

Appendix E  
 Summary of Step-Drawdown Test Results\*  
 Former Raytheon Facility  
 430 Boston Post Road  
 Wayland, Massachusetts

Parameter	MW-33S	MW-43S	MW-45M	MW-47M
<b>Screen Interval</b>				
Bottom Elevation (feet ASL)	103.9	114.4	84.6	82.6
Top Elevation (feet ASL)	108.9	119.4	89.6	87.6
<b>Geologic Material</b>	Silt	Sand & Silt	Sand	Silt
<b>Hydraulic Conductivity</b>				
Slug Test (cm/s)	1.77E-04	7.24E-05	1.72E-02	2.66E-04
Recovery Data (cm/s)	1.69E-03	NA	2.76E-02	NA
<b>Sustainable Well Yield (gpm)</b>	<1.8**	0.28	10	0.40
<b>Trichloroethene (mg/L, EPA 8021B)</b>				
Initial	180	600	120	NA
Middle	220	370	120	NA
End	190	330	120	NA

\* Information originally presented in Appendix D of "Phase II Comprehensive Site Assessment, Former Raytheon Facility, 430 Boston Post Road, Wayland Massachusetts" Report submitted to Raytheon Company 27 November 2001

**Notes:**

ASL = Above Mean Sea Level

gpm = gallons per minute

NA = Not Analyzed

\*\* Well went dry at 1.8 gpm.

Appendix E  
 Summary of Hydraulic Conductivity Testing Results\*  
 Former Raytheon Facility  
 430 Boston Post Road  
 Wayland, Massachusetts

Well Designation	Screen Interval		Geologic Material	Hydraulic Conductivity (cm/sec)
	Bottom Elevation (feet ASL)	Top Elevation (feet ASL)		
<i>Phase I Monitoring Wells</i>				
MW-10	113.3	123.3	Sand & Silt	1.86E-05
MW-13	112.9	122.9	Sand & Silt	4.82E-04
<i>Haley &amp; Aldrich Monitoring Wells</i>				
HA-101	108.6	123.6	Sand, Peat & Silt	1.09E-04
HA-102	104.2	119.2	Sand	2.00E-04
HA-103	109.8	124.8	Sand & Silt	2.59E-03
HA-104	106.7	121.7	Sand	1.36E-03
<i>Phase II Monitoring Wells</i>				
MW-32	112.9	122.9	Sand & Silt	8.05E-05
MW-33M	83.9	88.9	Sand & Silt	2.29E-05
MW-33S	103.9	108.9	Silt	1.77E-04
MW-33D	74.1	79.1	Till	5.19E-02
MW-33B	48.4	53.4	Bedrock	2.44E-03
MW-35	111.2	121.2	Sand	1.04E-05
MW-36	110.9	120.9	Sand & Silt	1.66E-05
MW-37	112.7	122.7	Sand & Silt	2.28E-03
MW-37M	84.7	89.7	Sand & Silt	3.22E-03
MW-39	113.2	123.2	Sand & Silt	2.94E-04
MW-40	113.2	123.2	Sand & Silt	9.00E-04
MW-40S	105.2	110.2	Sand	2.69E-03
MW-41	108.2	118.2	Sand	2.49E-03
MW-43S	114.4	119.4	Sand & Silt	7.24E-05
MW-43D	79.6	84.6	Till	3.85E-02
MW-45S	95.5	100.5	Sand	1.91E-02
MW-45M	84.6	89.6	Sand	1.72E-02
MW-45D	54.6	59.6	Sand & Silt	1.02E-05
MW-46S	107.8	112.8	Sand & Silt	6.49E-03
MW-46M	82.8	87.8	Silt	2.93E-04
MW-47S	96.6	101.6	Sand	1.15E-02
MW-47M	82.6	87.6	Silt	2.66E-04
MW-47D	61.6	66.6	Sand & Silt	7.28E-02

\* Information originally presented in Appendix D of "Phase II Comprehensive Site Assessment, Former Raytheon Facility, 430 Boston Post Road, Wayland Massachusetts" Report submitted to Raytheon Company 27 November 2001

Notes:

ASL = Above Mean Sea Level

Appendix F  
 Summary of Vertical Hydraulic Gradient Data  
 Former Raytheon Facility  
 430 Boston Post Road  
 Wayland, Massachusetts

Well Designation	6-8 Jan-03								21-Apr-03								28-Jul-03								29-Sep-03							
	Reference Elevation (ft ASL)	Depth to Water (ft)	Saturation Elevation (ft ASL)	Head Elevation (ft)	Head Change (ft)	Length Change (ft)	Hydraulic Gradient (ft/ft)	Up/Down	Reference Elevation (ft ASL)	Depth to Water (ft)	Saturation Elevation (ft ASL)	Head Elevation (ft)	Head Change (ft)	Length Change (ft)	Hydraulic Gradient (ft/ft)	Up/Down	Reference Elevation (ft ASL)	Depth to Water (ft)	Saturation Elevation (ft ASL)	Head Elevation (ft)	Head Change (ft)	Length Change (ft)	Hydraulic Gradient (ft/ft)	Up/Down	Reference Elevation (ft ASL)	Depth to Water (ft)	Saturation Elevation (ft ASL)	Head Elevation (ft)	Head Change (ft)	Length Change (ft)	Hydraulic Gradient (ft/ft)	Up/Down
DEP-19S	120.79							NA	120.79	2.78	108.10	118.01	-2.32	35.00	-0.0663	Up	120.79	3.52	108.10	117.27	-2.47	35.00	-0.0706	Up	120.79	3.46	108.10	117.33	-1.50	35.00	-0.0429	Up
DEP-19D	120.78								120.78	0.45	73.10	120.33					120.78	1.04	73.10	119.74				120.78	1.95	73.10	118.83					
MW-1S	133.79							NA	133.79						NA	NA	133.79	11.36	122.43	122.43	3.58	43.83	0.0817	Down	133.79	12.93	120.86	120.86	2.63	42.26	0.0622	Down
MW-1D	133.74								133.74								133.74	14.89	78.60	118.85				133.74	15.51	78.60	118.23					
MW-10S	134.58							NA	134.58						NA	NA	134.58						NA	NA	134.58	14.98	119.60	119.60	1.98	10.38	0.191	Down
MW-10SM	134.22								134.22								134.22						NA	NA	134.22	16.60	109.22	117.62				
MW-106	134.63							NA	134.63						NA	NA	134.63						NA	NA	134.63	16.03	118.60	118.60	1.93	8.97	0.215	Down
MW-106M	134.63								134.63								134.63						NA	NA	134.63	17.96	109.63	116.67				
MW-201S	132.38							NA	132.38	14.15	118.23	118.23	0.34	48.23	0.0070	Down	132.38	16.38	116.00	116.00	0.76	46.00	0.017	Down	132.38	16.71	115.67	115.67	1.42	45.67	0.0311	Down
MW-201D	132.10								132.10	14.21	70.00	117.89					132.10	16.86	70.00	115.24				132.10	17.85	70.00	114.25					
MW-202S	132.74							NA	132.74	14.93	117.81	117.81	-0.02	38.01	-0.001	Up	132.74	16.64	116.10	116.10	0.49	36.30	0.013	Down	132.74	17.45	115.29	115.29	0.66	35.49	0.019	Down
MW-202D	132.72								132.72	14.89	79.80	117.83					132.72	17.11	79.80	115.61				132.72	18.09	79.80	114.63					
MW-203S	132.50							NA	132.50	14.85	117.65	117.65	0.16	45.35	-0.0035	Up	132.50	17.72	114.78	114.78	-0.76	42.48	-0.018	Up	132.50	18.36	114.14	114.14	-1.06	41.84	-0.0253	Up
MW-203D	132.14								132.14	14.33	72.30	117.81					132.14	16.60	72.30	115.54				132.14	16.94	72.30	115.20					
MW-204S	132.98							NA	132.98	14.21	118.77	118.77	0.91	55.67	0.016	Down	132.98	17.27	115.71	115.71	0.12	52.61	0.0023	Down	132.98	18.07	114.91	114.91	-0.68	51.81	-0.013	Up
MW-204D	132.30								132.30	14.44	63.10	117.86					132.30	16.71	63.10	115.59				132.30	16.71	63.10	115.59					
MW-205S	131.98							NA	131.98	14.04	117.94	117.94	0.20	53.04	0.0038	Down	131.98	16.93	115.05	115.05	-2.10	50.15	-0.0419	Up	131.98	17.71	114.27	114.27	-0.84	49.37	-0.017	Up
MW-205D	131.98								131.98	14.24	64.90	117.74					131.98	14.83	64.90	117.15				131.98	16.87	64.90	115.11					
MW-206S	130.82							NA	130.82	14.50	116.32	116.32	-1.01	60.72	-0.0166	Up	130.82	16.35	114.47	114.47	-1.54	58.87	-0.0262	Up	130.82	16.89	113.93	113.93	-0.78	58.33	-0.013	Up
MW-206D	130.66								130.66	13.33	55.60	117.33					130.66	14.65	55.60	116.01				130.66	15.95	55.60	114.71					
MW-207S	129.16							NA	129.16	11.94	117.22	117.22	0.45	67.22	-0.0067	Up	129.16	14.78	114.38	114.38	0.65	64.38	-0.010	Up	129.16	15.32	113.84	113.84	-0.67	63.84	0.010	Up
MW-207D	129.10								129.10	11.83	50.00	117.67					129.10	14.07	50.00	115.03				129.10	14.59	50.00	114.51					
MW-208S	132.14							NA	132.14	14.83	117.31	117.31	-0.47	47.91	-0.010	Up	132.14	16.72	115.42	115.42	-0.13	46.02	-0.0024	Up	132.14	17.68	114.46	114.46	-0.77	45.06	-0.017	Up
MW-208D	132.38								132.38	14.60	69.40	117.78					132.38	16.85	69.40	115.53				132.38	17.15	69.40	115.23					
MW-212	134.39							NA	134.39	12.85	117.30	121.54	2.20	8.46	0.260	Down	134.39	14.55	119.84	119.84	1.39	11.00	0.126	Down	134.39	14.94	119.45	119.45	2.46	10.61	0.232	Down
MW-212M	133.84								133.84	14.50	108.84	119.34					133.84	15.39	108.84	118.45				133.84	16.85	108.84	116.99					
MW-215S	133.42							NA	133.42	12.69	120.73	120.73	0.68	30.93	0.022	Down	133.42	14.00	119.42	119.42	0.78	29.62	0.026	Down	133.42	14.64	118.78	118.78	0.44	28.98	0.015	Down
MW-215D	133.44								133.44	13.39	89.80	120.05					133.44	14.80	89.80	118.64				133.44	15.10	89.80	118.34					
MW-216S	134.54							NA	134.54	13.49	121.05	121.05	0.84	40.75	0.021	Down	134.54	14.66	119.88	119.88	1.19	39.58	0.0301	Down	134.54	15.51	119.03	119.03	0.73	38.73	0.019	Down
MW-216D	134.59								134.59	14.38	80.30	120.21					134.59	15.90	80.30	118.69				134.59	16.29	80.30	118.30					
MW-217S	130.06							NA	130.06	10.66	109.50	119.40	0.96	42.00	0.023	Down	130.06	13.33	109.50	116.73	0.58	42.00	0.014	Down	130.06	14.40	109.50	115.66	-0.19	42.00	-0.0045	Up
MW-217D	130.20								130.20	11.76	67.50	118.44					130.20	14.05	67.50	116.15				130.20	14.35	67.50	115.85					
MW-218S	130.24							NA	130.24	11.65	112.40	118.59	0.35	66.50	0.0053	Down	130.24	14.41	115.83	115.83	-0.07	69.93	-0.001	Up	130.24	15.11	115.13	115.13	-0.55	69.23	-0.0079	Up
MW-218D	130.02								130.02	11.78	45.90	118.24					130.02	14.12	45.90	115.90				130.02	14.34	45.90	115.68					
MW-219S	118.12							NA	118.12	2.81	108.40	115.31	-2.43	64.00	-0.0380	Up	118.12	3.68	108.40	114.44	-0.21	61.00	-0.0033	Up	118.12	4.19	108.40	113.93	-0.53	64.00	-0.0083	Up
MW-219D	117.95								117.95	0.21	44.40	117.74					117.95	3.30	44.40	114.65				117.95	3.49	44.40	114.46					
MW-220S	117.09							NA	117.09	1.18	107.50	115.91	-0.25	88.50	-0.0028	Up	117.09	4.02	107.50	113.07	-1.43	88.50	-0.0162	Up	117.09	4.09	107.50	113.00	-1.17	88.50	-0.0132	Up
MW-220D	116.99								116.99	0.83	19.00	116.16					116.99	2.49	19.00	114.50				116.99	2.82	19.00	114.17					
MW-221M	120.07							NA	120.07	1.81	101.00	118.26	-1.18	23.00	-0.0513	Up	120.07	3.38	101.00	116.69	0.42	23.00	0.018	Down	120.07	3.87	101.00	116.20	0.20	23.00	0.0087	Down
MW-221D	120.22								120.22	0.78	78.00	119.44					120.22	3.95	78.00	116.27				120.22	4.22	78.00	116.00					
MW-262S	129.60	8.19	104.86	121.41	3.03	50.90	0.0595	Down	129.60	7.25	104.86	122.35	2.95	50.90	0.0580	Down	129.60	9.43	104.86	120.17	2.46	50.90	0.0483	Down	129.60	10.23	104.86	119.37	2.17	50.90	0.0426	Down

Appendix F  
 Summary of Vertical Hydraulic Gradient Data  
 Former Raytheon Facility  
 430 Boston Post Road  
 Wayland, Massachusetts

