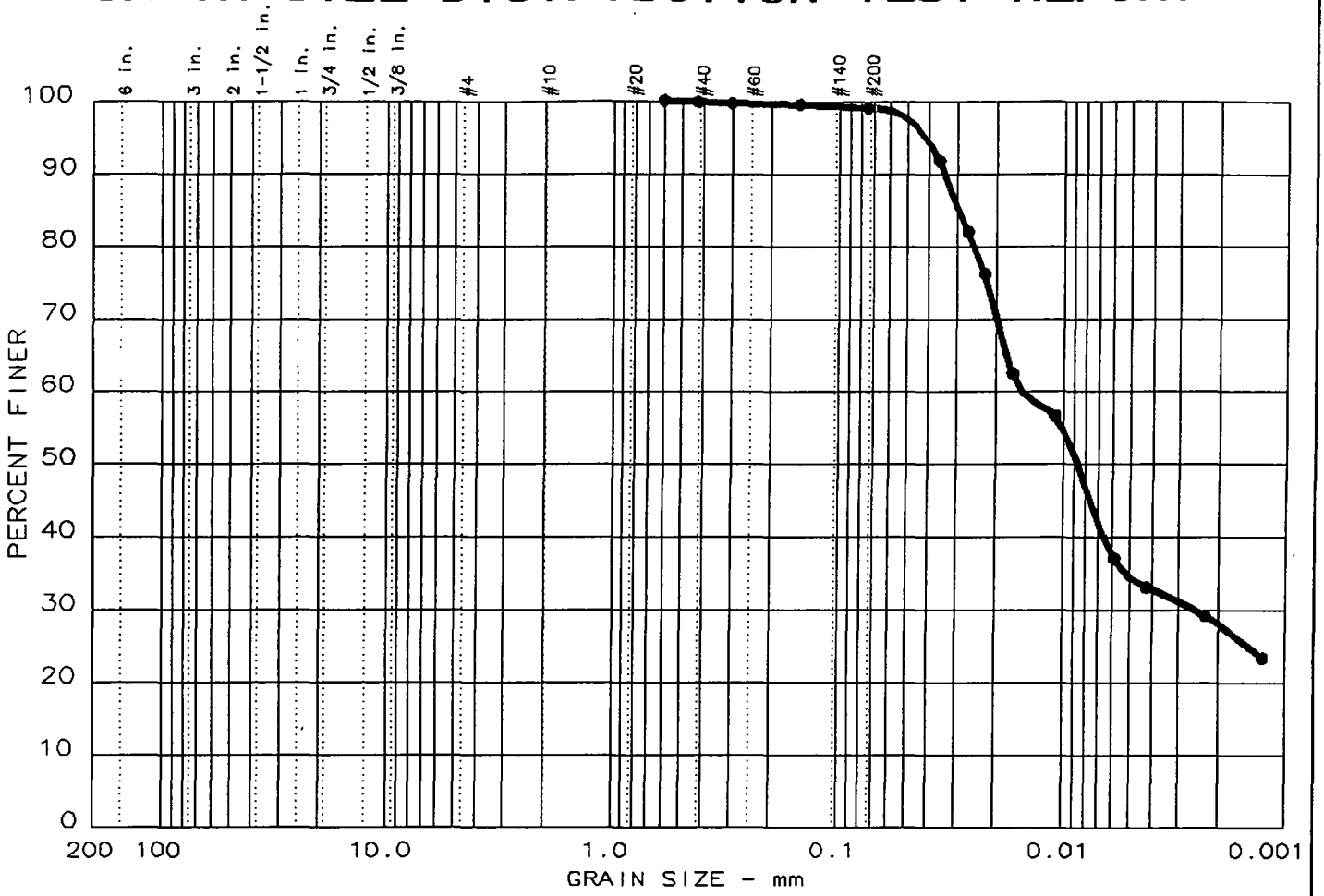
Input By : DWA

Checked By : WWW

Approved By : WWW

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	5	0.0	0.0	1.0	64.6	34.4

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	49	28			0.009	0.003				

MATERIAL DESCRIPTION	USCS	AASHTO
● Brown Lean CLAY, Trace Sand Natural Moisture Content = 30.3%	CL	A-7-6

Project No.: 98024

Project: Stoughton Landfill Clay Borrow Site

● Location: Test Pit:#13A @ 3.0 ft Rosenbaum Site

Date: April 15, 1998

GRAIN SIZE DISTRIBUTION TEST REPORT

CGC, Inc.

Remarks:

Tested By: DWA

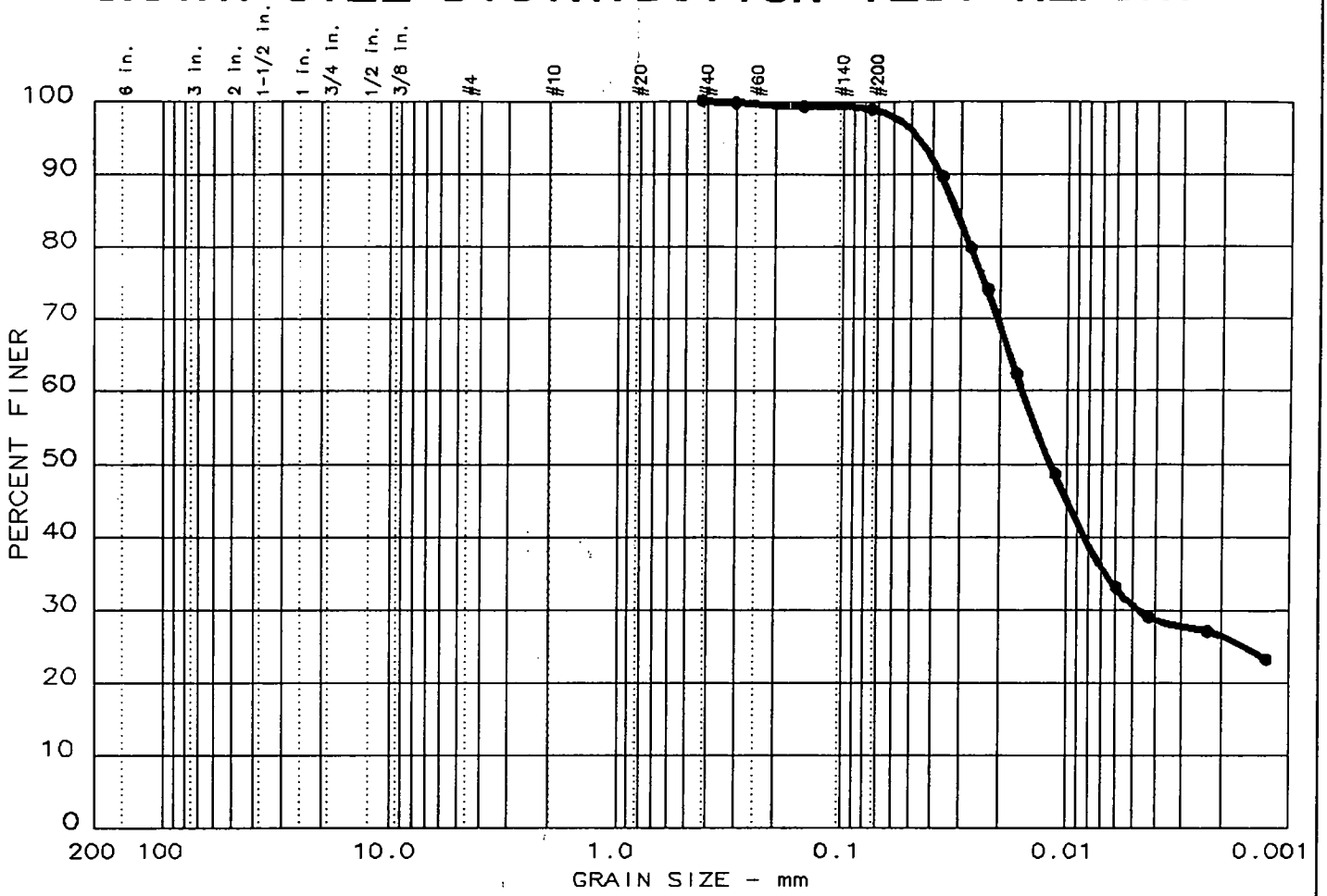
Input By : DWA

Checked By : WWW

Approved By : WWW

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	6	0.0	0.0	1.1	68.3	30.6

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	49	25			0.012	0.005				

MATERIAL DESCRIPTION	USCS	AASHTO
● Brown Lean CLAY, Trace Sand Natural Moisture Content = 28.7%	CL	A-7-6

Project No.: 98024
Project: Stoughton Landfill Clay Borrow Site
● Location: Test Pit:#13A @ 4.5 ft Rosenbaum Site

Date: April 15, 1998

GRAIN SIZE DISTRIBUTION TEST REPORT

CGC, Inc.

Remarks:

Tested By: DWA

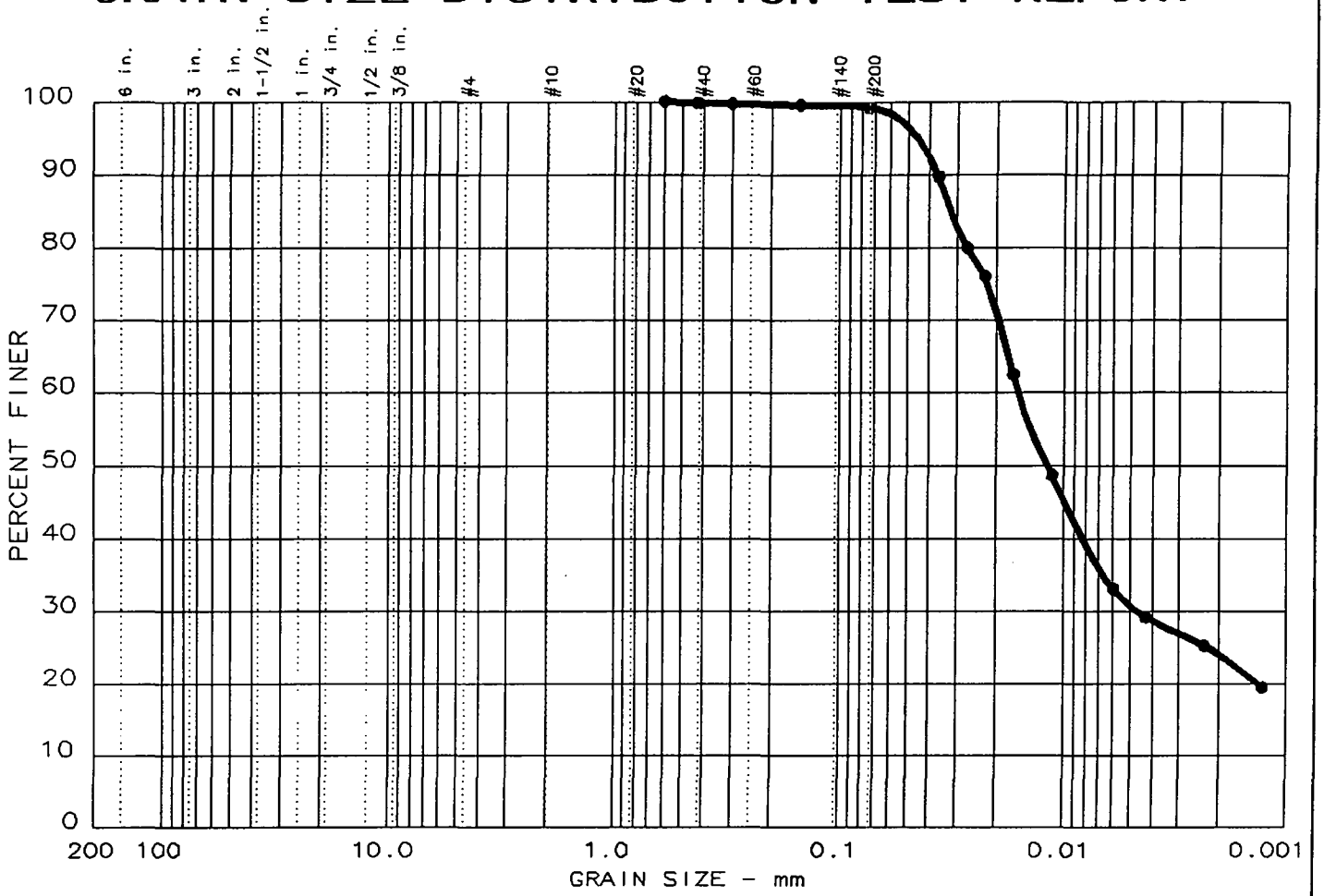
Input By : DWA

Checked By : WWW

Approved By : WWW

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	7	0.0	0.0	0.8	68.5	30.7

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	49	27			0.012	0.005				

MATERIAL DESCRIPTION	USCS	AASHTO
● Brown Lean CLAY, Trace Sand Natural Moisture Content = 29.2%	CL	A-7-6

Project No.: 98024
Project: Stoughton Landfill Clay Borrow Site
● Location: Test Pit:#14A @ 4.0 ft Rosenbaum Site

Date: April 15, 1998

GRAIN SIZE DISTRIBUTION TEST REPORT

CGC, Inc.

Remarks:

Tested By: DWA

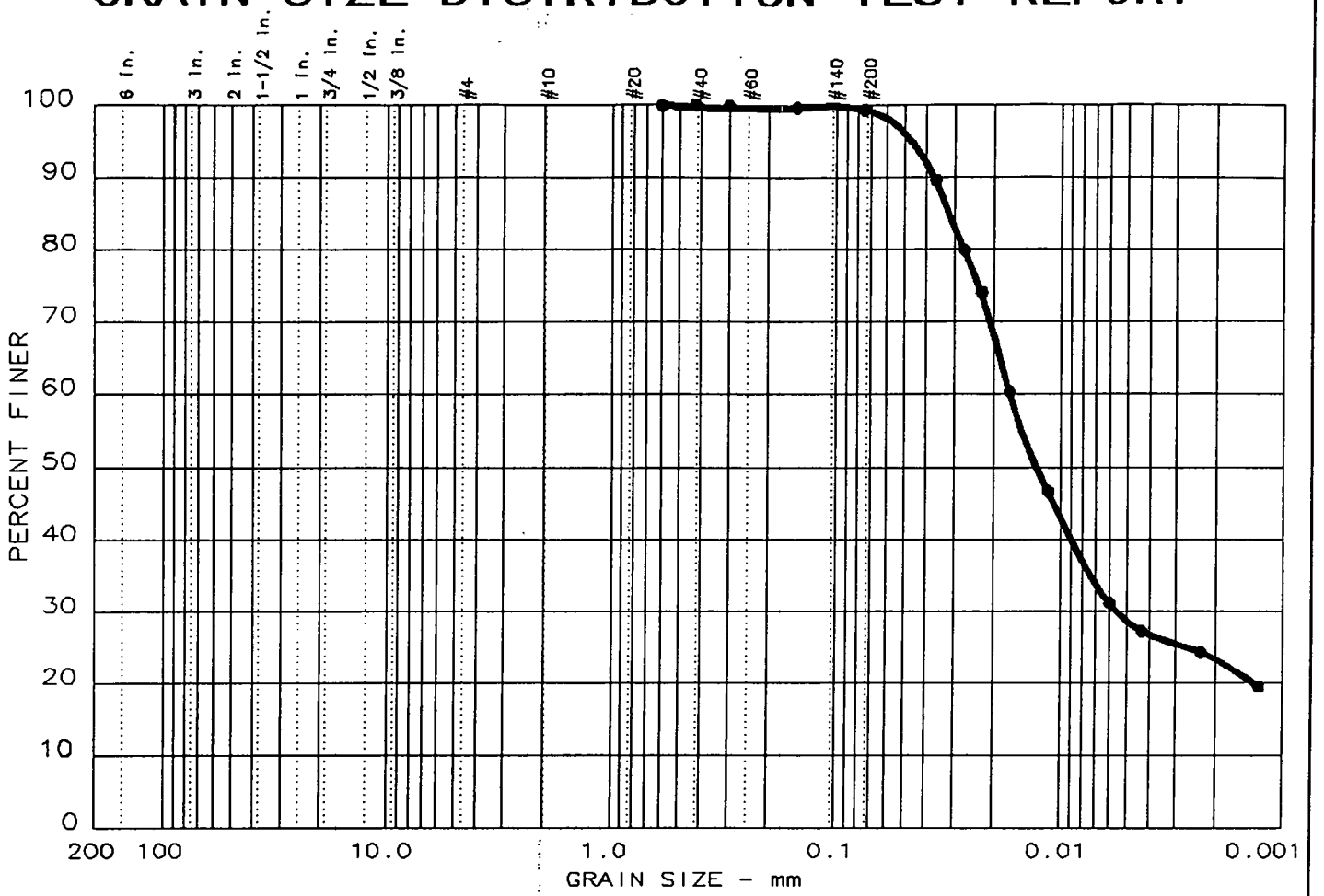
Input By : DWA

Checked By : WWW

Approved By : WWW

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	8	0.0	0.0	0.8	70.7	28.5

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	45	28			0.013	0.006				

MATERIAL DESCRIPTION	USCS	AASHTO
● Brown Lean CLAY, Trace Sand Natural Moisture Content = 29.0%	CL	A-7-6

Project No.: 98024
Project: Stoughton Landfill Clay Borrow Site
● Location: Test Pit:#14A @ 8.0 ft Rosenbaum Site

Date: April 15, 1998

GRAIN SIZE DISTRIBUTION TEST REPORT

CGC, Inc.

Remarks:

Tested By: DWA

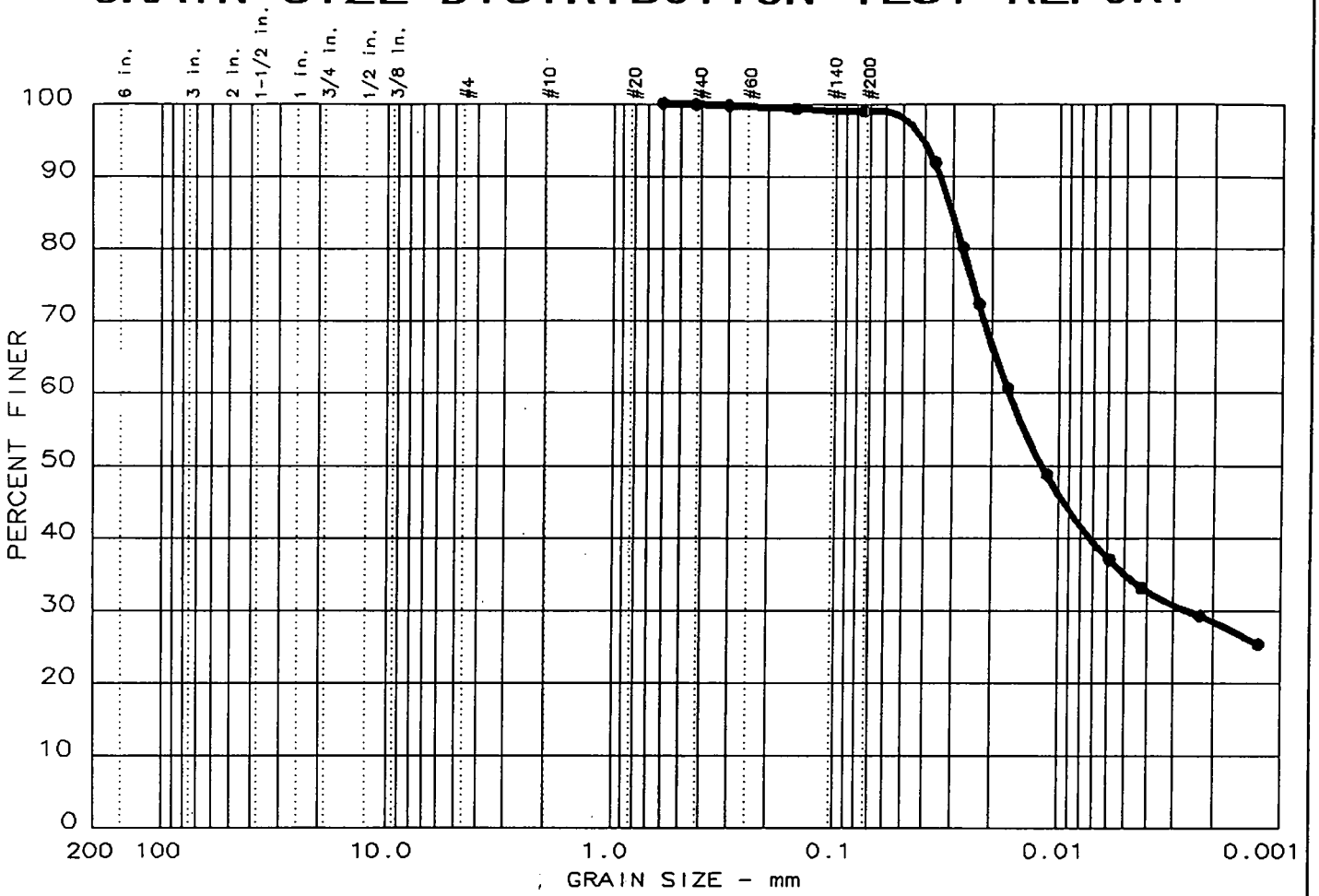
Input By : DWA

Checked By : WWW

Approved By : WWW

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	9	0.0	0.0	1.0	64.0	35.0

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	47	26			0.012	0.003				

MATERIAL DESCRIPTION	USCS	AASHTO
● Brown Lean CLAY, Trace Sand Natural Moisture Content = 29.2%	CL	A-7-6

Project No.: 98024
Project: Stoughton Landfill Clay Borrow Site
● Location: Test Pit:#23A @ 3.0 ft Rosenbaum Site

Date: April 15, 1998

GRAIN SIZE DISTRIBUTION TEST REPORT

CGC, Inc.