Well Designation	6-8 Jan-03								21-Apr-03								28-Jul-03								29-Sep-03								
	Reference Elevation (ft ASL)	Depth to Water (ft)	Saturation Elevation (ft ASL)	Head Elevation (ft)	Head Change (ft)	Length Change (ft)	Hydraulic Gradient (ft/ft)	Up/Down	Reference Elevation (ft ASL)	Depth to Water (ft)	Saturation Elevation (ft ASL)	Head Elevation (ft)	Head Change (ft)	Length Change (ft)	Hydraulic Gradient (ft/ft)	Up/Down	Reference Elevation (ft ASL)	Depth to Water (ft)	Saturation Elevation (ft ASL)	Head Elevation (ft)	Head Change (ft)	Length Change (ft)	Hydraulic Gradient (ft/ft)	Up/Down	Reference Elevation (ft ASL)	Depth to Water (ft)	Saturation Elevation (ft ASL)	Head Elevation (ft)	Head Change (ft)	Length Change (ft)	Hydraulic Gradient (ft/ft)	Up/Down	
MW-313S	114.61							NA	114.61						NA	NA	114.61	3.42	105.60	111.19	-1.37	22.00	-0.0623	Up	114.61	3.40	105.60	111.21	0.41	22.00	0.019	Down	
MW-313D	114.37							NA	114.37						NA	NA	114.37	1.81	83.60	112.56					114.37	3.57	83.60	110.80					
MW-314S	114.10							NA	114.10						NA	NA	114.10	3.41	105.30	110.69	0.02	22.00	0.0009	Down	114.10	3.15	105.30	110.95	1.18	22.00	0.0536	Down	
MW-314D	114.09							NA	114.09						NA	NA	114.09	3.42	83.30	110.67					114.09	4.32	83.30	109.77					
MW-315S	114.07							NA	114.07						NA	NA	114.07	2.98	105.20	111.09	-0.11	22.00	-0.0050	Up	114.07	3.08	105.20	110.99	0.10	22.00	0.0045	Down	
MW-315D	113.79							NA	113.79						NA	NA	113.79	2.59	83.20	111.20					113.79	2.90	83.20	110.89					
MW-33S	133.58							NA	133.58	14.59	106.50	118.99	1.26	30.00	0.0420	Down	133.58	16.90	106.50	116.68	1.17	30.00	0.0390	Down	133.58	18.05	106.50	115.53	0.33	30.00	0.011	Down	
MW-33D	133.57							NA	133.57	15.84	76.50	117.73					133.57	18.06	76.50	115.51					133.57	18.37	76.50	115.20					
MW-33S	133.58							NA	133.58	14.59	106.50	118.99	1.24	51.00	0.0243	Down	133.58	16.90	106.50	116.68	1.17	51.00	0.0229	Down	133.58	18.05	106.50	115.53	0.31	51.00	0.0061	Down	
MW-33B	133.67							NA	133.67	15.92	55.50	117.75					133.67	18.16	55.50	115.51					133.67	18.45	55.50	115.22					
MW-37	134.43							NA	134.43	13.82	120.61	120.61	1.86	33.41	0.0557	Down	134.43	15.66	117.73	118.77	1.86	30.53	0.0609	Down	134.43	16.70	117.73	117.73	1.22	30.53	0.0100	Down	
MW-37M	134.40							NA	134.40	15.65	87.20	118.75					134.40	17.49	87.20	116.91					134.40	17.89	87.20	116.51					
MW-40	134.84							NA	134.84						NA	NA	134.84	14.91	119.93	119.93	0.00	12.23	0.00		134.84	15.75	119.93	119.09	0.01	12.23	0.0088	Down	
MW-40S	134.82							NA	134.82						NA	NA	134.82	14.89	107.70	119.93					134.82	15.74	107.70	119.08					
MW-43S	133.80							NA	133.80	12.11	116.90	121.69	2.02	35.00	0.0577	Down	133.80	14.23	116.90	119.57	1.62	35.00	0.0463	Down	133.80	14.62	119.18	119.18	1.66	37.28	0.0445	Down	
MW-43D	134.31							NA	134.31	14.64	81.90	119.67					134.31	16.36	81.90	117.95					134.31	16.79	81.90	117.52					
MW-44S	134.73							NA	134.73	14.02	105.40	120.71	0.44	36.00	0.012	Down	134.73	15.51	105.40	119.22	0.49	36.00	0.014	Down	134.73	16.21	105.40	118.52	0.25	36.00	0.0069	Down	
MW-44D	134.66							NA	134.66	14.39	69.40	120.27					134.66	15.93	69.40	118.73					134.66	16.39	69.40	118.27					
MW-45S	132.07							NA	132.07	14.60	98.00	117.47	-0.48	41.00	-0.012	Up	132.07	17.42	98.00	114.65	-1.06	41.00	-0.0259	Up	132.07	18.10	98.00	113.97	-1.00	41.00	-0.0244	Up	
MW-45D	131.88							NA	131.88	13.93	57.00	117.95					131.88	16.17	57.00	115.71					131.88	16.91	57.00	114.97					
MW-45S	132.07							NA	132.07	14.60	98.00	117.47	0.18	60.20	0.0030	Down	132.07	17.42	98.00	114.65	-0.28	60.20	-0.0047	Up	132.07	18.10	98.00	113.97	-0.71	60.20	-0.012	Up	
MW-45B	131.59							NA	131.59	14.30	37.80	117.29					131.59	16.66	37.80	114.93					131.59	16.91	37.80	114.68					
MW-46S	131.44							NA	131.44	12.27	110.30	119.17	1.44	25.00	0.0576	Down	131.44							NA	NA	131.44	14.74	110.30	116.70	1.74	25.00	0.0696	Down
MW-46M	131.52							NA	131.52	13.79	85.30	117.73					131.52							NA	NA	131.52	16.56	85.30	114.96				
MW-47S	132.30							NA	132.30	14.23	99.10	118.07	0.24	35.00	0.0069	Down	132.30							NA	NA	132.30	17.85	99.10	114.45	0.82	35.00	-0.023	Up
MW-47D	132.29							NA	132.29	14.46	64.10	117.83					132.29							NA	NA	132.29	17.02	64.10	115.27				

Notes:  
 (-) vertical gradient represents upward groundwater flow  
 (+) vertical gradient represents downward groundwater flow  
 ASL = Above Mean Sea Level



Briggs Engineering & Testing  
*A DIVISION OF PK ASSOCIATES, INC.*

April 9, 2003

Briggs# 21843

ERM  
399 Boylston Street  
6<sup>th</sup> Floor  
Boston, MA 02116

Attn: Mr. Mike Horesh

**RE: Analysis of Soil Samples used at the ERM/Lab Work Project.  
(M-10099 through M-10108)**

Mr. Horesh:

Laboratory analysis of your samples tested at our Rockland Facility has been conducted, please see the enclosed results.

If you have any questions or if I can be of further service to you, please feel free to contact me at your convenience.

Very truly yours,  
BRIGGS ENGINEERING & TESTING  
*A Division of PK Associates, Inc.*

Mark D. Liebert  
Laboratory Director  
Construction Technology Division

Enclosures:

[www.briggsengineering.com](http://www.briggsengineering.com)



# Briggs Engineering & Testing

A DIVISION OF PK ASSOCIATES, INC.

## Environmental Resources Management

Briggs # 21843

Tested: 4-8-03

1.	<u>Sample No.</u>	<u>Description</u>	<u>Source</u>
	M-10099	Sandy Silt with clay	B-240/MW-265 35'-37'

### 2. Particle Size Analysis { ASTM D 422 }

<u>Sieve Size</u>		<u>Results</u> {% Passing by Wt.}	<u>Specifications</u>
100 mm	4"	100	
75 mm	3"	100	
63 mm	2-1/2"	100	
50 mm	2"	100	
37.5 mm	1-1/2"	100	
25 mm	1"	100	
19 mm	3/4"	100	
12.5 mm	1/2"	100	
9.5 mm	3/8"	100	
4.75 mm	#4	100	
2.00 mm	#10	100	
850 µm	#20	100	
425 µm	#40	100	
180 µm	#80	98	
150 µm	#100	95	
75 µm	#200	69.0	
<b>HYDROMETER ANALYSIS</b>			
0.0341 mm		37	
0.0230 mm		21	
0.0137 mm		13	
0.0097 mm		10	
0.0069 mm		6	
0.0035 mm		5	
0.0014 mm		5	

3. No specifications were provided.



**Briggs Engineering & Testing**

*A Division of PK Associates, Inc.*

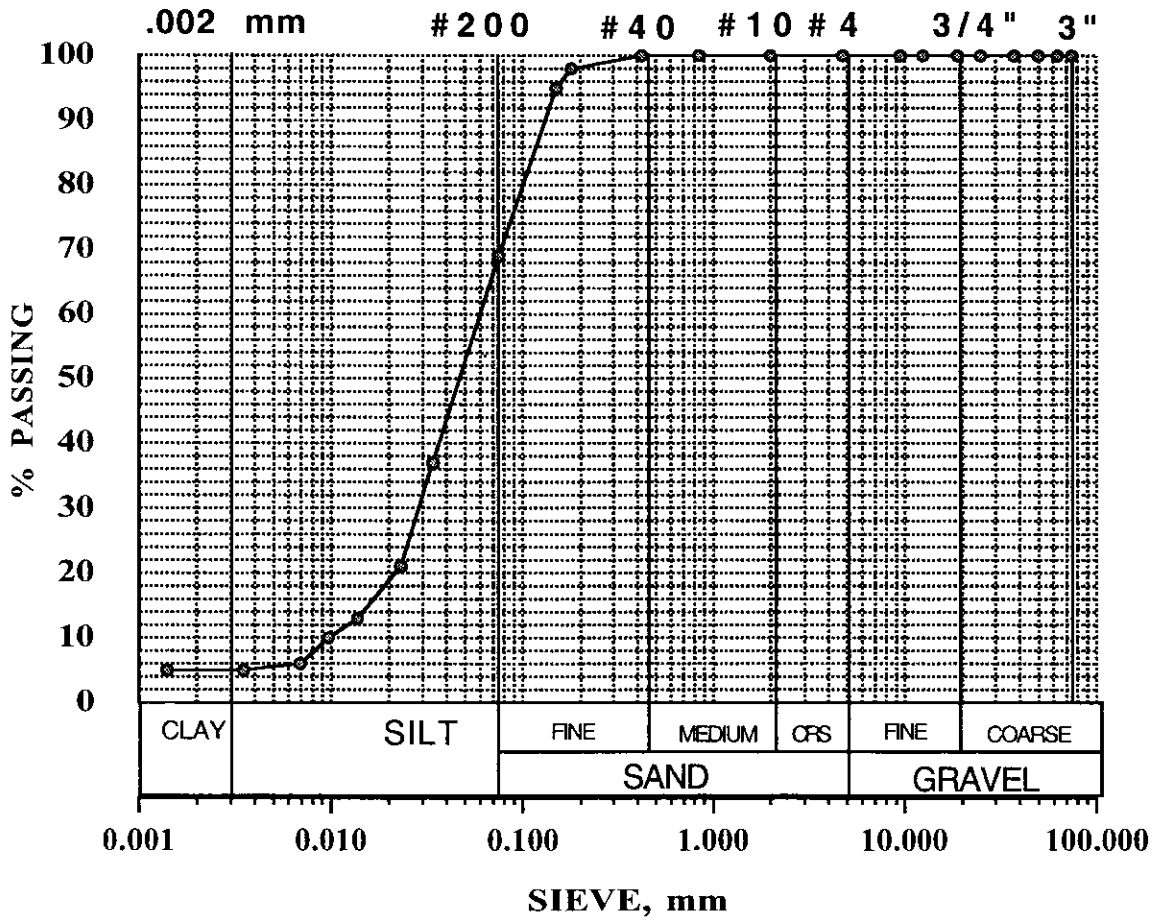
**Project:** Environmental Resources Management

**Sample no.**

M-10099

**Date:** 4/8/03

**PARTICLE SIZE DISTRIBUTION**





**Briggs Engineering & Testing**  
*A DIVISION OF PK ASSOCIATES, INC.*

Environmental Resources Management  
 Briggs # 21843  
 Tested: 4-8-03

1.	<u>Sample No.</u>	<u>Description</u>	<u>Source</u>
	M-10100	Sandy Silt with clay	B-240/MW-265 43'-45'

2. Particle Size Analysis { ASTM D 422 }

<u>Sieve Size</u>		<u>Results</u> {% Passing by Wt.}	<u>Specifications</u>
100 mm	4"	100	
75 mm	3"	100	
63 mm	2-1/2"	100	
50 mm	2"	100	
37.5 mm	1-1/2"	100	
25 mm	1"	100	
19 mm	3/4"	100	
12.5 mm	1/2"	100	
9.5 mm	3/8"	100	
4.75 mm	#4	100	
2.00 mm	#10	100	
850 µm	#20	99	
425 µm	#40	98	
180 µm	#80	94	
150 µm	#100	92	
75 µm	#200	82.0	
<b>HYDROMETER ANALYSIS</b>			
0.0359 mm		22	
0.0235 mm		13	
0.0139 mm		7	
0.0098 mm		7	
0.0069 mm		7	
0.0035 mm		6	
0.0014 mm		6	

3. No specifications were provided.





**Briggs Engineering & Testing**

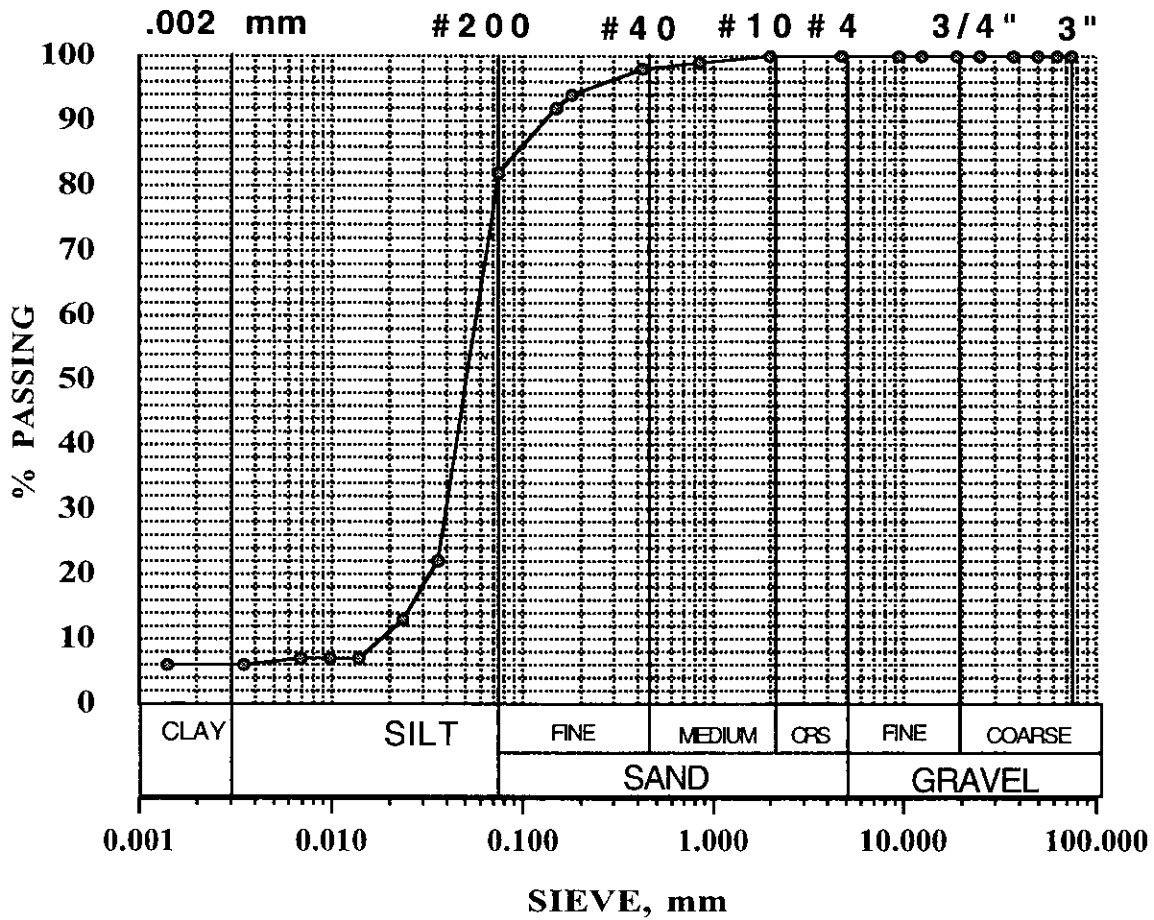
*A Division of PK Associates, Inc.*

**Project:** Environmental Resources Management

**Sample no.** M-10100

**Date:** 4/8/03

### PARTICLE SIZE DISTRIBUTION





**Briggs Engineering & Testing**  
*A DIVISION OF PK ASSOCIATES, INC.*

Environmental Resources Management  
 Briggs # 21843  
 Tested: 4-8-03

1.	<u>Sample No.</u>	<u>Description</u>	<u>Source</u>
	M-10101	Silt with clay	B-238/MW-268 14'-16'

2. Particle Size Analysis { ASTM D 422 }

<u>Sieve Size</u>		<u>Results</u> {% Passing by Wt.}	<u>Specifications</u>
100 mm	4"	100	
75 mm	3"	100	
63 mm	2-1/2"	100	
50 mm	2"	100	
37.5 mm	1-1/2"	100	
25 mm	1"	100	
19 mm	3/4"	100	
12.5 mm	1/2"	100	
9.5 mm	3/8"	100	
4.75 mm	#4	100	
2.00 mm	#10	100	
850 µm	#20	100	
425 µm	#40	100	
180 µm	#80	100	
150 µm	#100	100	
75 µm	#200	98.0	
<b>HYDROMETER ANALYSIS</b>			
0.0326 mm		57	
0.0207 mm		44	
0.0127 mm		31	
0.0094 mm		18	
0.0067 mm		14	
0.0035 mm		6	
0.0014 mm		6	