Remarks:

Tested By: DWA

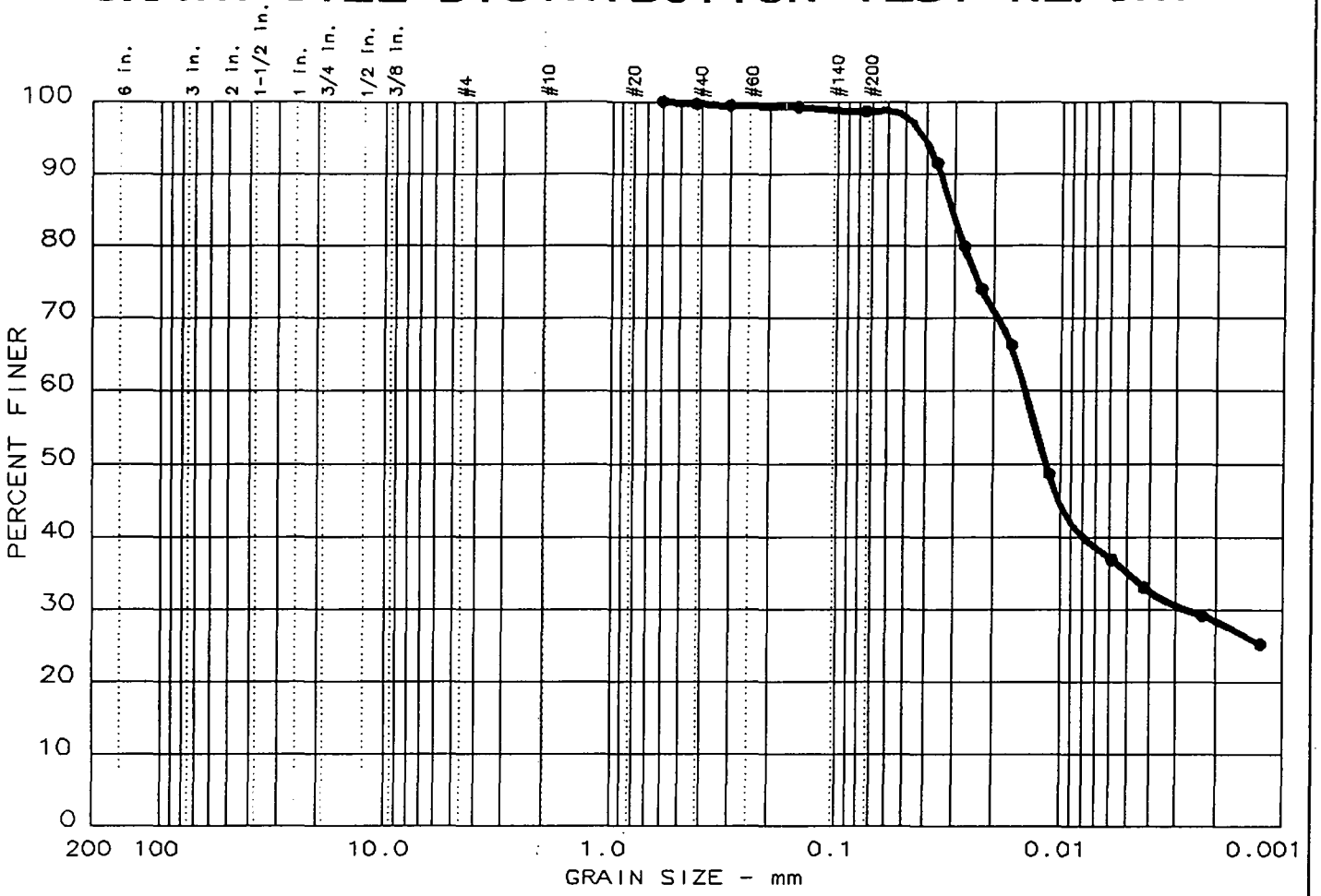
Input By : DWA

Checked By : WWW

Approved By : WWW

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	10	0.0	0.0	1.3	63.7	35.0

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	45	25			0.012	0.003				

MATERIAL DESCRIPTION	USCS	AASHTO
● Brown Lean CLAY, Trace Sand Natural Moisture Content = 28.7%	CL	A-7-6

Project No.: 98024
Project: Stoughton Landfill Clay Borrow Site
● Location: Test Pit:#23A @ 6.0 ft Rosenbaum Site

Date: April 15, 1998

GRAIN SIZE DISTRIBUTION TEST REPORT

CGC, Inc.

Remarks:

Tested By: DWA

Input By : DWA

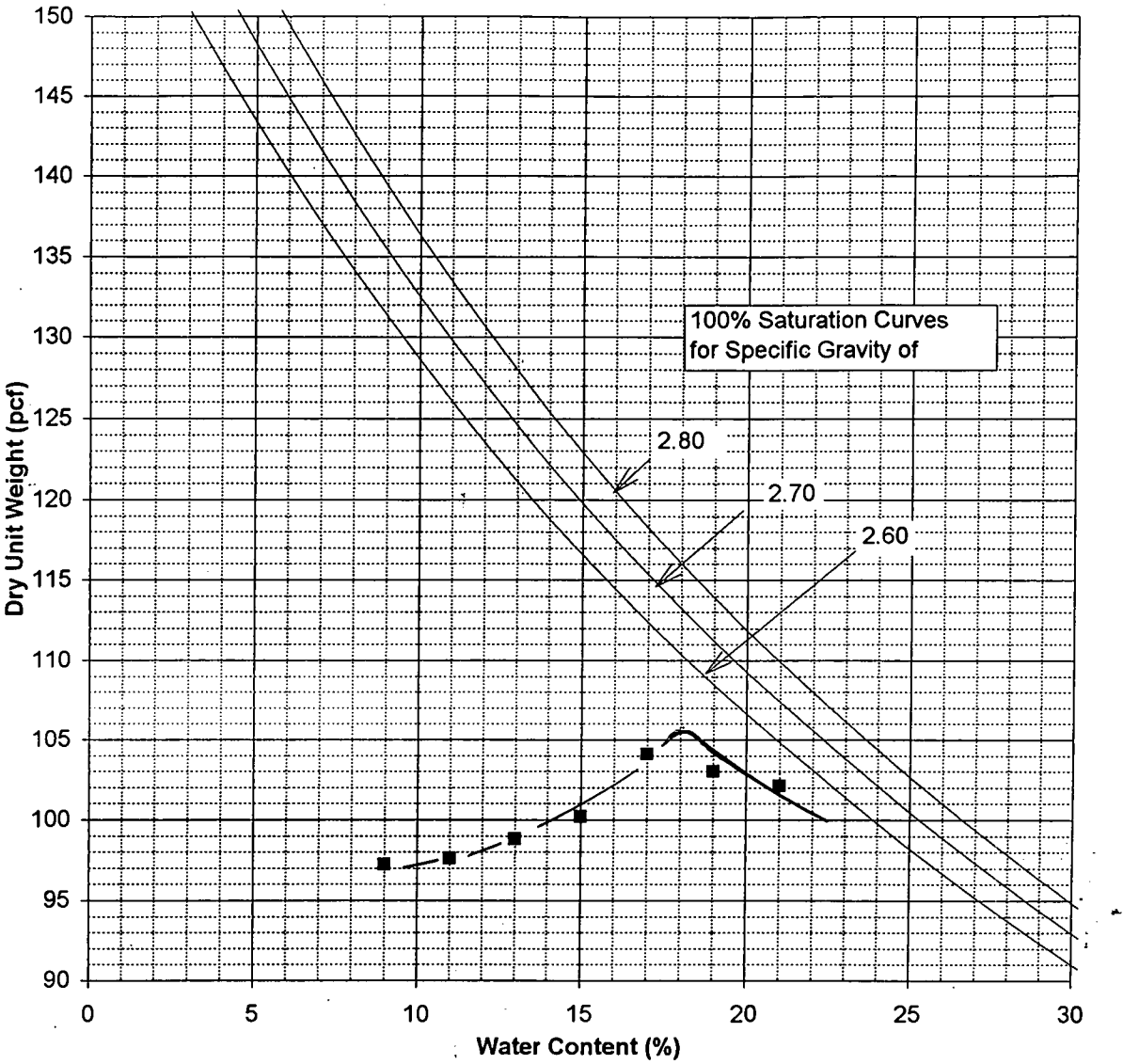
Checked By : WWW

Approved By : WWW

Figure No. _____

STANDARD PROCTOR TESTS

TEST REPORT



Specimen No	Maximum Dry Unit Weight, pcf	Optimum Water Content, %
TP# 1AA & 4AA Rosenbaum Stockpile	**106.0**	**18.0**

Specimen Description
Brown Lean CLAY, Trace Sand

Corrected Maximum Dry Unit Weight, pcf	Corrected Optimum Water Content, %	
N/A	**N/A**	

Test Method		Liquid Limit	Plastic Limit	Plasticity Index	Specific Gravity
ASTM D-698 Method "A"		46	20	26	2.8
Preparation Method	**USCS**	**% Gravel**	**% Sand**	**% Fines**	**% Oversize**
Dry	CL	0.0	2.3	97.7	0.0

PROJECT: Stoughton Landfill Borrow Site

PROJECT NUMBER: 98024

LABORATORY COMPACTION TEST

CGC, Inc.

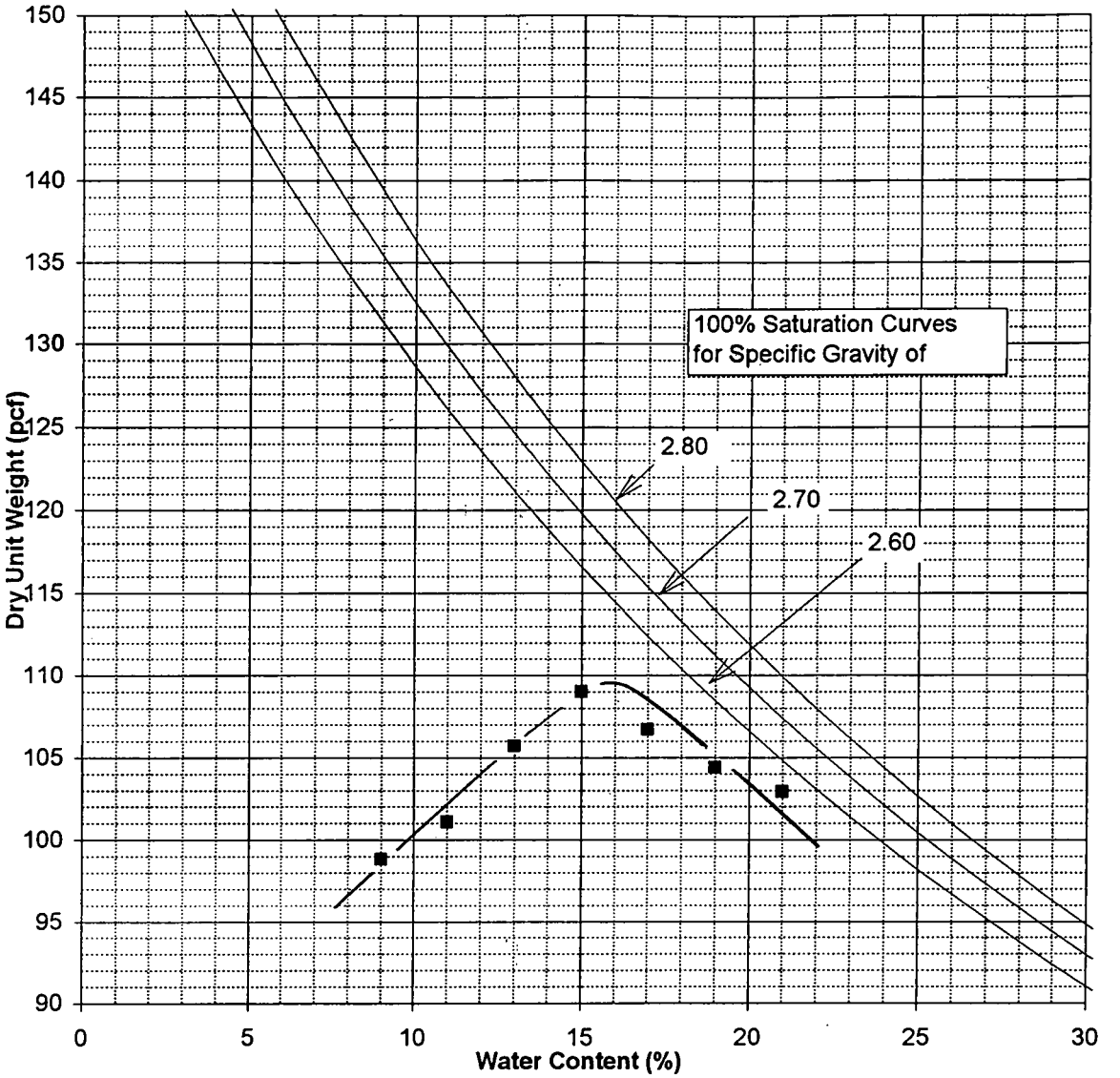
CHECKED BY: DWA

REVIEWED BY: WWW

DATE: 5/4/98

File:96061.17E

TEST REPORT



Specimen No	Maximum Dry Unit Weight, pcf	Optimum Water Content, %	
TP # 1A @ 1.0 to 3.0 ft	**110.0**	**16.0**	
Specimen Description			
Dark Brown Lean CLAY, Trace Sand			
Corrected Maximum Dry Unit Weight, pcf	Corrected Optimum Water Content, %		
N/A	**N/A**		
Test Method	Liquid Limit	Plastic Limit	Plasticity Index	Specific Gravity
ASTM D-698 Method "A"	43	21	22	2.8
Preparation Method / USCS	% Gravel	% Sand	% Fines	% Oversize
Dry / CL	0.0	3.6	96.4	0.0

PROJECT: Stoughton Landfill Borrow Site

PROJECT NUMBER: 98024

LABORATORY COMPACTION TEST

CGC, Inc.