3. No specifications were provided.

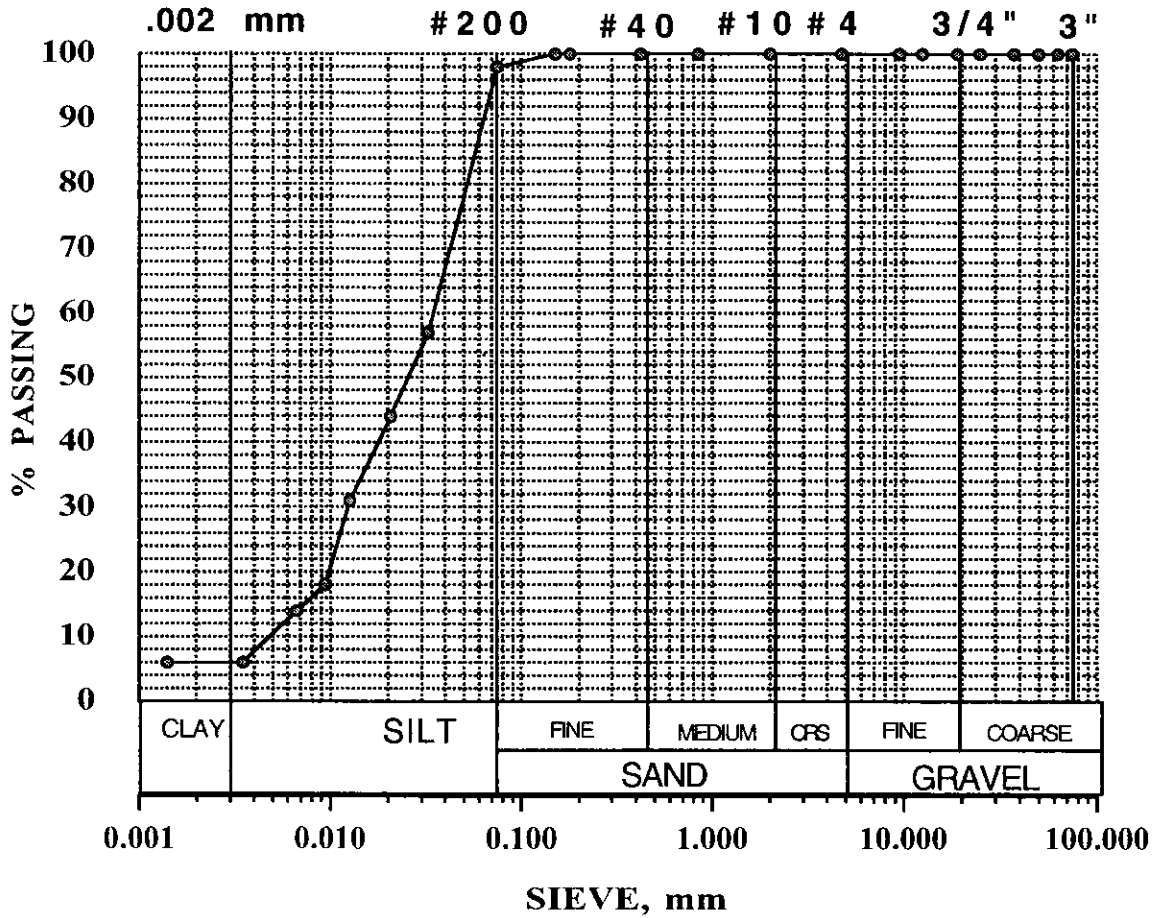


**Briggs Engineering & Testing**

*A Division of PK Associates, Inc.*

**Project:** Environmental Resources Management  
**Sample no.** M-10101 **Date:** 4/8/03

**PARTICLE SIZE DISTRIBUTION**





**Briggs Engineering & Testing**  
*A DIVISION OF PK ASSOCIATES, INC.*

Environmental Resources Management  
 Briggs # 21843  
 Tested: 4-8-03

1.	<u>Sample No.</u>	<u>Description</u>	<u>Source</u>
	M-10102	Silt with clay	B-238/MW-268 8'-10'

2. Particle Size Analysis { ASTM D 422 }

<u>Sieve Size</u>	<u>Results</u> {% Passing by Wt.}	<u>Specifications</u>
100 mm	4"	100
75 mm	3"	100
63 mm	2-1/2"	100
50 mm	2"	100
37.5 mm	1-1/2"	100
25 mm	1"	100
19 mm	3/4"	100
12.5 mm	1/2"	100
9.5 mm	3/8"	100
4.75 mm	#4	100
2.00 mm	#10	100
850 µm	#20	100
425 µm	#40	100
180 µm	#80	100
150 µm	#100	100
75 µm	#200	99.0
<b>HYDROMETER ANALYSIS</b>		
0.0326 mm		66
0.0206 mm		60
0.0119 mm		49
0.0087 mm		38
0.0063 mm		29
0.0034 mm		15
0.0014 mm		9

3. No specifications were provided.

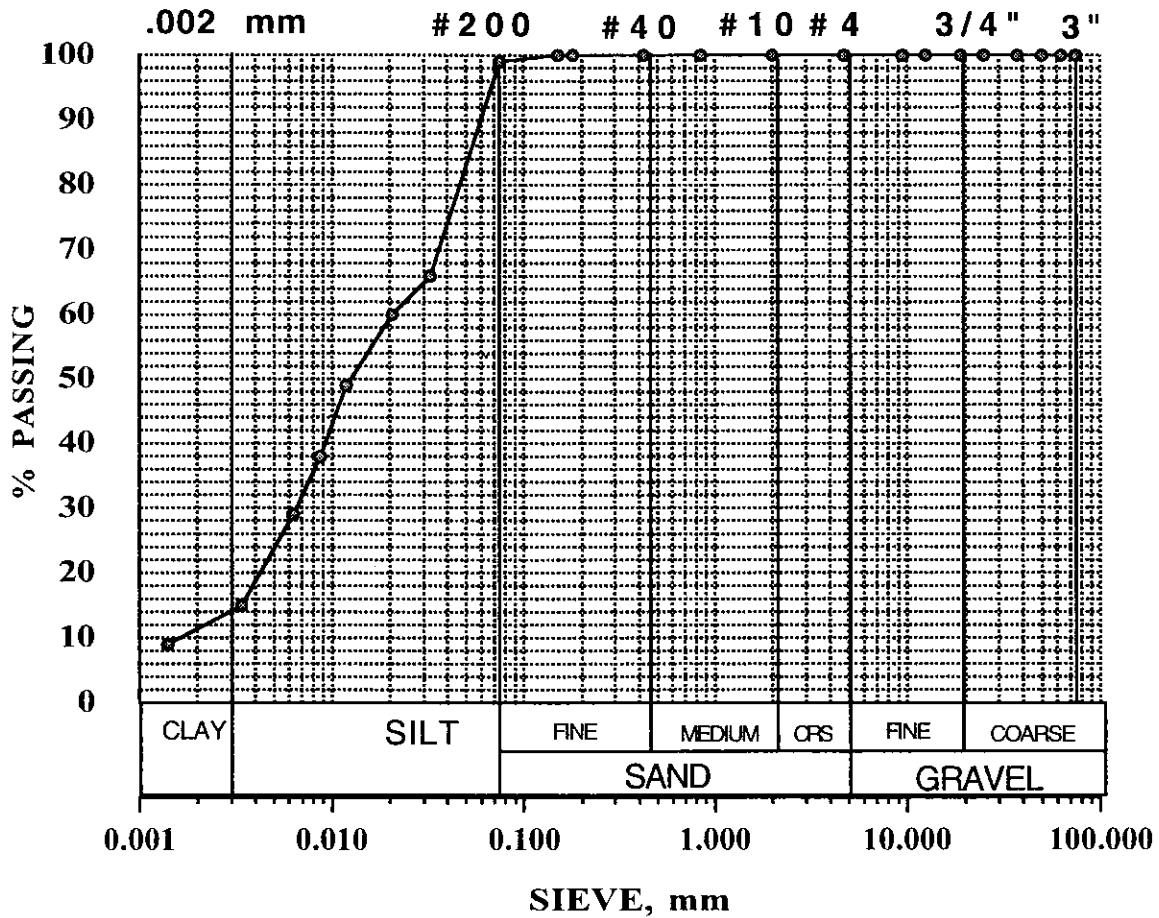


**Briggs Engineering & Testing**

*A Division of PK Associates, Inc.*

<b>Project:</b>	Environmental Resources Management	
<b>Sample no.</b>	M-10102	<b>Date:</b> 4/8/03

**PARTICLE SIZE DISTRIBUTION**





**Briggs Engineering & Testing**  
*A DIVISION OF PK ASSOCIATES, INC.*

Environmental Resources Management  
 Briggs # 21843  
 Tested: 4-8-03

1. Sample No.	Description	Source
M-10103	Silt with clay	B-238/MW-268 65'-67'

2. Particle Size Analysis { ASTM D 422 }

Sieve Size		Results {% Passing by Wt.}	Specifications
100 mm	4"	100	
75 mm	3"	100	
63 mm	2-1/2"	100	
50 mm	2"	100	
37.5 mm	1-1/2"	100	
25 mm	1"	100	
19 mm	3/4"	100	
12.5 mm	1/2"	100	
9.5 mm	3/8"	100	
4.75 mm	#4	100	
2.00 mm	#10	100	
850 µm	#20	100	
425 µm	#40	100	
180 µm	#80	100	
150 µm	#100	99	
75 µm	#200	97.0	

**HYDROMETER ANALYSIS**

0.0326 mm	68
0.0206 mm	53
0.0126 mm	32
0.0092 mm	23
0.0067 mm	16
0.0034 mm	10
0.0014 mm	9

3. No specifications were provided.

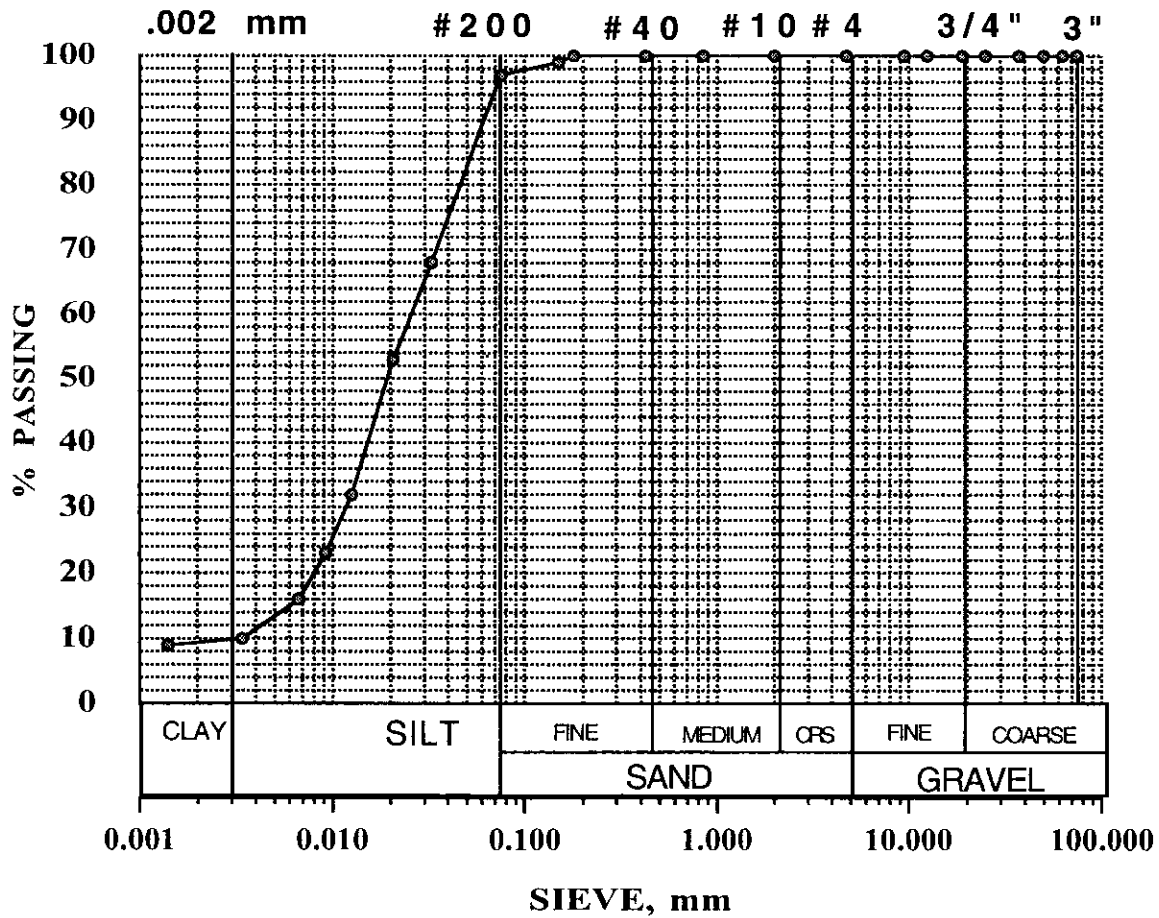


**Briggs Engineering & Testing**

*A Division of PK Associates, Inc.*

**Project:** Environmental Resources Management  
**Sample no.** M-10103 **Date:** 4/8/03

### PARTICLE SIZE DISTRIBUTION





Briggs Engineering & Testing  
 A DIVISION OF PK ASSOCIATES, INC.

Environmental Resources Management  
 Briggs # 21843  
 Tested: 4-8-03

1.	<u>Sample No.</u>	<u>Description</u>	<u>Source</u>
	M-10103A	Silty Sand with Clay	B-237/MW-267 5'-7'

2. Particle Size Analysis { ASTM D 422 }

<u>Sieve Size</u>		<u>Results</u> {% Passing by Wt.}	<u>Specifications</u>
100 mm	4"	100	
75 mm	3"	100	
63 mm	2-1/2"	100	
50 mm	2"	100	
37.5 mm	1-1/2"	100	
25 mm	1"	100	
19 mm	3/4"	100	
12.5 mm	1/2"	100	
9.5 mm	3/8"	100	
4.75 mm	#4	100	
2.00 mm	#10	100	
850 µm	#20	98	
425 µm	#40	93	
180 µm	#80	54	
150 µm	#100	49	
75 µm	#200	37.0	

**HYDROMETER ANALYSIS**

0.0326 mm	32
0.0206 mm	27
0.0126 mm	18
0.0092 mm	15
0.0067 mm	8
0.0034 mm	7
0.0014 mm	7

3. No specifications were provided.



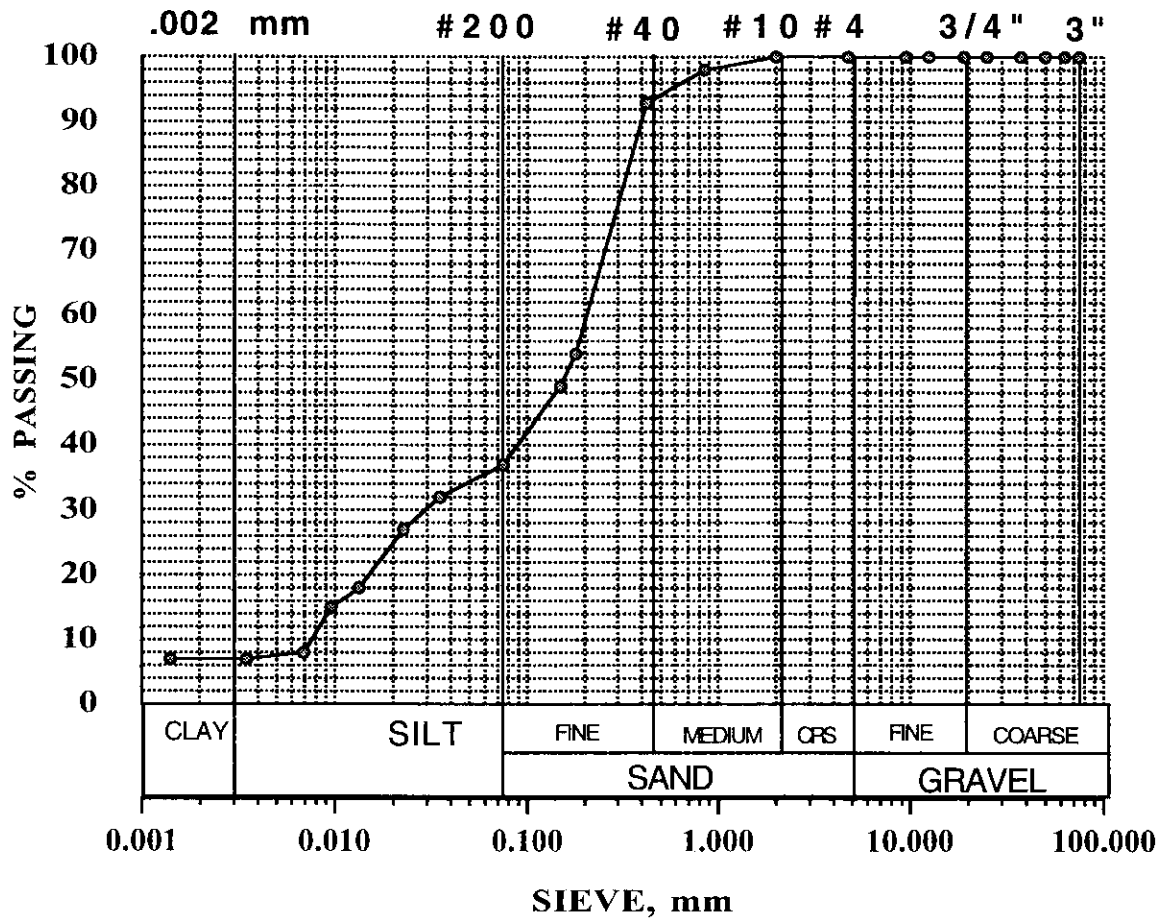


**Briggs Engineering & Testing**

*A Division of PK Associates, Inc.*

**Project:** Environmental Resources Management  
**Sample no.** M-10103A **Date:** 4/8/03

### PARTICLE SIZE DISTRIBUTION





**Briggs Engineering & Testing**  
*A DIVISION OF PK ASSOCIATES, INC.*

Environmental Resources Management  
 Briggs # 21843  
 Tested: 4-8-03

1. <u>Sample No.</u>	<u>Description</u>	<u>Source</u>
M-10104	Silty Sand with Clay	B-237/MW-267 25'-27'

2. Particle Size Analysis { ASTM D 422 }

<u>Sieve Size</u>		<u>Results</u> {% Passing by Wt.}	<u>Specifications</u>
100 mm	4"	100	
75 mm	3"	100	
63 mm	2-1/2"	100	
50 mm	2"	100	
37.5 mm	1-1/2"	100	
25 mm	1"	100	
19 mm	3/4"	100	
12.5 mm	1/2"	100	
9.5 mm	3/8"	100	
4.75 mm	#4	100	
2.00 mm	#10	100	
850 µm	#20	100	
425 µm	#40	100	
180 µm	#80	99	
150 µm	#100	99	
75 µm	#200	98.0	
<b>HYDROMETER ANALYSIS</b>			
0.0326 mm		57	
0.0207 mm		45	
0.0129 mm		28	
0.0094 mm		20	
0.0067 mm		14	
0.0035 mm		8	
0.0014 mm		8	

3. No specifications were provided.



**Briggs Engineering & Testing**

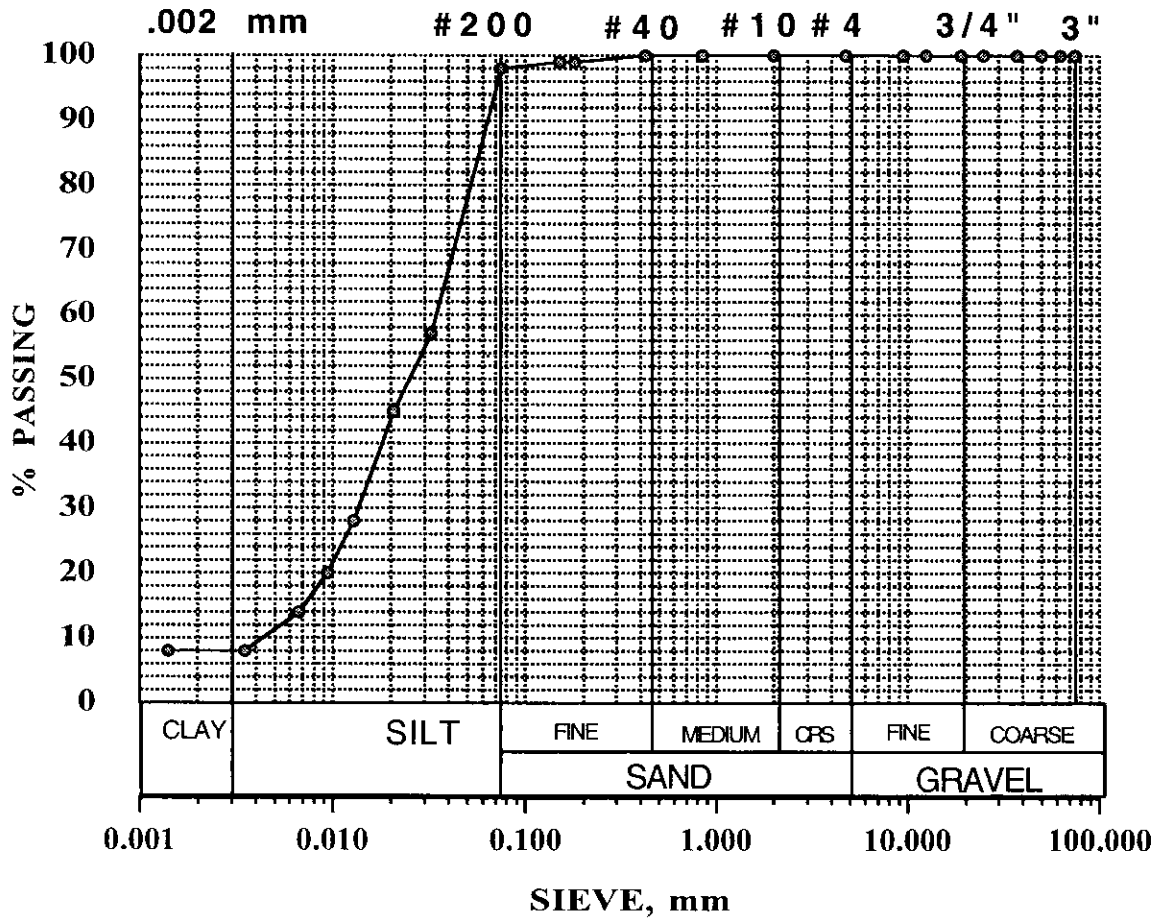
*A Division of PK Associates, Inc.*

**Project:** Environmental Resources Management

**Sample no.** M-10104

**Date:** 4/8/03

### PARTICLE SIZE DISTRIBUTION





Briggs Engineering & Testing  
*A DIVISION OF PK ASSOCIATES, INC.*

Environmental Resources Management  
 Briggs # 21843  
 Tested: 4-8-03

1.	<u>Sample No.</u>	<u>Description</u>	<u>Source</u>
	M-10105	Sandy Silt with Clay	B-237/MW-267 9'-11'

2. Particle Size Analysis { ASTM D 422 }

<u>Sieve Size</u>		<u>Results</u> {% Passing by Wt.}	<u>Specifications</u>
100 mm	4"	100	
75 mm	3"	100	
63 mm	2-1/2"	100	
50 mm	2"	100	
37.5 mm	1-1/2"	100	
25 mm	1"	100	
19 mm	3/4"	100	
12.5 mm	1/2"	100	
9.5 mm	3/8"	100	
4.75 mm	#4	100	
2.00 mm	#10	100	
850 µm	#20	99	
425 µm	#40	98	
180 µm	#80	92	
150 µm	#100	91	
75 µm	#200	88.0	
<b>HYDROMETER ANALYSIS</b>			
0.0326 mm		75	
0.0206 mm		69	
0.0119 mm		52	
0.0087 mm		38	
0.0067 mm		14	
0.0034 mm		12	
0.0014 mm		9	

3. No specifications were provided.

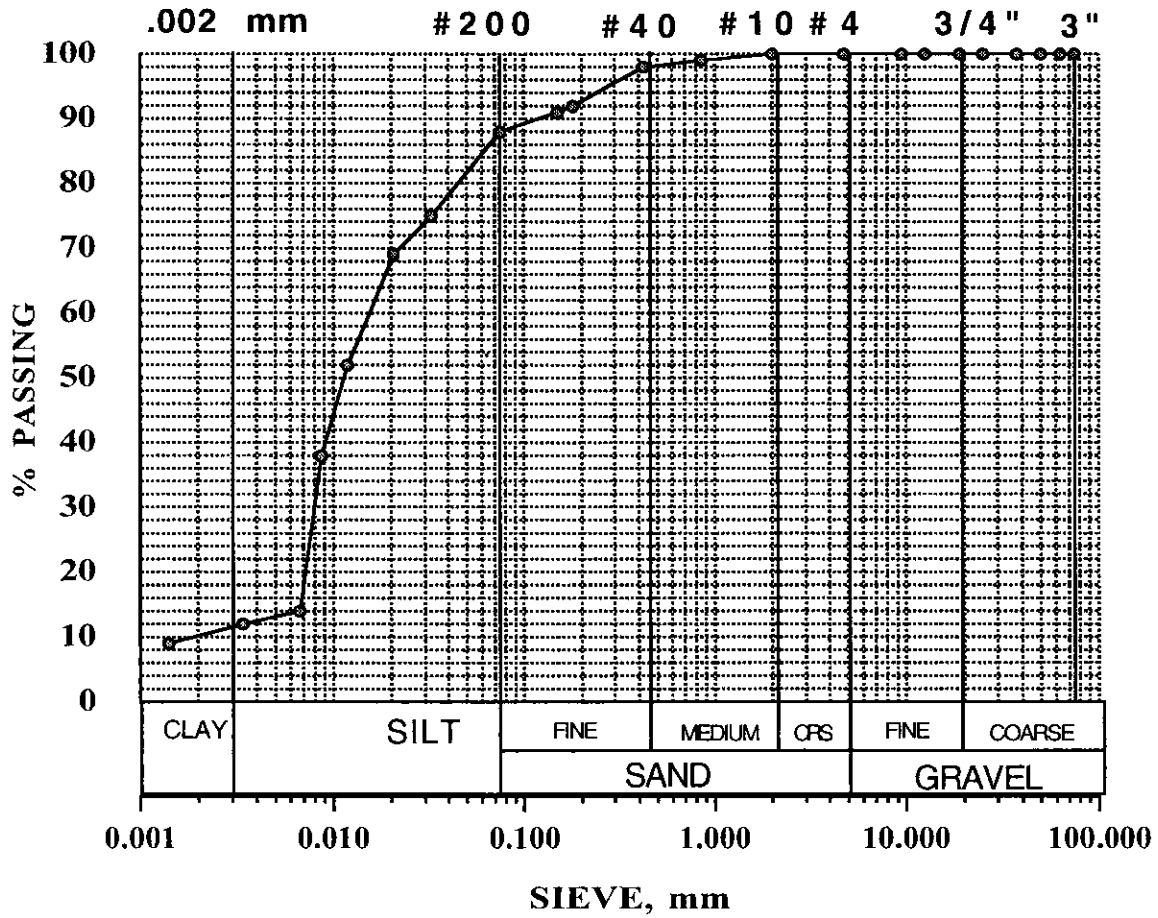


**Briggs Engineering & Testing**

*A Division of PK Associates, Inc.*

**Project:** Environmental Resources Management  
**Sample no.** M-10105 **Date:** 4/8/03

### PARTICLE SIZE DISTRIBUTION





**Briggs Engineering & Testing**  
*A DIVISION OF PK ASSOCIATES, INC.*

Environmental Resources Management  
 Briggs # 21843  
 Tested: 4-8-03

1.	<u>Sample No.</u>	<u>Description</u>	<u>Source</u>
	M-10106	Silty Sand with Clay	B-224/MW-263 10'-12'

2. Particle Size Analysis { ASTM D 422 }

<u>Sieve Size</u>		<u>Results</u> {% Passing by Wt.}	<u>Specifications</u>
100 mm	4"	100	
75 mm	3"	100	
63 mm	2-1/2"	100	
50 mm	2"	100	
37.5 mm	1-1/2"	100	
25 mm	1"	100	
19 mm	3/4"	100	
12.5 mm	1/2"	100	
9.5 mm	3/8"	100	
4.75 mm	#4	100	
2.00 mm	#10	100	
850 µm	#20	100	
425 µm	#40	100	
180 µm	#80	97	
150 µm	#100	91	
75 µm	#200	48.0	
<b>HYDROMETER ANALYSIS</b>			
0.0334 mm		38	
0.0224 mm		25	
0.0137 mm		12	
0.0097 mm		9	
0.0069 mm		7	
0.0035 mm		6	
0.0014 mm		6	

3. No specifications were provided.

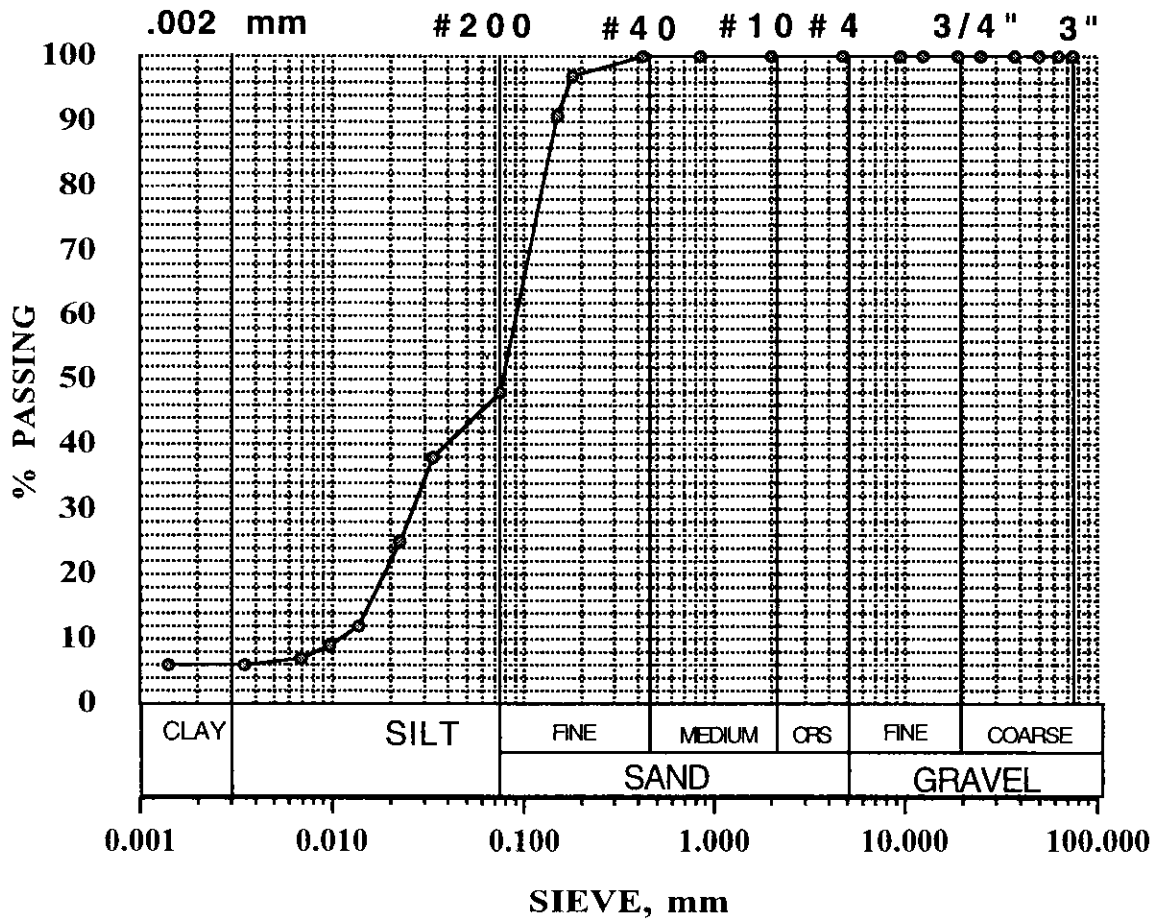


**Briggs Engineering & Testing**

*A Division of PK Associates, Inc.*

**Project:** Environmental Resources Management  
**Sample no.** M-10106 **Date:** 4/8/03

### PARTICLE SIZE DISTRIBUTION





Briggs Engineering & Testing  
 A DIVISION OF PK ASSOCIATES, INC.