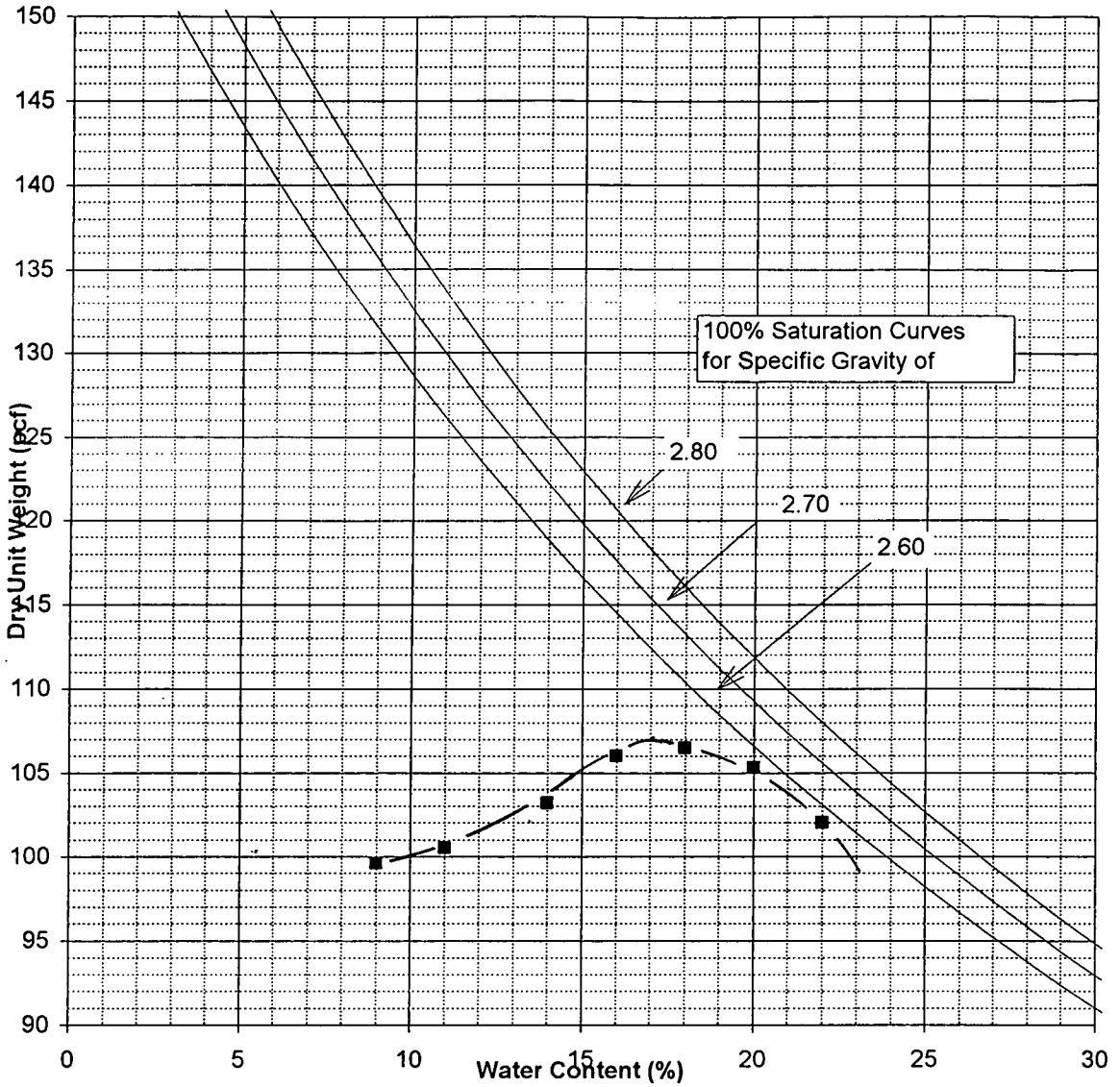
CHECKED BY: DWA

REVIEWED BY: WWW

DATE: 5/4/98

File:98024F.XLS

TEST REPORT



Specimen No.	Maximum Dry Unit Weight, pcf	Optimum Water Content, %	
TP # 4A @ 2.0 to 3.5 ft	**107.0**	**17.0**	
Specimen Description			
Brown Fat to Lean CLAY, Trace Fine Sand			
Corrected Maximum Dry Unit Weight, pcf	Corrected Optimum Water Content, %		
N/A	**N/A**		

Test Method	Liquid Limit	Plastic Limit	Plasticity Index	Specific Gravity
ASTM D-698 Method "A"	48	19	29	2.8

Preparation Method	USCS	% Gravel	% Sand	% Fines	% Oversize
Dry	CL / CH	0.0	0.9	99.1	0.0

PROJECT: Stoughton Landfill Borrow Site

PROJECT NUMBER: 98024

LABORATORY COMPACTION TEST

CGC, Inc. | CHECKED BY: DWA | REVIEWED BY: WWW | DATE: 5/4/98

File:98024G.XLS

FALLING HEAD PERMEABILITY TESTS

CGC, Inc.

Job No. 98024

Date: 5-1-98

FALLING HEAD PERMEABILITY TEST

CGC, Inc., 3011 Perry Street, Madison, WI (608) 288-4100

PROJECT: Stoughton Landfill Clay Borrow

LOCATION: Rosenbaum Quarry - Stoughton, Wisconsin

SAMPLE: TP #1A

DEPTH (ft): 1.0 - 3.0

SOIL DESCRIPTION: **Brown Lean CLAY, Trace Sand (CL)**

SAMPLE DIAMETER (cm): 10.16

	INITIAL	FINAL
SAMPLE LENGTH, L (cm)	11.64	11.64
MOISTURE CONTENT, %	13.0	21.6
DRY DENSITY (lb/cu ft)	105.7	105.7
PERCENT COMPACTION	96%	96%

RUN	COEFFICIENT OF PERMEABILITY, k (cm/sec)
1	4.5×10^{-8}
2	2.9×10^{-8}
3	1.4×10^{-8}
4	1.3×10^{-8}
5	1.3×10^{-8}
6	1.1×10^{-8}
7	1.1×10^{-8}
8	1.1×10^{-8}
9	9.9×10^{-9}
10	9.4×10^{-9}

AVERAGE COEFFICIENT OF PERMEABILITY = 1.0×10^{-8} cm/sec
(Based on run numbers 8 through 10)

FORMULA: $k = \frac{2.3aL}{At} \log_{10} \frac{ho}{h1}$,

Where a = cross-sectional area of standpipe,
t = time for water level to fall from initial height, ho, to final height, h1
(All other terms are defined above)

FOOTNOTES: This permeability test was performed on remolded material compacted into a 1/30 cu ft mold by (ASTM D698 method "A") standard Proctor.

REMARKS:

CHECKED BY: DWA **DATE:** 5/4/98 **APPROVED BY:** WWW **DATE:** 5/4/98

CGC, Inc.

Job No. 98024
Date: 5-1-98

FALLING HEAD PERMEABILITY TEST

CGC, Inc., 3011 Perry Street, Madison, WI (608) 288-4100

PROJECT: Stoughton Landfill Clay Borrow
LOCATION: Rosenbaum Quarry - Stoughton, Wisconsin
SAMPLE: TP #1A
DEPTH (ft): 1.0 - 3.0
SOIL DESCRIPTION: **Brown Lean CLAY, Trace Sand (CL)**
SAMPLE DIAMETER (cm): 10.16

	INITIAL	FINAL
SAMPLE LENGTH, L (cm)	11.64	11.64
MOISTURE CONTENT, %	15.0	20.6
DRY DENSITY (lb/cu ft)	109.0	109.0
PERCENT COMPACTION	99%	99%

RUN	COEFFICIENT OF PERMEABILITY, k (cm/sec)
1	8.9×10^{-9}
2	7.5×10^{-9}
3	6.0×10^{-9}
4	5.5×10^{-9}
5	5.2×10^{-9}
6	4.9×10^{-9}
7	6.5×10^{-9}
8	5.5×10^{-9}
9	4.2×10^{-9}
10	4.1×10^{-9}

AVERAGE COEFFICIENT OF PERMEABILITY = 4.4×10^{-9} cm/sec
(Based on run numbers 8 through 10)

FORMULA: $k = \frac{2.3aL}{At} \log_{10} \frac{ho}{h1}$,

Where a = cross-sectional area of standpipe,
t = time for water level to fall from initial height, ho, to final height, h1
(All other terms are defined above)

FOOTNOTES: This permeability test was performed on remolded material compacted into a 1/30 cu ft mold by (ASTM D698 method "A") standard Proctor.

REMARKS:

CHECKED BY: DWA **DATE:** 5/4/98 **APPROVED BY:** WWW **DATE:** 5/4/98

CGC, Inc.

Job No. 98024

Date: 5-1-98

FALLING HEAD PERMEABILITY TEST

CGC, Inc., 3011 Perry Street, Madison, WI (608) 288-4100

PROJECT: Stoughton Landfill Clay Borrow

LOCATION: Rosenbaum Quarry - Stoughton, Wisconsin

SAMPLE: TP #1A

DEPTH (ft): 1.0 - 3.0

SOIL DESCRIPTION: **Brown Lean CLAY, Trace Sand (CL)**

SAMPLE DIAMETER (cm): 10.16

	INITIAL	FINAL
SAMPLE LENGTH, L (cm)	11.64	11.64
MOISTURE CONTENT, %	17.0	21.1
DRY DENSITY (lb/cu ft)	106.7	106.7
PERCENT COMPACTION	97%	97%

RUN	COEFFICIENT OF PERMEABILITY, k (cm/sec)
1	2.5×10^{-8}
2	1.8×10^{-8}
3	1.2×10^{-8}
4	1.1×10^{-8}
5	9.1×10^{-9}
6	7.8×10^{-9}
7	7.8×10^{-9}
8	7.5×10^{-9}
9	6.8×10^{-9}
10	7.0×10^{-9}

AVERAGE COEFFICIENT OF PERMEABILITY = 7.1×10^{-9} cm/sec
(Based on run numbers 8 through 10)

FORMULA: $k = \frac{2.3aL}{At} \log_{10} \frac{ho}{h1}$,

Where a = cross-sectional area of standpipe,
t = time for water level to fall from initial height, ho, to final height, h1
(All other terms are defined above)

FOOTNOTES: This permeability test was performed on remolded material compacted into a 1/30 cu ft mold by (ASTM D698 method "A") standard Proctor.

REMARKS:

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CGC, Inc.