Environmental Resources Management  
 Briggs # 21843  
 Tested: 4-8-03

1. Sample No.	Description	Source
M-10107	Sandy Silt with Clay	B-224/MW-263 12'-14'

2. Particle Size Analysis { ASTM D 422 }

Sieve Size	Results {% Passing by Wt.}	Specifications
100 mm	4"	100
75 mm	3"	100
63 mm	2-1/2"	100
50 mm	2"	100
37.5 mm	1-1/2"	100
25 mm	1"	100
19 mm	3/4"	100
12.5 mm	1/2"	100
9.5 mm	3/8"	100
4.75 mm	#4	100
2.00 mm	#10	100
850 µm	#20	100
425 µm	#40	99
180 µm	#80	98
150 µm	#100	95
75 µm	#200	70.0
<b>HYDROMETER ANALYSIS</b>		
0.0334 mm		38
0.0220 mm		29
0.0132 mm		20
0.0094 mm		17
0.0067 mm		13
0.0034 mm		10
0.0014 mm		7

3. No specifications were provided.





**Briggs Engineering & Testing**

*A Division of PK Associates, Inc.*

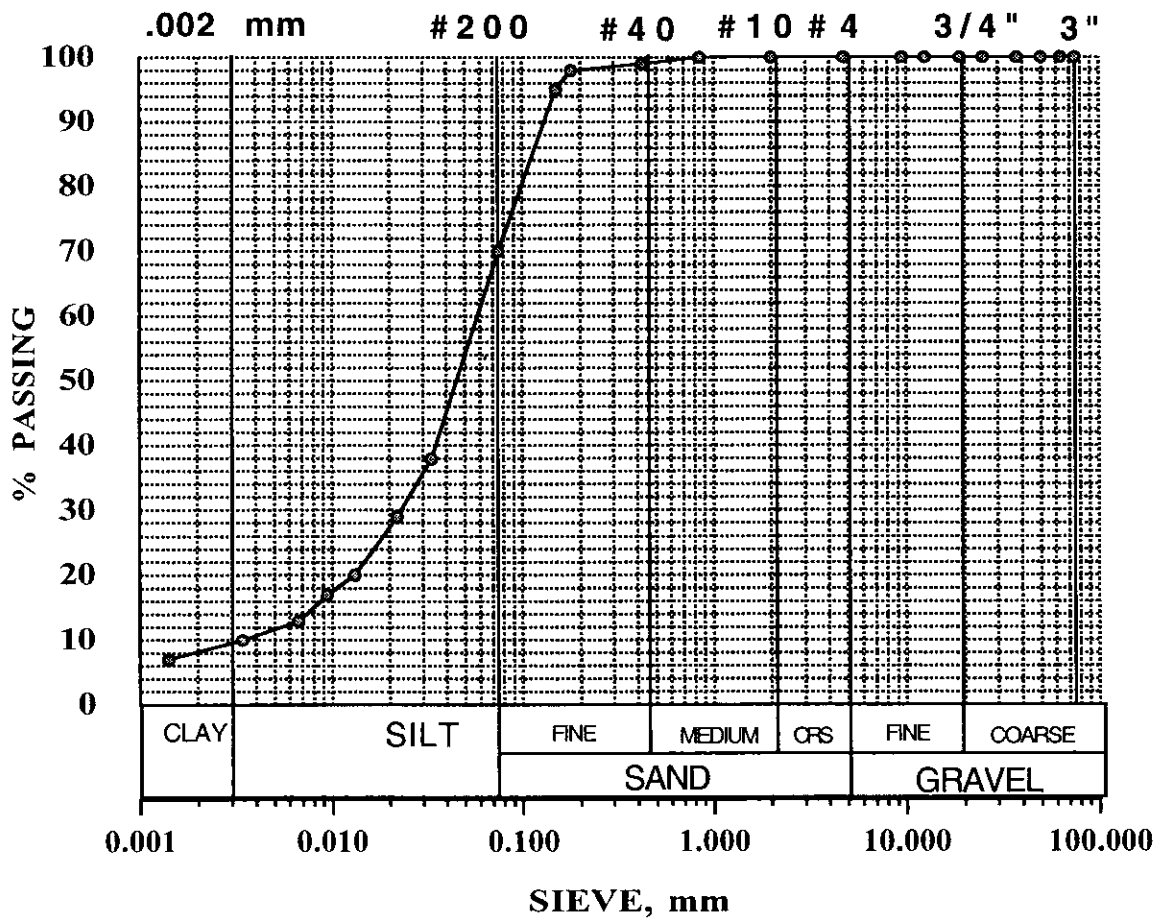
**Project:** Environmental Resources Management

**Sample no.**

M-10107

**Date:** 4/8/03

### PARTICLE SIZE DISTRIBUTION





**Briggs Engineering & Testing**  
*A DIVISION OF PK ASSOCIATES, INC.*

Environmental Resources Management  
 Briggs # 21843  
 Tested: 4-8-03

1. Sample No.	Description	Source
M-10108	Silty Sand	B-224/MW-263 16'-18'

2. Particle Size Analysis { ASTM D 422 }

Sieve Size		Results {% Passing by Wt.}	Specifications
100 mm	4"	100	
75 mm	3"	100	
63 mm	2-1/2"	100	
50 mm	2"	100	
37.5 mm	1-1/2"	100	
25 mm	1"	100	
19 mm	3/4"	100	
12.5 mm	1/2"	100	
9.5 mm	3/8"	100	
4.75 mm	#4	100	
2.00 mm	#10	100	
850 µm	#20	96	
425 µm	#40	89	
180 µm	#80	73	
150 µm	#100	64	
75 µm	#200	17.0	
<b>HYDROMETER ANALYSIS</b>			
0.0334 mm		14	
0.0220 mm		13	
0.0132 mm		12	
0.0094 mm		10	
0.0067 mm		9	
0.0034 mm		7	
0.0014 mm		6	

3. No specifications were provided.



**Briggs Engineering & Testing**

*A Division of PK Associates, Inc.*

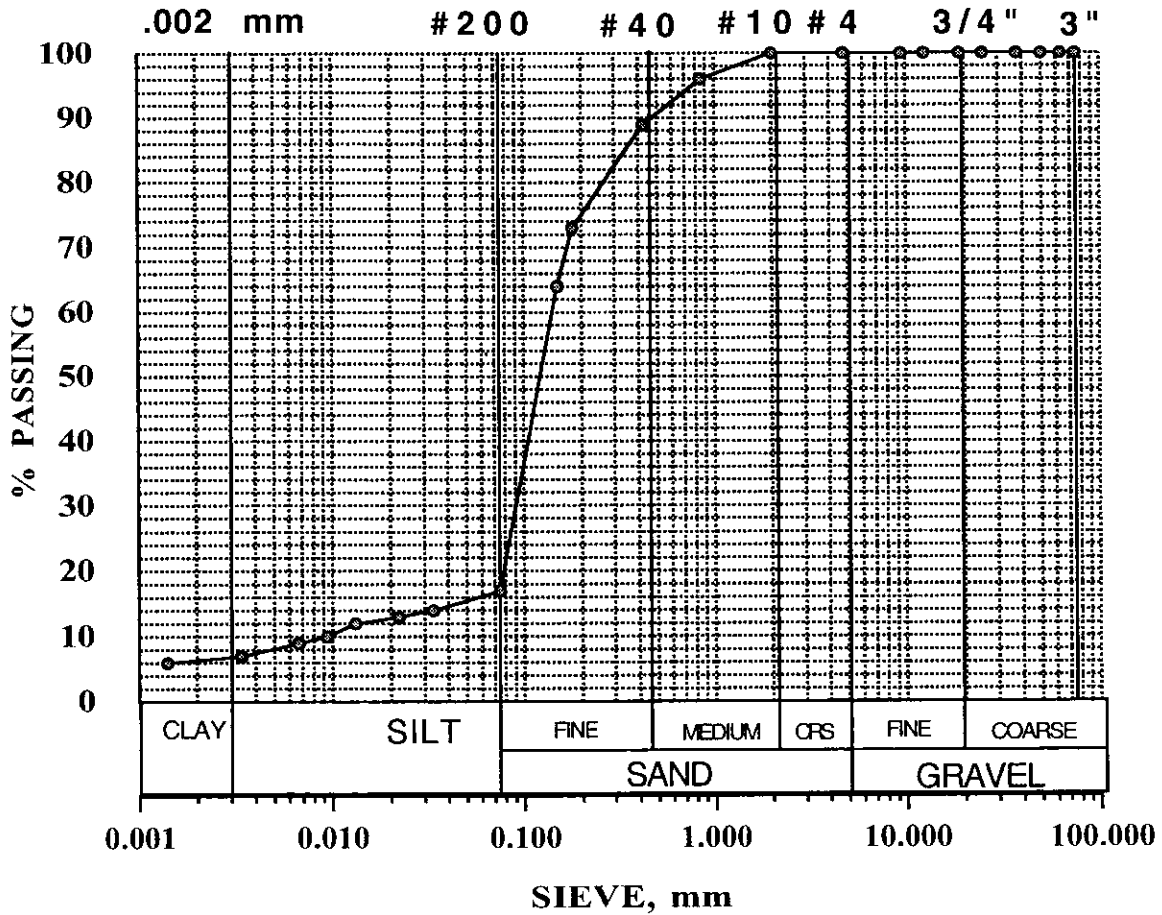
**Project:** Environmental Resources Management

**Sample no.**

M-10108

**Date:** 4/8/03

### PARTICLE SIZE DISTRIBUTION





Briggs Engineering & Testing  
A DIVISION OF PK ASSOCIATES, INC.

April 8, 2003  
Project No. 21843

ERM  
c/o Mike Horesh  
399 Boylston Street  
Boston, MA 02116

**RE: Estimated Permeability Rates of Soil**

Per your request, Briggs Engineering & Testing (Briggs) has performed gradation analyses and has estimated permeability rates for the eleven soil samples provided by your firm. The samples were collected from test borings at various depths. The locations were identified on the samples submitted to Briggs. A checklist dated March 28, 2003 was submitted by your firm and tabulates the sample locations. The list is attached to this report.

Briggs performed a sieve and hydrometer analysis in accordance with ASTM C136 and C117 on each of the eleven soil samples. Refer to the attached laboratory reports for the analyses results. Based on the result of the sieve and hydrometer analyses, Briggs estimates the following permeability rates as tabulated below:

<u>Briggs Sample No.</u>	<u>Sample Location</u>	<u>Estimated Permeability (cm/sec)</u>
M-10099	B240/MW265 @35-37'	$9.4 \times 10^{-5}$
M-10100	B240/MW265 @43-45'	$3.2 \times 10^{-4}$
M-10101	B238/MW268 @14-16'	$2.7 \times 10^{-5}$
M-10102	B238/MW268 @8-10'	$3.2 \times 10^{-6}$
M-10103	B238/MW268 @65-67'	$1.2 \times 10^{-5}$

[www.briggsengineering.com](http://www.briggsengineering.com)

<u>Briggs Sample No.</u>	<u>Sample Location</u>	<u>Estimated Permeability (cm/sec)</u>
M-10103A	B237/MW267 @5-7'	$5.3 \times 10^{-5}$
M-10104	B237/MW267 @25-27'	$1.8 \times 10^{-5}$
M-10105	B237/MW267 @9-11'	$4.0 \times 10^{-6}$
M-10106	B224/MW263 @10-12'	$1.0 \times 10^{-4}$
M-10107	B224/MW263 @12-14'	$1.2 \times 10^{-5}$
M-10108	B224/MW263 @16-18'	$8.8 \times 10^{-5}$

If you have any questions, please do not hesitate to contact us at your convenience.

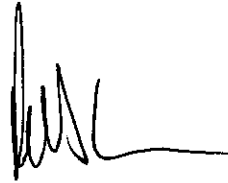
Very truly yours,

**BRIGGS ENGINEERING & TESTING**

*A Division of PK Associates, Inc.*



David W. Geisser  
Project Engineer



Paul M. Skorohod  
President

DWG:PMS:dg

Enclosure: Lab Report  
Samples List



**Briggs Engineering & Testing**  
*A DIVISION OF PK ASSOCIATES, INC*

Environmental Resources Management  
 Briggs # 21843  
 Tested: 4-8-03

1. <u>Sample No.</u>	<u>Description</u>	<u>Source</u>
M-10099	Sandy Silt with clay	B-240/MW-265 35'-37'

2. Particle Size Analysis { ASTM D 422 }

<u>Sieve Size</u>		<u>Results</u> {% Passing by Wt.}	<u>Specifications</u>
100 mm	4"	100	
75 mm	3"	100	
63 mm	2-1/2"	100	
50 mm	2"	100	
37.5 mm	1-1/2"	100	
25 mm	1"	100	
19 mm	3/4"	100	
12.5 mm	1/2"	100	
9.5 mm	3/8"	100	
4.75 mm	#4	100	
2.00 mm	#10	100	
850 µm	#20	100	
425 µm	#40	100	
180 µm	#80	98	
150 µm	#100	95	
75 µm	#200	69.0	
<b>HYDROMETER ANALYSIS</b>			
0.0341 mm		37	
0.0230 mm		21	
0.0137 mm		13	
0.0097 mm		10	
0.0069 mm		6	
0.0035 mm		5	
0.0014 mm		5	

3. No specifications were provided.

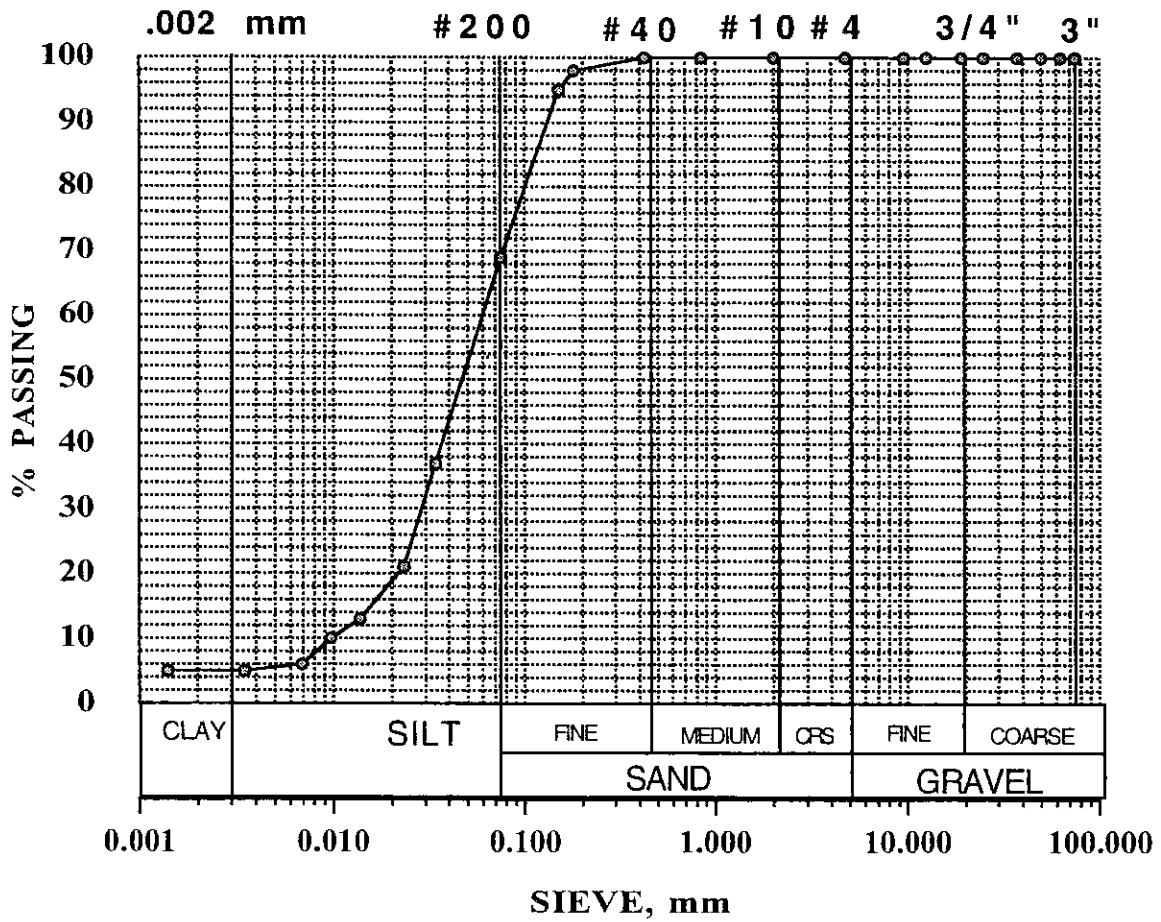


**Briggs Engineering & Testing**

*A Division of PK Associates, Inc.*

**Project:** Environmental Resources Management  
**Sample no.** M-10099 **Date:** 4/8/03

### PARTICLE SIZE DISTRIBUTION





Briggs Engineering & Testing  
 A DIVISION OF PK ASSOCIATES, INC.

Environmental Resources Management  
 Briggs # 21843  
 Tested: 4-8-03

1. Sample No.	Description	Source
M-10100	Sandy Silt with clay	B-240/MW-265 43'-45'

2. Particle Size Analysis { ASTM D 422 }

Sieve Size		Results {% Passing by Wt.}	Specifications
100 mm	4"	100	
75 mm	3"	100	
63 mm	2-1/2"	100	
50 mm	2"	100	
37.5 mm	1-1/2"	100	
25 mm	1"	100	
19 mm	3/4"	100	
12.5 mm	1/2"	100	
9.5 mm	3/8"	100	
4.75 mm	#4	100	
2.00 mm	#10	100	
850 µm	#20	99	
425 µm	#40	98	
180 µm	#80	94	
150 µm	#100	92	
75 µm	#200	82.0	
<b>HYDROMETER ANALYSIS</b>			
0.0359 mm		22	
0.0235 mm		13	
0.0139 mm		7	
0.0098 mm		7	
0.0069 mm		7	
0.0035 mm		6	
0.0014 mm		6	

3. No specifications were provided.



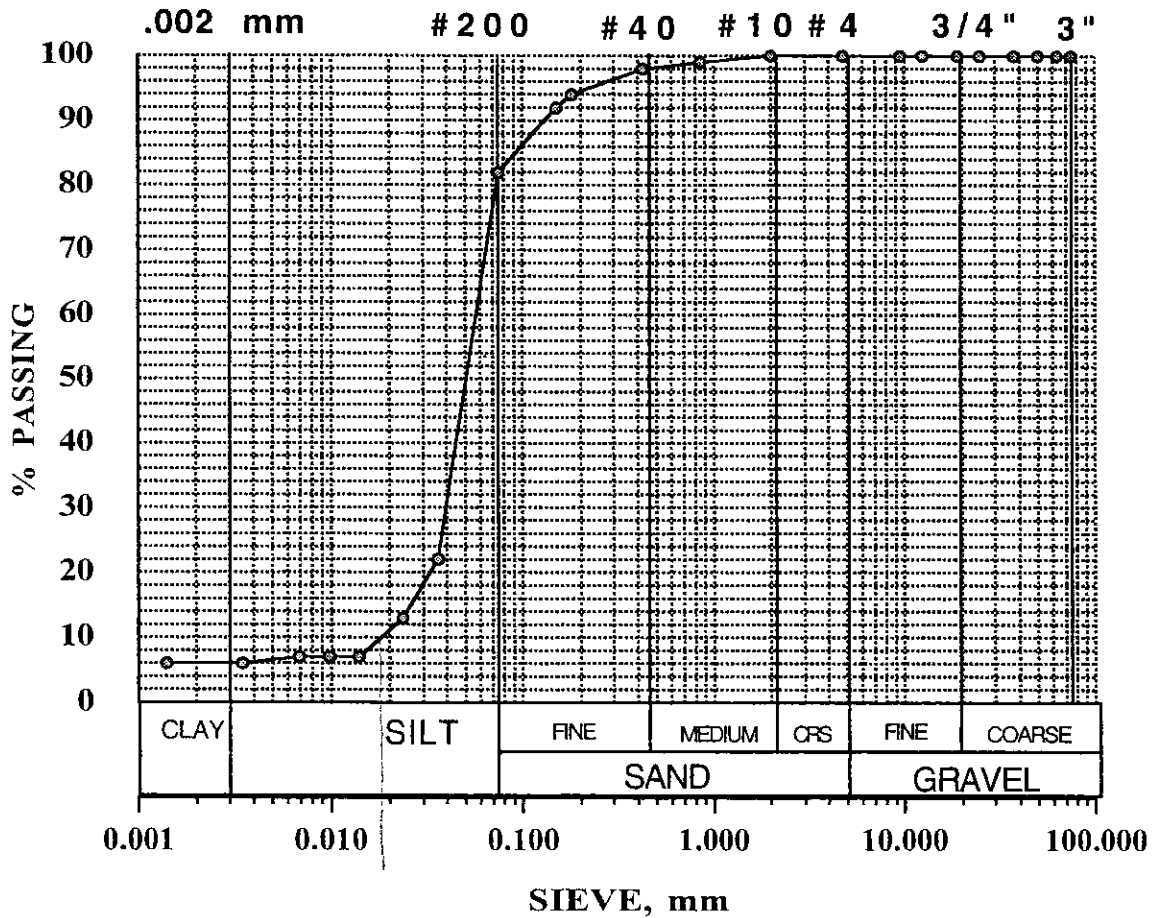


**Briggs Engineering & Testing**

*A Division of PK Associates, Inc.*

**Project:** Environmental Resources Management  
**Sample no.** M-10100 **Date:** 4/8/03

### PARTICLE SIZE DISTRIBUTION





Briggs Engineering & Testing  
 A DIVISION OF PK ASSOCIATES, INC.

Environmental Resources Management

Briggs # 21843

Tested: 4-8-03

1. Sample No.	Description	Source
M-10101	Silt with clay	B-238/MW-268 14'-16'

2. Particle Size Analysis { ASTM D 422 }

Sieve Size		Results {% Passing by Wt.}	Specifications
100 mm	4"	100	
75 mm	3"	100	
63 mm	2-1/2"	100	
50 mm	2"	100	
37.5 mm	1-1/2"	100	
25 mm	1"	100	
19 mm	3/4"	100	
12.5 mm	1/2"	100	
9.5 mm	3/8"	100	
4.75 mm	#4	100	
2.00 mm	#10	100	
850 µm	#20	100	
425 µm	#40	100	
180 µm	#80	100	
150 µm	#100	100	
75 µm	#200	98.0	
<b>HYDROMETER ANALYSIS</b>			
0.0326 mm		57	
0.0207 mm		44	
0.0127 mm		31	
0.0094 mm		18	
0.0067 mm		14	
0.0035 mm		6	
0.0014 mm		6	

3. No specifications were provided.

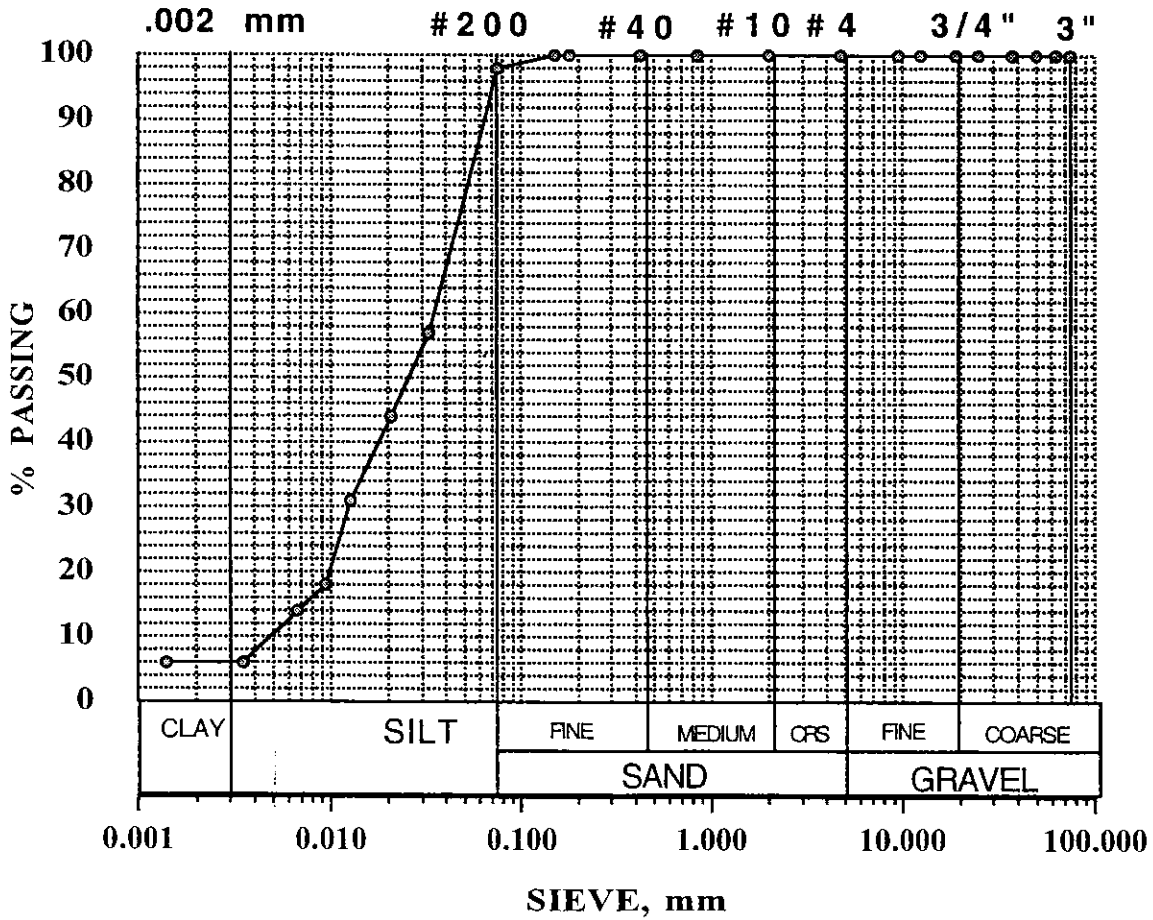


**Briggs Engineering & Testing**

*A Division of PK Associates, Inc.*

**Project:** Environmental Resources Management  
**Sample no.** M-10101 **Date:** 4/8/03

### PARTICLE SIZE DISTRIBUTION





Briggs Engineering & Testing  
 A DIVISION OF PK ASSOCIATES, INC.

Environmental Resources Management  
 Briggs # 21843  
 Tested: 4-8-03

1. Sample No.	Description	Source
M-10102	Silt with clay	B-238/MW-268 8'-10'

2. Particle Size Analysis { ASTM D 422 }

Sieve Size		Results {% Passing by Wt.}	Specifications
100 mm	4"	100	
75 mm	3"	100	
63 mm	2-1/2"	100	
50 mm	2"	100	
37.5 mm	1-1/2"	100	
25 mm	1"	100	
19 mm	3/4"	100	
12.5 mm	1/2"	100	
9.5 mm	3/8"	100	
4.75 mm	#4	100	
2.00 mm	#10	100	
850 µm	#20	100	
425 µm	#40	100	
180 µm	#80	100	
150 µm	#100	100	
75 µm	#200	99.0	
<b>HYDROMETER ANALYSIS</b>			
0.0326 mm		66	
0.0206 mm		60	
0.0119 mm		49	
0.0087 mm		38	
0.0063 mm		29	
0.0034 mm		15	
0.0014 mm		9	

3. No specifications were provided.

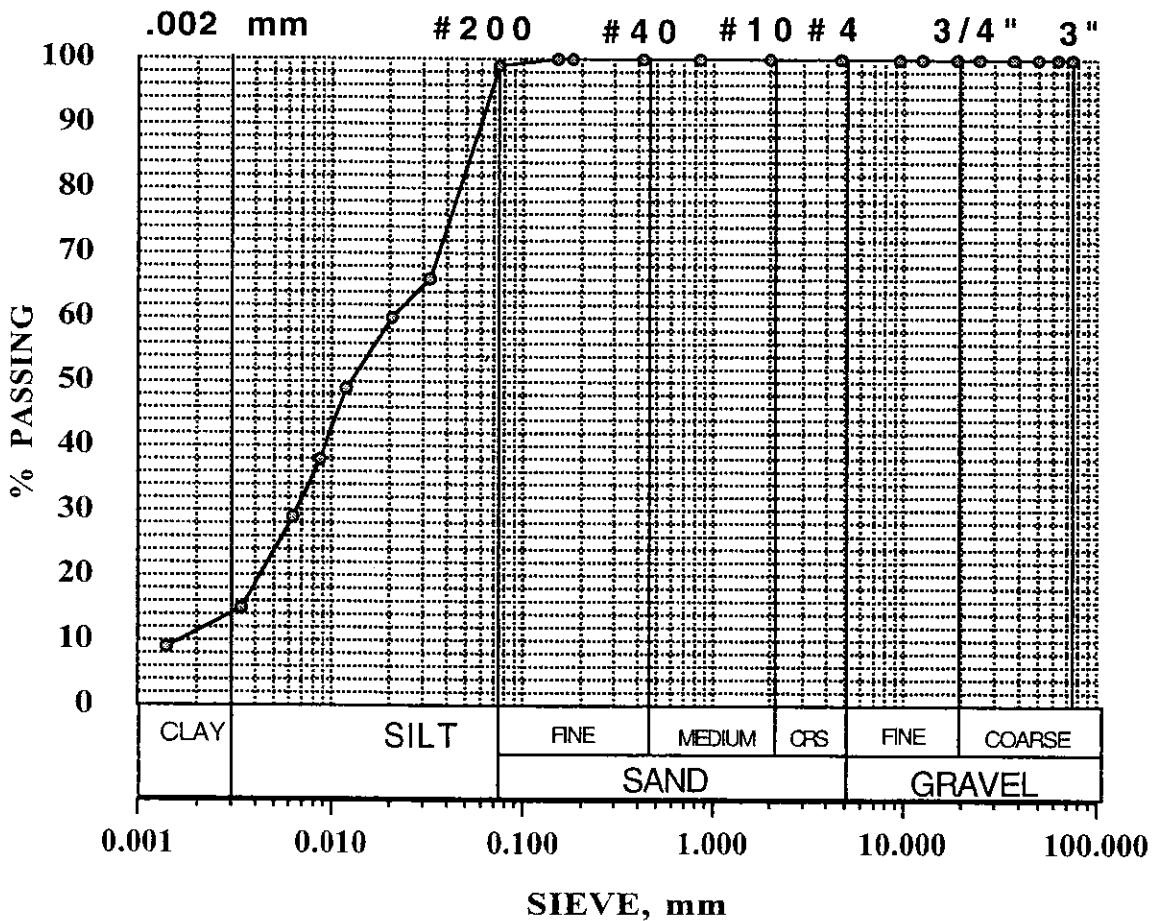


**Briggs Engineering & Testing**

*A Division of PK Associates, Inc.*

**Project:** Environmental Resources Management  
**Sample no.** M-10102 **Date:** 4/8/03

### PARTICLE SIZE DISTRIBUTION





Briggs Engineering & Testing  
 A DIVISION OF PK ASSOCIATES, INC.