Job No. 98024

Date: 5-1-98

FALLING HEAD PERMEABILITY TEST

CGC, Inc., 3011 Perry Street, Madison, WI (608) 288-4100

PROJECT: Stoughton Landfill Clay Borrow

LOCATION: Rosenbaum Quarry - Stoughton, Wisconsin

SAMPLE: TP #1A

DEPTH (ft): 1.0 - 3.0

SOIL DESCRIPTION: **Brown Lean CLAY, Trace Sand (CL)**

SAMPLE DIAMETER (cm): 10.16

	INITIAL	FINAL
SAMPLE LENGTH, L (cm)	11.64	11.64
MOISTURE CONTENT, %	19.0	21.7
DRY DENSITY (lb/cu ft)	104.4	104.4
PERCENT COMPACTION	95%	95%

RUN	COEFFICIENT OF PERMEABILITY, k (cm/sec)
1	3.7×10^{-8}
2	2.9×10^{-8}
3	2.2×10^{-8}
4	1.7×10^{-8}
5	1.3×10^{-8}
6	1.3×10^{-8}
7	1.1×10^{-8}
8	9.9×10^{-9}
9	9.9×10^{-9}
10	9.6×10^{-9}

AVERAGE COEFFICIENT OF PERMEABILITY = 9.8×10^{-9} cm/sec
(Based on run numbers 8 through 10)

FORMULA: $k = \frac{2.3aL}{At} \log_{10} \frac{ho}{h1}$,

Where a = cross-sectional area of standpipe,
t = time for water level to fall from initial height, ho, to final height, h1
(All other terms are defined above)

FOOTNOTES: This permeability test was performed on remolded material compacted into a 1/30 cu ft mold by (ASTM D698 method "A") standard Proctor.

REMARKS:

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CGC, Inc.

Job No. 98024

Date: 5-1-98

FALLING HEAD PERMEABILITY TEST

CGC, Inc., 3011 Perry Street, Madison, WI (608) 288-4100

PROJECT: Stoughton Landfill Clay Borrow

LOCATION: Rosenbaum Quarry - Stoughton, Wisconsin

SAMPLE: TP #1A

DEPTH (ft): 1.0 - 3.0

SOIL DESCRIPTION: **Brown Lean CLAY, Trace Sand (CL)**

SAMPLE DIAMETER (cm): 10.16

	INITIAL	FINAL
SAMPLE LENGTH, L (cm)	11.64	11.64
MOISTURE CONTENT, %	21.0	22.8
DRY DENSITY (lb/cu ft)	102.9	102.9
PERCENT COMPACTION	94%	94%

RUN	COEFFICIENT OF PERMEABILITY, k (cm/sec)
1	6.0×10^{-8}
2	4.1×10^{-8}
3	3.2×10^{-8}
4	2.0×10^{-8}
5	1.4×10^{-8}
6	1.4×10^{-8}
7	1.3×10^{-8}
8	1.2×10^{-8}
9	1.3×10^{-8}
10	1.2×10^{-8}

AVERAGE COEFFICIENT OF PERMEABILITY = 1.2×10^{-8} cm/sec
(Based on run numbers 8 through 10)

FORMULA: $k = \frac{2.3aL}{At} \log_{10} \frac{ho}{h1}$,

Where a = cross-sectional area of standpipe,
t = time for water level to fall from initial height, ho, to final height, h1
(All other terms are defined above)

FOOTNOTES: This permeability test was performed on remolded material compacted into a 1/30 cu ft mold by (ASTM D698 method "A") standard Proctor.

REMARKS:

CHECKED BY: DWA **DATE:** 5/4/98 **APPROVED BY:** WWW **DATE:** 5/4/98

CGC, Inc.

Job No. 98024

Date: 5-1-98

FALLING HEAD PERMEABILITY TEST

CGC, Inc., 3011 Perry Street, Madison, WI (608) 288-4100

PROJECT: Stoughton Landfill Clay Borrow

LOCATION: Rosenbaum Quarry - Stoughton, Wisconsin

SAMPLE: TP #4A

DEPTH (ft): 2.0 - 3.5

SOIL DESCRIPTION: **Brown Fat to Lean CLAY, Trace Fine Sand (CL/CH)**

SAMPLE DIAMETER (cm): 10.16

	INITIAL	FINAL
SAMPLE LENGTH, L (cm)	11.64	11.64
MOISTURE CONTENT, %	13.9	20.2
DRY DENSITY (lb/cu ft)	103.2	103.2
PERCENT COMPACTION	96%	96%

RUN	COEFFICIENT OF PERMEABILITY, k (cm/sec)
1	5.7×10^{-8}
2	5.5×10^{-8}
3	3.3×10^{-8}
4	2.4×10^{-8}
5	1.6×10^{-8}
6	7.5×10^{-9}
7	8.1×10^{-9}
8	5.4×10^{-9}
9	5.5×10^{-9}
10	5.2×10^{-9}

AVERAGE COEFFICIENT OF PERMEABILITY = 5.3×10^{-9} cm/sec
(Based on run numbers 8 through 10)

FORMULA: $k = \frac{2.3aL}{At} \log_{10} \frac{ho}{h1}$,

Where a = cross-sectional area of standpipe,
t = time for water level to fall from initial height, ho, to final height, h1
(All other terms are defined above)

FOOTNOTES: This permeability test was performed on remolded material compacted into a 1/30 cu ft mold by (ASTM D698 method "A") standard Proctor.

REMARKS:

CHECKED BY: DWA **DATE:** 5/4/98 **APPROVED BY:** WWW **DATE:** 5/4/98

CGC, Inc.

Job No. 98024

Date: 5-1-98

FALLING HEAD PERMEABILITY TEST

CGC, Inc., 3011 Perry Street, Madison, WI (608) 288-4100

PROJECT: Stoughton Landfill Clay Borrow

LOCATION: Rosenbaum Quarry - Stoughton, Wisconsin

SAMPLE: TP #4A

DEPTH (ft): 2.0 - 3.5

SOIL DESCRIPTION: **Brown Fat to Lean CLAY, Trace Fine Sand (CL/CH)**

SAMPLE DIAMETER (cm): 10.16

	INITIAL	FINAL
SAMPLE LENGTH, L (cm)	11.64	11.64
MOISTURE CONTENT, %	16.2	20.7
DRY DENSITY (lb/cu ft)	106.0	106.0
PERCENT COMPACTION	99%	99%

RUN	COEFFICIENT OF PERMEABILITY, k (cm/sec)
1	6.4×10^{-8}
2	6.7×10^{-8}
3	3.3×10^{-8}
4	1.7×10^{-8}
5	1.2×10^{-8}
6	9.4×10^{-9}
7	7.8×10^{-9}
8	7.8×10^{-9}
9	7.6×10^{-9}
10	7.6×10^{-9}

AVERAGE COEFFICIENT OF PERMEABILITY = 7.6×10^{-9} cm/sec
(Based on run numbers 8 through 10)

FORMULA: $k = \frac{2.3aL}{At} \log_{10} \frac{ho}{h1}$,

Where a = cross-sectional area of standpipe,
t = time for water level to fall from initial height, ho, to final height, h1
(All other terms are defined above)

FOOTNOTES: This permeability test was performed on remolded material compacted into a 1/30 cu ft mold by (ASTM D698 method "A") standard Proctor.

REMARKS:

CHECKED BY: DWA **DATE:** 5/4/98 **APPROVED BY:** WWW **DATE:** 5/4/98

CGC, Inc.

Job No. 98024

Date: 5-1-98

FALLING HEAD PERMEABILITY TEST

CGC, Inc., 3011 Perry Street, Madison, WI (608) 288-4100

PROJECT: Stoughton Landfill Clay Borrow

LOCATION: Rosenbaum Quarry - Stoughton, Wisconsin

SAMPLE: TP #4A

DEPTH (ft): 2.0 - 3.5

SOIL DESCRIPTION: **Brown Fat to Lean CLAY, Trace Fine Sand (CL/CH)**

SAMPLE DIAMETER (cm): 10.16

	INITIAL	FINAL
SAMPLE LENGTH, L (cm)	11.64	11.64
MOISTURE CONTENT, %	18.4	21.1
DRY DENSITY (lb/cu ft)	106.5	106.5
PERCENT COMPACTION	99%	99%

RUN	COEFFICIENT OF PERMEABILITY, k (cm/sec)
1	3.0×10^{-8}
2	1.7×10^{-8}
3	7.0×10^{-9}
4	8.6×10^{-9}
5	9.6×10^{-9}
6	6.0×10^{-9}
7	4.7×10^{-9}
8	2.6×10^{-9}
9	2.3×10^{-9}
10	2.6×10^{-9}

AVERAGE COEFFICIENT OF PERMEABILITY = 2.5×10^{-9} cm/sec
(Based on run numbers 8 through 10)

FORMULA: $k = \frac{2.3aL}{At} \log_{10} \frac{ho}{h1}$,

Where a = cross-sectional area of standpipe,
t = time for water level to fall from initial height, ho, to final height, h1
(All other terms are defined above)

FOOTNOTES: This permeability test was performed on remolded material compacted into a 1/30 cu ft mold by (ASTM D698 method "A") standard Proctor.

REMARKS:

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CGC, Inc.

Job No. 98024

Date: 5-1-98

FALLING HEAD PERMEABILITY TEST

CGC, Inc., 3011 Perry Street, Madison, WI (608) 288-4100

PROJECT: Stoughton Landfill Clay Borrow

LOCATION: Rosenbaum Quarry - Stoughton, Wisconsin

SAMPLE: TP #4A

DEPTH (ft): 2.0 - 3.5

SOIL DESCRIPTION: **Brown Fat to Lean CLAY, Trace Fine Sand (CL/CH)**

SAMPLE DIAMETER (cm): 10.16

	INITIAL	FINAL
SAMPLE LENGTH, L (cm)	11.64	11.64
MOISTURE CONTENT, %	20.3	22.2
DRY DENSITY (lb/cu ft)	105.3	105.3
PERCENT COMPACTION	98%	98%

RUN	COEFFICIENT OF PERMEABILITY, k (cm/sec)
1	6.4×10^{-8}
2	5.8×10^{-8}
3	3.1×10^{-8}
4	1.7×10^{-8}
5	6.8×10^{-9}
6	5.5×10^{-9}
7	5.2×10^{-9}
8	6.0×10^{-9}
9	5.2×10^{-9}
10	6.0×10^{-9}

AVERAGE COEFFICIENT OF PERMEABILITY = 5.7×10^{-9} cm/sec
(Based on run numbers 8 through 10)

FORMULA: $k = \frac{2.3aL}{At} \log_{10} \frac{ho}{h1}$,

Where a = cross-sectional area of standpipe,
t = time for water level to fall from initial height, ho, to final height, h1
(All other terms are defined above)

FOOTNOTES: This permeability test was performed on remolded material compacted into a 1/30 cu ft mold by (ASTM D698 method "A") standard Proctor.

REMARKS:

CHECKED BY: DWA **DATE:** 5/4/98 **APPROVED BY:** WWW **DATE:** 5/4/98

CGC, Inc.

Job No. 98024
Date: 5-1-98

FALLING HEAD PERMEABILITY TEST

CGC, Inc., 3011 Perry Street, Madison, WI (608) 288-4100

PROJECT: Stoughton Landfill Clay Borrow
LOCATION: Rosenbaum Quarry - Stoughton, Wisconsin
SAMPLE: TP #4A
DEPTH (ft): 2.0 - 3.5
SOIL DESCRIPTION: **Brown Fat to Lean CLAY, Trace Fine Sand (CL/CH)**
SAMPLE DIAMETER (cm): 10.16

	INITIAL	FINAL
SAMPLE LENGTH, L (cm)	11.64	11.64
MOISTURE CONTENT, %	22.1	23.3
DRY DENSITY (lb/cu ft)	102.0	102.0
PERCENT COMPACTION	95%	95%

RUN	COEFFICIENT OF PERMEABILITY, k (cm/sec)
1	8.9×10^{-9}
2	8.9×10^{-9}
3	8.1×10^{-9}
4	7.8×10^{-9}
5	6.5×10^{-9}
6	7.8×10^{-9}
7	7.0×10^{-9}
8	6.7×10^{-9}
9	6.5×10^{-9}
10	6.6×10^{-9}

AVERAGE COEFFICIENT OF PERMEABILITY = 6.6×10^{-9} cm/sec
(Based on run numbers 8 through 10)

FORMULA: $k = \frac{2.3aL}{At} \log_{10} \frac{ho}{h1}$,

Where a = cross-sectional area of standpipe,
t = time for water level to fall from initial height, ho, to final height, h1
(All other terms are defined above)

FOOTNOTES: This permeability test was performed on remolded material compacted into a 1/30 cu ft mold by (ASTM D698 method "A") standard Proctor.