Environmental Resources Management  
 Briggs # 21843  
 Tested: 4-8-03

1. Sample No.	Description	Source
M-10103	Silt with clay	B-238/MW-268 65'-67'

2. Particle Size Analysis { ASTM D 422 }

Sieve Size		Results {% Passing by Wt.}	Specifications
100 mm	4"	100	
75 mm	3"	100	
63 mm	2-1/2"	100	
50 mm	2"	100	
37.5 mm	1-1/2"	100	
25 mm	1"	100	
19 mm	3/4"	100	
12.5 mm	1/2"	100	
9.5 mm	3/8"	100	
4.75 mm	#4	100	
2.00 mm	#10	100	
850 µm	#20	100	
425 µm	#40	100	
180 µm	#80	100	
150 µm	#100	99	
75 µm	#200	97.0	
<b>HYDROMETER ANALYSIS</b>			
0.0326 mm		68	
0.0206 mm		53	
0.0126 mm		32	
0.0092 mm		23	
0.0067 mm		16	
0.0034 mm		10	
0.0014 mm		9	

3. No specifications were provided.

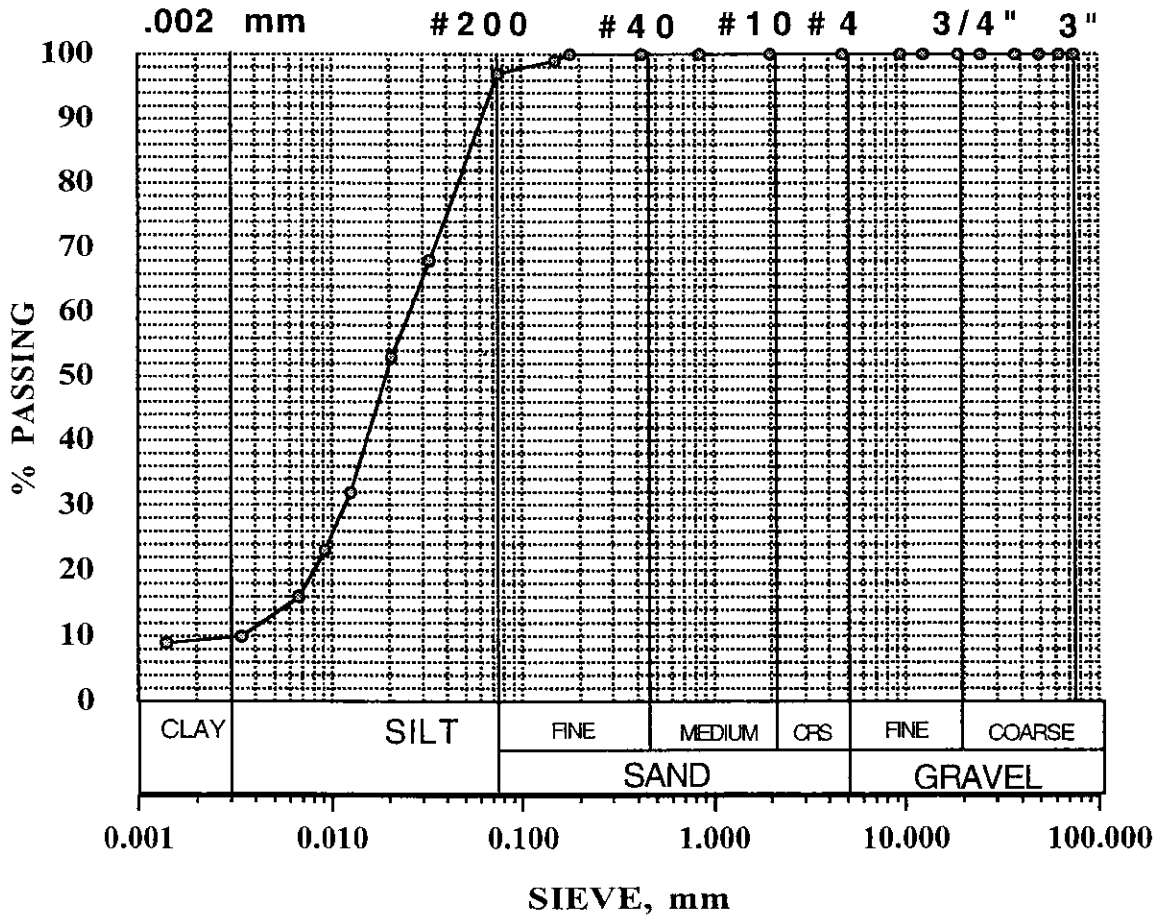


**Briggs Engineering & Testing**

*A Division of PK Associates, Inc.*

**Project:** Environmental Resources Management  
**Sample no.** M-10103 **Date:** 4/8/03

### PARTICLE SIZE DISTRIBUTION





Briggs Engineering & Testing  
 A DIVISION OF PK ASSOCIATES, INC.

Environmental Resources Management  
 Briggs # 21843  
 Tested: 4-8-03

1.	<u>Sample No.</u>	<u>Description</u>	<u>Source</u>
	M-10103A	Silty Sand with Clay	B-237/MW-267 5'-7'

2. Particle Size Analysis { ASTM D 422 }

<u>Sieve Size</u>		<u>Results</u>	<u>Specifications</u>
		{% Passing by Wt.}	
100 mm	4"	100	
75 mm	3"	100	
63 mm	2-1/2"	100	
50 mm	2"	100	
37.5 mm	1-1/2"	100	
25 mm	1"	100	
19 mm	3/4"	100	
12.5 mm	1/2"	100	
9.5 mm	3/8"	100	
4.75 mm	#4	100	
2.00 mm	#10	100	
850 µm	#20	98	
425 µm	#40	93	
180 µm	#80	54	
150 µm	#100	49	
75 µm	#200	37.0	
<b>HYDROMETER ANALYSIS</b>			
0.0326 mm		32	
0.0206 mm		27	
0.0126 mm		18	
0.0092 mm		15	
0.0067 mm		8	
0.0034 mm		7	
0.0014 mm		7	

3. No specifications were provided.



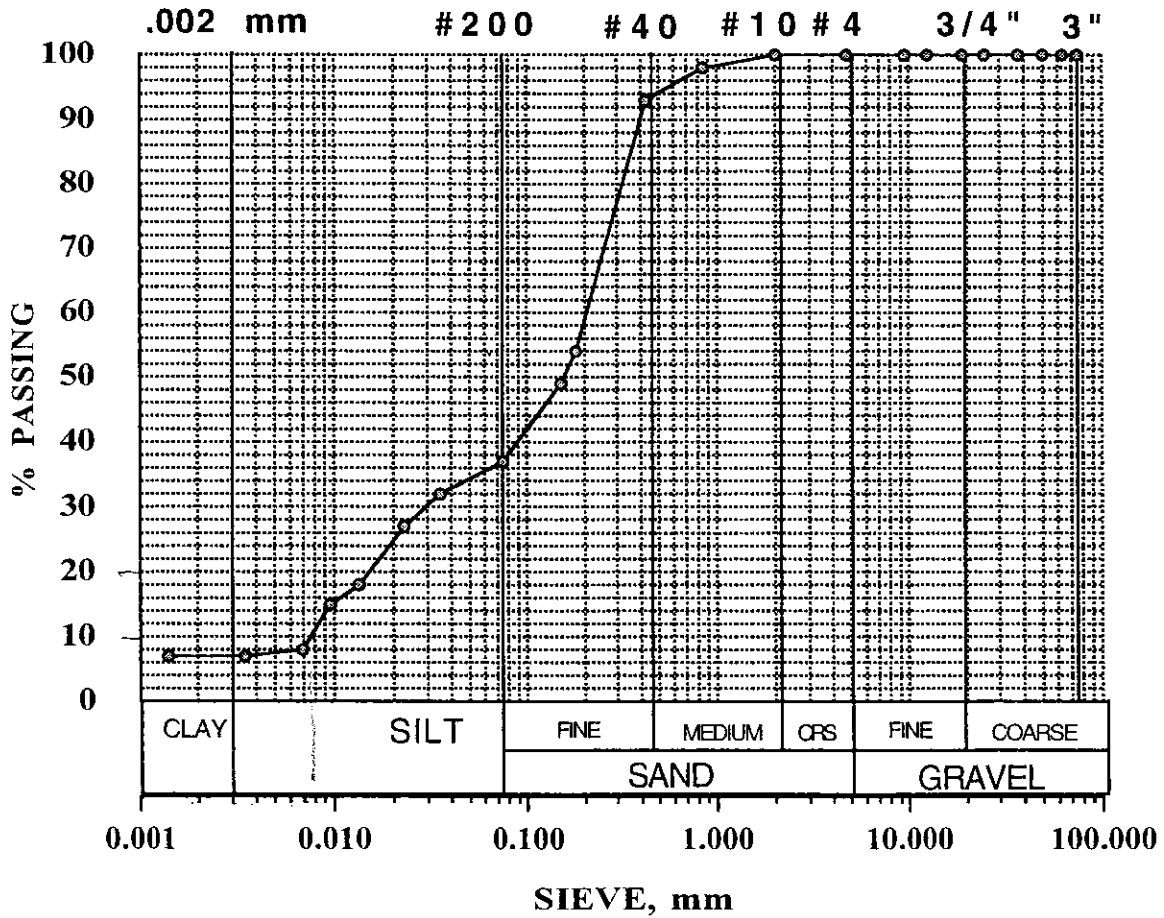


**Briggs Engineering & Testing**

*A Division of PK Associates, Inc.*

**Project:** Environmental Resources Management  
**Sample no.** M-10103A **Date:** 4/8/03

**PARTICLE SIZE DISTRIBUTION**





Briggs Engineering & Testing  
 A DIVISION OF PK ASSOCIATES, INC.

Environmental Resources Management  
 Briggs # 21843  
 Tested: 4-8-03

1.	<u>Sample No.</u>	<u>Description</u>	<u>Source</u>
	M-10104	Silty Sand with Clay	B-237/MW-267 25'-27'

2. Particle Size Analysis { ASTM D 422 }

<u>Sieve Size</u>		<u>Results</u>	<u>Specifications</u>
		{% Passing by Wt.}	
100 mm	4"	100	
75 mm	3"	100	
63 mm	2-1/2"	100	
50 mm	2"	100	
37.5 mm	1-1/2"	100	
25 mm	1"	100	
19 mm	3/4"	100	
12.5 mm	1/2"	100	
9.5 mm	3/8"	100	
4.75 mm	#4	100	
2.00 mm	#10	100	
850 µm	#20	100	
425 µm	#40	100	
180 µm	#80	99	
150 µm	#100	99	
75 µm	#200	98.0	
<b>HYDROMETER ANALYSIS</b>			
0.0326 mm		57	
0.0207 mm		45	
0.0129 mm		28	
0.0094 mm		20	
0.0067 mm		14	
0.0035 mm		8	
0.0014 mm		8	

3. No specifications were provided.

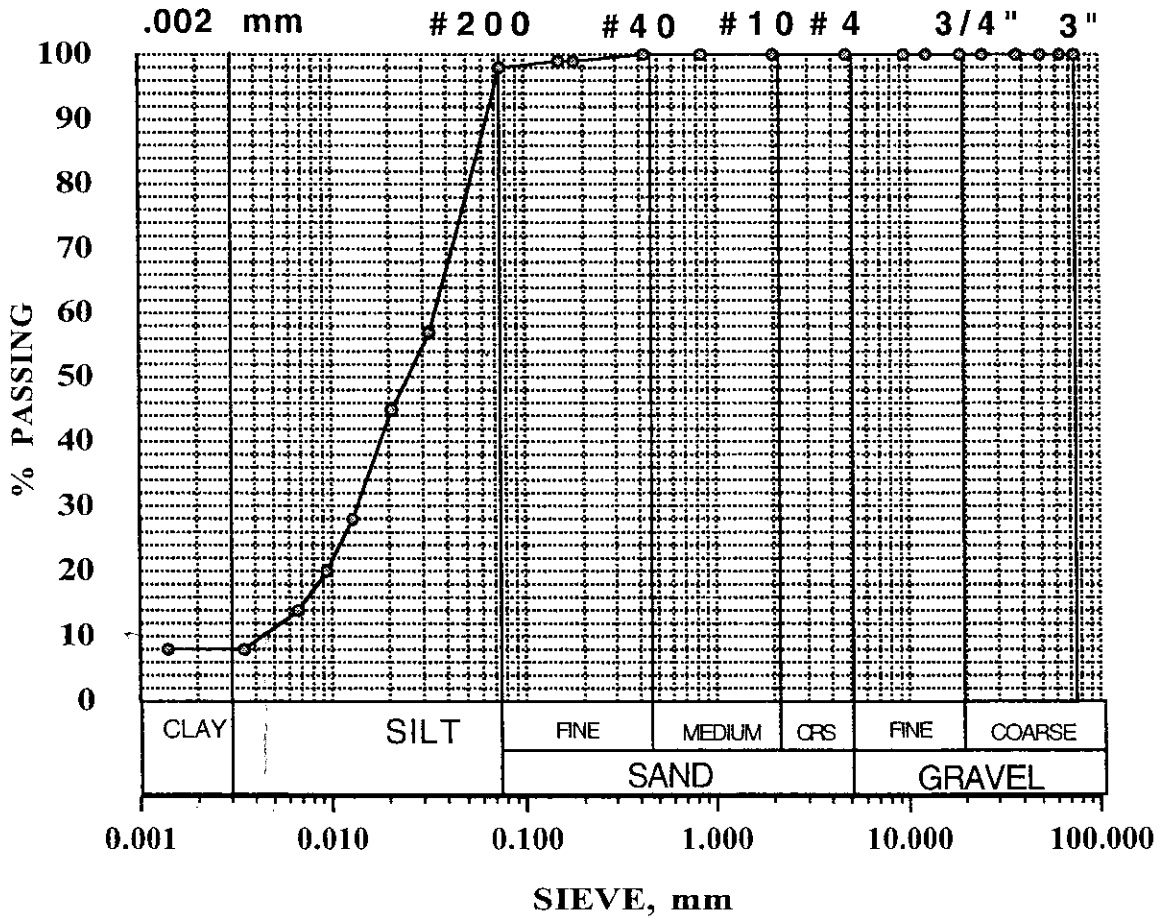


**Briggs Engineering & Testing**

*A Division of PK Associates, Inc.*

**Project:** Environmental Resources Management  
**Sample no.** M-10104 **Date:** 4/8/03

### PARTICLE SIZE DISTRIBUTION





Briggs Engineering & Testing  
 A DIVISION OF PK ASSOCIATES, INC

Environmental Resources Management  
 Briggs # 21843  
 Tested: 4-8-03

1.	<u>Sample No.</u>	<u>Description</u>	<u>Source</u>
	M-10105	Sandy Silt with Clay	B-237/MW-267 9'-11'

2. Particle Size Analysis { ASTM D 422 }

<u>Sieve Size</u>		<u>Results</u>	<u>Specifications</u>
		{% Passing by Wt.}	
100 mm	4"	100	
75 mm	3"	100	
63 mm	2-1/2"	100	
50 mm	2"	100	
37.5 mm	1-1/2"	100	
25 mm	1"	100	
19 mm	3/4"	100	
12.5 mm	1/2"	100	
9.5 mm	3/8"	100	
4.75 mm	#4	100	
2.00 mm	#10	100	
850 µm	#20	99	
425 µm	#40	98	
180 µm	#80	92	
150 µm	#100	91	
75 µm	#200	88.0	
<b>HYDROMETER ANALYSIS</b>			
0.0326 mm		75	
0.0206 mm		69	
0.0119 mm		52	
0.0087 mm		38	
0.0067 mm		14	
0.0034 mm		12	
0.0014 mm		9	

3. No specifications were provided.





# Briggs Engineering & Testing

A DIVISION OF PK ASSOCIATES, INC.