REMARKS:

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CGC, Inc.

Job No. 98024

Date: 5-1-98

FALLING HEAD PERMEABILITY TEST

CGC, Inc., 3011 Perry Street, Madison, WI (608) 288-4100

PROJECT: Stoughton Landfill Clay Borrow

LOCATION: Rosenbaum Quarry - Stoughton, Wisconsin

SAMPLE: TP #1AA & #4AA, Stockpile

DEPTH (ft): NA

SOIL DESCRIPTION: **Brown Lean CLAY, Trace Sand (CL)**

SAMPLE DIAMETER (cm): 10.16

	INITIAL	FINAL
SAMPLE LENGTH, L (cm)	11.64	11.64
MOISTURE CONTENT, %	13.0	23.4
DRY DENSITY (lb/cu ft)	98.8	98.8
PERCENT COMPACTION	93%	93%

RUN	COEFFICIENT OF PERMEABILITY, k (cm/sec)
1	3.6×10^{-8}
2	3.0×10^{-8}
3	2.5×10^{-8}
4	1.8×10^{-8}
5	1.5×10^{-8}
6	1.5×10^{-8}
7	1.3×10^{-8}
8	1.3×10^{-8}
9	1.3×10^{-8}
10	1.3×10^{-8}

AVERAGE COEFFICIENT OF PERMEABILITY = 1.3×10^{-8} cm/sec
(Based on run numbers 8 through 10)

FORMULA: $k = \frac{2.3aL}{At} \log_{10} \frac{ho}{h1}$,

Where a = cross-sectional area of standpipe,
t = time for water level to fall from initial height, ho, to final height, h1
(All other terms are defined above)

FOOTNOTES: This permeability test was performed on remolded material compacted into a 1/30 cu ft mold by (ASTM D698 method "A") standard Proctor.

REMARKS:

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CGC, Inc.

Job No. 98024

Date: 5-1-98

FALLING HEAD PERMEABILITY TEST

CGC, Inc., 3011 Perry Street, Madison, WI (608) 288-4100

PROJECT: Stoughton Landfill Clay Borrow

LOCATION: Rosenbaum Quarry - Stoughton, Wisconsin

SAMPLE: TP #1AA & #4AA, Stockpile

DEPTH (ft): NA

SOIL DESCRIPTION: **Brown Lean CLAY, Trace Sand (CL)**

SAMPLE DIAMETER (cm): 10.16

	INITIAL	FINAL
SAMPLE LENGTH, L (cm)	11.64	11.64
MOISTURE CONTENT, %	15.0	22.9
DRY DENSITY (lb/cu ft)	100.2	100.2
PERCENT COMPACTION	95%	95%

RUN	COEFFICIENT OF PERMEABILITY, k (cm/sec)
1	5.8×10^{-8}
2	2.9×10^{-8}
3	1.7×10^{-8}
4	8.9×10^{-9}
5	9.1×10^{-9}
6	9.6×10^{-9}
7	9.6×10^{-9}
8	9.6×10^{-9}
9	9.1×10^{-9}
10	9.4×10^{-9}

AVERAGE COEFFICIENT OF PERMEABILITY = 9.4×10^{-9} cm/sec
(Based on run numbers 8 through 10)

FORMULA: $k = \frac{2.3aL}{At} \log_{10} \frac{ho}{h1}$,

Where a = cross-sectional area of standpipe,
t = time for water level to fall from initial height, ho, to final height, h1
(All other terms are defined above)

FOOTNOTES: This permeability test was performed on remolded material compacted into a 1/30 cu ft mold by (ASTM D698 method "A") standard Proctor.

REMARKS:

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CGC, Inc.

Job No. 98024

Date: 5-1-98

FALLING HEAD PERMEABILITY TEST

CGC, Inc., 3011 Perry Street, Madison, WI (608) 288-4100

PROJECT: Stoughton Landfill Clay Borrow

LOCATION: Rosenbaum Quarry - Stoughton, Wisconsin

SAMPLE: TP #1AA & #4AA, Stockpile

DEPTH (ft): NA

SOIL DESCRIPTION: **Brown Lean CLAY, Trace Sand (CL)**

SAMPLE DIAMETER (cm): 10.16

	INITIAL	FINAL
SAMPLE LENGTH, L (cm)	11.64	11.64
MOISTURE CONTENT, %	17.0	21.7
DRY DENSITY (lb/cu ft)	104.1	104.1
PERCENT COMPACTION	98%	98%

RUN	COEFFICIENT OF PERMEABILITY, k (cm/sec)
1	1.1×10^{-8}
2	8.6×10^{-9}
3	6.3×10^{-9}
4	5.2×10^{-9}
5	3.9×10^{-9}
6	3.1×10^{-9}
7	2.8×10^{-9}
8	2.8×10^{-9}
9	3.1×10^{-9}
10	2.6×10^{-9}

AVERAGE COEFFICIENT OF PERMEABILITY = 2.8×10^{-9} cm/sec
(Based on run numbers 8 through 10)

FORMULA: $k = \frac{2.3aL}{At} \log_{10} \frac{ho}{h1}$,

Where a = cross-sectional area of standpipe,
t = time for water level to fall from initial height, ho, to final height, h1
(All other terms are defined above)

FOOTNOTES: This permeability test was performed on remolded material compacted into a 1/30 cu ft mold by (ASTM D698 method "A") standard Proctor.

REMARKS:

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CGC, Inc.

Job No. 98024

Date: 5-1-98

FALLING HEAD PERMEABILITY TEST

CGC, Inc., 3011 Perry Street, Madison, WI (608) 288-4100

PROJECT: Stoughton Landfill Clay Borrow

LOCATION: Rosenbaum Quarry - Stoughton, Wisconsin

SAMPLE: TP #1AA & #4AA, Stockpile

DEPTH (ft): NA

SOIL DESCRIPTION: **Brown Lean CLAY, Trace Sand (CL)**

SAMPLE DIAMETER (cm): 10.16

	INITIAL	FINAL
SAMPLE LENGTH, L (cm)	11.64	11.64
MOISTURE CONTENT, %	19.0	22.0
DRY DENSITY (lb/cu ft)	103.0	103.0
PERCENT COMPACTION	97%	97%

RUN	COEFFICIENT OF PERMEABILITY, k (cm/sec)
1	2.9×10^{-8}
2	2.2×10^{-8}
3	1.3×10^{-8}
4	9.6×10^{-9}
5	7.5×10^{-9}
6	6.5×10^{-9}
7	5.7×10^{-9}
8	6.0×10^{-9}
9	5.7×10^{-9}
10	5.5×10^{-9}

AVERAGE COEFFICIENT OF PERMEABILITY = 5.7×10^{-9} cm/sec
(Based on run numbers 8 through 10)

FORMULA: $k = \frac{2.3aL}{At} \log_{10} \frac{ho}{h1}$,

Where a = cross-sectional area of standpipe,
t = time for water level to fall from initial height, ho, to final height, h1
(All other terms are defined above)

FOOTNOTES: This permeability test was performed on remolded material compacted into a 1/30 cu ft mold by (ASTM D698 method "A") standard Proctor.

REMARKS:

CHECKED BY: DWA **DATE:** 5/4/98 **APPROVED BY:** WWW **DATE:** 5/4/98

CGC, Inc.

Job No. 98024

Date: 5-1-98

FALLING HEAD PERMEABILITY TEST

CGC, Inc., 3011 Perry Street, Madison, WI (608) 288-4100

PROJECT: Stoughton Landfill Clay Borrow

LOCATION: Rosenbaum Quarry - Stoughton, Wisconsin

SAMPLE: TP #1AA & #4AA, Stockpile

DEPTH (ft): NA

SOIL DESCRIPTION: **Brown Lean CLAY, Trace Sand (CL)**

SAMPLE DIAMETER (cm): 10.16

	INITIAL	FINAL
SAMPLE LENGTH, L (cm)	11.64	11.64
MOISTURE CONTENT, %	21.0	23.8
DRY DENSITY (lb/cu ft)	102.1	102.1
PERCENT COMPACTION	96%	96%

RUN	COEFFICIENT OF PERMEABILITY, k (cm/sec)
1	3.8×10^{-8}
2	2.6×10^{-8}
3	1.6×10^{-8}
4	1.4×10^{-8}
5	1.2×10^{-8}
6	1.0×10^{-8}
7	9.1×10^{-9}
8	8.9×10^{-9}
9	8.6×10^{-9}
10	8.4×10^{-9}

AVERAGE COEFFICIENT OF PERMEABILITY = 8.6×10^{-9} cm/sec
(Based on run numbers 8 through 10)

FORMULA: $k = \frac{2.3aL}{At} \log_{10} \frac{ho}{h1}$,

Where a = cross-sectional area of standpipe,
t = time for water level to fall from initial height, ho, to final height, h1
(All other terms are defined above)

FOOTNOTES: This permeability test was performed on remolded material compacted into a 1/30 cu ft mold by (ASTM D698 method "A") standard Proctor.

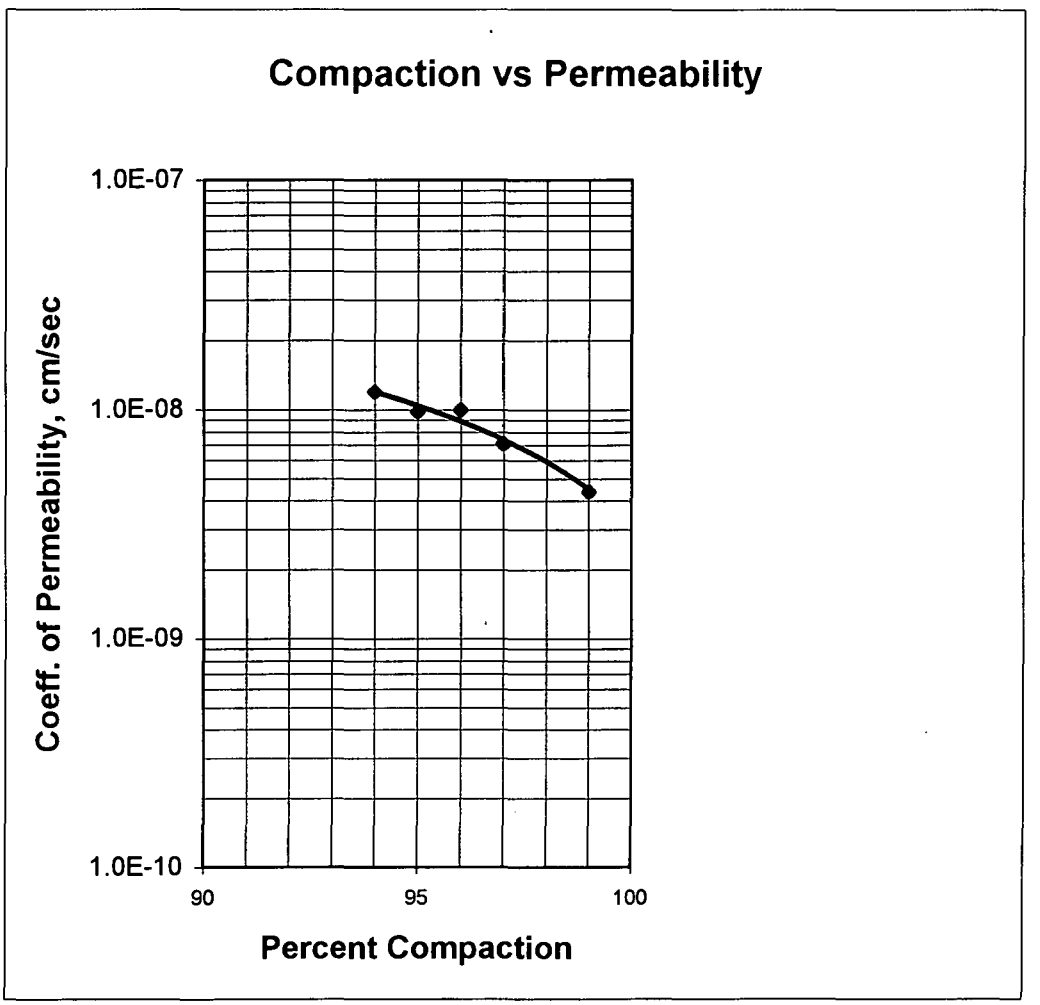
REMARKS:

CHECKED BY: DWA **DATE:** 5/4/98 **APPROVED BY:** WWW **DATE:** 5/4/98

COMPACTION VS PERMEABILITY CURVES

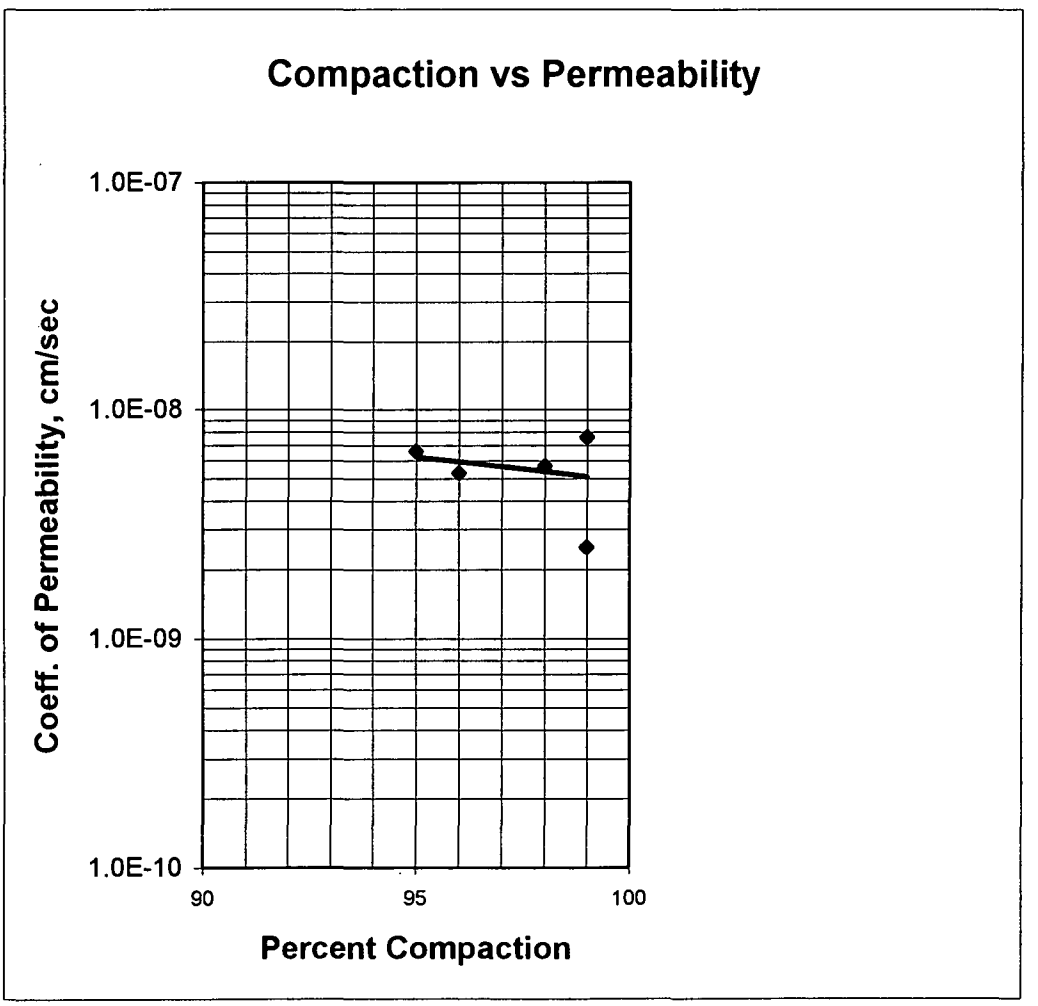
Compaction vs. Permeability
Test Pit 1A - Rosenbaum Clay Borrow Site
Stoughton City Landfill Cap

Test Pit	Initial Moisture Content, %	Final Moisture Content, %	Dry Density, PCF	Percent Compaction	Coefficient of Permeability, cm/sec
TP 1A	13.0	21.6	105.7	96	1.0E-08
TP 1A	15.0	20.6	109.0	99	4.4E-09
TP 1A	17.0	21.1	106.7	97	7.1E-09
TP 1A	19.0	21.7	104.4	95	9.8E-09
TP 1A	21.0	22.8	102.9	94	1.2E-08



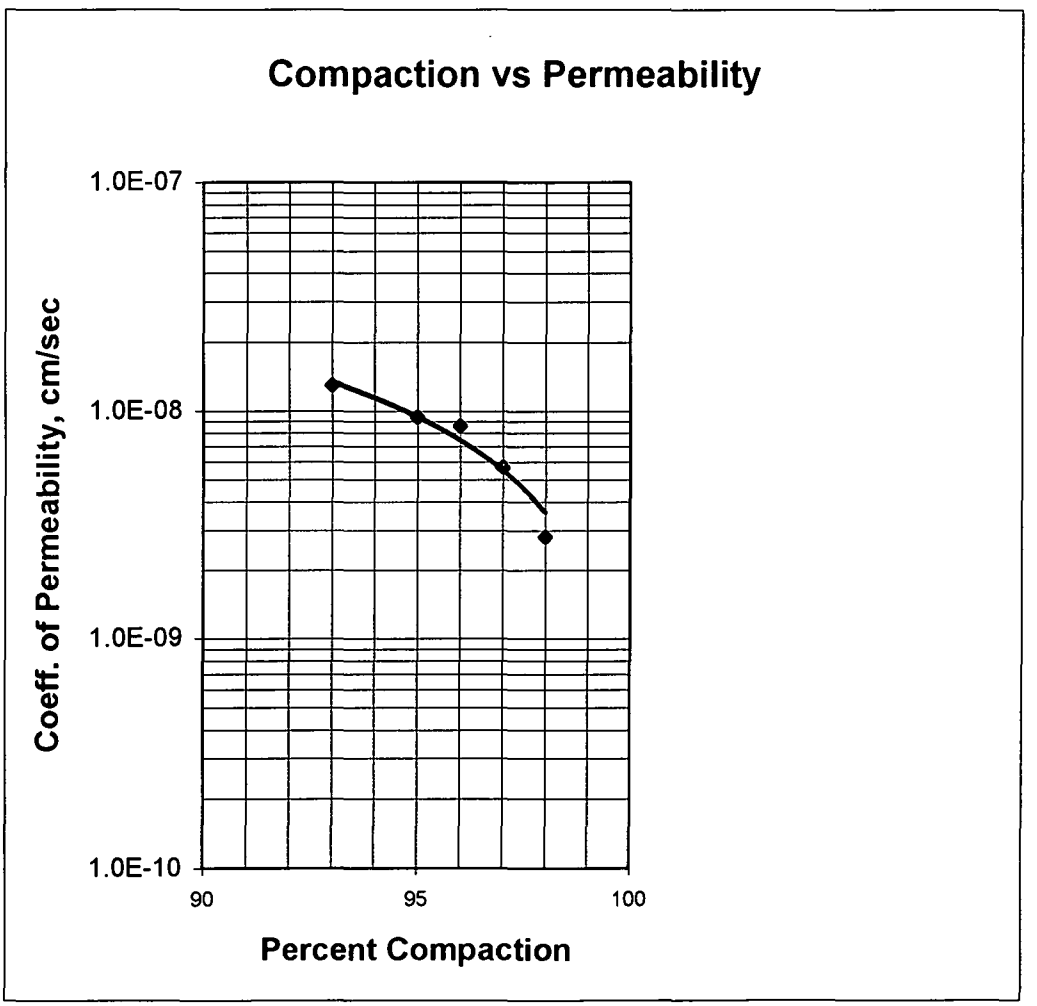
Compaction vs. Permeability
Test Pit 4A - Rosenbaum Clay Borrow Site
Stoughton City Landfill Cap

Test Pit	Initial Moisture Content, %	Final Moisture Content, %	Dry Density, PCF	Percent Compaction	Coefficient of Permeability, cm/sec
TP 4A	13.9	20.2	103.2	96	5.3E-09
TP 4A	16.2	20.7	106.0	99	7.6E-09
TP 4A	18.4	21.1	106.5	99	2.5E-09
TP 4A	20.3	22.2	105.3	98	5.7E-09
TP 4A	22.1	23.3	102.0	95	6.6E-09



Compaction vs. Permeability
Test Pits 1AA & 4AA - Rosenbaum Clay Borrow Site - Stockpile
Stoughton City Landfill Cap

Test Pit	Initial Moisture Content, %	Final Moisture Content, %	Dry Density, PCF	Percent Compaction	Coefficient of Permeability, cm/sec
TP 1AA & 4AA	13.0	32.4	98.8	93	1.3E-08
TP 1AA & 4AA	15.0	22.9	100.2	95	9.4E-09
TP 1AA & 4AA	17.0	21.7	104.1	98	2.8E-09
TP 1AA & 4AA	19.0	22.0	103.0	97	5.7E-09
TP 1AA & 4AA	21.0	23.8	102.1	96	8.6E-09



APPENDIX C

PERMIT DOCUMENTS - ROSENBAUM QUARRY

ROSENBAUM CRUSHING & EXCAVATING

972 HIGHWAY 138 SOUTH STOUGHTON, WI 53589 (608) 873-5068

April 29, 1998

Mr. Ron Hill
Ryan Inc. Central
500 Amundson Parkway
Stoughton, WI 53589

Re: Clay Borrow Site
Stoughton Landfill Cap

Dear Mr. Hill,

Enclosed are copies of the permit application we submitted in 1991 to the Wisconsin Department of Natural Resources relating to the operation of the sand and gravel quarry on our property south of Stoughton. We have also enclosed a copy of the response we received from the DNR.

We have operated the sand and gravel pit under a "grandfathered - Non Conforming Mineral Extraction" zoning classification since we acquired the property in 1988. Prior to our purchase of the property, we understand it had also been operated for the same purpose since before 1965.

To the best of our knowledge, there are no historical or archaeological areas on the property. Likewise, there are no significant hydrological features such as streams, ponds, springs, drainage divides or wetlands on the property. Because the clay borrow site generally slopes toward our active quarry area, we do not plan any further erosion control other than reseeding the disturbed upslope areas. Also, because the area will be used for sand and gravel extraction in the near future, reclamation of the clay borrow site after the clay overburden has been removed is not necessary.

Sincerely,

Mark Rosenbaum

Judy Rosenbaum

Judy Rosenbaum

Mail to: State of Wisconsin
Department of Natural Resources
WPDES Permit Section
Box 7921
Madison, WI 53707-7921

PERMIT APPLICATION
STORM WATER DISCHARGE ASSOCIATED WITH INDUSTRIAL ACTIVITY
Wisconsin Pollutant Discharge Elimination System (WPDES)
Form 3400- 152 7-91

LEAVE BLANK-DNR USE ONLY
Date Received
WPDES Permit Number

This form is authorized by s. 147.025, Wis. Stats. Submittal of a completed form to the Department is mandatory for any owner or operator of a storm water discharge source who must apply for a permit in accordance with 40 CFR Part 122. Storm water discharge means the discharge from any conveyance which is used for collecting and conveying storm water. The conveyance can be a storm sewer, open ditch, channel or grassy swale which conveys runoff and drainage related to storm events and snow melt. Storm water discharge associated with industrial activity includes storm water discharges from: inactive and active hazardous waste storage, disposal and treatment sites; metal, coal and non-metallic mineral mining; gas and oil extraction; metal scrap yards; salvage yards; and active and inactive landfills which have received industrial wastes. Failure to submit a completed form to the Department at least 180 days before the date on which the discharge is to commence, or by a specified deadline, may result in fines not to exceed $25,000 per day, by imprisonment for not more than 6 months, or both, pursuant to s. 147.21, Wis. Stats.

I. FACILITY IDENTIFICATION INFORMATION

A. Name of Facility to be shown on Permit
Rosenbaum Crushing & Excavating

B. Mailing Address of Facility - Street or Route
972 Hwy. 138 South

City, State, Zip Code
Stoughton, WI 53589

C. Location of Facility - County
Dane

Town Dunkirk Range 11 Section 18

1/4 Section NE 1/4-1/4 Section SE

D. Facility Contact Person
Mark Rosenbaum

Telephone Number
(608) 873 - 1944

E. Standard Industrial Classification (SIC) Code (if applicable), Name and 4 Digit Number
Construction Sand And Gravel - 1442

F. Description of Industrial Activity and Land Use at the Facility
If this is an inactive facility, indicate how long the facility has been inactive.
Quarry operation of sand and gravel for construction uses.

II. PERMIT INFORMATION

A. Has your facility been issued a wastewater WPDES permit?

☐ Yes ☒ No
If yes, please indicate:

Permit Number WI-_____

B. Has the Department of Natural Resources issued any other type of permit or license for your facility?

☐ Yes ☒ No
If yes, please list:

Type of Permit/License | Permit/License Number

III. SITE DRAINAGE MAP

You will need to submit a site drainage map as part of your application. An example site map is included to assist you in preparing your own site drainage map. Please indicate the presence of the following items on your map:

A. Facility's property lines
B. Paved areas and buildings on the site
C. Material loading and access areas
D. Area used for open pit mining, landfill activities, salvage yard storage or other industrial activities
E. Areas of hazardous waste treatment, storage or disposal
F. Areas where pesticides, herbicides, soil conditioners and fertilizers are applied
G. Past and present areas used for outdoor storage or disposal of significant material which have a potential to cause storm water contamination
H. Existing structural control measures to reduce pollutants in storm water runoff
I. Storm water conveyance structures - storm sewer, ditch, grass waterway, etc.
J. Location of storm water discharge outfalls (these would be the points of discharge of storm water by each storm water conveyance listed in I)
K. Topographic contour lines or an outline of drainage areas served by each storm water outfall on the site
L. Water body that receives storm water runoff - surface water or groundwater

IV. STORM WATER DISCHARGE INFORMATION (If needed, you may continue your answers on an attached sheet of paper, properly noting the item you are addressing.)

A. Number of outfalls or channelized flows off your propery (as shown on the site map in part III) None

B. Has storm water runoff from your facility been analyzed for presence of any known water pollutants? ☐ Yes ☒ No

If yes, attach copies of any collected data.

C. Where does your storm water runoff discharge? (Check all that apply.)

☐ Surface water body ☒ Seeps into the ground (groundwater)
☐ Municipal storm sewer

If surface water discharge, what is the name of the lake, stream or other water body where storm water discharges?

D. Any known unpact on receiving water bodies listed in IV.C? ☐ Yes ☒ No

If yes, describe to what extent?

E. Identify below if your facility has any of the following to control pollutants from getting into the storm water.

1. Structural control measures (diversions, sedimentation basins): ☒ Yes ☐ No
   If yes, briefly describe structural measures as shown on site map.
   Settling Ponds
2. Management practices (cleaning measures, runoff prevention): ☐ Yes ☒ No
   If yes, briefly describe type and frequency of mangement practices.
3. Treatment of storm water (retention, aeration): ☐ Yes ☒ No
   If yes, briefly describe type of treatment.

F. Estimated area of impervious surfaces (such as paved areas and roo that generate storm water runoff.

Total impervious area:	(1) 0	acres
Total area of your property:	(2) 80	acres
Percent impervious*:	(3) 0	%

*To calculate percent impervious (3), divide the answer in (1) by t answer in (2) and multiply by 100%:
Percent impervious = [(1) ÷ (2)] x 100%.

Outfall No.	Area of Impervious Surface	Total Area Drain
01		
02		
03		
04		

G. Have any leaks, spills or other instances of storm water contamination occurred at your facility within the last 3 years? ☐ Yes ☒ No

If yes, describe what occurred and how it happened:

H. Are any raw materials, finished products, waste products or chemica exposed to storm water, currently or in the past 3 years? ☒ Yes ☐ No

If yes, list items exposed:
All natural materials - sand & stone.

V. DISCHARGES OTHER THAN STORM WATER

Do you discharge anything other than storm water to your storm water outfall(s)? ☐ Yes ☒ No

Are such other discharges regulated under a WPDES permit? ☐ Yes ☒ No

If yes to either of the above questions, please describe the discharges:

VI. SIGNATURES

A. Signature of person completing form, attesting to the accuracy and completeness of the statements made.

Signature: Mark Rosenbaum

Typed/Printed Name	Telephone Number
Mark Rosenbaum	(608) 873 - 1944
Title	**Date Signed**
Owner	11/15/91

Address if application is prepared by a consultant or someone other than an employe of the facility.

Street or Route

City, State, Zip Code

B. This application must be signed by the official representative of the permitted facility who is: the owner, the sole proprietor for a sole proprietorship, a general partner for a partnership, or by a ranking elected official or other duly authorized representative for a unit of government, or an executive officer of at least the level of vice president for a corporation, having overall responsibility for the operation of the facility. If the application is not signed, or is found to be incomplete, it will be returned.

Signature: Mark Rosenbaum

Typed/Printed Name	Telephone Number
Mark Rosenbaum	(608) 873 - 1944
Title	**Date Signed**
Owner	11/15/91

PROP. LINE

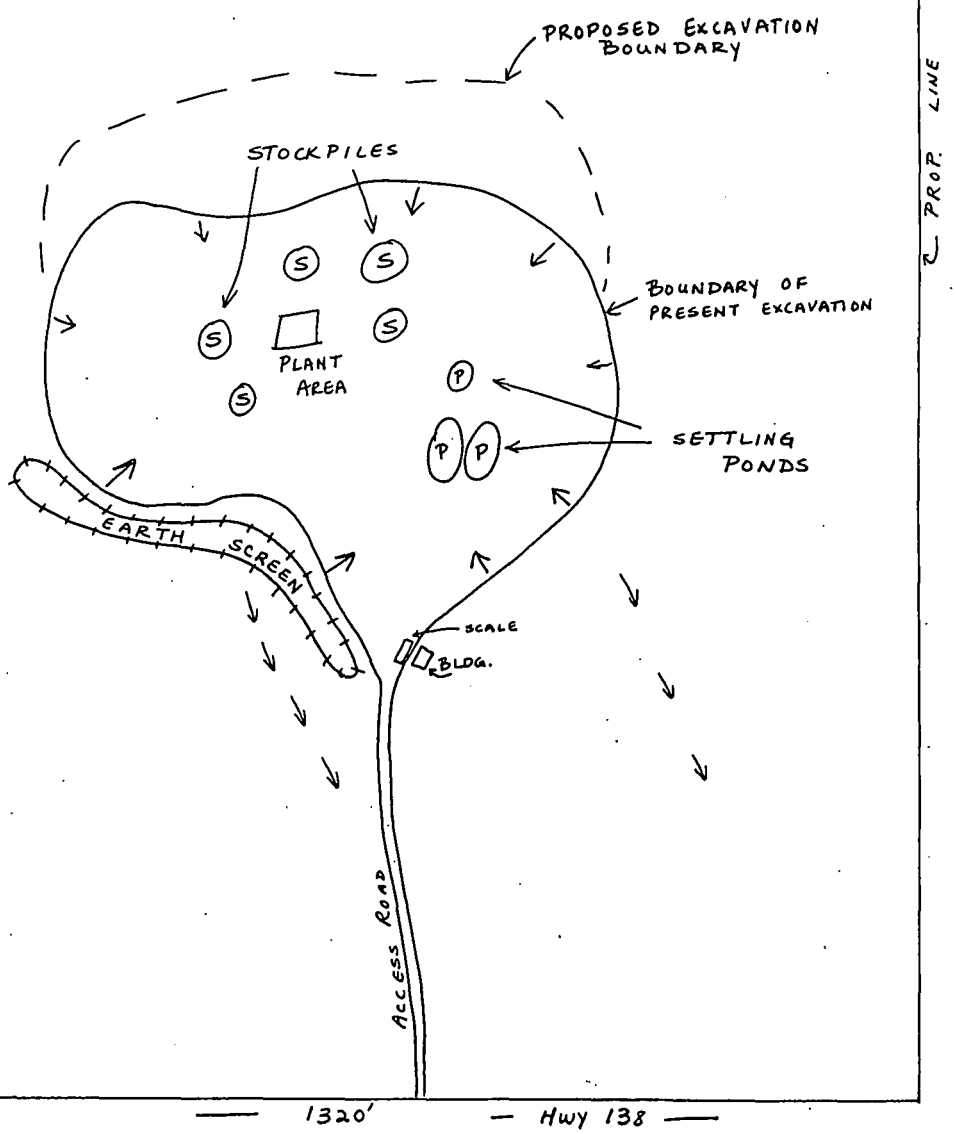
SAND & GRAVEL QUARRY

→ N

SCALE 1" = 200'

NOTE: ALL DRAINAGE WITHIN EXCAVATED AREA IS INTERNAL → SEEPS INTO GROUNDWATER.

→ DIRECTION OF WATER FLOW



WISCONSIN
DEPT. OF NATURAL RESOURCES

Carroll D. Besadny
Secretary

State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

101 South Webster Street
Box 7921
Madison, Wisconsin 53707
TELEPHONE 608-266-2621
TELEFAX 608-267-3579
TDD 608-267-6897

July 15, 1992

Dear Applicant:

This letter is to confirm our receipt of your application or notification of exemption (letter) for a stormwater discharge permit. As you are already aware, the State of Wisconsin is in the process of implementing a stormwater discharge control program in accordance with federal regulations.

The Department of Natural Resources is taking the potential for stormwater to degrade surface and groundwater seriously. It is recognized, however, that the severity of stormwater pollution from industrial sites varies greatly. The Department is in the process of reviewing storm water discharge permit applications to determine in what order facilities will be issued stormwater discharge permits. Collection or analysis of stormwater samples will not be required in order to complete your individual permit application.

The Department intends to have a general stormwater permit available for issuance by October, 1992. The general permit will be used to cover appropriate individual and group applicants. The general permit will not, however, be issued immediately to all eligible facilities. Instead, it will be issued over a period of time according to a schedule that the Department is currently developing. The first permits are likely to be issued during the fall and winter of 1992-93. The Department will be soliciting your comments on permit issuance scheduling and the general permit prior to release.

The general stormwater permits will contain requirements for preventing and minimizing stormwater pollution. In addition, the permit will require some facilities to conduct stormwater sampling during the term of the permit. The Department is developing detailed guidance describing how to prepare a pollution prevention plan, conduct stormwater sampling, and select managerial and structural stormwater poilution control practices.

Thank you for your patience. If you have any further questions or comments, please write to the Department or call (608) 264-6262.

Sincerely,

Mary Jo Kopecky

Mary Jo Kopecky, Director
Bureau of Wastewater Management