Environmental Resources Management

Briggs # 21843

Tested: 4-8-03

1. Sample No.	Description	Source
M-10106	Silty Sand with Clay	B-224/MW-263 10'-12'

## 2. Particle Size Analysis { ASTM D 422 }

Sieve Size	Results {% Passing by Wt.}	Specifications
100 mm 4"	100	
75 mm 3"	100	
63 mm 2-1/2"	100	
50 mm 2"	100	
37.5 mm 1-1/2"	100	
25 mm 1"	100	
19 mm 3/4"	100	
12.5 mm 1/2"	100	
9.5 mm 3/8"	100	
4.75 mm #4	100	
2.00 mm #10	100	
850 µm #20	100	
425 µm #40	100	
180 µm #80	97	
150 µm #100	91	
75 µm #200	48.0	
<b>HYDROMETER ANALYSIS</b>		
0.0334 mm	38	
0.0224 mm	25	
0.0137 mm	12	
0.0097 mm	9	
0.0069 mm	7	
0.0035 mm	6	
0.0014 mm	6	

3. No specifications were provided.

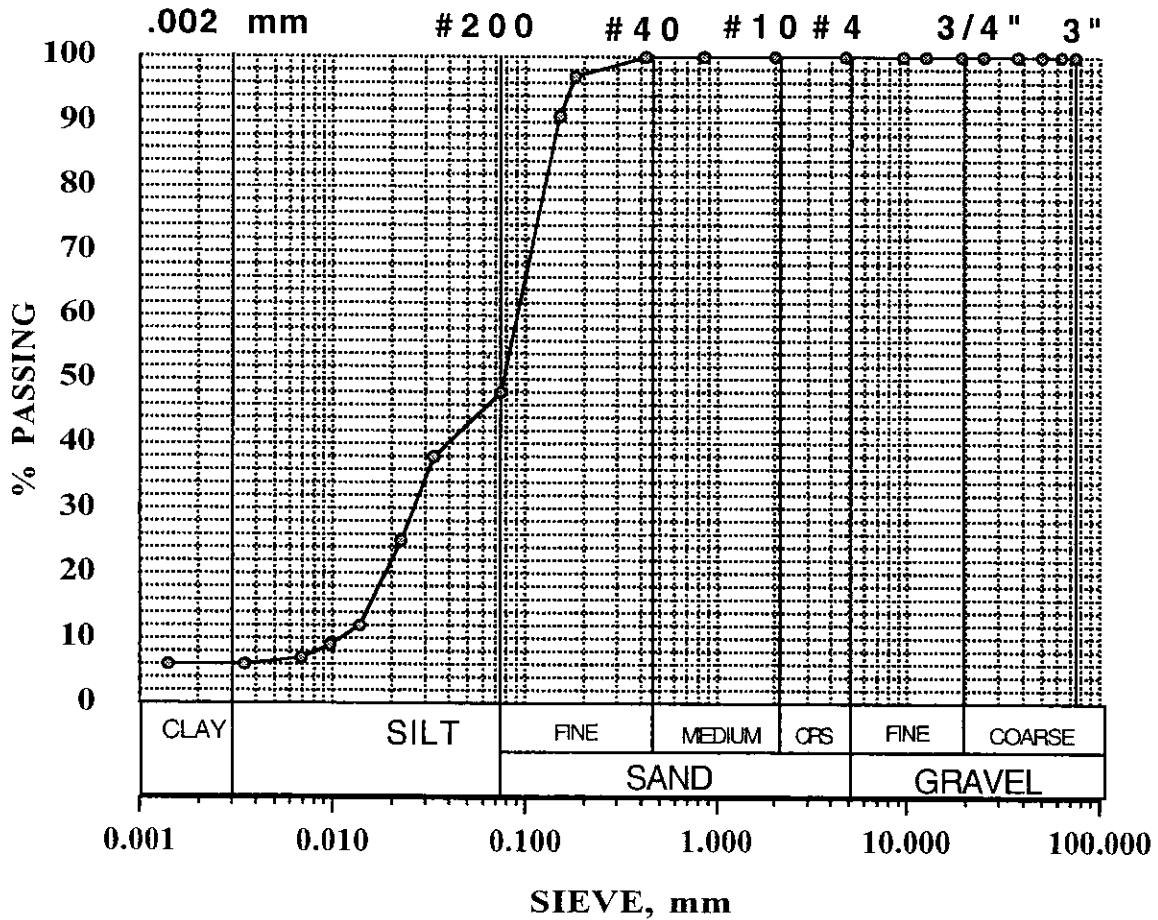


**Briggs Engineering & Testing**

*A Division of PK Associates, Inc.*

**Project:** Environmental Resources Management  
**Sample no.** M-10106 **Date:** 4/8/03

### PARTICLE SIZE DISTRIBUTION





**Briggs Engineering & Testing**  
 A DIVISION OF PK ASSOCIATES, INC.

Environmental Resources Management  
 Briggs # 21843  
 Tested: 4-8-03

1.	<u>Sample No.</u>	<u>Description</u>	<u>Source</u>
	M-10107	Sandy Silt with Clay	B-224/MW-263 12'-14'

2. Particle Size Analysis { ASTM D 422 }

<u>Sieve Size</u>		<u>Results</u>	<u>Specifications</u>
		{% Passing by Wt.}	
100 mm	4"	100	
75 mm	3"	100	
63 mm	2-1/2"	100	
50 mm	2"	100	
37.5 mm	1-1/2"	100	
25 mm	1"	100	
19 mm	3/4"	100	
12.5 mm	1/2"	100	
9.5 mm	3/8"	100	
4.75 mm	#4	100	
2.00 mm	#10	100	
850 µm	#20	100	
425 µm	#40	99	
180 µm	#80	98	
150 µm	#100	95	
75 µm	#200	70.0	
<b>HYDROMETER ANALYSIS</b>			
0.0334 mm		38	
0.0220 mm		29	
0.0132 mm		20	
0.0094 mm		17	
0.0067 mm		13	
0.0034 mm		10	
0.0014 mm		7	

3. No specifications were provided.



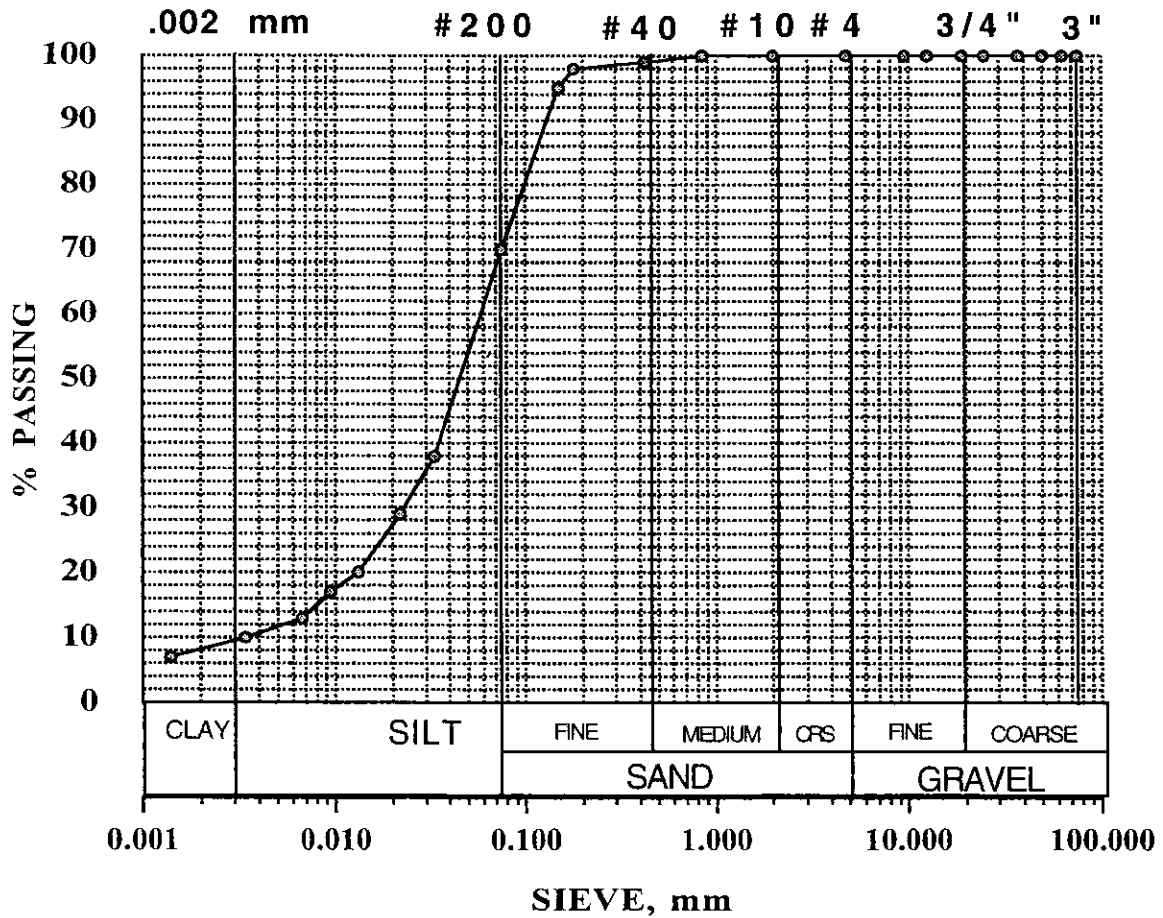


**Briggs Engineering & Testing**

*A Division of PK Associates, Inc.*

**Project:** Environmental Resources Management  
**Sample no.** M-10107 **Date:** 4/8/03

### PARTICLE SIZE DISTRIBUTION





**Briggs Engineering & Testing**  
 A DIVISION OF PK ASSOCIATES, INC.

Environmental Resources Management  
 Briggs # 21843  
 Tested: 4-8-03

1.	<u>Sample No.</u>	<u>Description</u>	<u>Source</u>
	M-10108	Silty Sand	B-224/MW-263 16'-18'

2. Particle Size Analysis { ASTM D 422 }

<u>Sieve Size</u>		<u>Results</u>	<u>Specifications</u>
		{% Passing by Wt.}	
100 mm	4"	100	
75 mm	3"	100	
63 mm	2-1/2"	100	
50 mm	2"	100	
37.5 mm	1-1/2"	100	
25 mm	1"	100	
19 mm	3/4"	100	
12.5 mm	1/2"	100	
9.5 mm	3/8"	100	
4.75 mm	#4	100	
2.00 mm	#10	100	
850 µm	#20	96	
425 µm	#40	89	
180 µm	#80	73	
150 µm	#100	64	
75 µm	#200	17.0	
<b>HYDROMETER ANALYSIS</b>			
0.0334 mm		14	
0.0220 mm		13	
0.0132 mm		12	
0.0094 mm		10	
0.0067 mm		9	
0.0034 mm		7	
0.0014 mm		6	

3. No specifications were provided.

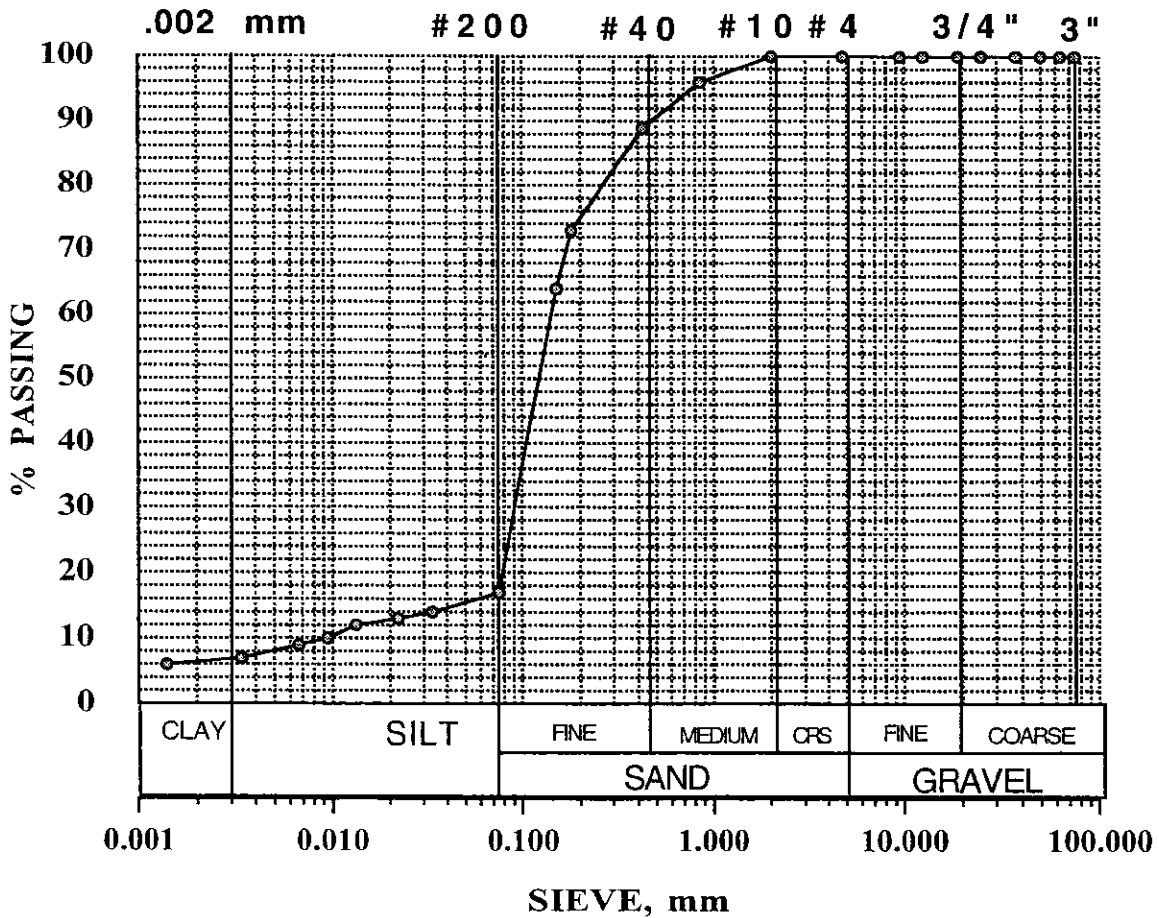


**Briggs Engineering & Testing**

*A Division of PK Associates, Inc.*

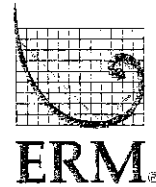
**Project:** Environmental Resources Management  
**Sample no.** M-10108 **Date:** 4/8/03

### PARTICLE SIZE DISTRIBUTION



28 March, 2003  
Reference: 1922.03

Briggs Engineering and Testing  
100 Weymouth Street, Unit B-1  
Rockland, MA 02370



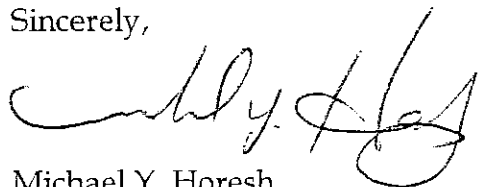
Dear Mr. Ken Oliver:

Enclosed in this package are 11 soil samples that are to be analyzed using Washed Sieve Analysis or Sieve with Hydrometer Analysis (ASTM-D22). Furthermore, please perform Permeability (K) estimates for each of the samples, based on the results of the analysis. Total costs for the analyses and K-estimates are contained within the proposal sent out by Briggs Engineering and Testing and revised by Michael Horesh, at ERM. A copy of the accepted proposal is included.

Following the analyses, please save any or all of the remaining sample for possible future use. Sample can be saved in the original bottles, in which they have been submitted.

A checklist of each of the samples is included with sample jar identification and depths. Similar information is also included on labels of each of the sample jars. Please confirm that the checklist submitted corresponds to the samples submitted. If there are any noticeable discrepancies, please contact me prior to performing the analysis. Otherwise, please send a copy of the completed checklist as part of the final lab report.

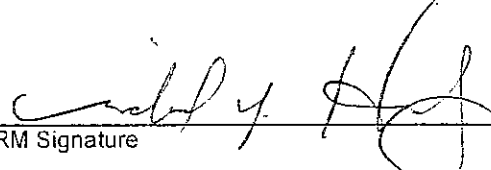
Sincerely,



Michael Y. Horesh  
*Project Geologist*

enclosures:  
Signed proposal of soil laboratory testing  
Sample checklist

Bottle ID	Submitted Interval	ERM Sample Confirmation	Briggs Sample Confirmation
B-240/MW-265	35'-37'	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B-240/MW-265	43'-45'	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B-238/MW-268	14'-16'	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B-238/MW-268	8'-10'	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B-238/MW-268	65'-67'	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B-237/MW-267	5'-7'	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B-237/MW-267	25'-27'	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B-237/MW-267	9'-11'	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B-224/MW-263	10'-12'	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B-224/MW-263	12'-14'	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B-224/MW-263	16'-18'	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

  
 \_\_\_\_\_  
 ERM Signature

3-28-03  
 \_\_\_\_\_  
 Date

\_\_\_\_\_  
 Briggs Signature

\_\_\_\_\_  
 Date